CRWMS/M&O

Design Analysis Cover Sheet

Complete only applicable items.

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1. Purpose

The purpose of this analysis is to calculate the thermal response of the repository host rock and near-field surface temperatures due to the heat produced by drift-emplaced waste packages (WPs). The main objective of the evaluation is to predict time-dependent WP surface temperatures for later use as boundary conditions for detailed thermal evaluations of large and small Multi-Purpose Canisters (MPCs), defense high-level waste (DHLW), and uncanistered spent fuel (UCF) waste package conceptual designs. This analysis will also provide a parametric evaluation of the thermal effects of thermal loading and various emplacement parameters to determine what parameters are important to repository thermal behavior.

2. Quality Assurance

The Quality Assurance (QA) program applies to this analysis. The work reported in this document is part of the thermal analysis for the License Application Design phase. This activity can impact the proper functioning of the Mined Geologic Disposal System (MGDS) waste package; the waste package has been identified as an MGDS Q-List item important to safety and waste isolation (pp. 5,16, Ref. 5.1). The waste package is on the Q-List by direct inclusion by the Department of Energy (DOE), without conducting a QAP-2-3 evaluation. The work performed for this analysis is covered by a Waste Package Development (WPD) QAP-2-0 work control Activity Evaluation entitled "Perform Criticality, Thermal, Structural, and Shielding Analyses" (Ref. 5.2). The QAP-2-0 evaluation determined such activities to be subject to *Quality Assurance Requirements and Description* (QARD) (Ref. 5.3) controls. Applicable procedural controls are listed in the evaluation.

All design inputs which are identified in this document are for pre-Title II (conceptual or preliminary) designs; some or all of these design inputs will require subsequent qualification (or superseding inputs) as the waste package design proceeds. For design documents subject to the QARD requirements, unqualified design inputs must be considered as TBV (to be verified) items subject to tracking, in accordance with applicable procedures. The design inputs identified and documented in Section 4 have been assigned the single tracking number TBV-217-WPD, to meet tracking requirements.

3. Method

Finite element analysis was the analytical model employed. A finite element representation of the geometry of a waste package in repository emplacement was developed and solved using the solid modeling and thermal analysis capabilities of the commercially available ANSYS finite element software. A range of thermal loadings (waste package and drift spacings) and waste package sizes was considered.

4. Design Inputs

All design inputs are for pre-Title II designs; some or all of these design inputs will require subsequent qualification (or superseding inputs) as the waste package design proceeds. The design inputs identified and documented in Section 4 have been assigned the single tracking number TBV-217-WPD, to meet tracking requirements in accordance with applicable procedures.

4.1 Design Parameters

Table 2 of Section 1.12 of the Yucca Mountain Project Reference Information Base (RIB, p. 5, Ref. 5.4) provides corrected depths to rock unit lower contacts from borehole USW G-4 (see Assumption 4.3.5). These depths are listed here in Table 4.1-1 for the rock units considered in this analysis (see Assumption 4.3.14). Table 2 of Section 1.1326 of the RIB (p. 9, Ref. 5.4) provides mean-value in-situ-saturation estimates for the rock mass thermal conductivity for some of the rock units. These values are also listed here in Table 4.1-1.

Table 4.1-1. Stratigraphy for Borehole USW G-4 (Ref. 5.4)

Rock Unit	Corrected Lower Contact	Thermal Conductivity
Ground Level	0 m (0 ft)	N/A
Undifferentiated Overburden	9.1 m (30 ft)	(see Assumption 4.3.10)
TCw Lithophysae Poor TCw Lithophysae Rich (TCw Average)	36.0 m (118 ft)	1.73 W/m·K 1.59 W/m·K (1.66 W/m·K) (see Assumption 4.3.11)
PTn Welded, Devitrified PTn Non-welded or Bedded	74.1 m (243 ft)	1.60 W/m·K 0.85 W/m·K (see Assumption 4.3.12)
TSw1 Lithophysae Poor TSw1 Lithophysae Rich (TSw1 Average)	204.2 m (670 ft)	1.70 W/m·K 1.60 W/m·K (1.65 W/m·K) (see Assumption 4.3.11)
TSw2	393.5 m (1291 ft)	2.10 W/m·K
TSw3	409.3 m (1343 ft)	1.28 W/m·K
CHn1v	414.5 m (1360 ft)	1.20 W/m·K

CHn1z	518.5 m (1701 ft)	1.28 W/m·K
CHn2v CHn2z (CHn2 Average)	535.2 m (1756 ft) (see Assumption 4.3.14)	1.20 W/m·K 1.56 W/m·K (1.38 W/m·K) (see Assumption 4.3.13)

Table 6 of Section 1.1326 of the RIB (p. 11, Ref. 5.4) gives the thermal capacitance of the rock mass at selected temperatures for nine of the thermal/mechanical rock units. They are repeated here in Table 4.1-2. Thermal capacitance is the product of specific heat and density. Therefore, for the emplacement thermal model, the below values were converted to $\text{J/m}^3\cdot\text{K}$ (multiplied by 1×10^6) and entered as temperature-dependent specific heats with all rock densities equal to 1.0 kg/m^3 (see Assumption 4.3.16).

Table 4.1-2. Thermal Capacitance of Rock Units ($\text{J/cm}^3\cdot\text{K}$) (Ref. 5.4)

Temp.	TCw	PTn	TSw1	TSw2	TSw3	CHn1v	CHn2v	CHn2*
25°C	1.9263	2.1164	1.9779	2.0324	1.8443	2.4436	2.6032	2.4309
50°C	2.0183	2.2196	2.0654	2.1280	2.0315	2.5557	2.6647	2.5385
94°C	2.1494	2.3498	2.1891	2.2638	2.2831	2.6960	2.7447	2.6803
95°C	9.6274	30.3260	12.6294	10.7683	4.5590	36.6013	36.6069	27.9869
105°C	9.3665	29.2767	12.2534	10.4690	4.5188	35.3263	35.3440	27.0553
114°C	9.1306	28.3302	11.9138	10.1984	4.4800	34.1764	34.2053	26.2146
115°C	1.9278	1.3695	1.8555	2.0065	2.2953	1.5013	2.7914	2.5644
155°C	2.0272	1.4612	1.9641	2.1114	2.4489	1.6018	2.7419	2.5935
195°C	2.1053	1.5358	2.0264	2.1912	2.5740	1.6836	2.6707	2.5985
235°C	2.1802	1.5986	2.0985	2.2692	2.6792	1.7525	1.5814	1.9820
275°C	2.2492	1.6529	2.1649	2.3410	2.7702	1.8120	1.6320	2.0474

* CHn2 values are the average of CHn2v and CHn2z (see Assumption 4.3.13)

Table 4.1-3 lists the thermal properties of typical concrete to be used as the drift invert (see Assumption 4.3.20). These values were taken from Tables A.3 and A.8 of a standard heat transfer textbook (pp. 679, 692, Ref. 5.5) for a temperature of 300 K. To be conservative, a lower bound for emissivity was used.

Table 4.1-3. Material Properties of Concrete Invert (Ref. 5.5)

	Conductivity	Density	Specific Heat	Emissivity
Concrete Invert	1.4 W/m·K	2300.0 kg/m ³	880.0 J/kg·K	0.88

Table 4.1-4 lists the thermal properties of ASTM A 516 carbon steel (see Assumption 4.3.28). Values for thermal conductivity and thermal diffusivity of A 516 (C-Mn-Si) were taken from Table I-4.0, Appendix I of the 1986 ASME Boiler and Pressure Vessel Code (p. 97, Ref. 5.6) and are converted here to conductivity and specific heat in SI units. The conversion of thermal diffusivity (defined in Equation 4.1-1 below, p. 107, Ref. 5.6) to specific heat requires the density listed in Table 4.1-5.

$$\text{Thermal Diffusivity (ft}^2\text{/hr)} = \frac{\text{Thermal Conductivity (Btu/hr}\cdot\text{ft}\cdot^\circ\text{F)}}{\text{Density (lb/ft}^3\text{)} \times \text{Specific Heat (Btu/lb}\cdot^\circ\text{F)}}$$

(Equation 4.1-1)

Table 4.1-4. Thermal Properties of A 516 Carbon Steel (Ref. 5.6)

Temperature		Thermal Conductivity (Btu/hr·ft·°F)	Thermal Diffusivity (ft ² /hr)	Thermal Conductivity (W/m·K)	Specific Heat (J/kg·K)
°F	°C				
70	21.11	23.6	0.454	40.84	428.72
100	37.78	23.9	0.443	41.36	444.95
150	65.56	24.2	0.433	41.88	460.94
200	93.33	24.4	0.422	42.23	476.87
250	121.11	24.4	0.414	42.23	486.08
300	148.89	24.4	0.406	42.23	495.66
350	176.67	24.3	0.396	42.06	506.09
400	204.44	24.2	0.386	41.88	517.07
450	232.22	23.9	0.375	41.36	525.64

500	260.00	23.7	0.364	41.02	536.99
550	287.78	23.4	0.355	40.50	543.63
600	315.56	23.1	0.346	39.98	550.62
650	343.33	22.7	0.333	39.29	562.21
700	371.11	22.4	0.320	38.77	577.32
750	398.89	22.0	0.308	38.08	589.10
800	426.67	21.7	0.298	37.56	600.57
850	454.44	21.2	0.286	36.69	611.35
900	482.22	20.9	0.274	36.17	629.09
950	510.00	20.5	0.262	35.48	645.12
1000	537.78	20.0	0.248	34.61	665.12
1050	565.56	19.6	0.237	33.92	682.07
1100	593.33	19.2	0.228	33.23	694.52
1150	621.11	18.7	0.213	32.36	724.07
1200	648.89	18.2	0.197	31.50	761.95
1250	676.67	17.5	0.179	30.29	806.31
1300	704.44	16.7	0.155	28.90	888.60
1350	732.22	15.8	0.119	27.35	1095.04
1400	760.00	15.3	0.077	26.48	1638.78
1450	787.78	15.1	0.154	26.13	808.68
1500	815.56	15.1	0.169	26.13	736.90

Table 4.1-5 lists the density and emissivity of A 516 carbon steel. The density of A 516 (C-Mn-Si) was taken from Table A.1 of a standard heat transfer text (p. 670, Ref. 5.5) and the emissivity (average for smooth oxidized iron) was taken from Table 4.3.2 of Marks' Handbook (p. 4-68, Ref. 5.7). The density of 316 stainless steel (see Assumption 4.3.30) was taken from Table 17 of the Metals Handbook (p. 423, Ref. 5.8).

Table 4.1-5. Steel Material Properties (Refs. 5.5, 5.7, and 5.8)

	Density	Emissivity
A 516 Carbon Steel	8131.0 kg/m ³	0.80
316 Stainless Steel	8000.0 kg/m ³	Not Applicable

Table 4.1-6 lists the specific heat of 316 (16Cr-12Ni-2Mo) stainless steel (see Assumption 4.3.30). Values for thermal conductivity and thermal diffusivity were taken from Table I-4.0, Appendix I of the 1986 ASME Boiler and Pressure Vessel Code (p. 102, Ref. 5.6) and are converted here to specific heat with Equation 4.1-1 and the density from Table 4.1-6. A value for specific heat at 100°C was interpolated.

Table 4.1-6. Thermal Properties of Stainless 316 (Ref. 5.6)

Temperature		Thermal Conductivity (Btu/hr·ft·°F)	Thermal Diffusivity (ft ² /hr)	Specific Heat (J/kg·K)
°F	°C			
200	93.33	8.4	0.141	499.38
	100.00			501.9
250	121.11	8.7	0.143	509.98

4.2 Criteria

The design of the engineered barrier system (EBS) will depend on thermal analyses of the repository host rock and near-field. Criteria that relate to the thermal analysis of the EBS are derived from the applicable requirements and planning documents. Upper-level systems requirements are provided in the Mined Geologic Disposal System Requirements Document (Ref. 5.9). The requirements flow down to the Engineered Barrier Design Requirements Document (EB-DRD, Ref. 5.10) as specific requirements for engineered barrier segment design. The Waste Package Implementation Plan (WPIP, Ref. 5.11) also provides criteria and goals for the thermal design of the EBS. The criteria applicable to thermal analysis of waste package emplacement are equivalent to the applicable requirements, interface requirements, and criteria cited in the MGDS-RD, EB-DRD, and WPIP and they are listed in this section.

4.2.1 EB-DRD Requirements (pp. 3-8, 3-14, 3-19, 3-25, 3-47, 3-49, 3-53, 3-54, Ref. 5.10)

"3.1.5 MAJOR CONSIDERATIONS AND ASSUMPTIONS

- ...
- B. The assumption used in developing this EB-DRD is that the extent of blending (ie., the mixing in waste packages of SNF and/or HLW of different thermal outputs) required is limited to that which can be accommodated by the WA process

Thermal loading studies will determine the extent of blending that must occur. Limited blending can be accomplished at the MRS through the WA process. If significant blending is required, this could have a major impact on the MRS and/or MGDS design and operations, and will be the subject of system studies. If these studies show that changes in system design requirements are necessary, the RDs will be revised."

"3.2.2 RADIOLOGICAL PROTECTION

3.2.2.1 GENERAL REQUIREMENTS

- ...
- C. The Engineered Barrier Segment, together with the Repository Segment, shall provide adequate shielding from radioactive components and high ambient temperatures.

[Derived]"

"3.2.3.3 ENGINEERED BARRIER SEGMENT - REPOSITORY SEGMENT INTERFACE REQUIREMENTS

...

- A.8 The Repository Segment will accommodate the emplacement concept (TBD) selected during ACD.

[Derived]

- ...
- b. The Repository Segment will prevent free-liquid-phase water from contacting the waste package during the period from package insertion until repository closure.

[Derived]

- c. The Repository Segment layout will be designed so that a combination of characteristics will assist in keeping liquid water from contacting the waste packages for the first 300 to 1000 (TBV) years after closure.

[Derived]

- d. The Repository Segment layout will also ensure that the design limit temperatures (TBD) for waste forms are not exceeded.

[Derived]

- ...
- A.10 If the design requires the waste form to be transferred for any purpose (such as from shipping casks to waste packages), the Repository Segment is responsible for the following:

- ...
- b. Repository Segment operations at the surface handling facility will be designed so that cladding failure from mechanical abrasion or deformation considering thermally-induced effects will result in less than five percent (TBV) cladding strain.

[Derived]

- ...
- A.17 The underground facility will be designed so that the performance objectives will be met taking into account the predicted thermal and thermomechanical response of the host rock, and surrounding strata, and groundwater system.

[MGDS-RD 3.7.3.4.C] [10 CFR 60.133(i)]"

"3.2.3.4 ENGINEERED BARRIER SEGMENT -WASTE ACCEPTANCE INTERFACE REQUIREMENTS

- ...
- A. WA will provide standard HLW meeting the following criteria:

- ...
- 1.e. Total heat generation rate: Up to 1500 watts per canister (TBV) at the year of shipment.

- 1.f Waste temperature: Will not have exceeded 400°C (TBV) during transit to ensure the glass transition temperature was not exceeded.

[MGDS-RD 3.2.3.2.2.B.1]

- ...
C. WA will provide standard SNF meeting the following criteria:

- ...
1.d Cooling: The minimum cooling time for fuel is five (5) years.

...
[MGDS-RD 3.2.3.2.2.A.1] [10 CFR 961.11, App. E, B.3]

- ...
2. Temperature will not have exceeded 350°C (TBV) during storage under inert gas.

[Derived]"

"3.7

ENGINEERED BARRIER SEGMENT MAJOR COMPONENT CHARACTERISTICS/REQUIREMENTS

The major components of the Engineered Barrier Segment are the waste packages, the underground facility, any backfill placed in the emplacement drifts, and any emplacement hardware provided to support and protect the emplaced waste package. (The underground facility portion of the Engineered Barrier Segment and the associated requirements allocated to the EB-DRD by the MGDS-RD are identified as interfaces with the Repository Segment in Section 3.2.3.3.) These major components shall be capable of contributing to the assigned function, Isolate Waste (1.4.3), by containing waste in the waste package during the containment period of 300 to 1,000 years (TBR), and then by limiting the release of radionuclides during the post-containment period.

[MGDS-RD 3.7.3.1.A, B] [CRD 3.7.4.1.1]

- ...
G. To limit the predicted thermal and thermomechanical response of the host rock and surrounding strata, and groundwater system, the Engineered Barrier Segment configuration and loading shall:

1. Limit borehole wall temperature (if a borehole is used) to 275°C (TBV)
2. Limit the maximum temperature 1 meter into the rock to 200°C (TBV)
3. Limit the TSw3 (vitrophyre tuff) maximum temperature to 115°C (TBV)

4. Limit the maximum ground surface temperature change in the vicinity of the repository to 6°C (TBV)
5. Limit the emplacement drift maximum temperature to 100°C (TBV)
6. Limit the access drift maximum temperature to 50°C (TBV)
[MGDS-RD 3.7.3.4.C] [10 CFR 60.133(i)]"

"3.7.1 WASTE PACKAGE SUBSYSTEM REQUIREMENTS

- ...
- B. The design of waste packages shall include, but not limited to, consideration of the following factors: solubility, oxidation/reduction reactions, corrosion, hydriding, gas generation, thermal effects, mechanical strength, mechanical stress, radiolysis, radiation damage, radionuclide retardation, leaching, fire and explosion hazards, thermal loads, and synergistic interactions.
[MGDS-RD 3.7.3.3.B] [10 CFR 60.135(a)(2)]"

"3.7.1.3 INTERNAL STRUCTURE REQUIREMENTS

- ...
- G. The internal structure shall maintain functionality under the thermal and chemical conditions generated by the waste form.
[Derived]"

"3.7.2 BACKFILL REQUIREMENTS

- ...
- C. The transfer of heat from the waste package to the geologic setting by the backfill material shall not have an adverse effect on the long term performance of the WP.
[Derived]
- F. The chemical and mechanical stability of the backfill when subjected to the maximum thermal environment anticipated in the repository shall not have an adverse effect on the long term performance of the waste package.
[Derived]"

4.2.2 MGDS-RD Requirements (pp. 26, 42, 107, Ref. 5.9)

The following requirements from the MGDS-RD (Ref. 5.9) apply to the thermal analysis of the EBS but were not explicitly echoed in the current revision of the EB-DRD (Ref. 5.10).

"3.1.5 Major Considerations and Assumptions

- ...
- M. It is assumed that loaded MPCs emplaced for disposal will have a maximum thermal output of 14.2 kilowatts. Accommodation of this condition will require management of the waste delivery schedule or storage of loaded MPCs with a higher thermal output until the thermal output has decreased to 14.2 kilowatts. This 14.2 kilowatts is equivalent to the thermal output of 21 PWR assemblies with 40 GWd/MTU burnup and 3.75% initial enrichment 10 years after discharge from a reactor. (Twenty-one assemblies represents the capacity of one of several potential MPC configurations.)"

"3.2.3.2.3 MGDS-Transportation Interface Requirements

- ...
- J. The MGDS shall provide an emplacement environment (e.g., waste package design, underground facility design, emplacement mode or orientation, spacing between waste packages, etc.) for the MPC with disposal container, such that an emplaced waste package with a thermal output of 14.2 kW will not result in an MPC surface temperature higher than 225°C <TBR>. [Ref. 2.4.2.C] [RW-0199] [10 CFR 60.135(a)(2)] [Derived by 3.2.1.1.H]

The MPC design is responsible for maintaining the peak SNF cladding temperature below the maximum temperature designated for disposal. To meet this requirement, the peak cladding temperature in a loaded MPC with a thermal output of 14.2 kW may not exceed 350°C when subjected to an MPC external wall temperature of 225°C."

"3.7.3.3 Waste Package Requirements

- ...
- B.2 Waste packages shall be emplaced in an environment (e.g., waste package design, underground facility design, emplacement mode or orientation, spacing between waste packages, etc.), such that SNF cladding temperatures in an emplaced waste package do not exceed 350°C <TBR>. [10 CFR 60.135(a)(2)] [Derived by CRD 3.2.1.1.H]"

4.2.3 WPIP Criteria (pp. 2-4, 3-2, 4-30, 5-1, Ref. 5.11)

The impetus to perform thermal evaluations of the waste package and near-field is provided by the Waste Package Implementation Plan (WPIP, Ref. 5.11). Design goals and the activities supporting these goals are listed in the WPIP. Design goals related to thermal analysis are listed in Section 2.4 of the WPIP and provide basic thermal criteria for the design of the EBS. Activities to support the design goals related to thermal analysis are indicated in Sections 3.4, 4.5, and 5.1 of the WPIP.

"2.4 DESIGN GOALS

- ...
- Center line fuel pin temperature limit of (to be determined (TBD)) °C
 - Rock wall temperature limit of (TBD) °C
 - Thermal loading of the repository (TBD)
- ...

The maximum temperature of the glass waste forms must be maintained below limits established for them. This limit is about 500°C (to be verified) for West Valley Defense High-Level Waste glass. The YMP and the glass producers have the responsibility to maintain the peak temperature below the transition temperature."

Table 2-1 Listing of Design Goals*

- ...
- Meet temperature limits for components
 - Provide for a range of thermal loads⁺
 - Provide capability to adjust repository thermal loading after emplacement⁺

*The source of the design goals is, for the most part, the Engineered Barrier Design Requirements Document.

⁺The source of these design goals is engineering judgement."

"3.4 PERFORMANCE ALLOCATION

... Thermal analyses will be performed to determine the temperature profiles across the drifts for drift emplacement. Limited thermal analyses will also be performed for the borehole emplacement modes, assuming various package sizes and thermal loadings. These analyses will permit the re-evaluation of the goals given in the SCP for performance measures. ..."

"4.5 ENVIRONMENT INFORMATION NEEDS

4.5.2 Hydrologic Properties

Determine hydrologic (and thermal) properties of the WP environment in order to:

- Develop a comprehensive model of the thermal and hydrologic behavior of the waste package environment as a function of overall repository thermal loading and rock properties, including two-phase flow
- Use the model to forecast the near field temperature and fluid flow; these near field parameters will be used by M&O Waste Package Development, M&O PA, and LLNL to calculate/forecast the WP temperatures (surface and centerline) and the distribution of corrosion rates and package lifetimes (as input to the models determined by the chemical and mineralogical properties investigation described above)."

"5.1 WP/EBS DESIGN ACTIVITIES

- 2. Thermal Evaluation (time dependent)
 - 2.1. Internal
 - 2.1.1. SNF and HLW
 - 2.1.2. WP basket
 - 2.1.3. WP internal barrier(s)
 - 2.1.4. WP body
 - 2.1.5. Closure
 - 2.2. External, EBS and near field
 - 2.3. Receipt rate and thermal variability"

4.2.4 Thermal Goals for EBS Design

Based on Assumption 4.3.1, the requirements of Section 3.7.G of the EB-DRD (Ref. 5.10), and the design goals of the WPIP (Ref. 5.11), the following thermal criteria are established for the design of the EBS:

- Keep the rock mass temperature at 1 meter from a vertical borehole less than 200°C.
- Keep the emplacement drift wall temperature less than 200°C.
- Limit the TSw3 (basal vitrophyre) maximum temperature to less than 115°C.
- Limit the maximum ground surface temperature change in the vicinity of the repository to less than 2°C.

- Limit the emplacement drift maximum temperature for borehole emplacement to less than 100°C.
- Limit the access drift wall rock maximum temperature to less than 50°C during preclosure.
- Limit the CHn maximum temperature to less than 115°C.
- Limit the PTn (Upper Paint Brush non-welded) maximum temperature to less than 115°C.
- Limit the SNF cladding maximum temperature to less than 350°C.
- Limit the high-level waste glass maximum temperature to less than 500°C.
- Maximize the time the waste package container stays above boiling consistent with the thermal strategy developed.
- The structural strength of any material component of the waste package shall not be compromised by temperature/environment of the EBS environment.

The above thermal criteria are in addition to those listed in Sections 4.2.1, 4.2.2, and 4.2.3.

4.2.5 Thermal Goals/Criterion Addressed by this Analysis

Based on Assumption 4.3.1, the requirements listed in the previous sections, and the design goals of the WPIP (Ref. 5.11), the following criteria are to be addressed by this analysis:

- Keep the emplacement drift wall temperature less than 200°C.
- Limit the TSw3 (basal vitrophyre) maximum temperature to less than 115°C.
- Limit the CHn maximum temperature to less than 115°C.
- Limit the PTn (Upper Paint Brush non-welded) maximum temperature to less than 115°C.
- Limit the SNF cladding maximum temperature to less than 350°C.
- Maximize the time the waste package container stays above boiling consistent with the thermal strategy developed.

4.3 Assumptions

All design inputs are for pre-Title II designs; some or all of these design inputs will require subsequent qualification (or superseding inputs) as the waste package design proceeds. The design inputs identified and documented in Section 4 have been assigned the single tracking number TBV-217-WPD, to meet tracking requirements in accordance with applicable procedures.

4.3.1 The following thermal criteria are assumed to apply to the design of the Engineered Barrier Segment. These criteria are consistent with current program decisions in the Controlled Design Assumption Document (CDA, Ref. 5.12). The criteria are originally based on a reevaluation of the Site Characterization Plan (SCP) thermal goals (Table 3, p. 22, Ref. 5.13). Each thermal criteria is listed here followed by its CDA or SCP reference. This assumption is used in Section 4.2.4.

- Keep the rock mass temperature at 1 meter from a vertical borehole less than 200°C. (CDA EBD RD 3.7.G.2, p. 6-76, Ref. 5.12)
- Keep the emplacement drift wall temperature less than 200°C. (CDA EBD RD 3.7.G.2, p. 6-76, Ref. 5.12)
- Limit the TSw3 (basal vitrophyre) maximum temperature to less than 115°C. (CDA EBD RD 3.7.G.3, p. 6-77, Ref. 5.12)
- Limit the maximum ground surface temperature change in the vicinity of the repository to less than 2°C. (CDA EBD RD 3.7.G.4, p. 6-78, Ref. 5.12)
- Limit the emplacement drift maximum temperature for borehole emplacement to less than 100°C. (CDA EBD RD 3.7.G.5, p. 6-79, Ref. 5.12)
- Limit the access drift wall rock maximum temperature to less than 50°C during preclosure. (CDA EBD RD 3.7.G.6, p. 6-80, Ref. 5.12)
- Limit the CHn maximum temperature to less than 115°C. (CDA DCSS 025, p. 6-155, Ref. 5.12)
- Limit the PTn (Upper Paint Brush non-welded) maximum temperature to less than 115°C. (CDA DCSS 031, p. 6-160, Ref. 5.12)

- Limit the SNF cladding maximum temperature to less than 350°C.
(CDA DCWP 001, p. 6-165, Ref. 5.12)
 - Limit the high-level waste glass maximum temperature to less than 500°C.
(CDA DCWP 002, p. 6-166, Ref. 5.12)
 - Maximize the time the waste package container stays above boiling consistent with the thermal strategy developed. (Table 3, p. 23, Ref. 5.13)
 - The structural strength of any material component of the waste package shall not be compromised by temperature/environment of the EBS environment..
(Derived from p. 2-4, Ref. 5.11 and Section 3.7.1.3.E, p. 3-53, Ref. 5.10)
- 4.3.2 The waste package will be emplaced in-drift in a horizontal mode. This is consistent with large waste packages such as the MPC with disposal container and is a current program decision (CDA Key 011, p. 6-18, Ref. 5.12). This assumption is used in Section 7.4.1.
- 4.3.3 A pillar model of repository emplacement with a single modeled waste package will be used to determine the average drift wall and waste package surface temperatures. A single modeled waste package implies that all packages in the repository generate the same heat. This assumption results in a prediction of average repository temperatures, neglecting hot and cold spots due to the variability of waste package heat loads. The assumption is necessary to allow a detailed evaluation of emplacement geometry while maintaining reasonable model size. This assumption is used in Sections 7.4.1 and 7.4.2.
- 4.3.4 The repository emplacement model assumes an infinite repository horizon such that heat losses at the repository sides (edge effects) are neglected. The assumption of an infinite repository is applicable to the interior of the repository, which is not affected by cooling at the edge. This region includes most of the repository area during the first 1000 years (p. 5, Ref. 5.14). This assumption follows as a result of Assumption 4.3.3 and is necessary to maintain a reasonable model size. This assumption is used in Section 7.4.2.
- 4.3.5 A layered rock stratigraphy for the repository emplacement model is assumed consistent with that measured at borehole USW G-4 (Table 2, Section 1.12, p. 5, Ref. 5.4). Borehole USW G-4 is near the proposed repository main block. This assumption is used in Sections 4.1, 7.4.1, and 7.4.2.

- 4.3.6 The repository horizon (bottom of drift cut) for the repository emplacement model is at a depth of 311 m (measured from borehole USW G-4). This assumption has been used in previous near-field thermal evaluations (Appendix E, p. 9, Ref. 5.15) performed by Sandia National Laboratories (SNL). Historically, this value represents the location (107 m below the lower contact of TSw1 measured from borehole USW G-4) of a proposed canister-scale heater test (p. 3, Ref. 5.16). This value is consistent with an approximate depth of 350 m provided in the SCP (p. 7-8, Ref. 5.17) and places the repository horizon within the TSw2 rock unit (CDA Key 022, p. 6-26, Ref. 5.12). This assumption is used in Section 7.4.1.
- 4.3.7 The repository emplacement model thermal evaluation will predict temperatures for up to 1000 years after emplacement. After about 1000 years, depending on the emplacement spacings, the 3-D pillar model of emplacement will tend to over-predict average temperatures due neglected edge effects (see Assumption 4.3.4) during the cool-down phase of repository thermal response. This effect was quantified in benchmark calculations against Lawrence Livermore National Laboratory (LLNL) evaluations (p. 7, Ref. 5.18). This assumption is used in Section 7.4.2.
- 4.3.8 A repository emplacement model lower boundary that extends to a depth of 1300 m will ensure lower boundary condition isolation for at least 1000 years. Analyses performed at LLNL (p. 853, Ref. 5.19) have found that there may be insufficient water circulation at the water table, due to low permeabilities, to maintain a constant temperature at that depth (about 611 m). A constant temperature boundary condition will not affect solution results if the heat conduction wavefront does not reach the boundary condition before the end of model solution time (1000 years, see Assumption 4.3.7). This assumption is used in Sections 7.4.1 and 7.4.2.
- 4.3.9 The ground surface and rock at 1300 m temperatures can be assumed constant values of 18.7°C and 53.05°C respectively. Assumptions for the average ground surface temperature and the ambient thermal gradients in the rock are provided in the CDA (TDSS 002, p. 6-182, Ref. 5.12). The temperature at 1300 m is calculated as the sum of the ground surface temperatures plus the thermal gradients [$18.7^{\circ}\text{C} + 0.019^{\circ}\text{C/m}$ (0 to 150 m) + 0.018°C/m (150 to 400 m) + 0.030°C/m (400 to 541 m)], where the last thermal gradient is assumed to extend to 1300 m. Also, since the surface temperature is fixed in this model, the temperature rise at the ground surface due to thermal loading of the repository will not be calculated. Temperature boundary conditions are required for a thermal analysis. This assumption is used Section 7.4.2.
- 4.3.10 Material properties for the Undifferentiated Overburden (UO) are assumed to be the same as the material properties of TCw. There are no material properties provided in the RIB (Ref. 5.4) for UO; therefore, there is no reason to track or distinguish between UO and TCw. This assumption is used in Sections 4.1, 7.4.1, and 7.4.2.

- 4.3.11 The thermal conductivities for TCw and TSw1 are assumed the average of their lithophysae poor and rich components. There is no data given in the RIB (Ref. 5.4) that would indicate what proportion of these rock units are lithophysae rich compared to lithophysae poor; therefore, an average will be representative. This assumption is used in Sections 4.1 and 7.2.
- 4.3.12 The thermal conductivity of PTn is assumed that of non-welded PTn. There is no data given in the RIB (Ref. 5.4) for what portion of the PTn unit is welded; therefore, the lower value has been selected to be conservative. This assumption is used in Sections 4.1 and 7.2.
- 4.3.13 The thermal conductivity and thermal capacitance of CHn2 are assumed to be the average of the values given for CHn2v and CHn2z in the RIB (Table 2, Section 1.1326, p. 9, Ref. 5.4). There is no data given in the RIB for the lower contact depths of CHn2v and CHn2z; therefore, an average will be representative. This assumption is used in Sections 4.1 and 7.2.
- 4.3.14 Material properties of the CHn2 unit are assumed to persist below its lower contact down to 1300 m. There are no material properties provided in the RIB (Ref. 5.4) for rock units below CHn2; therefore, there is no reason to track or distinguish units below CHn2. This assumption is used in Sections 4.1, 7.2, and 7.4.1.
- 4.3.15 The effects of water movement (fluid flow) in the rock units (layers) on temperatures at the waste package and near-field are minor such that the system can be approximated by a model that considers conduction and radiation heat transfer only. While "conduction-only" codes cannot predict water movement or humidities, they have been shown to provide a reasonable estimate of rock temperatures in benchmarking evaluations (p. 7, Ref. 5.18). This assumption is used in Section 7.4.2.
- 4.3.16 The temperature-dependent thermal capacitances provided in the RIB (Table 6, Section 1.1326, p. 11, Ref. 5.4) will approximate the latent heat absorption due to boiling of water in the rock units. The model and analysis code used in this analysis does not consider fluid flow (see Assumption 4.3.15) and the temperature-dependent thermal capacitances have higher values near the boiling point to represent the heat of vaporization of the in-situ water. This formulation is consistent with previous conduction/radiation thermal evaluations performed by SNL (Appendix E, p. 5, Ref. 5.15). It is important to note, however, that as described in the RIB, these capacitances are applicable only for the heating phase of the rock units. This limitation does not affect the estimation of peak temperatures which occur before repository cool-down begins. This assumption is used in Sections 4.1, 7.2, and 7.4.2.

- 4.3.17 The repository horizon will be limited to the TSw2 geologic unit in the primary area. This assumption is consistent with current repository conceptual designs (p. 8-12, Ref. 5.20) and is a current program decision (CDA Key 022, p. 6-26, Ref. 5.12). This assumption is used in Section 7.4.1.
- 4.3.18 The emissivity of the TSw2 rock unit is 0.85. This value is an historic value that was used in numerous evaluations performed by SNL and can be compared to 0.75 used by LLNL (p. 539, Ref. 5.21) and the range of 0.88 to 0.95 given for rocks in a standard heat transfer textbook (Table A.8, p. 693, Ref. 5.5). This assumption is used in Section 7.2.
- 4.3.19 The waste package is emplaced in a circular drift with a diameter of 5.0 m. This drift diameter is consistent with recent repository subsurface conceptual designs for center-in-drift emplacement using permanent rail carts (p. 2, Ref. 5.22 and Section 8.6.1.G, p. 8-76, Ref. 5.20). This assumption is used in Section 7.4.1.
- 4.3.20 The emplacement drift invert will be cast-in-place concrete with a depth of 0.7 m. This invert material and thickness is consistent with recent repository sub-subsurface conceptual designs for center-in-drift emplacement using permanent rail carts (p. 2, Ref. 22 and Section 8.6.1.S, p. 8-78, Ref. 5.20). Given a distance between the drift centerline and the top of the invert of 1.8 m (p. 2, Ref. 5.22) and a drift diameter of 5.0 m (Assumption 4.3.18), then the invert height would be 0.7 m $[5.0/2 - 1.8]$. This assumption is used in Sections 4.1, 7.2, and 7.4.1.
- 4.3.21 The center of the large waste package, with 21 pressurized-water reactor (PWR) assemblies, is 0.137 m below the drift centerline. This WP position is consistent with recent repository subsurface conceptual designs for center-in-drift emplacement using permanent rail carts (p. 2, Ref. 5.22 and Section 8.6.1.H, p. 8-77, Ref. 5.20). This assumption is used in Section 7.4.1.
- 4.3.22 The permanent rail cart for the smaller WP (12 PWR) will have similar dimensions to the rail cart for the large WP (21 PWR) such that the clearance between the bottom of the WP and the top of the invert is the same for both WPs. To allow both large and small WPs in the same repository, the emplacement methods should be compatible (same rail spacing, wheel diameter, etc.). This assumption is used in Section 7.4.1.
- 4.3.23 The waste package is assumed to "float" in the emplacement drift such that thermal effects due to the emplacement support device can be neglected. Designs for WP support devices (pedestals, rail carts) are conceptual (Section 8.7.2.2, p. 8-131, Ref. 5.20) and specific designs are not available. Therefore, the support device and any conductive or insulative properties it may have are neglected. This assumption is used in Sections 7.4.1 and 7.4.2.

- 4.3.24 The emplacement drift will not be backfilled at repository closure. No backfill material has been specified; however, the assumption of possible drift backfilling is a current program decision (CDA Key 046, p. 6-39, Ref. 5.12). The evaluation of the thermal impact of emplacement drift backfill is beyond the scope of this analysis and will be considered in future emplacement scale evaluations. This assumption is used in Section 7.4.2.
- 4.3.25 The emplacement drifts are not ventilated. While some ventilation is likely during the actual emplacement operations, it may not be possible (cost effective) to continuously ventilate all of the emplacement drifts. Studies of repository ventilation (Ref. 5.23) are in progress; however, it is conservative to assume that the emplacement drift is unventilated after emplacement operations have been completed. This assumption is used in Section 7.4.2.
- 4.3.26 Thermal radiation is the dominant heat transfer mechanism between the waste package and the drift wall such that air convection in the drift can be neglected. Given that the emplacement drifts are not ventilated (see Assumption 4.3.25) and conduction through the WP supports is neglected (see Assumption 4.3.23), thermal radiation and natural convection will transfer the WP heat to the drift wall. Reference 5.24 (p. 59) showed that radiation heat transfer in a closed drift above borehole emplaced WPs is an order of magnitude greater than convective heat transfer. Therefore, radiation is considered the dominant heat transfer mechanism in the open emplacement drifts as well. This assumption, which is consistent with evaluations performed by SNL (Appendix E, p. 5, Ref. 5.15), simplifies the model and will result in slightly conservative WP temperatures. This assumption is used in Section 7.4.2.
- 4.3.27 The waste package in the repository emplacement model will be a smeared-property homogeneous heat-generating cylinder with dimensions based on the 21 PWR and 12 PWR MPC conceptual designs with disposal container. MPC conceptual designs are described in Volume II.A of the MPC Conceptual Design Report (pp. II.A.4-1 to II.A.4-22, Ref. 5.25). The two sizes of MPC disposal containers are represented by preliminary sketches prepared in support of Waste Package Development Advanced Conceptual Design (Ref. 5.26 and Ref. 5.27) and the outer dimensions are listed in Table 4.3-1. Details of internal construction will not effect the determination of emplacement near-field surface temperatures; therefore, the WP can be represented by a homogeneous cylinder. This assumption is used in Sections 7.2 and 7.4.1.

Table 4.3-1. MPC with Disposal Container Dimensions (Refs. 5.26 and 5.27)

	21 PWR MPC/WP	12 PWR MPC/WP
Outer Diameter	1.8016 m	1.5305 m
Outer Length	5.682 m	5.647 m

- 4.3.28 The homogeneous waste package in the repository emplacement model will include a 0.1 m layer of A 516 carbon steel to properly distribute temperatures along its length. In previous iterations of the development of this model (p. 3, Ref. 5.18), a purely homogeneous model of the WP had slightly over-predicted the temperature difference between the end and mid-length of the WP. A metal layer was found to spread the heat more evenly over the surface of the WP as would be expected in the metallic multi-barrier design. A 0.1 m outer barrier of A 516 carbon steel is indicated by preliminary sketches prepared in support of Waste Package Development Advanced Conceptual Design (Ref. 5.26 and Ref. 5.27) and the CDA (Key 042, p. 6-37, Ref. 5.12). This assumption is used in Sections 4.1, 7.2, and 7.4.1.
- 4.3.29 The density of the homogeneous waste package can be represented by the estimated total mass of the 21 PWR MPC with disposal container (p. 5, Ref. 5.28) divided by its volume derived from Table 4.3-1. Since accurate temperatures internal to the waste package are not required of this model, a density based on a weighted average of constituent materials is adequate. This assumption is used in Section 7.2.
- 4.3.30 The specific heat of the homogeneous canister can be represented by that of 316 stainless steel at 100°C. Since accurate temperatures internal to the waste package are not required of this model, a specific heat that is representative of internal materials is adequate. With the A 516 carbon steel outer barrier removed, the remaining materials are dominated by the MPC shell and basket which can be assumed to be primarily stainless steel (pp. II.A.4-1 to II.A.4-22, Ref. 5.25). A reference temperature of 100°C is an engineering estimate of the average waste package temperature over time. This assumption is used in Section 4.1 and 7.2.
- 4.3.31 The conductivity of the homogeneous canister can be represented by an average value derived from previous discrete analyses of the MPC with disposal container. Since accurate temperatures internal to the waste package are not required of this model, an effective conductivity for the homogeneous WP can be calculated based the peak cladding temperature, MPC shell surface temperature, and decay heat load from a previous MGDS thermal analysis of the MPC/WP reported in the MGDS MPC Design Considerations Report (pp. 57 and 63, Ref. 5.29). It is also assumed that the heat load

at initial emplacement (p. 57, Ref. 5.29) can substituted for the heat load at one year without significant impact to the calculation of the homogeneous canister conductivity. This assumption is used in Section 7.2.

- 4.3.32 Thermal loading will be calculated as a function of area mass loading (AML) in MTU/acre (kgU/m^2). Local AML is defined as the mass of the waste package (MTU/WP) divided by the product of WP spacing and drift spacing. Thermal loadings can be defined by AML, initial areal power density (APD), and equivalent energy density (EED). APDs can vary depending on the age of the SNF, and no reference deposition period for EED has been established. Therefore, an AML, which does not change with time after emplacement, is the most consistent method of defining lifetime repository thermal behavior. This assumption is used in Section 7.5.
- 4.3.33 Two primary high thermal loadings (100 MTU/acre and 83 MTU/acre) and a couple variations of a low thermal loading (25 MTU/acre) will be considered in this analysis. These values are consistent with the range (20 - 100 MTU/acre) of thermal loadings given in the CDA (Key 019, p. 6-24, Ref. 5.12). Systems Engineering (p. 2, Ref. 5.30) recommended thermal loadings of 25 and 83 MTU/acre be used for M&O thermal loading evaluations in order to facilitate the comparison of analysis results. A thermal loading of 100 MTU/acre represents the likely maximum possible without violating thermal goals according to the FY 93 Thermal Loading System Study Final Report (p. 10-2, Ref. 5.15) and is a bounding case for this analysis. This assumption is used in Section 7.5.
- 4.3.34 In determining emplacement spacings for a given thermal loading, the minimum center-to-center WP spacing for the large (21 PWR) WP will be 16 m and the maximum WP spacing will be no longer than the drift spacing for that case. An estimated minimum WP spacing for a large WP (21 PWR assemblies) was derived from previous scoping thermal evaluations (p. 3, Ref. 5.31) with conservative assumptions such as a 4.3 m emplacement drift and young/hot SNF. That preliminary evaluation predicted that for 21 PWR WPs, an 11 m WP spacing would exceed WP internal thermal goals and a 15.9 m WP spacing would not. WP spacings that are larger than the drift spacing are considered undesirable because they are inefficient from a drift excavation point of view. This assumption is used in Section 7.5.
- 4.3.35 In determining emplacement spacings for a given thermal loading, the emplacement drift spacing will be limited to multiples of 22.5 m. This assumption is consistent with current repository conceptual designs (Section 8.6.1.U, p. 8-70, Ref. 5.20). Also, a drift spacing of 22.5 m permits AMLs up to 100 MTU/acre (see Assumption 4.3.33) given the minimum WP spacing of 16 m (see Assumption 4.3.34). This assumption is used in Section 7.5.

- 4.3.36 In determining emplacement spacings for a given thermal loading, the large (21 PWR, see Assumption 4.3.38) waste package will be used as the reference, and the smaller waste packages (12 PWR) will be placed with the same drift spacings with smaller WP spacings. Both large and small waste packages may be emplaced in the repository. To achieve a uniform thermal loading, the smaller waste packages must be placed closer together. This assumption is used in Section 7.5.
- 4.3.37 In determining emplacement spacings for a given thermal loading, it is assumed that the DHLW packages are positioned between SNF waste packages, but that their heat output does not contribute to the thermal loading of the repository. That DHLW packages may be positioned between SNF packages is consistent with current repository conceptual designs (Section 8.6.1.O, p. 8-78, Ref. 5.20). The heat output of a DHLW package is sufficiently less than that for a SNF WP such that the contribution of DHLW can be neglected in this evaluation. Parametrics documenting the contribution of DHLW will be performed in future evaluations. This assumption is used in Section 7.5.
- 4.3.38 Large and small boiling-water reactor (BWR) WPs are assumed to have the same heat load and uranium mass loading as the large and small PWR WPs, respectively. Average BWR SNF characteristics were not available at the time of the calculations reported here; therefore, only PWR characteristics (see Assumption 4.3.39) are used in this evaluation. Typically, BWR WPs would generate less heat than PWR WPs and their inclusion in the calculation would result in slightly cooler near-field temperatures. This assumption is used in Sections 7.3 and 7.5.
- 4.3.39 The average SNF characteristics are represented by a PWR assembly that is 22 years old with 42.2 GWd/MTU burnup and 0.428 MTU/assembly. This average SNF type was a current program decision in Rev. 00 of the CDA (Key 004, p. 6-4, Ref. 5.39). Current average SNF characteristics (CDA Key 004, p. 6-12, Ref. 5.12), which indicate slightly older (and therefore cooler) SNF, were not available at the time of the calculations reported here. An older SNF average would result in slightly cooler short-term near-field temperature peaks.

The age and burnup of the assumed average SNF were derived from a preliminary waste stream analysis (Table 7b, Ref. 5.32) in support of the FY 93 Thermal Loading System Study (Ref. 5.15). Table 1 of the waste stream analysis (Ref. 5.32) indicates that there could be 4532 waste packages with a capacity of 21 PWR assemblies each. This results in 95,172 PWR assemblies which divided into a total 40,747.22 MTU of PWRs (Table 7b, Ref. 5.32) gives an average assembly weight of 0.428 MTU. This assumption is used in Sections 7.3 and 7.5.

4.3.40 Time histories of SNF decay heat are interpolated from values derived from the Characteristics Database (CDB, Ref. 5.33). The CDB LWR Radiological PC Database (Ref. 5.33) has been qualified by the Office of Civilian Radioactive Waste Management (OCRWM) for use in work subject to the requirements of the QARD (Ref. 5.3). Tables of energy (heat) production due to activation products, actinides and daughters, and fission products in the CDB provide a source of SNF decay heat loads. This assumption is used in Section 7.5.

4.4 Codes and Standards

Not Applicable. Thermal design of the waste package is not controlled by codes and standards. The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Ref. 5.6) has been used only as a source of material properties for ASTM A 516 carbon steel (C-Mn-Si) and 316 stainless steel (16Cr-12Ni-2Mo).

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- 5.38 Waste Package Design Basis Fuel Analysis, Draft Document, DI Number: B000000000-01717-0200-00127 REV 00A (RPC-951204-01), CRWMS M&O, September 19, 1995.
- 5.39 Controlled Design Assumption Document, DI Number: B000000000-01717-4600-00032 REV 00, CRWMS M&O.

6. Use of Computer Software

The primary computer code used for this analysis is ANSYS Revision 5.0A which is identified with the Computer Software Configuration Item (CSCI) identifier B00000000-01717-1200-30003, Ver. 5.0A. ANSYS is a commercially available finite element thermal and mechanical analysis code and is appropriate for the thermal analyses of waste package emplacement. The analyses using the ANSYS software were executed on a Hewlett-Packard 9000 Series 735 workstation. The software qualification of the ANSYS software, including problems of the type analyzed in this report, is summarized in the ANSYS 5.0A Verification and Validation Final Report (p. 1, Ref. 5.34). The ANSYS evaluations performed for this design analysis are fully within the range of the validation performed for the ANSYS 5.0A code. Access and use of the code for the analysis were granted and performed in accordance with the ANSYS 5.0A Life Cycle Plan (p. 1, Ref. 5.35) and the QAP-SI series procedures. Inputs and outputs to the ANSYS software are included as attachments as described in the following design analysis.

A secondary computer code used for this analysis is the Characteristics Database (CDB) LWR Radiological PC Database, CSCI: A00000000-02268-1200-20002, Ver. 1.1. The CDB has been qualified by the Office of Civilian Radioactive Waste Management (OCRWM) for use in work subject to the requirements of the QARD (Ref. 5.3). The CDB was installed on an IBM-compatible PC in accordance with the User Manual for the CDB_R (p. 1, Ref. 5.36) and was obtained in accordance with the QAP-SI series procedures. While this software was not actually run for this analysis, values of energy production were extracted from a database file included with the software distribution. A detailed description of the data extracted is given in Section 7.3. Use of the energy production values from the CDB is appropriate for this design analysis and is within the range of validation performed for the CDB.

Limited use of Computational Support Software (defined in QAP-SI-0) is also included in this design analysis. Borland dBASE, Ver. IV, a database management code run on an IBM-compatible PC, was used to perform a summation of records in a database file included with the CDB distribution. A detailed description of formulas and data extracted is given in Section 7.3. Lotus 1-2-3, Ver. 1.1, a spreadsheet package, was used to tabulate the ANSYS results output for presentation in a table. No calculation or modification beyond cut-and-paste and presentation style operations were performed on the ANSYS output. Harvard Graphics, Ver. 2.0, a presentation graphics package run on an IBM-compatible PC, was used to plot ANSYS solution results. No calculation or modification beyond cut-and-paste operations with tabular ANSYS output was performed in Harvard Graphics.

7. Design Analysis

7.1 Introduction

As part of an engineered barrier system for the containment of radionuclides, the waste package (WP), which can include the MPC, must be shown to comply with all regulations and requirements that govern the conditions of the emplaced SNF and the near-field rock at the repository horizon. Temperatures in the WP and near-field host rock are key to radionuclide containment, as they directly affect oxidation rates of the metal barriers and the ability of the rock to impede particle movement. Postclosure release rates are regulated by 10 CFR 60, 10 CFR 960, and 40 CFR 191.

Maximum allowable temperatures are based on material performance criteria and are specified as design goals for the WP/EBS design (see Section 4.2.4). For SNF, the Commercial Spent Fuel Management Program (p. xii, Ref. 5.37) at Pacific Northwest Laboratory recommended a 380°C temperature limit for the cladding to prevent creep rupture failure. A more conservative limiting value of 350°C has been selected (CDA DCWP 001, p. 6-165, Ref. 5.12) to account for uncertainties in source characteristics as well as heat transfer calculations. To limit the predicted thermal and thermo-mechanical response of the host rock and surrounding strata, maximum temperatures of 200°C for TSw2 (at the emplacement drift wall) and 115°C in the TSw3 (vitrophyre tuff) layer have been specified. Specific characteristics and requirements for the engineered barrier system are discussed in Section 4.2.

The method for WP thermal evaluations involves a three-model approach to determine the time-dependent WP thermal behavior. A three-dimensional (3-D) transient finite element model of the WP emplacement provides the WP surface temperature history for use as a boundary condition in a detailed WP model. Resulting SNF basket wall temperature predictions from the WP model provide the boundary for an estimation of peak SNF cladding temperatures. Cladding temperatures are predicted in the WP model using an effective conductivity defined to represent an homogeneous SNF assembly. The effective conductivity was determined using a detailed third model of an intact SNF assembly. Cladding temperatures are also conservatively estimated using an empirical correlation. This design analysis describes the first step of this three-model approach.

The thermal environment of the WP in the repository will change with time and is affected by the heat produced in the WP. Therefore, the WP thermal evaluation must be a transient analysis that takes into account the time varying heat load of the WP. This can be contrasted to an SNF storage cask analysis where the thermal environment is assumed constant and is provided by regulations.

7.2 Material Properties

As inputs to the design analysis, the thermal properties of the WP, surrounding materials, and the host repository rock will be key to the resulting temperatures in the near and far field.

Assuming a layered rock stratigraphy (Assumption 4.3.5), the rock layers around the repository must conduct away the heat generated by the WPs. Thermal conductivities and thermal capacitances for each of the rock layers used in this analysis (see Section 7.4 for model development) are listed in Table 4.1-1 and Table 4.1-2. They are derived from values given in the RIB (Ref. 5.4) using assumptions 4.3.10, 4.3.11, 4.3.12, 4.3.13, 4.3.14, and 4.3.16. The emissivity of the TSw2 rock layer is assumed an historic value of 0.85 (Assumption 4.3.18).

Assuming a concrete invert (Assumption 4.3.20), the conductivity, specific heat, density, and emissivity of the emplacement drift invert are listed in Table 4.1-3.

Assuming a WP outer barrier of A 516 carbon steel (Assumption 4.3.28), the thermal conductivity and specific heat are listed in Table 4.1-4 and the density and emissivity are listed in Table 4.1-5.

To meet the level of detail required in a thermal evaluation of WP emplacement, the WP can be assumed a smeared-property homogeneous heat-generating cylinder (Assumption 4.3.27). The WP density can be represented by the estimated total mass of a large WP (65,900 kg, p. 5, Ref. 5.28) divided by its volume (Assumption 4.3.29). The volume can be estimated as 14.491 m^3 based on dimensions given in Table 4.3-1 [$\pi * 1.802^2 * 5.682 / 4.0$]. Dividing the volume into the mass gives 4547.65 kg/m^3 (truncated to 4547). Excluding the outer barrier, the specific heat of the WP will be dominated by the MPC shell and basket which can be assumed to be primarily stainless steel (Assumption 4.3.30). The specific heat of 316 stainless steel at 100°C is listed in Table 4.1-6. An estimated effective thermal conductivity for the homogeneous WP can be calculated based on previous scoping calculations (Assumption 4.3.31). The following values for a previous evaluation were reported in the MGDS MPC Design Considerations Report (pp. 57 and 63, Ref. 5.29).

Assembly Heat ($Q/21$) =	676 watts	(At emplacement, p. 57, Ref. 5.29)
Peak SNF Cladding (T_o) =	354°C	(At 1 year, p. 63, Ref. 5.29)
MPC Surface (T_s) =	222°C	(At 1 year, p. 63, Ref. 5.29)

Equation 3.52 of a standard heat transfer text (p. 92, Ref. 5.5) describes the temperature distribution in a solid cylinder with uniform heat generation. Solving at a radius (r) of zero gives Equation 7.2-1.

$$T_o = \frac{q r_o^2}{4k} + T_s$$

(Equation 7.2-1)

Substituting $q^* = Q/(\pi r_o^2 L)$ and solving for conductivity (k) gives Equation 7.2-2.

$$k = \frac{Q}{4\pi L(T_o - T_s)}$$

(Equation 7.2-2)

Using a value of $L=5.682$ m from Table 4.3-1 and the values for Q , T_o , and T_s provided above, an effective thermal conductivity of 1.5 W/m·K can be calculated (see Assumption 4.3.31). Table 7.2-1 summarizes the conductivity, density, and specific heat resulting from the calculations here.

Table 7.2-1. Material Properties of the Homogeneous Waste Package

	Conductivity	Density	Specific Heat
Homogeneous Waste Package	1.5 W/m·K	4547 kg/m ³	501.9 J/kg·K

The material properties identified in this section were formatted into ANSYS commands and placed in a data file to be read by the software during the analysis. The file "proprep.dat" is included in this design analysis as Attachment I. Material property values listed in Attachment I for "Packed Crushed Tuff" and "Eff. Radiation" were developed during previous scoping evaluations and were not used in this design analysis.

7.3 SNF Decay Heat Loads

The purpose of a thermal evaluation of an emplaced waste package is to determine the effect of the WP decay heat on the repository host rock. The decay heat of individual WPs can vary greatly depending on the age, burnup, etc. of the loaded SNF. Design basis spent nuclear fuel characteristics have been developed for waste package design (p. 32, Ref. 5.38), but they do not represent average characteristics. The initial heat output from a design basis PWR assembly can be much greater than average and this can affect the early (short-term) temperatures of the repository. However, long-term thermal behavior of the repository rock will primarily be a function of the area mass loading or tons of SNF emplaced per acre. The repository response will be determined more by the integrated heat (the area under the curve) from the emplaced SNF and less by the initial heat of the individual WPs. Thus, an initial areal power density (APD) in kW/acre (or W/m²) will not adequately determine the thermal response because the APD will change differently with time depending on the average SNF characteristics. To determine a thermal response that is representative of the entire repository, average (instead of design basis) SNF characteristics must be developed. For a given AML and assuming average SNF characteristics, the average host rock and near field temperatures can be determined and then applied as the thermal environment for a detailed thermal analysis of individual WPs.

A set of average SNF characteristics have been conservatively based on a youngest fuel first (YFF10) waste receipt scenario (Assumption 4.3.39). The time dependent WP heat load is based on the decay heat of a 22 year old PWR assembly with 42.2 GWd/MTU burnup and 0.428 MTU/assembly (Assumptions 4.3.38 and 4.3.39). Using these characteristics, a table of assembly decay heat as a function of time can be developed. The process for creating a table of decay heats (ASCII data file named "heatdat.dat") is described as follows.

When installed, the Characteristics Database (CDB) LWR Radiological PC Database (Ref. 5.33) includes several supporting data files concerning SNF characteristics. One file, "totals.dbf", contains totals for activation products (V), actinides and daughters (A), and fission products (F) in units designated W, G, E, C, X, S, and P for each reactor type, burnup, enrichment, and decay time. A database management code, dBASE IV (computational support software), was used to sum the records labeled W (for watts or energy output) over segments V (activation), A (actinides), and F (fission products). This summation was performed for each reactor type (B or P), burnup, enrichment, and decay time given in "totals.dbf" and output as an ASCII data file named "heatdat.dat". The file "heatdat.dat", included in this design analysis as Attachment II, is a formatted table of SNF assembly heats as a function of reactor type (B or P), burnup, enrichment, and decay time (out of reactor) and provides a reference table for an interpolation program described next (Assumption 4.3.40).

As a sample calculation of this data manipulation, the heats from a selected SNF assembly type (similar to the average above) is calculated. The file "totals.dbf" contains a data point for a 20 year old PWR assembly with 40,000 MWd/MTU burnup and 3.72% enrichment. Given this assembly type, the total (over all isotopes) energy production (W) records are $1.072\text{E}+01$, $3.429\text{E}+02$, and $7.646\text{E}+02$ watts/MTIHM for activation products (V), actinides and daughters (A), and fission products (F), respectively (Ref. 5.33). The sum of these values is $1.118\text{E}+03$ watts/MTIHM which is same as the record reported in Attachment II for a PWR with 40,000 MWd/MTU burnup, 3.72% enrichment, and 20 years out of reactor.

A short C++ code was developed to provide the integrated heats over time and the instantaneous heats for assembly types that are between the data points given in the CDB tables. Attachment II, "heatdat.dat", is read by subroutine "buildheat()" of the code. The coding, titled "inheat.cpp" and included in this design analysis as Attachment III, is a double (simple and logarithmic) interpolation and integration routine that produces a table of integrated heat and instantaneous heat as a function of time for given SNF characteristics. The capabilities for the calculation of volumetric heat load (peak and average) in the "inheat.cpp" code were not used in this design analysis.

As a test of the code, PWR SNF characteristics of 10 years old, 40,000 MWd/MTU burnup, 3.72% enrichment (average), and 0.428 MTU/assembly were entered as inputs to "inheat.cpp". The output file, "rep1040.txt", is included in this design analysis as Attachment IV. After an emplacement period of 10 years (total age 20 years) the PWR SNF assembly produces 478.5 watts of heat, according to Attachment IV. For comparison, if the total heat production of that assembly ($1.118\text{E}+03$ watts/MTIHM) derived (above) from the CDB is multiplied by the assumed 0.428 MTU/assembly, a total instantaneous heat (20 years out-of-reactor) of 478.5 watts results which is the same as that calculated by "inheat.cpp".

Entering the average SNF characteristics (22 years old, 42.2 GWd/MTU burnup, etc.), described above, into "inheat.cpp" results in an output data file, "rep2242.txt", included in this design analysis as Attachment V. The data file provides the instantaneous heat of the assumed average PWR assembly as a function of time. The average fuel type has a somewhat higher burnup than the test case above; and therefore, should have a higher heat production at about 20 years out-of-reactor (486.7 watts versus 478.5 watts from Attachments V and IV respectively).

To be usable in an ANSYS evaluation, the table of assembly heats must be formatted into a set of commands that will store the values in an ANSYS readable array parameter. Therefore, the column of heat outputs in Attachment V were reformatted into ANSYS commands and placed in a data file to be read by the software during the analysis. The file "snf2242.dat" is included in this design analysis as Attachment VI. Some time steps from the original table were omitted, and some were added (by linear interpolation) to ensure that a heat load value was available for each solution time step used in the analysis.

The heat load is applied as a volumetric heat generation (W/m^3) in the homogeneous WP by multiplying the assembly heat by the number of assemblies and dividing by the volume of the homogeneous WP (volume inside of the outer barrier). This calculation is performed within the ANSYS computation using variables (Fortran) for the dimensions and other model parameters. (See Section 7.4.3 for a discussion of the ANSYS input commands used in model development and to perform the evaluation.)

7.4 Model Development

7.4.1 Model Geometry

To fully investigate the thermal loading effects in the near field (especially WP surface temperatures), a 3-D transient model is required. In previous 2-D thermal models created by the M&O and national laboratories, WP surface and drift wall temperatures represent the average down the length of the drift. While average drift wall temperatures can be predicted by a 2-D drift scale model for small WP spacings, WP surface temperatures will be under-predicted due to the axial smearing of the WP heat load. Therefore, a 3-D thermal model of an emplacement drift and waste package has been constructed to capture WP-to-WP interactions as well as drift-to-drift interactions. The ANSYS Ver. 5.0A finite element code was used to create the 3-D repository emplacement thermal model.

Figure 7.4-1 displays a cross section (not to scale) of the geometry used in the model. Yucca Mountain is composed of a layered rock stratigraphy. The rock units are distinguished by their physical properties noted from borehole samples. Data from borehole USW G-4 (Table 2, Section 1.12, p. 5, Ref. 5.4) provided the stratigraphy and contact depths for each of the rock units used in this analysis (Assumption 4.3.5). Contact depths for each unit (shown on Figure 7.4-1) are listed in Table 4.1-1. For this analysis, the Undifferentiated Overburden and unit TCw are grouped together as one material (Assumption 4.3.10), and the properties of unit CHn2 are assumed to persist below its actual contact depth of 535.3 m (Assumption 4.3.14).

The location of the proposed repository is limited to the TSw2 geologic unit (Assumption 4.3.17). While its exact design and location have not yet been determined, advanced conceptual design evaluations have been performed which suggest likely configurations (Section 8, Ref. 5.20). For this analysis, the WP is assumed to be horizontally emplaced (Assumption 4.3.2) in a circular drift with a 5.0 m diameter (Assumption 4.3.19). The drift floor will be cast-in-place concrete with a depth of 0.7 m (Assumption 4.3.20), and the bottom of the drift cut is 311 m (Assumption 4.3.6) below the ground surface measured from borehole USW G-4. The geometry and location of the drift in this model are schematically shown in Figure 7.4-1.

Two sizes of WPs were considered in this analysis, the 21 PWR MPC conceptual design with disposal container, and the 12 PWR MPC conceptual design with disposal container (Assumption 4.3.27). Since temperature details internal to the WP are not required of this model, the WP is assumed a homogeneous heat-generating cylinders (Assumption 4.3.27) with outer dimensions given in Table 4.3-1. The representation of the WP does, however, include a 0.1 m layer of A 516 carbon steel (the conceptual outer barrier) at the surface of the WP (Assumption 4.3.28). Since the purpose of this design analysis is to predict WP surface temperatures, it is important to adequately model the heat transfer characteristics at the

FIGURE 7.4-1. Repository Emplacement Model

surface. A purely homogeneous model of the WP will over-predict axial temperature distributions due to the low "average" (or "effective") thermal conductivity of the homogeneous WP. By including a metal outer layer, the heat will be more accurately distributed over the WP outer surface.

As seen in Figure 7.4-1, the WP (not to scale) is "floating" near the center of the drift (Assumption 4.3.23). Concepts for WP support devices are preliminary, and it is conservative to neglect the effect of the supports in transferring heat from the waste package. However, to be consistent with a permanent rail cart emplacement scenario, the WP is assumed to be 0.137 m below the drift center (Assumption 4.3.21). The smaller WP (12 PWR) will likely be emplaced on a similar sized rail cart (Assumption 4.3.22) such that the distance to the drift floor (invert) is the same. The clearance distance between the bottom of the 21 PWR WP and the invert is: drift radius (5.0/2) minus invert height (0.7) minus WP radius (1.8016/2) minus center offset (0.137) = 0.7622 m. Therefore, the center offset for the 12 PWR WP is: drift radius (5.0/2) minus invert height (0.7) minus WP radius (1.5305/2) minus clearance (0.7622) = 0.27255 m.

The 2-D cross section formed in Figure 7.4-1 can be extruded into 3-D to form a single WP in a unit cell of surrounding rock. As described in the following two sections, the model is a pillar of rock (Assumption 4.3.3) with width equal to the drift spacing, depth equal to the waste package spacing, and a height of 1300 m (Assumption 4.3.8). Attachment VII provides a graphical ANSYS display of the geometry and mesh density for one representative case (c21b5a described in Section 7.5). Attachment VII, page 1 displays a perspective end view of the WP in the emplacement drift. Page 2 displays a side view cut through the centerline of the WP (note the 0.1 m outer barrier around the WP). Page 3 displays the element mesh density in the entire model, from ground surface to 1300 m. Page 4 displays an end view with the WP cut through the mid-length. A description of the ANSYS input files used to generate the models is given in Section 7.4.3.

7.4.2 Boundary Conditions

The 3-D model is a pillar section of the repository (Assumption 4.3.3) with planes of symmetry represented by two adiabatic boundaries halfway between the drifts and halfway between two waste packages. The single modeled waste package is assumed to be in an infinite repository (Assumption 4.3.4). The approximation of an infinite repository is reasonable up to 1000 years or so after emplacement when repository thermal edge effects (not modeled here) will begin to influence the cool-down of the center of an actual repository. After about 1000 years, depending on the spacings, the model used here will tend to over-predict near-field temperatures, so care must be taken in extrapolating to such long times. Benchmarks against V-TOUGH calculations at Lawrence Livermore National Laboratory (LLNL) quantify the effects of neglecting repository edge effects after 1000 years (p. 7, Ref. 5.18). The thermal model of WP emplacement developed in this design analysis will be solved over only the first 1000 years after emplacement (Assumption 4.3.7).

Analyses performed at LLNL (p. 853, Ref. 5.19) have shown that there may be insufficient water circulation at the water table, due to low permeabilities, to maintain a constant temperature at that depth. Therefore, the 3-D emplacement thermal model has a bottom boundary condition at a depth of 1300 m instead of at the water table depth of about 611 m (Assumption 4.3.8). This depth will ensure that the thermal behavior of the repository horizon will not be affected by this boundary condition assumption for over 1000 years of model time.

The thermal model of WP emplacement interfaces with the environment at the top and bottom planes. Constant temperature boundary conditions are applied at the top and bottom to represent the ground surface and the underlying rock as heat sinks. The ground surface can be assumed a constant (average) temperature of 18.7°C (Assumption 4.3.9), and the rock temperature at 1300 m can be assumed 53.05°C (Assumption 4.3.9) based on thermal gradients reported in the RIB and in the CDA (TDSS 002, p. 6-182, Ref. 5.12). The calculation is included here as Equation 7.4-1.

$$[18.7^{\circ}\text{C} + 0.019^{\circ}\text{C}/\text{m}*(150 \text{ m}) + 0.018^{\circ}\text{C}/\text{m}*(400 - 150 \text{ m}) + 0.030^{\circ}\text{C}/\text{m}*(1300 - 400 \text{ m})]$$

(Equation 7.4-1)

While the thermal model includes radiation and conduction heat transfer, it is referred to as a "conduction-only" code because it does not predict water movement (matrix and fracture flow, or equivalent continuum) in the repository host rock. Temperatures in the rock have a major impact on water movement; however, water (besides boiling and condensation) has less of an impact on the temperature distribution, such that the system can be approximated by a model that considers conduction (and radiation) only (Assumption 4.3.15). While "conduction-only" codes cannot predict water movement or humidities, they have been shown to provide a reasonable estimate of rock temperatures in benchmarking evaluations (p. 7, Ref. 5.18). To

capture the thermal effects of boiling water in the host rock, the heat capacitance of the rock units include the latent heat absorbed due to boiling at temperatures near the boiling point (Assumption 4.3.16). Temperature dependent specific heats for rock are listed in Table 4.1-2. This formulation is consistent with previous conduction/radiation thermal evaluations performed by Sandia National Laboratories (SNL) (Appendix E, p. 5, Ref. 4.15). It is important to note that the capacitance formulations are applicable only for the heating phase of the rock units, if it is assumed that the water has mobilized (escaped) after vaporization.

For this evaluation of temperatures of WP emplacement, it is assumed that there is no forced ventilation of the emplacement drifts (Assumption 4.3.25), and that the emplacement drift is not backfilled at repository closure (Assumption 4.3.24). Calculations of ventilation or backfill are not within the scope of this evaluation; however, they will likely be considered in future design analyses.

Assuming no ventilation or backfill, the only heat transfer paths between the waste package and the drift wall would be thermal radiation and natural convection of the drift air (neglecting the WP supports, see Assumption 4.3.23). Reference 5.24 (p. 59) showed that radiation heat transfer in a closed SCP-type emplacement drift is an order of magnitude greater than convective heat transfer. To be conservative, the complex calculations of natural convection have been neglected and thermal radiation is assumed to be the only heat transfer path between the waste package and the drift (Assumption 4.3.26). This assumption, which is consistent with evaluations performed by SNL (Appendix E, p. 5, Ref. 5.15), simplifies the model and will result in slightly conservative temperatures.

7.4.3 ANSYS Input Files

This section briefly describes the ANSYS 5.0A commands and format used to develop the WP emplacement thermal model. One basic input file was created, and then the file was copied to different case names (see Section 7.5) and modified by varying model parameters such as drift spacing and WP spacing to create other thermal loadings. Mesh densities were changed for each case to accommodate changes in dimensions, and the geometry was checked for each case before initiating the solution. While dimensions changed between cases (diameters and spacings), the solid model geometry and numbering remained the same.

The input files used to generate the ANSYS solutions are echoed to the output file for each batch run performed. A list of the individual evaluations performed is given in Section 7.5 along with the case name and the parameters used. Each output file has been included in this design analysis as an attachment. At the beginning of the output file, the input batch commands are numbered and printed, including comments.

Each input file is a self-contained solution which uses as input only the material properties file (Attachment I) and the heat load file (Attachment VI). While the input files have been commented such that another engineer experienced with ANSYS can understand the analysis, the following discussion explains each section in general.

The first step in the analysis is to define model parameters and dimensions (such as radii, lengths, and spacings) using the ANSYS Parametric Design Language. By defining key dimensions as parameters, the model is very flexible and can be easily modified (for parametric evaluation here and in the future). Other derived dimensions used in the model are defined with formulas as functions of the key parameters such that arithmetic mistakes are kept to an absolute minimum (human errors). An example of this process is the homogeneous WP volume (variable: WPVOL) which is defined as $\pi \cdot \text{radius}^2 \cdot \text{length}$. Definition of key and derived variables is done at the beginning of the input file.

The second step is to define which ANSYS element types will be used, and to read in the material property and heat load files described in the previous sections.

The third step is to define the 2-D plane of the model geometry (solid modeling) using a "bottom up" approach. Key-points are defined; followed by lines; and then areas. Element mesh densities (how many element divisions along each line) are then defined. The density of the element mesh used depends on what regions will have high temperature gradients and is largely determined by engineering judgement. Finer meshes typically provide higher accuracy; however, there is a limit to the total number of elements used based on computer disk and memory space limitations and the length of time required to converge the solution. High thermal loadings and small WPs required as few as 7,265 elements compared to low loadings with large WPs which used as many as 14,289 elements in this design analysis.

Meshes were generated in the 2-D plane and then extruded into 3-D bricks (elements). The resulting 3-D model is displayed graphically for a representative case (c21b5a described in Section 7.5) in Attachment VII. Attachment VII, page 1 displays a perspective end view of the WP in the emplacement drift. Page 2 displays a side view cut through the centerline of the WP. Page 3 displays the element mesh density in the entire model, from ground surface to 1300 m. And, page 4 displays an end view with the WP cut through the mid-length. Smaller elements were defined in and around the WP where thermal gradients are expected to be the highest.

After generation of the solid meshes, radiation surface elements are generated on the WP and drift wall faces. The AUX12 utility of ANSYS is then invoked to create a matrix of explicit thermal radiation view-factors between the exposed element faces. With this method, radiation energy is exchanged between surfaces only if the surfaces can "see" each other. This explicit method can be more accurate than an alternate method of defining a calculated effective radiation conductivity (Appendix E, p. 5, Ref. 5.15).

With the finite element model complete, the next step is to apply temperature and heat load boundary conditions and solve over several time steps. Volumetric heat loads on the homogeneous WP are calculated based on the SNF decay heat as a function of time defined in Section 7.3. The temperature boundary conditions are applied to the top (ground surface) and bottom as described in Section 7.4.2. The first solution uses no WP heat load and established the initial thermal gradient (temperature distribution) conditions in the repository host rock. The second solution applies the drift ambient temperature as a fixed condition on the drift wall and determines initial temperature gradient in the waste package using the SNF heat load at time of emplacement. The following solutions solve the transient thermal response of the WP and repository rock for 1,000 years after emplacement in the drift. Table 7.4-1 gives a conversion between the emplacement time (in years), the ANSYS solution time (in seconds) as printed in the output files, and the ANSYS analysis load step number. The load steps have been defined on a logarithmic time scale because the heat load decays exponentially and the system response is expected to follow the decay curve of the SNF.

The last step in the analysis is to report the resulting temperatures in and around the emplacement near field. The WP top, side, and bottom temperatures as a function of time are stored in array parameters that can be read as inputs into future ANSYS analyses of the WP. WP and drift wall temperatures are written to an output file with the name suffix ".parm" (one for each case, included here as attachments). Future detailed thermal evaluations of WP internals will use these surface temperatures as boundary conditions. The thermal evaluation of WP emplacement described here is the first step of a three model approach used to determine temperatures in the EBS. Finally, a couple mesh plots are written (represented by Attachment VII) and several sample color contours plot. The end of the output deck contains a listing of the temperature as a function of time for 54 different locations in the model. Some of these temperature outputs are plotted in Section 7.6.

Table 7.4-1. ANSYS Solution Time/Load Steps

Time (years)	Time (seconds)	ANSYS Load Step	Time (years)	Time (seconds)	ANSYS Load Step
Initial Rock	.100E-06	1	9	.284E+09	21
Initial WP	.200E-06	2	10	.316E+09	22
0	31.56	3	20	.631E+09	23
0.1	.316E+07	4	30	.947E+09	24
0.2	.631E+07	5	40	.126E+10	25
0.3	.947E+07	6	50	.158E+10	26
0.4	.126E+08	7	60	.189E+10	27
0.5	.158E+08	8	70	.221E+10	28
0.6	.189E+08	9	80	.252E+10	29
0.7	.221E+08	10	90	.284E+10	30
0.8	.252E+08	11	100	.316E+10	31
0.9	.284E+08	12	200	.631E+10	32
1	.316E+08	13	300	.947E+10	33
2	.631E+08	14	400	.126E+11	34
3	.947E+08	15	500	.158E+11	35
4	.126E+09	16	600	.189E+11	36
5	.158E+09	17	700	.221E+11	37
6	.189E+09	18	800	.252E+11	38
7	.221E+09	19	900	.284E+11	39
8	.252E+09	20	1,000	.316E+11	40

7.5 Thermal Loading

The 3-D thermal model of WP emplacement described in Section 7.4, was used to evaluate waste package and near field thermal behavior at a range of representative "high" and "low" thermal loadings. A parametric set of thermal loadings cases is required because the thermal loadings for the repository has been specified as a range in the CDA (Key 019, p. 6-24, Ref. 5.12) and the WP must be shown to meet thermal goals and requirements over that range.

For the purpose of this design analysis, the thermal loading will be calculated as a function of area mass loading (AML) in MTU/acre (or kgU/m²) (Assumption 4.3.32). Since the WP heat load changes with time, defining an AML is more consistent (and a better predictor of long term temperatures) than defining an initial areal power density (APD) in kW/acre (or kW/m²). Two primary high thermal loadings (100 MTU/acre and 83 MTU/acre) and one low thermal loading (25 MTU/acre) were selected to represent the range (Assumption 4.3.33). These values are consistent with the range in the CDA (Key 019, p. 6-24, Ref. 5.12) and with recommendations by Systems Engineering (p. 2, Ref. 5.30). A thermal loading of 100 MTU/acre provides a bounding case for the highest loading that may be used.

A few variations on WP spacing at 100 and 25 MTU/acre were considered to determine the impact of WP spacing on meeting near-field thermal goals. At 100 MTU/acre, the question is: "What is the smallest WP spacing achievable without violating thermal goals?"; and at 25 MTU/acre, the question is: "What WP spacings are required to keep the WP surface temperature below 100°C and 70°C?" The thermal loading cases for the large (21 PWR) WP, including drift and WP spacings used, are listed in Table 7.5-1.

In determining the emplacement spacings for each of the thermal loading cases, a few guidelines were followed for consistency with previous evaluations. It has been previously estimated (p. 3, Ref. 5.31) that the minimum WP spacing for the large (21 PWR) WP should be no less than 16 m. This minimum spacing has been used in the thermal loadings cases (Assumption 4.3.34) except those cases (c21c5a and c21a5a) devised to confirm the minimum spacing. It is expected that one (or both) of these cases will demonstrate that thermal goals are violated at spacings less than 16 m and confirm the previous analysis. It is also assumed that any WP spacing that is longer than the drift spacing for a given thermal loading is inefficient (for construction), and therefore, undesirable (Assumption 4.3.34).

Current repository conceptual designs (Section 8.6.1.U, p. 8-70, Ref. 5.20) indicate drift spacings in multiples of 22.5 m. Therefore, except in case c21c5a where it could not be achieved, the emplacement drift spacing is limited to multiples of 22.5 m (Assumption 4.3.35). Also, the emplacement spacings are based on the large (21 PWR) WP and the smaller (12 PWR) WP would be placed in the same drifts (and drift spacings) with smaller

WP spacings (Assumption 4.3.36). This allows consideration of a repository that contains both large and small packages.

While it is expected that defense high-level waste (DHLW) packages may be placed between the SNF packages, their low heat output is assumed not to contribute to the thermal loading of the repository (Assumption 4.3.37). Parametrics documenting the contribution of DHLW is not within the scope of this analysis and will be documented in future evaluations.

The calculation of emplacement spacings for different thermal loadings is straightforward as described in Equation 7.5-1. The assembly weight is 0.428 MTU/assy (average SNF as described in Section 7.3 and Assumption 4.3.39), the number of assemblies is 21 and 12 for the large and small WPs (see Assumption 4.3.38), and the spacings are as listed in Table 7.5-1.

$$AML(MTU/acre) = \frac{\text{Assembly Weight}(MTU/assy) \times \text{No. of Assemblies}}{WP\text{ Spacing}(m) \times \text{Drift Spacing}(m) \times 2.4711E-4 \text{ acres/m}^2}$$

(Equation 7.5-1)

Table 7.5-1. Large (21 PWR) Thermal Loading Scenarios

Case Name	Area Mass Loading (AML)		Initial APD (kW/acre)	WP Spacing	Drift Spacing
	(MTU/acre)	(kg/m ²)			
c21x5a	100	24.7	113.7	16.165 m	22.5 m
c21c5a	100	24.7	113.7	12.124 m	30.0 m
c21a5a	100	24.7	113.7	8.0825 m	45.0 m
c21b5a	83	20.5	94.4	19.477 m	22.5 m
c21w5a	25	6.18	28.4	32.331 m	45.0 m
c21j5a	25	6.18	28.4	21.554 m	67.5 m
c21h5a	25	6.18	28.4	16.165 m	90.0 m

The second and third cases, at 100 MTU/acre, are intended to determine at what WP spacing the near field thermal goals are violated compared to the first case which describes a base case for the upper bound thermal loading. The last three cases, at 25 MTU/acre, provide a

study of the effect of WP spacing on temperatures at a low thermal loading and represent the utilization of even multiples of the high thermal loading drift spacing (every other drift, every third, etc.).

Case c21w5a achieves the longest reasonable WP spacing and should result in the lowest near field temperatures; case c21j5a has a WP spacing similar to c21b5a (83 MTU/acre); and case c21h5a has a short WP spacing (similar to c21x5a at 100 MTU/acre) and represents the "localized disturbance" concept for low thermal loadings. The "localized disturbance" concept depends on high temperature gradients (due to the closely spaced WPs) to drive local water in the rock away from the emplacement drifts. The viability of this concept depends on the drift-scale hydrothermal effects which are not modeled here; however, the temperature response has been determined.

Table 7.5-2 lists the emplacement spacings (thermal loadings) evaluated for the small (12 PWR) WP. The set of cases are similar to Table 7.5-1 except that no minimum WP spacing evaluation was performed at 100 MTU/acre. As described above, the 12 PWR packages are assumed emplaced with the same drift spacings and assumed average SNF used for the 21 PWR packages (see Assumptions 4.3.32 through 4.3.40). Again, representative "high" and "low" thermal loadings were selected with drift spacings in multiples of 22.5 m.

Table 7.5-2. Small (12 PWR) Thermal Loading Scenarios

Case Name	Area Mass Loading (AML)		Initial APD (kW/acre)	WP Spacing	Drift Spacing
	(MTU/acre)	(kg/m ²)			
c12x5a	100	24.7	113.7	9.237 m	22.5 m
c12b5a	83	20.5	94.4	11.129 m	22.5 m
c12w5a	25	6.18	28.4	18.475 m	45.0 m
c12j5a	25	6.18	28.4	12.317 m	67.5 m
c12h5a	25	6.18	28.4	9.237 m	90.0 m

Each of the cases in Table 7.5-1 and Table 7.5-2 was submitted as an ANSYS batch job on a Hewlett-Packard 9000 Series 735 workstation. The output files and parameter files are included in this design analysis as attachments (example: Attachment XXI - c21x5a.old.out, and Attachment IX - c21x5a.parm). A summary of temperature results is given in the following section.

7.6 Thermal Results

The parameter and ANSYS output files for each of the twelve cases are included in this design analysis as Attachments IX through XX, and XXI through XXXII, respectively. At the end of the ANSYS output file for each case, tables of temperatures as a function of time are printed for various locations in the thermal model. Temperatures inside and outside the outer barrier, above and below the invert, at the drift wall, at 1 and 3 meters into the rock, at the drift-to-drift midplane, and at various contacts between rock layers are printed.

A portion of these results were summarized in tabular format using the Lotus 1-2-3 spreadsheet package (computational support software). The tabular results are included in this design analysis as Attachment VIII. Attachment VIII, pages 1 and 2 summarize select temperatures at the WP mid-length for the large (21 PWR) WP. Pages 3 and 4 summarize select temperatures for the small (12 PWR) WP. Attachment VIII, page 5 provides a comparison of the three cases at 100 MTU/acre (results from c21x5a are repeated here from page 1 for ease of comparison). The results presented in Attachment VIII are also graphically presented in this section using Harvard Graphics.

Figure 7.6-1 displays a comparison of maximum large (21 PWR) WP surface temperatures for the five base thermal loading (TL) scenarios on a logarithmic time scale. Cases c21c5a and c21a5a are discussed later. As expected, low TL case c21h5a actually has higher near-field temperatures than high TL case c21b5a for the first 5 years due to its shorter WP spacing. However, by 500 years, the three low thermal loading temperatures have nearly converged to a single temperature which is much lower than that for the high loadings. Peak WP surface temperatures occur in 40-50 years for the high loadings and in about 8 years for the low loadings. The figure demonstrates a significant difference in short-term near-field temperatures between short and long WP spacings. If the goal of a low thermal loading scenario is to maintain low near-field temperatures, a low AML and a long WP spacing are needed.

Figure 7.6-2 compares maximum drift wall temperatures for the five loadings, and Figure 7.6-3 compares the maximum temperature at 3 m into the drift wall. Maximum temperatures always occurred at axial locations corresponding to the mid-length of the WP. Just as for the WP surface temperatures, the peak temperatures occurred earlier for the low loadings than for the high thermal loading. Figure 7.6-4 compares the drift-to-drift midplane temperatures and demonstrates that the waste package spacing has little effect on temperatures half-way between drifts. At the drift-to-drift midplane, temperatures are primarily a function of thermal loading in MTU/acre. For all of the thermal loading scenarios, the drift wall temperature limit of 200°C was not exceeded; however, the TSw2/TSw3 interface reached 118°C (greater than the limit of 115°C) at 1000 years for the highest loading (c21x5a). The TSw2/TSw3 interface reached 106°C at 1000 years for high TL case c21b5a.

Figure 7.6-1. Large (21 PWR) WP Surface Temperatures

Figure 7.6-2. Large (21 PWR) WP, Drift Wall Temperatures

Figure 7.6-3. Large (21 PWR) WP, 3 m from Drift Temperatures

Figure 7.6-4. Large (21 PWR) WP, Drift/Drift Midplane Temperatures

Thermal goals for the CHn and PTn rock units (115°C) were not exceeded for any of the thermal loadings. At 1000 years, for the highest thermal loading (c21x5a), the TSw3/CHnv interface reached 108°C and the PTn/TSw1 interface reached 56°C. In all cases, both of these interfaces had temperatures below that of the TSw2/TSw3 interface making the TSw3 thermal goal (115°C) the limiting criterion.

The evaluation results indicate lower near-field temperatures for the small (12 PWR) WP compared to the large (21 PWR) WP; however, the temperatures at 3 m into the drift wall and beyond are virtually identical for the different WP capacities. The greatest difference between the 12 and 21 PWR WP surface temperatures was 21°C, and it occurred six months after emplacement for the low TL cases with the longest WP spacings. Figure 7.6-5 plots a comparison of maximum 12 PWR WP surface temperatures for the five thermal loading scenarios. Again the shorter WP spacing of low TL case c12h5a resulted in higher near-field temperatures than high TL case c12b5a for the first 5 years. The long-term near-field temperatures for the 12 PWR WP are the nearly the same as for the 21 PWR WP.

Figure 7.6-6 compares the maximum drift wall temperatures for the five loadings, and Figure 7.6-7 compares the maximum temperature at 3 m into the drift wall. Maximum drift wall temperatures were no more than 16°C lower for the small (12 PWR) WP (compared to the large WP), and maximum 3 m rock temperatures were less than 3°C lower. Like the large (21 PWR) cases, the small (12 PWR) cases all had peak WP surface temperatures at or above the boiling point. Only low TL case c12w5a with the long WP spacing had maximum drift wall temperatures below boiling. Figure 7.6-8 compares the drift-to-drift midplane temperatures which differed from the large WP cases by less than 1°C.

Figures 7.6-9 and 7.6-10 investigate the effect of shorter WP spacings on maximum WP surface temperatures and drift wall temperatures respectively. The results of cases c21x5a, c21c5a, and c21a5a demonstrate that WP spacing is a key factor for near field temperatures. Thermal goals are clearly violated for the 8 m WP spacing with a peak drift wall temperature of 227°C (greater than 200°C drift wall temperature) and are near the limits with the 12 m WP spacing. Compared to the base 16 m WP spacing case, WP peak surface temperatures were 46°C hotter for the 8 m spacing and 10°C hotter for the 12 m spacing. Further analysis using detailed WP thermal models and design-basis SNF will be required before it can be determined if the drift wall temperature criterion or the peak cladding temperature criterion is the limiting thermal goal. However, if peak cladding temperatures were raised proportional to the WP surface temperature, it can be estimated (based on previous evaluations: p. 63, Ref. 5.29) that a 12 m WP spacing would be marginal and an 8 m WP spacing would violate cladding thermal goals. Given a peak drift wall temperature of 192°C for the 12 m WP spacing cases, WP spacings less than 12 m will likely exceed the drift wall thermal goal. And, given calculational and waste stream uncertainties, a minimum WP spacing of 16 m provides a conservative lower bound for large waste packages such as the 21 PWR capacity MPC with disposal container. This confirms the results of previous scoping analyses (p. 3, Ref. 5.31) which made similar judgements.

Figure 7.6-5. Small (12 PWR) WP Surface Temperatures

Figure 7.6-6. Small (12 PWR) WP, Drift Wall Temperatures

Figure 7.6-7. Small (12 PWR) WP, 3 m from Drift Temperatures

Figure 7.6-8. Small (12 PWR) WP, Drift/Drift Midplane Temperatures

Figure 7.6-9. Effect of Short WP Spacing on Large WP Surface Temperatures

Figure 7.6-10. Effect of Short WP Spacing on Drift Wall Temperatures

8. Conclusions

It is important to note that the analyses described here are for a 22 year old PWR assembly with a burnup of 42.2 GWd/MTU (an assumed average). Therefore, the results describe only the average waste package (i.e., about half of the waste packages will be hotter). The detailed waste package evaluations, which use the results of these analyses as boundary conditions, estimate internal waste package temperatures for design basis SNF characteristics to ensure that thermal goals have been attained. For a pillar model which represents one average WP in the repository, the heat of that package must be the average of all of the emplaced waste packages. While all the waste packages (hot and cold) will collectively influence repository temperatures (average SNF characteristics), every waste package must meet thermal goals (design basis characteristics).

The emplacement thermal evaluations described above provide the boundary conditions for more detailed evaluations of specific waste package concepts. In the 3-D emplacement model, the WP is represented by a homogeneous heat source such that the resulting near-field temperatures can represent any similar capacity WP (in this case 21 PWR or 12 PWR). However, it should be noted that (at this revision) unqualified inputs to this design analysis have been identified and used (TBV-217-WPD), and the results presented here should be considered unqualified (unverified).

The thermal results presented in this design analysis provide reasonable estimates of the near field temperatures around drift emplaced waste packages. They are consistent with previous analyses performed by the M&O and national laboratories, and they provide trending for near field temperatures as a function of thermal loading and emplacement layout. Important trends include the significance of WP spacing (as opposed to just thermal loading) in maintaining temperatures below the thermal goals listed in Section 4.2. As predicted in the FY 1993 Thermal Loading System Study (p. 10-2, Ref. 5.15), loadings above or near 100 MTU/acre were found to stress thermal temperature limits and should be considered an upper bound. The analysis indicates that long WP spacings are needed to maintain rock temperatures below boiling at low thermal loadings, and that near field rock temperatures for the 12 PWR WP are similar to those for the 21 PWR WP. This analysis also confirmed that WP spacings less than 12 m will violate thermal goals, and that a 16 m WP spacing is a conservative lower bound for large (21 PWR) waste packages. The repository thermal loading has not been specified and will not be finally established for years; therefore, this analysis provides a parametric trending of possible thermal loading scenarios.

9. Attachments

Attachments to this design analysis are summarized in Table 9-1.

Table 9-1. List of Attachments

Attachment Number	Title / Description	Date	Number of Pages
I	ANSYS 5.0 MPC Material Property Tables (File Name: proprep.dat)	01/06/95	2
II	Data Table of SNF Energy Output Derived from the CDB LWR Radiological PC Database (File Name: heatdat.dat)	06/16/92	2
III	Listing of C++ Program INTHEAT (File Name: intheat.cpp)	02/25/93	3
IV	Data Table Output of Test Assembly Integrated and Instantaneous Heat Productions (File Name: rep1040.txt)	07/27/95	1
V	Data Table Output of Average Assembly Integrated and Instantaneous Heat Productions (File Name: rep2242.txt)	06/30/95	1
VI	Waste Package Heat Generation Rates (Input to ANSYS) (File Name: snf2242.dat)	01/06/95	1
VII	Mesh Plots for ANSYS 5.0A model for case c21b5a (File Names: meshdrif, meshside, meshfar, and meshnear.grph)	01/06/95	4
VIII	Summary of 3-D Emplacement Thermal Model Results (File Name: c21r12.wk3)	08/08/95	5
IX	Parameter Output for Case: c21x5a (File Name: c21x5a.parm)	03/30/95	11
X	Parameter Output for Case: c21c5a (File Name: c21c5a.parm)	08/01/95	11
XI	Parameter Output for Case: c21a5a (File Name: c21a5a.parm)	08/01/95	11
XII	Parameter Output for Case: c21b5a (File Name: c21b5a.parm)	01/06/95	11
XIII	Parameter Output for Case: c21w5a (File Name: c21w5a.parm)	01/20/95	11
XIV	Parameter Output for Case: c21j5a (File Name: c21j5a.parm)	01/30/95	11
XV	Parameter Output for Case: c21h5a (File Name: c21h5a.parm)	01/25/95	11

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XVI	Parameter Output for Case: c12x5a (File Name: c12x5a.parm)	03/30/95	11
XVII	Parameter Output for Case: c12b5a (File Name: c12b5a.parm)	01/07/95	11
XVIII	Parameter Output for Case: c12w5a (File Name: c12w5a.parm)	01/23/95	11
XIX	Parameter Output for Case: c12j5a (File Name: c12j5a.parm)	01/30/95	11
XX	Parameter Output for Case: c12h5a (File Name: c12h5a.parm)	01/26/95	11
XXI	ANSYS Solution Output for Case: c21x5a (File Name: c21x5a.old.out)	03/30/95	175
XXII	ANSYS Solution Output for Case: c21c5a (File Name: c21c5a.old.out)	08/01/95	175
XXIII	ANSYS Solution Output for Case: c21a5a (File Name: c21a5a.old.out)	08/01/95	173
XXIV	ANSYS Solution Output for Case: c21b5a (File Name: c21b5a.old.out)	01/06/95	179
XXV	ANSYS Solution Output for Case: c21w5a (File Name: c21w5a.old.out)	01/20/95	186
XXVI	ANSYS Solution Output for Case: c21j5a (File Name: c21j5a.old.out)	01/30/95	175
XXVII	ANSYS Solution Output for Case: c21h5a (File Name: c21h5a.old.out)	01/25/95	170
XXVIII	ANSYS Solution Output for Case: c12x5a (File Name: c12x5a.old.out)	03/30/95	171
XXIX	ANSYS Solution Output for Case: c12b5a (File Name: c12b5a.old.out)	01/07/95	173
XXX	ANSYS Solution Output for Case: c12w5a (File Name: c12w5a.old.out)	01/23/95	174
XXXI	ANSYS Solution Output for Case: c12j5a (File Name: c12j5a.old.out)	01/30/95	170
XXXII	ANSYS Solution Output for Case: c12h5a (File Name: c12h5a.old.out)	01/26/95	165

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MPDATA, C,13, 1, 428.72, 444.95, 460.94, 476.87, 486.08, 495.66,
MPDATA, C,13, 7, 506.09, 517.07, 525.64, 536.99, 543.63, 550.62,
MPDATA, C,13,13, 562.21, 577.32, 589.10, 600.57, 611.35, 629.09,
MPDATA, C,13,19, 645.32, 665.12, 682.07, 694.52, 724.07, 761.95,
MPDATA, C,13,25, 806.31, 888.60,1095.04,1638.78, 808.68, 736.90,
/COM,
/COM, *****
/COM, ** End of Material Property List **
/COM, *****
/EOF,
/COM, *****

```


653	B	7500	0.72	Z	W	4.081E+03	1.881E+03	1.062E+03	4.958E+02	2.887E+02	2.561E+02	2.385E+02	2.137E+02	1.776E+02
1.258E+02	9.135E+01	7.753E+01	5.945E+01	3.404E+01	1.710E+01	1.092E+01	8.278E+00	5.243E+00	1.971E+00	5.958E-01	2.431E-01	2.516E-01	2.354E-01	
658	B	7500	1.05	Z	W	3.656E+03	1.651E+03	9.297E+02	4.382E+02	2.602E+02	2.296E+02	2.120E+02	1.864E+02	1.498E+02
1.002E+02	7.012E+01	5.949E+01	4.612E+01	2.737E+01	1.478E+01	9.917E+00	7.587E+00	4.868E+00	1.859E+00	5.676E-01	2.321E-01	2.270E-01	2.061E-01	
663	B	7500	1.75	Z	W	3.385E+03	1.494E+03	8.399E+02	4.037E+02	2.475E+02	2.165E+02	1.967E+02	1.672E+02	1.260E+02
7.416E+01	4.703E+01	3.963E+01	3.128E+01	1.969E+01	1.181E+01	8.457E+00	6.561E+00	4.300E+00	1.699E+00	5.527E-01	2.513E-01	2.191E-01	1.802E-01	
668	B	15000	1.09	Z	W	5.818E+03	2.863E+03	1.698E+03	8.692E+02	5.277E+02	4.611E+02	4.236E+02	3.702E+02	2.951E+02
1.954E+02	1.339E+02	1.114E+02	8.388E+01	4.669E+01	2.218E+01	1.348E+01	1.002E+01	6.163E+00	2.278E+00	7.455E-01	3.634E-01	3.569E-01	3.117E-01	
673	B	15000	1.79	Z	W	5.359E+03	2.613E+03	1.553E+03	8.094E+02	5.055E+02	4.418E+02	4.037E+02	3.478E+02	2.690E+02
1.670E+02	1.088E+02	9.013E+01	6.838E+01	3.904E+01	1.962E+01	1.244E+01	9.321E+00	5.803E+00	2.185E+00	7.299E-01	3.633E-01	3.369E-01	2.817E-01	
678	B	15000	2.49	Z	W	5.046E+03	2.439E+03	1.452E+03	7.692E+02	4.921E+02	4.292E+02	3.895E+02	3.300E+02	2.466E+02
1.420E+02	8.662E+01	7.130E+01	5.456E+01	3.212E+01	1.718E+01	1.138E+01	8.602E+00	5.431E+00	2.092E+00	7.231E-01	3.745E-01	3.248E-01	2.560E-01	
683	B	22500	1.72	Z	W	7.089E+03	3.659E+03	2.276E+03	1.268E+03	8.003E+02	6.908E+02	6.263E+02	5.335E+02	4.068E+02
2.483E+02	1.577E+02	1.280E+02	9.511E+01	5.301E+01	2.553E+01	1.556E+01	1.142E+01	6.881E+00	2.525E+00	8.879E-01	4.862E-01	4.471E-01	3.637E-01	
688	B	22500	2.42	Z	W	6.606E+03	3.393E+03	2.116E+03	1.191E+03	7.670E+02	6.643E+02	6.018E+02	5.103E+02	3.835E+02
2.250E+02	1.375E+02	1.112E+02	8.300E+01	4.696E+01	2.336E+01	1.459E+01	1.077E+01	6.559E+00	2.443E+00	8.733E-01	4.858E-01	4.327E-01	3.421E-01	
693	B	22500	3.12	Z	W	6.223E+03	3.180E+03	1.988E+03	1.133E+03	7.442E+02	6.454E+02	5.831E+02	4.901E+02	3.611E+02
2.012E+02	1.170E+02	9.418E+01	7.075E+01	4.082E+01	2.115E+01	1.362E+01	1.012E+01	6.234E+00	2.365E+00	8.640E-01	4.904E-01	4.194E-01	3.189E-01	
698	B	30000	2.23	Z	W	8.221E+03	4.433E+03	2.877E+03	1.706E+03	1.105E+03	9.454E+02	8.492E+02	7.107E+02	5.253E+02
3.021E+02	1.797E+02	1.423E+02	1.041E+02	5.843E+01	2.898E+01	1.790E+01	1.299E+01	7.764E+00	2.785E+00	1.038E+00	6.136E-01	5.369E-01	4.119E-01	
703	B	30000	2.93	Z	W	7.694E+03	4.129E+03	2.681E+03	1.598E+03	1.050E+03	9.024E+02	8.121E+02	6.802E+02	5.006E+02
2.812E+02	1.624E+02	1.282E+02	9.414E+01	5.331E+01	2.693E+01	1.688E+01	1.231E+01	7.335E+00	2.700E+00	1.019E+00	6.109E-01	5.255E-01	3.961E-01	
708	B	30000	3.63	Z	W	7.245E+03	3.875E+03	2.521E+03	1.516E+03	1.011E+03	8.719E+02	7.844E+02	6.547E+02	4.762E+02
2.583E+02	1.436E+02	1.129E+02	8.337E+01	4.786E+01	2.483E+01	1.588E+01	1.164E+01	7.007E+00	2.621E+00	1.003E+00	6.087E-01	5.112E-01	3.760E-01	
713	B	40000	2.74	Z	W	1.136E+04	6.579E+03	4.523E+03	2.880E+03	1.908E+03	1.617E+03	1.437E+03	1.180E+03	8.451E+02
4.644E+02	2.611E+02	1.986E+02	1.403E+02	7.880E+01	4.033E+01	2.529E+01	1.814E+01	1.052E+01	3.789E+00	1.512E+00	9.677E-01	7.937E-01	5.578E-01	
718	B	40000	3.44	Z	W	1.075E+04	6.184E+03	4.234E+03	2.686E+03	1.784E+03	1.519E+03	1.356E+03	1.122E+03	8.113E+02
4.469E+02	2.478E+02	1.876E+02	1.324E+02	7.443E+01	3.821E+01	2.405E+01	1.733E+01	1.013E+01	3.699E+00	1.495E+00	9.717E-01	7.939E-01	5.543E-01	
723	B	40000	4.14	Z	W	1.018E+04	5.827E+03	3.981E+03	2.526E+03	1.687E+03	1.442E+03	1.291E+03	1.071E+03	7.770E+02
4.244E+02	2.311E+02	1.746E+02	1.233E+02	6.963E+01	3.605E+01	2.287E+01	1.654E+01	9.742E+00	3.603E+00	1.469E+00	9.623E-01	7.823E-01	5.429E-01	
728	B	50000	3.04	Z	W	1.173E+04	6.986E+03	4.946E+03	3.280E+03	2.227E+03	1.887E+03	1.674E+03	1.365E+03	9.668E+02
5.197E+02	2.830E+02	2.108E+02	1.467E+02	8.301E+01	4.380E+01	2.788E+01	1.984E+01	1.134E+01	4.048E+00	1.675E+00	1.113E+00	8.871E-01	5.983E-01	
733	B	50000	3.74	Z	W	1.113E+04	6.581E+03	4.638E+03	3.060E+03	2.080E+03	1.769E+03	1.577E+03	1.297E+03	9.293E+02
5.028E+02	2.707E+02	2.008E+02	1.392E+02	7.874E+01	4.159E+01	2.653E+01	1.896E+01	1.093E+01	3.958E+00	1.660E+00	1.120E+00	8.909E-01	5.983E-01	
738	B	50000	4.44	Z	W	1.055E+04	6.206E+03	4.362E+03	2.874E+03	1.959E+03	1.674E+03	1.496E+03	1.237E+03	8.906E+02
4.802E+02	2.546E+02	1.882E+02	1.306E+02	7.408E+01	3.934E+01	2.523E+01	1.811E+01	1.052E+01	3.858E+00	1.632E+00	1.109E+00	8.806E-01	5.897E-01	
743	P	10000	0.99	Z	W	5.071E+03	2.334E+03	1.321E+03	6.203E+02	3.593E+02	3.140E+02	2.886E+02	2.530E+02	2.035E+02
1.368E+02	9.569E+01	8.081E+01	6.212E+01	3.605E+01	1.864E+01	1.211E+01	9.161E+00	5.782E+00	2.170E+00	6.615E-01	2.728E-01	2.709E-01	2.456E-01	
748	P	10000	1.69	Z	W	4.603E+03	2.065E+03	1.166E+03	5.589E+02	3.359E+02	2.921E+02	2.652E+02	2.261E+02	1.720E+02
1.035E+02	6.662E+01	5.594E+01	4.365E+01	2.666E+01	1.520E+01	1.053E+01	8.069E+00	5.194E+00	2.005E+00	6.355E-01	2.770E-01	2.489E-01	2.093E-01	
753	P	10000	2.39	Z	W	4.390E+03	1.934E+03	1.090E+03	5.297E+02	3.268E+02	2.831E+02	2.546E+02	2.121E+02	1.538E+02
8.283E+01	4.802E+01	3.990E+01	3.162E+01	2.030E+01	1.259E+01	9.163E+00	7.111E+00	4.664E+00	1.859E+00	6.278E-01	3.028E-01	2.485E-01	1.904E-01	
758	P	20000	1.74	Z	W	7.430E+03	3.679E+03	2.197E+03	1.140E+03	6.915E+02	5.953E+02	5.393E+02	4.596E+02	3.512E+02
2.143E+02	1.370E+02	1.125E+02	8.488E+01	4.838E+01	2.429E+01	1.529E+01	1.132E+01	6.909E+00	2.545E+00	8.504E-01	4.250E-01	3.941E-01	3.275E-01	
763	P	20000	2.44	Z	W	6.974E+03	3.421E+03	2.045E+03	1.077E+03	6.707E+02	5.786E+02	5.225E+02	4.408E+02	3.288E+02
1.894E+02	1.148E+02	9.376E+01	7.117E+01	4.148E+01	2.180E+01	1.419E+01	1.058E+01	6.536E+00	2.452E+00	8.369E-01	4.281E-01	3.784E-01	3.016E-01	
768	P	20000	3.14	Z	W	6.634E+03	3.223E+03	1.929E+03	1.030E+03	6.554E+02	5.658E+02	5.088E+02	4.243E+02	3.082E+02
1.661E+02	9.428E+01	7.645E+01	5.849E+01	3.502E+01	1.938E+01	1.306E+01	9.817E+00	6.148E+00	2.358E+00	8.302E-01	4.398E-01	3.683E-01	2.783E-01	
773	P	30000	2.41	Z	W	9.270E+03	4.848E+03	3.044E+03	1.709E+03	1.068E+03	9.094E+02	8.148E+02	6.804E+02	5.008E+02
2.838E+02	1.670E+02	1.331E+02	9.863E+01	5.656E+01	2.917E+01	1.851E+01	1.347E+01	7.995E+00	2.893E+00	1.036E+00	5.771E-01	5.059E-01	3.922E-01	
783	P	30000	3.11	Z	W	8.728E+03	4.536E+03	2.850E+03	1.615E+03	1.028E+03	8.789E+02	7.881E+02	6.565E+02	4.785E+02
2.624E+02	1.486E+02	1.179E+02	8.775E+01	5.095E+01	2.692E+01	1.739E+01	1.272E+01	7.631E+00	2.805E+00	1.018E+00	5.759E-01	4.931E-01	3.733E-01	
778	P	30000	3.81	Z	W	8.281E+03	4.277E+03	2.690E+03	1.540E+03	9.992E+02	8.567E+02	7.674E+02	6.359E+02	4.567E+02
2.398E+02	1.295E+02	1.022E+02	7.650E+01	4.517E+01	2.463E+01	1.626E+01	1.198E+01	7.267E+00	2.719E+00	1.005E+00	5.780E-01	4.800E-01	3.521E-01	
788	P	40000	3.02	Z	W	1.117E+04	6.122E+03	4.016E+03	2.400E+03	1.539E+03	1.305E+03	1.166E+03	9.673E+02	7.049E+02
3.938E+02	2.249E+02	1.747E+02	1.264E+02	7.196E+01	3.726E+01	2.367E+01	1.717E+01	1.014E+01	3.685E+00	1.381E+00	8.184E-01	6.889E-01	5.043E-01	

793	P	40000	3.72	Z	W	1.058E+04	5.771E+03	3.781E+03	2.265E+03	1.467E+03	1.249E+03	1.118E+03	9.296E+02	6.766E+02
3.720E+02	2.076E+02	1.606E+02	1.163E+02	6.672E+01	3.501E+01	2.248E+01	1.637E+01	9.752E+00	3.588E+00	1.358E+00	8.128E-01	6.772E-01	4.900E-01	
798	P	40000	4.42	Z	W	1.006E+04	5.462E+03	3.580E+03	2.156E+03	1.412E+03	1.206E+03	1.081E+03	8.969E+02	6.485E+02
3.479E+02	1.884E+02	1.452E+02	1.056E+02	6.119E+01	3.271E+01	2.129E+01	1.559E+01	9.364E+00	3.490E+00	1.333E+00	8.041E-01	6.607E-01	4.709E-01	
803	P	50000	3.56	Z	W	1.299E+04	7.424E+03	5.032E+03	3.130E+03	2.032E+03	1.714E+03	1.522E+03	1.248E+03	8.904E+02
4.778E+02	2.581E+02	1.944E+02	1.378E+02	7.961E+01	4.324E+01	2.805E+01	2.005E+01	1.156E+01	4.116E+00	1.622E+00	1.021E+00	8.257E-01	5.716E-01	
808	P	50000	4.26	Z	W	1.235E+04	7.018E+03	4.746E+03	2.952E+03	1.926E+03	1.632E+03	1.453E+03	1.196E+03	8.571E+02
4.569E+02	2.423E+02	1.817E+02	1.288E+02	7.469E+01	4.085E+01	2.666E+01	1.915E+01	1.112E+01	4.015E+00	1.597E+00	1.015E+00	8.177E-01	5.628E-01	
813	P	50000	4.96	Z	W	1.175E+04	6.645E+03	4.491E+03	2.800E+03	1.843E+03	1.565E+03	1.396E+03	1.151E+03	8.237E+02
4.325E+02	2.239E+02	1.674E+02	1.190E+02	6.941E+01	3.841E+01	2.529E+01	1.825E+01	1.069E+01	3.909E+00	1.566E+00	1.001E+00	8.010E-01	5.472E-01	
818	P	60000	4.03	Z	W	1.479E+04	8.775E+03	6.119E+03	3.933E+03	2.582E+03	2.167E+03	1.915E+03	1.555E+03	1.091E+03
5.664E+02	2.915E+02	2.129E+02	1.477E+02	8.705E+01	4.996E+01	3.318E+01	2.342E+01	1.316E+01	4.590E+00	1.886E+00	1.241E+00	9.672E-01	6.342E-01	
823	P	60000	4.73	Z	W	1.411E+04	8.326E+03	5.788E+03	3.711E+03	2.441E+03	2.057E+03	1.824E+03	1.490E+03	1.053E+03
5.476E+02	2.777E+02	2.018E+02	1.396E+02	8.232E+01	4.739E+01	3.159E+01	2.239E+01	1.269E+01	4.490E+00	1.866E+00	1.242E+00	9.669E-01	6.321E-01	
828	P	60000	5.43	Z	W	1.346E+04	7.901E+03	5.482E+03	3.516E+03	2.324E+03	1.965E+03	1.747E+03	1.432E+03	1.015E+03
5.233E+02	2.605E+02	1.884E+02	1.305E+02	7.720E+01	4.473E+01	2.999E+01	2.135E+01	1.220E+01	4.378E+00	1.831E+00	1.227E+00	9.533E-01	6.218E-01	

/*PROGRAM INTHEAT.C calculates heat and integrated (over time) heat as a function of age and burnup (assuming average enrichment for the specified burnup) for a series of years, up to an upper limit, all of which are input by the user according to a set of onscreen instructions. The heat calculation is performed by interpolation in a table of heat values for specified values of age, burnup, and initial enrichment for both PWR and BWR fuel types. This table is read from the file "heatdat.dat" which is derived from the CDB LWR Radiological PC Database,

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When this disk is unzipped to the harddrive, a file called "totals.dbf" is generated. The records in "heatdat.dat" (read in the buildheat() subroutine) are generated from the records in "totals.dbf" by adding the units W (Watts) records for segment records V (activation), A (actinides), and F (fission products) for each reactor type (B or P), burnup, and enrichment given in the table. In this process the records of "totals.dbf" having units designated G, E, C, X, S, P are not used.*/

```
#include <conio.h>
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
#include <float.h>
#include <string.h>
#include <conio.h>
#include <ctype.h>
#define RCTPOOLS 140
```

```
void buildheat(); //Function to read standard heats from heatdat.dat
float refburnup[7][2], //Array for burnup values at which heatdat.dat gives
//heat values [burnupindex][fueltype]
refheat[23][7][3][2], //Array of heats read
//[ageindex][burnupindex][enrichmentindex][fueltype]
assay[7][3][2], //Array for enrichment values at which heatdat.dat gives
//heat values [burnupindex][enrichmentindex][fueltype]
getheat(long int, float, float, long int); //Interpolates for heat values
long int count;
```

```
main(int argc, char *argv[])
{
    long int i, //index for looping and test integer
    years, //number of years counted (maxtime-mintime)
    age, //variable input to getheat function
    type, //fuel type (b or p)
    mintime, //input age at start of integration
    maxtime, //input age for end of integration
    upper; //actual age at which program will end
    float burnup, //burnup input by user
    mtupassy, //MTU per assy, input by user
    old, //heat increment for previous time interval
    fnw, //heat increment for this time interval
    volpassy, //volume per assy, input by user
    pkfac, //peaking factor, input by user
    intheat=0; //integrated (accumulated) heat
    char buf[80], //string variable to receive user supplied output file name
    c; //character variable to receive user supplied fuel type
    FILE *fout; //pointer which will be assigned to the output file name
    buildheat(); //builds the heat table to be used for interpolation from heatdat.dat
    clrscr();
    gotoxy(1,5);
    printf("Enter the following parameters, separated by blanks, CR at end.\n");
    printf("Age at start of integration (in yrs, must be greater than 1)\n");
    printf("Age at end of integration (in yrs, must be less than 300,000)\n");
    printf("Burnup (MWD/MTU, less than 60000 for PWR, 40000 for BWR)\n");
    printf("Fuel Type (BWR=b, PWR=p)\n");
    printf("Mass of fuel per assembly (MTU/assy)\n");
    printf("Assembly volume (in cubic meters)\n");
    printf("Maximum peaking factor\n");
    printf("Typical example: 5 1000 35000 p .43 .160847 1.15\n");
    scanf("%ld %ld %f %c %f %f %f", &mintime, &maxtime, &burnup, &c, &mtupassy,
    &volpassy, &pkfac);
```

```

type=(tolower(c)=='b')?0:1;
years=maxtime-mintime+1;
i=log10(years); //Round up to power of 10 if close
if(pow(10,i+1)-years<=years/10) years=pow(10,i+1);
if((mintime<1)||((maxtime>300000)||((mintime>maxtime)))
{printf("\n\nPlease start over and enter valid times\n");
printf("Press any key to start over.");getch();exit(0);}
printf("\nEnter name of file for output\n");
scanf("%s",buf);
while((fout=fopen(buf,"w"))==NULL)
{printf("Please enter a valid filename.\n");
scanf("%s",buf);};
age=mintime;
fprintf(fout,"Integrated Watts/assembly for\n");
fprintf(fout,"Age=-ld Burnup=-.0f Type=-c MTU/assy=-.3f Vol/assy=-.6f PkngFctr=-.2f\n",
age,burnup,((type==0)?'B':'P'),mtupass,volpass,pkfac);
fprintf(fout,"%8s%8s%18s%15s%10s%10s\n","Period","Age",
"Integrated heat","Decay Power","AvgHt/vol","PkHt/vol");
fprintf(fout,"%8s%8s%18s%15s%10s%10s\n","(yrs)","(yrs)",
"(Watt-yrs/assy)","(Watts/assy)","Watts/m3","Watts/m3");
old=getheat(age,burnup,0,type); //Initial call to getheat
upper=(years<=10)?years:10;
i=0;intheat=0;fnew=old;
fprintf(fout,"%8ld%8ld%18.0f%15.0f%10.2f%10.2f\n",i,i+mintime,mtupass*intheat,
mtupass*fnew,fnew/volpass*mtupass,fnew*pkfac/volpass*mtupass);
for(i=1;i<upper;i++)
{fnew=getheat(age+i,burnup,0,type);
intheat+=(fnew+old)/2;
old=fnew;
fprintf(fout,"%8ld%8ld%18.0f%15.0f%10.2f%10.2f\n",i,i+mintime,mtupass*intheat,
mtupass*fnew,fnew/volpass*mtupass,fnew*pkfac/volpass*mtupass);}
if(years>10)
{upper=(years<=95)?years:95;
for(i=15;i<upper;i+=5)
{fnew=getheat(age+i,burnup,0,type);
intheat+=(old+fnew)*2.5;
old=fnew;
fprintf(fout,"%8ld%8ld%18.0f%15.0f%10.2f%10.2f\n",i,i+mintime,mtupass*intheat,
mtupass*fnew,fnew/volpass*mtupass,fnew*pkfac/volpass*mtupass);}
}
if(years>95)
{upper=(years<=200)?years:200;
for(i=100;i<upper;i+=10)
{fnew=getheat(i+age,burnup,0,type);
intheat+=(old+fnew)*5;
old=fnew;
fprintf(fout,"%8ld%8ld%18.0f%15.1f%10.2f%10.2f\n",i,i+mintime,mtupass*intheat,
mtupass*fnew,fnew/volpass*mtupass,fnew*pkfac/volpass*mtupass);}
}
if(years>200)
{upper=(years<=1000)?years:1000;
for(i=300;i<upper;i+=100)
{fnew=getheat(i+age,burnup,0,type);
intheat+=(old+fnew)*50;
old=fnew;
fprintf(fout,"%8ld%8ld%18.0f%15.1f%10.2f%10.2f\n",i,i+mintime,mtupass*intheat,
mtupass*fnew,fnew/volpass*mtupass,fnew*pkfac/volpass*mtupass);}
}
if(years>1000)
{upper=(years<=10000)?years:10000;
for(i=2000;i<upper;i+=1000)
{fnew=getheat(i+age,burnup,0,type);
intheat+=500*(old+fnew);
old=fnew;
fprintf(fout,"%8ld%8ld%18.0f%15.2f%10.2f%10.2f\n",i,i+mintime,mtupass*intheat,
mtupass*fnew,fnew/volpass*mtupass,fnew*pkfac/volpass*mtupass);}
}
if(years>10000)
{upper=(years<=300000)?years:300000;
for(i=20000;i<upper;i+=10000)
{fnew=getheat(i+age,burnup,0,type);
intheat+=5000*(old+fnew);
old=fnew;
fprintf(fout,"%8ld%8ld%18.0f%15.2f%10.2f%10.2f\n",i,i+mintime,mtupass*intheat,

```

```

        mtupassy*fnew,fnew/volpassy*mtupassy,fnew*pkfac/volpassy*mtupassy);}
    );};}

void buildheat()
{int i,j,k,m,      //nested loop iteration and indexing of arrays read
  dummyd;          //dummy to read through superfluous index in each record
char dummyc,       //dummy to read through type and superfluous labels (Z & W)
FILE *fin;
if ((fin=fopen("heatdat.dat","r"))==NULL)
  {printf("Cant open newheat\n","r");exit(0);};
for (j=0;j<2;j++)
  for (i=0;i<6;i++)
    for (k=0;k<3;k++)
      {fscanf(fin,"%d %c %f %f %c %c",&dummyd,&dummyc,&refburnup[i][j],
        &assay[i][j][k],&dummyc,&dummyc);
        for (m=0;m<23;m++) fscanf(fin,"%f",&refheat[m][i][k][j]);};}

//Subroutine which does the interpolation for heat as a function of age
//(year), fueltype (type), and burnup (burn); initial enrichment (rich)
//is a placeholder in case interpolation on initial enrichment would be
//added later.
float getheat(long int year,float burn,float rich,long int type)
{long int i,j,      //Indices for iterations
yr[]={1,2,3,5,10,15,20,30,50,100,200,300,
500,1000,2000,5000,10000,20000,50000,100000,200000,
500000,1000000}, //Array of age values at which heat is given
yrmatch=0,         //Indicator that input age matches the ref table
bmatch=0;          //Indicator that burnup matches the ref table
float m,m0,m1,p,p0,p1,x,y,u,v,w;//Intermediate values for the interpolation
i=0;j=0;
while((i<23)&&(year>yr[i]))i++;
if(i==0) {printf("too early %ld %ld %f\n",year,count,burn);exit(0);};
if (year==yr[i]) yrmatch=1;
if (burn>refburnup[5][type]) burn=refburnup[5][type];
while((j<6)&&(burn>refburnup[j][type]))j++;
if (abs(burn-refburnup[j][type])<100) bmatch=1;
if (yrmatch==0)
  {if (j>0) m0=log(refheat[i][j-1][1][type]/refheat[i-1][j-1][1][type]);
  m1=log(refheat[i][j][1][type]/refheat[i-1][j][1][type]);
  if (j>0) m=(m0*(refburnup[j][type]-burn)+m1*(burn-refburnup[j-1][type]))/
  log((float)yr[i]/yr[i-1])/(refburnup[j][type]-refburnup[j-1][type]);
  else m=m1/log((float)yr[i]/yr[i-1]);
  if ((m<.0001)&&(m>-.0001)) printf("m error %d\n",count);};
if (yrmatch==0) x=pow(((float)year/yr[i-1]),m);
if (burn<refburnup[0][type])
  {if (yrmatch==0) return(refheat[i-1][0][1][type]*x*burn/refburnup[0][type]);
  else return(refheat[i][0][1][type]*burn/refburnup[0][type]);};
if (bmatch==1)
  {if (yrmatch==0) return(refheat[i-1][j][1][type]*x);
  else return(refheat[i][j][1][type]);};
if (j==0) {printf("New check error");exit(0);};
p0=log(refheat[i-1][j][1][type]/refheat[i-1][j-1][1][type]);
p1=log(refheat[i][j][1][type]/refheat[i][j-1][1][type]);
p=(p0*(year-yr[i-1])+p1*(yr[i]-year))/
  log(refburnup[j][type]/refburnup[j-1][type])/(yr[i]-yr[i-1]);
if ((p<.0001)&&(p>-.0001)) printf("p error %d\n",count);
y=pow((burn/refburnup[j-1][type]),p);
if (yrmatch==0) return(refheat[i-1][j-1][1][type]*x*y);
else return(refheat[i][j-1][1][type]*y);}

```

Integrated Watts/assembly for

Age=10 Burnup=40000 Type=P MTU/assy=0.428 Vol/assy=1.000000 PkngFctr=1.00

Period (yrs)	Age (yrs)	Integrated heat (Watt-yrs/assy)	Decay Power (Watts/assy)	AvgHt/vol Watts/m ³	PkHt/vol Watts/m ³
0	10	0	628	627.88	627.88
1	11	616	605	604.58	604.58
2	12	1211	584	584.06	584.06
3	13	1785	566	565.80	565.80
4	14	2343	549	549.41	549.41
5	15	2885	535	534.57	534.57
6	16	3413	521	521.45	521.45
7	17	3929	509	509.41	509.41
8	18	4432	498	498.32	498.32
9	19	4926	488	488.05	488.05
10	20	5409	479	478.50	478.50
15	25	7686	432	432.29	432.29
20	30	9761	398	397.87	397.87
25	35	11660	361	361.50	361.50
30	40	13395	333	332.69	332.69
35	45	15000	309	309.19	309.19
40	50	16497	290	289.58	289.58
45	55	17888	267	266.72	266.72
50	60	19173	247	247.42	247.42
55	65	20369	231	230.91	230.91
60	70	21488	217	216.60	216.60
65	75	22539	204	204.08	204.08
70	80	23532	193	193.03	193.03
75	85	24473	183	183.19	183.19
80	90	25366	174	174.37	174.37
85	95	26218	166	166.42	166.42
90	100	27033	159	159.22	159.22
95	105	27813	153	152.81	152.81
100	110	29311	146.9	146.95	146.95
110	120	30729	136.6	136.57	136.57
120	130	32050	127.7	127.67	127.67
130	140	33288	120.0	119.96	119.96
140	150	34454	113.2	113.19	113.19
150	160	35556	107.2	107.21	107.21
160	170	36601	101.9	101.87	101.87
170	180	37596	97.1	97.09	97.09
180	190	38546	92.8	92.77	92.77
190	200	39454	88.9	88.85	88.85
200	210	40329	86.2	86.15	86.15
300	310	48003	67.3	67.33	67.33
400	410	54190	56.4	56.43	56.43
500	510	59461	49.0	48.99	48.99
600	610	64033	42.4	42.44	42.44
700	710	68034	37.6	37.58	37.58
800	810	71603	33.8	33.81	33.81
900	910	74834	30.8	30.80	30.80
1000	1010	77789	28.3	28.29	28.29
2000	2010	99409	14.95	14.95	14.95
3000	3010	113032	12.30	12.30	12.30
4000	4010	124533	10.70	10.70	10.70
5000	5010	134691	9.61	9.61	9.61
6000	6010	143920	8.84	8.84	8.84
7000	7010	152464	8.24	8.24	8.24
8000	8010	160463	7.76	7.76	7.76
9000	9010	168015	7.35	7.35	7.35
10000	10010	175190	7.00	7.00	7.00

Integrated Watts/assembly for
Age=22 Burnup=42200 Type=P MTU/assy=0.428 Vol/assy=1.000000 PkngFctr=1.00

Period (yrs)	Age (yrs)	Integrated heat (Watt-yrs/assy)	Decay Power (Watts/assy)	AvgHt/vol Watts/m3	PkHt/vol Watts/m3
0	22	0	487	486.73	486.73
1	23	482	477	476.98	476.98
2	24	954	468	467.83	467.83
3	25	1418	459	459.23	459.23
4	26	1873	451	451.12	451.12
5	27	2320	443	443.45	443.45
6	28	2760	436	436.19	436.19
7	29	3193	429	429.30	429.30
8	30	3619	424	423.69	423.69
9	31	4037	413	412.58	412.58
10	32	4446	405	404.51	404.51
15	37	6381	370	369.57	369.57
20	42	8159	342	341.59	341.59
25	47	9809	319	318.57	318.57
30	52	11341	294	294.08	294.08
35	57	12755	272	271.63	271.63
40	62	14066	253	252.60	252.60
45	67	15288	236	236.24	236.24
50	72	16434	222	222.02	222.02
55	77	17513	210	209.54	209.54
60	82	18533	198	198.49	198.49
65	87	19500	189	188.64	188.64
70	92	20422	180	179.79	179.79
75	97	21301	172	171.80	171.80
80	102	22136	162	162.49	162.49
85	107	22933	156	156.05	156.05
90	112	23698	150	150.15	150.15
95	117	24435	145	144.72	144.72
100	122	25857	139.7	139.70	139.70
110	132	27209	130.7	130.73	130.73
120	142	28478	122.9	122.94	122.94
130	152	29673	116.1	116.12	116.12
140	162	30804	110.1	110.08	110.08
150	172	31878	104.7	104.69	104.69
160	182	32901	99.9	99.86	99.86
170	192	33877	95.5	95.50	95.50
180	202	34810	90.9	90.95	90.95
190	212	35705	88.2	88.20	88.20
200	222	36575	85.7	85.66	85.66
300	322	44226	67.4	67.36	67.36
400	422	50432	56.8	56.78	56.78
500	522	55742	49.4	49.41	49.41
600	622	60359	42.9	42.94	42.94
700	722	64411	38.1	38.10	38.10
800	822	68032	34.3	34.33	34.33
900	922	71315	31.3	31.31	31.31
1000	1022	74332	29.0	29.04	29.04
2000	2022	96617	15.53	15.53	15.53
3000	3022	110776	12.79	12.79	12.79
4000	4022	122739	11.14	11.14	11.14
5000	5022	133292	9.97	9.97	9.97
6000	6022	142864	9.17	9.17	9.17
7000	7022	151727	8.55	8.55	8.55
8000	8022	160026	8.05	8.05	8.05
9000	9022	167863	7.63	7.63	7.63
10000	10022	175285	7.22	7.22	7.22

```

/COM, *****
/COM, ** Waste Package Heat Generation Rates **
/COM, ** File name: snf2242.dat **
/COM, ** Age 22.0 years 0.428 MTU/Assy **
/COM, ** 42200 MWD/MTU burnup, type P **
/COM, ** 12-8-1994 **
/COM, ** Initial enrichment average for burnup **
/COM, ** ASSY time is in years **
/COM, *****
ASSY( 1,1)= 486.7, 485.7, 484.7, 483.7, 482.8, 481.8,
ASSY( 7,1)= 480.8, 479.8, 478.9, 477.9, 477.0, 467.8,
ASSY(13,1)= 459.2, 451.1, 443.5, 436.2, 429.3, 423.7,
ASSY(19,1)= 412.6, 404.5, 341.6, 294.1, 252.6, 222.0,
ASSY(25,1)= 198.5, 179.8, 162.5, 150.1, 139.7, 85.7,
ASSY(31,1)= 67.4, 56.8, 49.4, 42.9, 38.1, 34.3,
ASSY(37,1)= 31.3, 29.0, 15.5, 12.8, 11.1, 10.0,
ASSY(43,1)= 9.2, 8.6, 8.0, 7.6, 7.2,
ASSY( 1,0)= 1.0E-6, 0.1, 0.2, 0.3, 0.4, 0.5,
ASSY( 7,0)= 0.6, 0.7, 0.8, 0.9, 1.0, 2.0,
ASSY(13,0)= 3.0, 4.0, 5.0, 6.0, 7.0, 8.0,
ASSY(19,0)= 9.0, 10.0, 20.0, 30.0, 40.0, 50.0,
ASSY(25,0)= 60.0, 70.0, 80.0, 90.0, 100.0, 200.0,
ASSY(31,0)= 300.0, 400.0, 500.0, 600.0, 700.0, 800.0,
ASSY(37,0)= 900.0, 1000.0, 2000.0, 3000.0, 4000.0, 5000.0,
ASSY(43,0)= 6000.0, 7000.0, 8000.0, 9000.0, 10000.0
ASSY(0,1)=1.0
/EOF

```

ANSYS 5.0 A
JAN 4 1995
09:36:34
PLOT NO. 1
ELEMENTS
MAT NUM

ZV = -1
*DIST=26.541
*YF = .25326
CONE=25
PRECISE HIDDEN

ANSYS 5.0 A
JAN 4 1995
09:36:40
PLOT NO. 1
ELEMENTS
MAT NUM

XV =1
ZV =-.612E-16
*DIST=21.233
*YF =.25326
CONE=25
PRECISE HIDDEN

ANSYS 5.0 A
JAN 4 1995
09:36:17
PLOT NO. 1
ELEMENTS
MAT NUM

ZV =1
DIST=715
YF =-341.363
PRECISE HIDDEN

ANSYS 5.0 A
JAN 4 1995
09:43:26
PLOT NO. 1
ELEMENTS
MAT NUM

XV = -.36934
YV = .15899
ZV = -.91559
*DIST=18.273
*XF = 2.778
*YF = -.97308
*ZF = 7.598
A-ZS=5.109
CONE=25
PRECISE HIDDEN

21 PWR MPC with Disposal Container
22 year old, 42.2 GWd/MTU burnup Average SNF (YFF10)

R. Bahney 08-08-95 File: c21r12.wk3

Time (years)	Heat Load (Wassy)	100 MTU/acre with 16.165 m WP Spacing					83 MTU/acre with 19.477 m WP Spacing				
		WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln	WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln
0	486.70	69	26	26	26	26	69	26	26	26	26
0.1	485.70	98	71	48	30	26	97	69	47	30	26
0.2	484.70	105	79	57	36	27	102	76	55	35	27
0.3	483.70	109	85	62	40	27	106	81	60	39	27
0.4	482.80	113	89	66	44	29	109	84	63	42	29
0.5	481.80	116	92	70	47	30	111	87	66	45	30
0.6	480.80	118	95	73	49	32	113	89	69	47	32
0.7	479.80	120	97	75	52	34	114	91	71	49	33
0.8	478.90	122	100	78	54	36	116	93	73	51	35
0.9	477.90	123	102	80	56	38	117	95	74	53	36
1	477.00	125	103	82	58	40	118	96	76	55	38
2	467.80	135	116	95	73	55	127	107	88	67	51
3	459.20	142	124	104	84	67	134	115	96	77	61
4	451.10	147	131	111	91	75	138	120	102	84	69
5	443.50	152	136	117	97	82	142	125	107	89	75
6	436.20	156	141	122	102	88	145	129	112	94	80
7	429.30	159	145	127	106	92	148	132	115	98	85
8	423.70	162	148	130	110	95	150	135	119	101	89
9	412.60	164	151	133	113	97	152	137	121	104	92
10	404.50	166	153	136	116	99	153	139	123	106	94
20	341.60	177	167	154	138	125	160	149	136	122	109
30	294.10	185	177	165	152	141	164	155	144	132	122
40	252.60	188	181	171	160	150	165	157	148	138	129
50	222.00	188	182	174	164	155	165	158	150	141	134
60	198.50	188	183	175	166	159	164	158	151	143	136
70	179.80	187	182	175	167	161	163	158	151	144	138
80	162.50	186	181	175	168	162	162	156	151	144	139
90	150.10	184	180	174	168	162	160	156	150	144	139
100	139.70	183	179	174	168	162	159	155	150	144	139
200	85.70	176	174	170	166	163	152	150	146	143	140
300	67.40	171	169	166	163	160	148	146	143	141	138
400	56.80	168	166	164	161	159	146	144	142	139	138
500	49.40	166	164	162	160	158	144	142	140	138	137
600	42.90	164	162	161	159	157	142	140	139	137	135
700	38.10	161	160	159	157	155	140	138	137	135	134
800	34.30	159	158	156	155	153	138	137	135	134	133
900	31.30	156	155	154	153	151	136	135	134	133	132
1000	29.00	154	153	152	151	149	135	134	133	132	131

21 PWR MPC with Disposal Container

22 year old, 42.2 GWd/MTU burnup Average SNF (YFF10)

R. Bahney 08-08-95 File: c21r12.wk3

Time (years)	Heat Load (W/assy)	25 MTU/acre with 32.331 m WP Spacing					25 MTU/acre with 21.554 m WP Spacing					25 MTU/acre with 16.165 m WP Spacing				
		WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln	WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln	WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln
0	486.70	69	26	26	26	26	69	26	26	26	26	69	26	26	26	26
0.1	485.70	94	66	46	30	26	96	68	47	30	26	98	71	48	30	26
0.2	484.70	99	72	52	35	26	101	74	54	35	26	105	79	57	36	26
0.3	483.70	101	75	56	38	26	104	79	58	39	26	109	85	62	40	26
0.4	482.80	103	77	59	40	26	107	82	62	41	26	113	89	66	43	26
0.5	481.80	104	79	61	42	26	109	84	64	44	26	116	92	70	46	26
0.6	480.80	106	80	62	44	26	111	86	66	46	26	118	95	73	49	26
0.7	479.80	107	82	64	45	26	112	88	68	48	26	120	97	75	51	26
0.8	478.90	107	83	65	46	26	113	90	70	49	26	121	99	77	53	26
0.9	477.90	108	84	66	47	26	114	91	71	50	26	123	101	79	55	26
1	477.00	109	84	67	48	26	115	92	73	52	26	124	103	81	57	26
2	467.80	112	89	72	54	28	122	100	81	60	26	133	113	92	68	26
3	459.20	114	92	75	58	30	125	105	86	66	27	138	119	98	75	26
4	451.10	115	94	77	60	32	127	107	89	69	28	141	123	102	79	26
5	443.50	116	95	79	62	34	128	109	92	72	29	143	126	106	83	27
6	436.20	116	96	80	63	36	129	111	93	74	30	144	128	108	86	27
7	429.30	117	97	81	65	38	130	112	95	76	31	145	129	110	88	28
8	423.70	117	97	82	66	39	131	113	96	77	33	146	130	111	90	29
9	412.60	117	98	83	67	41	130	113	97	78	34	146	131	113	91	29
10	404.50	117	98	83	68	42	130	113	97	79	35	146	131	113	92	30
20	341.60	114	99	87	74	52	127	112	99	84	46	143	131	115	97	39
30	294.10	111	97	87	76	58	122	110	98	85	52	138	126	113	97	46
40	252.60	108	95	86	77	61	117	106	96	84	56	131	121	109	96	51
50	222.00	104	93	85	77	63	113	103	94	84	59	125	116	106	94	55
60	198.50	102	91	84	77	64	109	100	92	83	61	120	112	102	92	57
70	179.80	99	90	84	77	65	106	97	90	82	62	116	108	100	90	59
80	162.50	97	88	82	76	66	103	95	88	81	63	112	104	97	88	60
90	150.10	95	87	82	76	66	101	93	87	80	64	109	102	95	87	61
100	139.70	93	86	81	75	67	99	92	86	79	64	106	100	93	85	62
200	85.70	85	80	77	73	68	88	83	80	76	67	93	88	84	80	65
300	67.40	81	77	75	72	68	84	80	77	74	67	87	84	80	77	66
400	56.80	79	76	74	71	68	81	78	76	73	67	84	81	78	75	66
500	49.40	77	74	73	71	68	79	76	74	72	67	82	79	77	74	66
600	42.90	76	73	72	70	67	78	75	73	71	67	80	77	75	73	66
700	38.10	75	72	71	69	67	76	74	72	70	66	78	76	74	72	66
800	34.30	73	71	70	69	66	75	73	71	70	66	77	74	73	71	65
900	31.30	72	70	69	68	66	74	72	70	69	65	75	73	72	70	65
1000	29.00	71	70	68	67	65	73	71	69	68	65	74	72	71	69	64

12 PWR MPC with Disposal Container
22 year old, 42.2 GWd/MTU burnup Average SNF (YFF10)

R. Bahney 08-08-95 File: c21r12.wk3

Time (years)	Heat Load (W/assy)	100 MTU/acre with 9.237 m WP Spacing					83 MTU/acre with 11.129 m WP Spacing				
		WP Side	Drift Wall	1m Rock	3m Rock	Df MidPln	WP Side	Drift Wall	1m Rock	3m Rock	Df MidPln
0	486.70	58	26	26	26	26	57	26	26	26	26
0.1	485.70	83	60	43	29	26	79	57	41	29	26
0.2	484.70	90	68	51	34	26	85	64	48	33	26
0.3	483.70	94	74	56	38	27	89	68	53	37	27
0.4	482.80	98	79	61	42	29	92	72	56	39	28
0.5	481.80	101	82	64	45	30	95	75	59	42	30
0.6	480.80	104	85	67	47	32	97	78	62	44	31
0.7	479.80	106	88	70	50	34	99	80	64	46	33
0.8	478.90	108	90	72	52	36	100	82	66	48	34
0.9	477.90	110	92	75	54	37	102	83	68	50	36
1	477.00	112	94	77	56	39	103	85	69	52	37
2	467.80	123	108	91	72	55	113	97	82	65	50
3	459.20	131	116	100	82	66	120	105	91	75	60
4	451.10	137	123	107	90	75	125	111	97	82	68
5	443.50	142	129	113	96	82	130	116	102	87	75
6	436.20	146	134	119	101	87	133	120	107	92	80
7	429.30	150	138	123	105	92	136	124	111	96	84
8	423.70	153	142	127	109	95	139	127	114	99	88
9	412.60	155	145	130	112	97	141	130	117	102	91
10	404.50	157	147	132	115	99	143	132	119	105	94
20	341.60	171	163	151	137	125	152	143	133	120	109
30	294.10	180	173	163	151	141	157	150	141	131	122
40	252.60	183	178	169	159	150	159	153	145	137	129
50	222.00	184	180	172	163	155	160	154	148	140	133
60	198.50	184	180	174	166	158	159	155	149	142	136
70	179.80	184	180	174	167	160	159	155	149	143	138
80	162.50	183	179	174	167	161	158	154	149	143	139
90	150.10	182	179	173	167	162	157	153	149	143	139
100	139.70	180	178	173	167	162	156	152	148	143	139
200	85.70	174	172	169	166	163	150	148	146	143	140
300	67.40	169	168	165	163	160	146	145	143	140	138
400	56.80	166	165	163	161	159	144	143	141	139	137
500	49.40	165	164	162	160	158	142	141	140	138	137
600	42.90	163	162	160	158	157	140	139	138	137	135
700	38.10	160	159	158	157	155	139	138	136	135	134
800	34.30	158	157	156	154	153	137	136	135	134	133
900	31.30	155	155	154	152	151	136	135	134	133	132
1000	29.00	153	153	152	150	149	134	134	133	132	131

12 PWR MPC with Disposal Container

22 year old, 42.2 GWd/MTU burnup Average SNF (YFF10)

R. Bahney 08-08-95 File: c21r12.wk3

Time (years)	Heat Load (W/assy)	25 MTU/acre with 18.475 m WP Spacing					25 MTU/acre with 12.317 m WP Spacing					25 MTU/acre with 9.237 m WP Spacing				
		WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln	WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln	WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln
0	486.70	57	26	26	26	26	57	26	26	26	26	58	26	26	26	26
0.1	485.70	75	51	39	28	26	78	55	40	29	26	83	60	43	29	26
0.2	484.70	78	56	43	32	26	83	62	47	33	26	90	69	51	34	26
0.3	483.70	81	59	46	34	26	87	66	51	36	26	95	74	56	38	26
0.4	482.80	82	61	48	36	26	90	69	54	38	26	98	79	61	41	26
0.5	481.80	84	63	50	37	26	92	72	57	41	26	101	82	64	44	26
0.6	480.80	85	64	52	39	26	94	74	59	43	26	104	85	67	47	26
0.7	479.80	86	65	53	40	26	95	76	61	44	26	106	88	70	49	26
0.8	478.90	87	66	54	41	26	97	78	62	46	26	108	90	72	51	26
0.9	477.90	88	67	55	42	26	98	79	64	47	26	110	92	74	53	26
1	477.00	88	68	56	43	26	99	80	65	48	26	111	94	76	55	26
2	467.80	93	74	62	49	28	106	89	75	57	26	121	105	88	67	26
3	459.20	95	77	65	52	30	110	94	80	63	27	126	111	94	73	26
4	451.10	97	79	68	55	32	113	97	83	67	28	129	115	98	78	26
5	443.50	98	81	70	57	34	115	100	86	69	29	132	118	101	81	27
6	436.20	99	82	71	59	36	116	101	88	72	30	133	120	104	84	27
7	429.30	99	83	72	60	38	117	103	89	73	31	135	122	106	86	28
8	423.70	100	84	73	61	39	118	104	90	75	33	136	124	108	88	29
9	412.60	100	85	74	62	41	118	104	91	76	34	136	124	109	90	29
10	404.50	100	85	75	63	42	118	104	92	77	35	137	125	110	91	30
20	341.60	101	88	80	70	52	116	105	94	82	46	135	125	112	96	39
30	294.10	99	89	81	73	58	113	103	94	83	52	130	121	110	96	46
40	252.60	97	88	81	74	61	109	100	92	83	56	124	117	107	95	51
50	222.00	95	86	81	75	63	105	97	91	82	59	119	112	103	93	55
60	198.50	93	85	80	75	64	102	95	89	81	61	115	108	100	91	57
70	179.80	91	84	80	75	65	100	93	88	81	62	111	105	98	89	59
80	162.50	89	83	79	74	66	97	91	86	80	63	107	101	95	87	60
90	150.10	88	82	78	74	66	95	90	85	79	64	104	99	93	86	61
100	139.70	87	81	78	74	67	94	88	84	79	64	102	97	92	85	62
200	85.70	81	77	75	73	68	85	81	79	75	67	90	87	83	79	65
300	67.40	78	75	73	71	68	81	78	76	74	67	85	82	80	76	66
400	56.80	76	74	72	71	68	79	76	75	73	67	82	80	78	75	66
500	49.40	75	73	72	70	68	77	75	74	72	67	80	78	76	74	66
600	42.90	74	72	71	69	67	76	74	73	71	67	78	76	75	73	66
700	38.10	73	71	70	69	67	74	73	72	70	66	77	75	74	72	66
800	34.30	72	70	69	68	66	73	72	71	69	66	75	74	72	71	65
900	31.30	71	69	68	68	66	72	71	70	69	65	74	73	71	70	65
1000	29.00	70	69	68	67	65	71	70	69	68	65	73	72	71	69	64

Summary of 3-D Emplacement Thermal Model Results BB0000000-01717-0200-00009 REV 00 ATTACHMENT VIII - Page 5

21 PWR MPC with Disposal Container:
22 year old, 42.2 GWd/MTU burnup Average SNF (YFF10)

R. Bahney 08-08-95 File: c21r12.wk3

Time (years)	Heat Load (W/assy)	100 MTU/acre with 16.165 m WP Spacing					100 MTU/acre with 12.124 m WP Spacing					100 MTU/acre with 8.0825 m WP Spacing				
		WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln	WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln	WP Side	Drift Wall	1m Rock	3m Rock	Df Midpln
0	486.70	69	26	26	26	26	69	26	26	26	26	70	26	26	26	26
0.1	485.70	98	71	48	30	26	103	76	51	31	26	115	89	57	32	26
0.2	484.70	105	79	57	36	27	112	87	62	37	26	128	105	73	41	26
0.3	483.70	109	85	62	40	27	118	95	69	43	26	135	114	82	49	26
0.4	482.80	113	89	66	44	29	123	100	74	48	27	141	121	88	55	26
0.5	481.80	116	92	70	47	30	126	104	79	51	27	146	126	93	60	26
0.6	480.80	118	95	73	49	32	129	108	82	55	28	150	131	98	64	26
0.7	479.80	120	97	75	52	34	132	111	85	58	29	154	136	102	68	26
0.8	478.90	122	100	78	54	36	134	113	88	60	30	158	140	106	71	26
0.9	477.90	123	102	80	56	38	135	115	90	62	31	161	144	109	74	27
1	477.00	125	103	82	58	40	137	117	92	64	32	164	147	113	77	27
2	467.80	135	116	95	73	55	149	131	106	79	44	185	170	137	97	31
3	459.20	142	124	104	84	67	157	140	116	89	55	196	183	151	110	38
4	451.10	147	131	111	91	75	163	148	124	97	64	205	193	161	120	45
5	443.50	152	136	117	97	82	168	153	130	103	71	211	200	168	128	52
6	436.20	156	141	122	102	88	172	158	136	109	77	216	205	174	135	58
7	429.30	159	145	127	106	92	176	163	140	114	83	220	210	179	140	64
8	423.70	162	148	130	110	95	179	166	145	118	87	224	214	184	145	69
9	412.60	164	151	133	113	97	181	169	148	122	91	226	216	187	149	74
10	404.50	166	153	136	116	99	183	171	151	125	94	227	218	189	153	78
20	341.60	177	167	154	138	125	192	183	165	144	113	234	227	203	172	99
30	294.10	185	177	165	152	141	197	190	175	157	133	231	225	204	177	115
40	252.60	188	181	171	160	150	198	192	179	164	144	227	221	203	181	131
50	222.00	188	182	174	164	155	198	192	181	168	150	223	218	202	182	139
60	198.50	188	183	175	166	159	197	191	182	170	154	219	214	200	183	144
70	179.80	187	182	175	167	161	195	191	182	171	156	215	211	198	182	147
80	162.50	186	181	175	168	162	193	189	180	171	158	211	207	196	181	150
90	150.10	184	180	174	168	162	191	187	179	170	158	208	204	194	180	151
100	139.70	183	179	174	168	162	189	186	179	170	159	205	202	192	179	152
200	85.70	176	174	170	166	163	180	177	173	168	161	190	187	181	173	157
300	67.40	171	169	166	163	160	173	171	168	164	159	181	179	175	169	156
400	56.80	168	166	164	161	159	170	168	166	162	158	177	175	171	166	155
500	49.40	166	164	162	160	158	168	166	164	161	157	174	172	169	164	155
600	42.90	164	162	161	159	157	165	164	162	159	156	170	169	166	162	154
700	38.10	161	160	159	157	155	163	162	160	157	154	167	166	163	160	153
800	34.30	159	158	156	155	153	160	159	157	155	152	164	163	160	157	151
900	31.30	156	155	154	153	151	158	156	155	153	150	161	160	158	155	149
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*SET,WPTOP ( 37, 1, 1), 74.02473665564
*SET,WPTOP ( 38, 1, 1), 72.97730802471
*SET,WPVOL , 7.573151546382
*SET,WPVLL , 1000000000000
*SET,XXX , 1.734935157290
*SET,YYY , -1.527450000000
/GOPR

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*-----*
| WELCOME TO THE ANSYS PROGRAM |
*-----*

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***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = c21x5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

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***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED      = 16777216      64.000 MB  COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592       18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496   25.568 MB
WORK SPACE OBTAINED       = 16777214      64.000 MB
BYTES PER WORD            = 4

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RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

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ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON     TO START THE ANSYS MENU SYSTEM
ENTER HELP        FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 3/29/1994
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c21x5a.inp *
7 /COM, *
8 /COM, * 21 PWR WP/MPC (10 cm overpack) *
9 /COM, * Average SNF: 22 years old, 42.2 GWD/MTU burnup *
10 /COM, * 5.0 m Diameter Drift with Concrete Invert *
11 /COM, * 100 MTU/acre (24.7 kgU/m^2) AML (High Thermal Loading) *
12 /COM, * Drift spacing = 22.5 m (11.25 m model half width) *
13 /COM, * WP c/c spacing = 16.165 m *
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat *
16 /COM, * SNF Heat Loads file: snf2242.dat *
17 /COM, *
18 /COM, *****

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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,21 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.9008,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.682,
40 *SET,WPWLL,0.10,
41 *SET,WSPC,16.165,
42 *SET,WPNUM,21.0,
43 *SET,MODEL,11.25,
44 *SET,OFFST,0.137,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD-OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep,dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242,dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,
219 /COM,      Define areas in rock layers
220 AL,23, 3,24, 1, (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWLL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWLL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWLL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM, Model is 6 elements wide
371 /COM, (3+7=10 divisions)
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 3,
378 /COM, Extrude WP 5 elements
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM, 1 element thick steel
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM, Extrude drift 5 elements with smallest
386 /COM, elements at WP mid-length
387 LESIZE, 58,,, 5,5.9,
388 LESIZE, 59,,, 5,5.9,
389 /COM, *****
390 /COM, Set element sizes in rock layers
391 /COM, 3 element thick TCw
392 LESIZE, 24,,, 3,
393 /COM, 3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM, 9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM, 12 elements above and below near field
398 /COM, with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,,12,0.3,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,,12,3,
403 LSEL,ALL,
404 /COM, 3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM, 2 element thick CHN1v
407 LESIZE, 46,,, 2,
408 /COM, 7 element thick CHN1z
409 LESIZE, 49,,, 7,
410 /COM, 12 element thick CHN2 with smaller elements
411 /COM, near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM, Concatenate lines for mapped meshing
417 /COM, (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM, Mesh 2-D areas
426 /COM, (first WP, then invert, DF wall and rock layers)
427 /COM, Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM, Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM, Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatenatd lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,          Rock around drift
513 /COM,          (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,58,
527 VMESH,41,
528 /COM,          Mid-drift rock
529 /COM,          (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,58,
535 /COM,          Concatenate to mesh volume 45
536 /COM,          (L's 311,312 used and freed up)
537 /COM,          (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,          Extrude rest of TSw2
546 /COM,          (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,          Extrude TSw1
549 /COM,          (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,          Extrude PTn
553 /COM,          (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,          Extrude TCw
557 /COM,          (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,          Extrude TSw3
561 /COM,          (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,          Extrude CHn1v
565 /COM,          (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,          Extrude CHn1z
569 /COM,          (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,          Extrude CHn2
573 /COM,          (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,          *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TM100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM, *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TM10,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TM11,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TM110,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))

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```

929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TM1100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),      0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAV,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 21.233,
984 /DIST,1,1.25,1
985 /VCON,1, 25.000,
986 /TYPE,1,HIDP,
987 /SHADE,,GOUR,
988 /GLINE,,0,
989 /TITLE,
990 VSEL,S,LOC,Z,0,100
991 ESLV,S
992 /SHOW,meshdrift,grph,0,8,
993 EPLOT
994 /COM,          View model meshing for side cut-away
995 /ANGLE, 1,+90,YS,1
996 /DIST,1,0.8,1
997 VSEL,S,LOC,X,-100,0
998 ESLV,S

```

```

999 /SHOW,meshside,grph,0,8,
1000 EPLOT
1001 /COM, *****
1002 /COM,      Create color temp. contour plots for WP end view
1003 /COM,
1004 /COM,      Set view settings
1005 /RESET
1006 /DEVICE,VECT,OFF
1007 /NUM, 1,
1008 /TRIAD,OFF,
1009 /PNUM,MAT, 1,
1010 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1011 /VIEW,1, -.36934, .15899, -.91559,
1012 /FOC, 1, 2.7776, -.97308, 7.5978,
1013 /DIST,1, 12.182,
1014 /DIST,1,1.5,1
1015 /ANG, 1, 5.1088, ZS,
1016 /VCON,1, 25.000,
1017 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1018 /TYPE,,HIDP,
1019 /GLIN,1,-1,
1020 /CVAL,,40,50,60,70,80,90,100,300,
1021 /COM,      Select end view of WP
1022 VSEL,S,LOC,Z,0,100,
1023 ESLV,S,
1024 /COM,      Select load steps and plot temperatures
1025 SET,3,
1026 /TITLE,
1027 /SHOW,near0,100.grph,0,8,
1028 PLNSOL,TEMP,
1029 SET,8,
1030 /TITLE,
1031 /SHOW,near05,100.grph,0,8,
1032 PLNSOL,TEMP,
1033 SET,13,
1034 /TITLE,
1035 /SHOW,near1,100.grph,0,8,
1036 PLNSOL,TEMP,
1037 SET,17,
1038 /TITLE,
1039 /SHOW,near5,100.grph,0,8,
1040 PLNSOL,TEMP,
1041 SET,22,
1042 /TITLE,
1043 /SHOW,near10,100.grph,0,8,
1044 PLNSOL,TEMP,
1045 SET,26,
1046 /TITLE,
1047 /SHOW,near50,100.grph,0,8,
1048 PLNSOL,TEMP,
1049 SET,31,
1050 /TITLE,
1051 /SHOW,near100,100.grph,0,8,
1052 PLNSOL,TEMP,
1053 SET,35,
1054 /TITLE,
1055 /SHOW,near500,100.grph,0,8,
1056 PLNSOL,TEMP,
1057 SET,40,
1058 /TITLE,
1059 /SHOW,near1k,100.grph,0,8,
1060 PLNSOL,TEMP,
1061 /COM,      View mesh for closeup end of model
1062 /GLINE,,0,
1063 /TYPE,,HIDP,
1064 /SHADE,,GOUR,
1065 /SHOW,meshnear,grph,0,8,
1066 EPLOT
1067 /COM, *****
1068 /COM,      Create color temp. contour plots for WP corner view

```

```

1069 /COM,
1070 /COM,          Set view settings
1071 /RESET
1072 /DEVICE,VECT,OFF,
1073 /NUM, 1,
1074 /TRIAD,OFF,
1075 /PNUM,MAT , 1,
1076 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1077 /VIEW,1, .64865, .48519E-01, -.75954,
1078 /FOC, 1, -.21216E-01, .39180, 2.3739,
1079 /DIST,1, 7.6223,
1080 /DIST,1,1.5,1
1081 /ANG, 1, -.52088,ZS,
1082 /VCON,1, 25.000,
1083 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1084 /TYPE,1,HIDP,
1085 /GLIN,1,-1,
1086 /CVAL,,40,50,60,70,80,90,100,300,
1087 /COM,          Select corner view of WP
1088 VSEL,S,LOC,X,-100,0,
1089 VSEL,R,LOC,Z,0,100,
1090 ESLV,S,
1091 /COM,          Select load steps and plot temperatures
1092 SET,3,
1093 /TITLE,
1094 /SHOW,corn0 ,100.grph,0,8,
1095 PLNSOL,TEMP,
1096 SET,8,
1097 /TITLE,
1098 /SHOW,corn05 ,100.grph,0,8,
1099 PLNSOL,TEMP,
1100 SET,13,
1101 /TITLE,
1102 /SHOW,corn1 ,100.grph,0,8,
1103 PLNSOL,TEMP,
1104 SET,17,
1105 /TITLE,
1106 /SHOW,corn5 ,100.grph,0,8,
1107 PLNSOL,TEMP,
1108 SET,22,
1109 /TITLE,
1110 /SHOW,corn10 ,100.grph,0,8,
1111 PLNSOL,TEMP,
1112 SET,26,
1113 /TITLE,
1114 /SHOW,corn50 ,100.grph,0,8,
1115 PLNSOL,TEMP,
1116 SET,31,
1117 /TITLE,
1118 /SHOW,corn100 ,100.grph,0,8,
1119 PLNSOL,TEMP,
1120 SET,35,
1121 /TITLE,
1122 /SHOW,corn500 ,100.grph,0,8,
1123 PLNSOL,TEMP,
1124 SET,40,
1125 /TITLE,
1126 /SHOW,corn1k ,100.grph,0,8,
1127 PLNSOL,TEMP,
1128 /COM,          View mesh for corner of model
1129 /GLINE,,0,
1130 /TYPE,,HIDP,
1131 /SHADE,,GOUR,
1132 /SHOW,meshcorn,grph,0,8,
1133 EPLOT
1134 FINISH
1135 /COM, *****
1136 /COM,          Print time/temperature output at specific locations
1137 /POST26,
1138 /COM,

```

```

1139 /COM, *****
1140 /COM, *      Waste Package Surface Temperatures      *
1141 /COM, *****
1142 /COM,      wmidside = midlength side surface
1143 /COM,      wwpside = end of WP side surface
1144 /COM,      wmidtop = midlength top surface
1145 /COM,      wwpetop = end of WP top surface
1146 /COM,      wmidbot = midlength bottom surface
1147 /COM,      wwpebot = end of WP bottom surface
1148 NSOL,2,(NODE( WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1149 NSOL,3,(NODE( WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpside,
1150 NSOL,4,(NODE( 0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1151 NSOL,5,(NODE( 0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1152 NSOL,6,(NODE( 0.0,(0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1153 NSOL,7,(NODE( 0.0,(0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1154 PRVAR,2,3,4,5,6,7,
1155 /COM,
1156 /COM, *****
1157 /COM, *      Waste Package Inside Shell Temperatures      *
1158 /COM, *****
1159 /COM,      smidside = midlength side inside shell
1160 /COM,      swpside = end of WP side inside shell
1161 /COM,      smidtop = midlength top inside shell
1162 /COM,      swpetop = end of WP top inside shell
1163 /COM,      smidbot = midlength bottom inside shell
1164 /COM,      swpebot = end of WP bottom inside shell
1165 NSOL,2,(NODE((WPRAD-WPWLL), 0.0,      0.0)),TEMP,,smidside,
1166 NSOL,3,(NODE((WPRAD-WPWLL), 0.0,(WPLEN/2.0-WPWLL))),TEMP,,swpside,
1167 NSOL,4,(NODE(0.0,      (WPRAD-WPWLL),      0.0)),TEMP,,smidtop,
1168 NSOL,5,(NODE(0.0,      (WPRAD-WPWLL),(WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1169 NSOL,6,(NODE(0.0,(0.0-WPRAD+WPWLL),      0.0)),TEMP,,smidbot,
1170 NSOL,7,(NODE(0.0,(0.0-WPRAD+WPWLL),(WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1171 PRVAR,2,3,4,5,6,7,
1172 /COM,
1173 /COM, *****
1174 /COM, *      Waste Package Center and Bottom of Invert      *
1175 /COM, *****
1176 /COM,      wmidcent = midlength center of WP
1177 /COM,      shellcnt = end of WP center inside shell
1178 /COM,      wwpecent = end of WP center surface
1179 /COM,      imidbot = midlength bottom of invert
1180 /COM,      iwpebot = end of WP bottom of invert
1181 /COM,      idfebot = end of drift bottom of invert
1182 NSOL,2,(NODE( 0.0,      0.0,      0.0)),TEMP,,wmidcent,
1183 NSOL,3,(NODE( 0.0,      0.0,(WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1184 NSOL,4,(NODE( 0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1185 NSOL,5,(NODE( 0.0,(DFCENT-DFRAD),      0.0)),TEMP,,imidbot,
1186 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD),      (WPLEN/2.0))),TEMP,,iwpebot,
1187 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD),      (WSPC/2.0))),TEMP,,idfebot,
1188 PRVAR,2,3,4,5,6,7,
1189 /COM,
1190 /COM, *****
1191 /COM, *      Surface Temperature of Invert      *
1192 /COM, *****
1193 /COM,      imidcent = midlength center of invert surface
1194 /COM,      iwpecent = end of WP center of invert surface
1195 /COM,      idfecent = end of drift center of invert surface
1196 /COM,      imidedge = midlength corner of invert surface
1197 /COM,      iwpeedge = end of WP corner of invert surface
1198 /COM,      idfeedge = end of drift corner of invert surface
1199 NSOL,2,(NODE( 0.0,      YYY,      0.0)),TEMP,,imidcent,
1200 NSOL,3,(NODE( 0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1201 NSOL,4,(NODE( 0.0,      YYY,      (WSPC/2.0))),TEMP,,idfecent,
1202 NSOL,5,(NODE( XXX,      YYY,      0.0)),TEMP,,imidedge,
1203 NSOL,6,(NODE( XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1204 NSOL,7,(NODE( XXX,      YYY,      (WSPC/2.0))),TEMP,,idfeedge,
1205 PRVAR,2,3,4,5,6,7,
1206 /COM,
1207 /COM, *****
1208 /COM, *      Drift Wall Surface Temperatures      *

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1209 /COM, *****
1210 /COM,      dmidside = midlength drift wall side surface
1211 /COM,      dwpeside = end of WP drift wall side surface
1212 /COM,      ddfeside = end of drift side surface
1213 /COM,      dmidtop = midlength drift wall top surface
1214 /COM,      dwpetop = end of WP drift wall top surface
1215 /COM,      ddfetop = end of drift top surface
1216 NSOL,2,(NODE( DFRAD,      DFCENT,      0.0)),TEMP,,dmidside,
1217 NSOL,3,(NODE( DFRAD,      DFCENT,      (WPLEN/2.0))),TEMP,,dwpeside,
1218 NSOL,4,(NODE( DFRAD,      DFCENT,      (WSPSP/2.0))),TEMP,,ddfeside,
1219 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),      0.0)),TEMP,, dmidtop,
1220 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),      (WPLEN/2.0))),TEMP,, dwpetop,
1221 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),      (WSPSP/2.0))),TEMP,, ddfetop,
1222 PRVAR,2,3,4,5,6,7,
1223 /COM,
1224 /COM, *****
1225 /COM, *      1 meter Rock Temperatures      *
1226 /COM, *****
1227 /COM,      1midside = midlength 1 meter from drift side
1228 /COM,      1dfeside = end of drift 1 meter from drift side
1229 /COM,      1midtop = midlength 1 meter above drift top
1230 /COM,      1dfetop = end of drift 1 meter above drift top
1231 /COM,      1midbot = midlength 1 meter below drift cut
1232 /COM,      1dfebot = end of drift 1 meter below drift cut
1233 NSOL,2,(NODE((DFRAD+1),      DFCENT,      0.0)),TEMP,,1midside,
1234 NSOL,3,(NODE((DFRAD+1),      DFCENT,      (WSPSP/2.0))),TEMP,,1dfeside,
1235 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),      0.0)),TEMP,, 1midtop,
1236 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),      (WSPSP/2.0))),TEMP,, 1dfetop,
1237 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),      0.0)),TEMP,, 1midbot,
1238 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),      (WSPSP/2.0))),TEMP,, 1dfebot,
1239 PRVAR,2,3,4,5,6,7,
1240 /COM,
1241 /COM, *****
1242 /COM, *      3 meter Rock Temperatures      *
1243 /COM, *****
1244 /COM,      3midside = midlength 3 meter from drift side
1245 /COM,      3dfeside = end of drift 3 meter from drift side
1246 /COM,      3midtop = midlength 3 meter above drift top
1247 /COM,      3dfetop = end of drift 3 meter above drift top
1248 /COM,      3midbot = midlength 3 meter below drift cut
1249 /COM,      3dfebot = end of drift 3 meter below drift cut
1250 NSOL,2,(NODE((DFRAD+3),      DFCENT,      0.0)),TEMP,,3midside,
1251 NSOL,3,(NODE((DFRAD+3),      DFCENT,      (WSPSP/2.0))),TEMP,,3dfeside,
1252 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),      0.0)),TEMP,, 3midtop,
1253 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),      (WSPSP/2.0))),TEMP,, 3dfetop,
1254 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),      0.0)),TEMP,, 3midbot,
1255 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),      (WSPSP/2.0))),TEMP,, 3dfebot,
1256 PRVAR,2,3,4,5,6,7,
1257 /COM,
1258 /COM, *****
1259 /COM, *      Upper Rock Layer Interface Temperatures      *
1260 /COM, *****
1261 /COM,      surfTCw = center ground surface
1262 /COM,      TCwPTn = center TCw and PTn interface
1263 /COM,      PTnTSw1 = center PTn and TSw1 interface
1264 /COM,      TSw1TSw2 = center TSw1 and TSw2 interface
1265 /COM,      upmodel = center TSw2 1/2 drift spacing above WP
1266 /COM,      middrift = drift to drift midplane at rep. height
1267 NSOL,2,(NODE( 0.0,      GSURF,      0.0)),TEMP,, surfTCw,
1268 NSOL,3,(NODE( 0.0, (GSURF-36.00),      0.0)),TEMP,, TCwPTn,
1269 NSOL,4,(NODE( 0.0, (GSURF-74.10),      0.0)),TEMP,, PTnTSw1,
1270 NSOL,5,(NODE( 0.0, (GSURF-204.2),      0.0)),TEMP,, TSw1TSw2,
1271 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),      0.0)),TEMP,, upmodel,
1272 NSOL,7,(NODE( MODEL,      DFCENT,      0.0)),TEMP,, middrift,
1273 PRVAR,2,3,4,5,6,7,
1274 /COM,
1275 /COM, *****
1276 /COM, *      Lower Rock Layer Interface Temperatures      *
1277 /COM, *****
1278 /COM,      dwnmodel = center TSw2 1/2 drift spacing below WP

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1279 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1280 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1281 /COM,          CHnvCHnz = center CHn1v and CHn1z interface
1282 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1283 /COM,          CHn2bot = center actual lower contact of CHn2
1284 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1285 NSOL,3,(NODE( 0.0, (GSURF-393.5), 0.0)),TEMP,,TSw2TSw3,
1286 NSOL,4,(NODE( 0.0, (GSURF-409.3), 0.0)),TEMP,,TSw3CHnv,
1287 NSOL,5,(NODE( 0.0, (GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1288 NSOL,6,(NODE( 0.0, (GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1289 NSOL,7,(NODE( 0.0, (GSURF-535.2), 0.0)),TEMP,, CHn2bot,
1290 PRVAR,2,3,4,5,6,7,
1291 FINISH
1292 /EXIT,
1293 /COM,          *****
1294 /COM,          End of batch input file
1295 /COM,          *****
1296 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,

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ABBREVIATION= X11 /show,x11,
 ABBREVIATION= VEC /show,,,1,
 ABBREVIATION= RAS /show,,,0,
 ABBREVIATION= ON /menu,on,
 ABBREVIATION= OFF /menu,off,
 ABBREVIATION= NVP /config,nvpag,512,
 ABBREVIATION= QUIT /exit,nosav,
 XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

 END start.ans

To start ANSYS menu:

type: x3d for console
 x11 for X-term

type: on

 ANSYS REVISION 5.0A 3/29/1994
 3-D Model of Waste Package Drift Emplacement R.Bahney III

* File name: c21x5a.inp *

* 21 PWR WP/MPC (10 cm overpack) *
 * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
 * 5.0 m Diameter Drift with Concrete Invert *
 * 100 MTU/acre (24.7 kgU/m²) AML (High Thermal Loading) *
 * Drift spacing = 22.5 m (11.25 m model half width) *
 * WP c/c spacing = 16.165 m *

* Material Properties file: Proprep.dat *
 * SNF Heat Loads file: snf2242.dat *

 Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

TITLE=

21 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
 MASS = KILOGRAMS(KG)
 TIME = SECONDS(SEC)
 TEMPERATURE = CENTIGRADE
 CURRENT = AMPS

 Define emplacement parameters

WPRAD = radius of waste package (m)
 DFRAD = radius of drift (m)
 INVRT = height of invert backfill floor (m)
 WPLEN = length of waste package (m)
 WPWLL = thickness of outer barrier (m)
 WPSPC = waste package c/c spacing (m)

WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .9008000
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.682000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 16.16500
 PARAMETER WPNUM = 21.00000
 PARAMETER MODEL = 11.25000
 PARAMETER OFFST = .1370000

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1
 PARAMETER GSURF = 308.6370

PARAMETER DFCENT = .1370000
 PARAMETER XXX = 1.734935
 PARAMETER YYY = -1.663000
 PARAMETER WPVOL = 11.04426
 PARAMETER TM_START = 31.55760
 PARAMETER TM10 = 3155760.
 PARAMETER TM11 = .3155760E+08
 PARAMETER TM110 = .3155760E+09
 PARAMETER TM1100 = .3155760E+10
 PARAMETER TM11000 = .3155760E+11
 PARAMETER TME0 = .2840187E+08
 PARAMETER TME1 = .3155763E+08
 PARAMETER TME9 = .2840184E+09
 PARAMETER TME10 = .3155760E+09
 PARAMETER TME90 = .2840184E+10
 PARAMETER TME100 = .3155760E+10
 PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 19:41:47 MAR 29, 1995 CP= .600
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCW	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smearred Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **

** Emissivity EMIS **

** Conductivity: KXX (W/m/K) **

** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***

SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C MAT= 4 NUM. POINTS= 8
SLOC= 5 .1046900E+08 .1019840E+08 2006500. 2111400.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 11
SLOC= 9 2191200. 2269200. 2341000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 4
SLOC= 1 1844300. 2031500. 2283100. 4559000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 8
SLOC= 5 4518800. 4480000. 2295300. 2448900.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 11
SLOC= 9 2574000. 2679200. 2770200.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 4
SLOC= 1 2443600. 2555700. 2696000. .3660130E+08

PROPERTY TABLE C MAT= 6 NUM. POINTS= 8
SLOC= 5 .3532630E+08 .3417640E+08 1501300. 1601800.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 11
SLOC= 9 1683600. 1752500. 1812000.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 4
SLOC= 1 2603200. 2664700. 2744700. .3660690E+08

PROPERTY TABLE C MAT= 7 NUM. POINTS= 8
SLOC= 5 .3534400E+08 .3420530E+08 2791400. 2741900.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 11
SLOC= 9 2670700. 1581400. 1632000.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 4
SLOC= 1 2430900. 2538500. 2680250. .2798690E+08

PROPERTY TABLE C MAT= 8 NUM. POINTS= 8
SLOC= 5 .2705530E+08 .2621460E+08 2564400. 2593500.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 11
SLOC= 9 2598500. 1981950. 2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
SLOC= 1 21.11000 37.78000 65.56000
9 93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
SLOC= 7 176.6700 204.4400 232.2200
260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
SLOC= 13 343.3300 371.1100 398.8900
426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
 SLOC= 19 510.0000 537.7800 565.5600
 593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) =	480.8000 477.0000	479.8000 467.8000	478.9000	477.9000
PARAMETER ASSY(13,1) =	459.2000 429.3000	451.1000 423.7000	443.5000	436.2000
PARAMETER ASSY(19,1) =	412.6000 252.6000	404.5000 222.0000	341.6000	294.1000
PARAMETER ASSY(25,1) =	198.5000 139.7000	179.8000 85.70000	162.5000	150.1000
PARAMETER ASSY(31,1) =	67.40000 38.10000	56.80000 34.30000	49.40000	42.90000
PARAMETER ASSY(37,1) =	31.30000 11.10000	29.00000 10.00000	15.50000	12.80000
PARAMETER ASSY(43,1) =	9.200000 7.200000	8.600000	8.000000	7.600000
PARAMETER ASSY(1,0) =	.1000000E-05 .4000000	.1000000 .5000000	.2000000	.3000000
PARAMETER ASSY(7,0) =	.6000000 1.000000	.7000000 2.000000	.8000000	.9000000
PARAMETER ASSY(13,0) =	3.000000 7.000000	4.000000 8.000000	5.000000	6.000000
PARAMETER ASSY(19,0) =	9.000000 40.00000	10.00000 50.00000	20.00000	30.00000
PARAMETER ASSY(25,0) =	60.00000 100.0000	70.00000 200.0000	80.00000	90.00000
PARAMETER ASSY(31,0) =	300.0000 700.0000	400.0000 800.0000	500.0000	600.0000
PARAMETER ASSY(37,0) =	900.0000 4000.000	1000.000 5000.000	2000.000	3000.000
PARAMETER ASSY(43,0) =	6000.000 10000.00	7000.000	8000.000	9000.000

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
 INPUT MATRIX= ASSY(1,0)
 INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
 RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.9014
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
 WPHOT(1) = COPY ASSY(1)
 SCALE FACTORS RESULT= 1.9014 INPUT= 1.0000
 VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000

PARAMETER WPTOP(0,1) = 1.000000

PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)

(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)

(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-11.2500	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	3	X,Y,Z=	11.2500	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	-11.2500	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	11.2500	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	-11.2500	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	11.2500	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	-11.2500	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	11.2500	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	-11.2500	11.3870	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.000000E+00	11.3870	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	11.2500	11.3870	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	-11.2500	.137000	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	11.2500	.137000	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	-11.2500	-11.1130	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.000000E+00	-11.1130	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	11.2500	-11.1130	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	-11.2500	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	11.2500	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	-11.2500	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	11.2500	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	-11.2500	-105.863	.000000E+00	IN CSYS=	0

KEYPOINT	28	X,Y,Z=	.000000E+00	-105.863	.000000E+00	IN CSYS=	0
KEYPOINT	29	X,Y,Z=	11.2500	-105.863	.000000E+00	IN CSYS=	0
KEYPOINT	30	X,Y,Z=	-11.2500	-209.863	.000000E+00	IN CSYS=	0
KEYPOINT	31	X,Y,Z=	.000000E+00	-209.863	.000000E+00	IN CSYS=	0
KEYPOINT	32	X,Y,Z=	11.2500	-209.863	.000000E+00	IN CSYS=	0
KEYPOINT	33	X,Y,Z=	-11.2500	-991.363	.000000E+00	IN CSYS=	0
KEYPOINT	34	X,Y,Z=	.000000E+00	-991.363	.000000E+00	IN CSYS=	0
KEYPOINT	35	X,Y,Z=	11.2500	-991.363	.000000E+00	IN CSYS=	0

Define lines connecting rock layers
 (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS	1	2			
LINE NO.=	1	KP1=	1	TAN1=	-1.0000 .0000 .0000
		KP2=	2	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	2	3			
LINE NO.=	2	KP1=	2	TAN1=	-1.0000 .0000 .0000
		KP2=	3	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	4	5			
LINE NO.=	3	KP1=	4	TAN1=	-1.0000 .0000 .0000
		KP2=	5	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	5	6			
LINE NO.=	4	KP1=	5	TAN1=	-1.0000 .0000 .0000
		KP2=	6	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	7	8			
LINE NO.=	5	KP1=	7	TAN1=	-1.0000 .0000 .0000
		KP2=	8	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	8	9			
LINE NO.=	6	KP1=	8	TAN1=	-1.0000 .0000 .0000
		KP2=	9	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	10	11			
LINE NO.=	7	KP1=	10	TAN1=	-1.0000 .0000 .0000
		KP2=	11	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	11	12			
LINE NO.=	8	KP1=	11	TAN1=	-1.0000 .0000 .0000
		KP2=	12	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	13	14			
LINE NO.=	9	KP1=	13	TAN1=	-1.0000 .0000 .0000
		KP2=	14	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	14	15			
LINE NO.=	10	KP1=	14	TAN1=	-1.0000 .0000 .0000
		KP2=	15	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	18	19			
LINE NO.=	11	KP1=	18	TAN1=	-1.0000 .0000 .0000
		KP2=	19	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	19	20			
LINE NO.=	12	KP1=	19	TAN1=	-1.0000 .0000 .0000
		KP2=	20	TAN2=	1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS		21	22			
LINE NO.=	13	KP1=	21	TAN1=	-1.0000	.0000 .0000
		KP2=	22	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		22	23			
LINE NO.=	14	KP1=	22	TAN1=	-1.0000	.0000 .0000
		KP2=	23	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		24	25			
LINE NO.=	15	KP1=	24	TAN1=	-1.0000	.0000 .0000
		KP2=	25	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		25	26			
LINE NO.=	16	KP1=	25	TAN1=	-1.0000	.0000 .0000
		KP2=	26	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		27	28			
LINE NO.=	17	KP1=	27	TAN1=	-1.0000	.0000 .0000
		KP2=	28	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		28	29			
LINE NO.=	18	KP1=	28	TAN1=	-1.0000	.0000 .0000
		KP2=	29	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		30	31			
LINE NO.=	19	KP1=	30	TAN1=	-1.0000	.0000 .0000
		KP2=	31	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		31	32			
LINE NO.=	20	KP1=	31	TAN1=	-1.0000	.0000 .0000
		KP2=	32	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		33	34			
LINE NO.=	21	KP1=	33	TAN1=	-1.0000	.0000 .0000
		KP2=	34	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		34	35			
LINE NO.=	22	KP1=	34	TAN1=	-1.0000	.0000 .0000
		KP2=	35	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		1	4			
LINE NO.=	23	KP1=	1	TAN1=	.0000	1.0000 .0000
		KP2=	4	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		2	5			
LINE NO.=	24	KP1=	2	TAN1=	.0000	1.0000 .0000
		KP2=	5	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		3	6			
LINE NO.=	25	KP1=	3	TAN1=	.0000	1.0000 .0000
		KP2=	6	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		4	7			
LINE NO.=	26	KP1=	4	TAN1=	.0000	1.0000 .0000
		KP2=	7	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		5	8			
LINE NO.=	27	KP1=	5	TAN1=	.0000	1.0000 .0000
		KP2=	8	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		6	9			
LINE NO.=	28	KP1=	6	TAN1=	.0000	1.0000 .0000
		KP2=	9	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		7	10			
LINE NO.=	29	KP1=	7	TAN1=	.0000	1.0000 .0000
		KP2=	10	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		8	11			
LINE NO.=	30	KP1=	8	TAN1=	.0000	1.0000 .0000

	KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 9 12						
LINE NO.=	31	KP1=	9	TAN1=	.0000	1.0000
		KP2=	12	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 10 13						
LINE NO.=	32	KP1=	10	TAN1=	.0000	1.0000
		KP2=	13	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 11 14						
LINE NO.=	33	KP1=	11	TAN1=	.0000	1.0000
		KP2=	14	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 12 15						
LINE NO.=	34	KP1=	12	TAN1=	.0000	1.0000
		KP2=	15	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 13 16						
LINE NO.=	35	KP1=	13	TAN1=	.0000	1.0000
		KP2=	16	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 15 17						
LINE NO.=	36	KP1=	15	TAN1=	.0000	1.0000
		KP2=	17	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 16 18						
LINE NO.=	37	KP1=	16	TAN1=	.0000	1.0000
		KP2=	18	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 17 20						
LINE NO.=	38	KP1=	17	TAN1=	.0000	1.0000
		KP2=	20	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 18 21						
LINE NO.=	39	KP1=	18	TAN1=	.0000	1.0000
		KP2=	21	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 19 22						
LINE NO.=	40	KP1=	19	TAN1=	.0000	1.0000
		KP2=	22	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 20 23						
LINE NO.=	41	KP1=	20	TAN1=	.0000	1.0000
		KP2=	23	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 21 24						
LINE NO.=	42	KP1=	21	TAN1=	.0000	1.0000
		KP2=	24	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 22 25						
LINE NO.=	43	KP1=	22	TAN1=	.0000	1.0000
		KP2=	25	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 23 26						
LINE NO.=	44	KP1=	23	TAN1=	.0000	1.0000
		KP2=	26	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 24 27						
LINE NO.=	45	KP1=	24	TAN1=	.0000	1.0000
		KP2=	27	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 25 28						
LINE NO.=	46	KP1=	25	TAN1=	.0000	1.0000
		KP2=	28	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 26 29						
LINE NO.=	47	KP1=	26	TAN1=	.0000	1.0000
		KP2=	29	TAN2=	.0000	-1.0000

LINE CONNECTS KEYPOINTS		27	30			
LINE NO.=	48	KP1=	27	TAN1=	.0000	1.0000
		KP2=	30	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		28	31			
LINE NO.=	49	KP1=	28	TAN1=	.0000	1.0000
		KP2=	31	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		29	32			
LINE NO.=	50	KP1=	29	TAN1=	.0000	1.0000
		KP2=	32	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		30	33			
LINE NO.=	51	KP1=	30	TAN1=	.0000	1.0000
		KP2=	33	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		31	34			
LINE NO.=	52	KP1=	31	TAN1=	.0000	1.0000
		KP2=	34	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		32	35			
LINE NO.=	53	KP1=	32	TAN1=	.0000	1.0000
		KP2=	35	TAN2=	.0000	-1.0000

Define areas in rock layers
(A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
LINE LIST = 23 3 24 1
(TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
LINE LIST = 24 4 25 2
(TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
LINE LIST = 26 5 27 3
(TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
LINE LIST = 27 6 28 4
(TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
LINE LIST = 29 7 30 5
(TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
LINE LIST = 30 8 31 6
(TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
LINE LIST = 32 9 33 7
(TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
LINE LIST = 33 10 34 8

```

      (TRAVERSED IN SAME DIRECTION AS LINE 33)
AREA NUMBER =      8
DEFINE AREA BY LIST OF LINES
  LINE LIST = 39 13 40 11
  (TRAVERSED IN SAME DIRECTION AS LINE 39)
AREA NUMBER =      9
DEFINE AREA BY LIST OF LINES
  LINE LIST = 40 14 41 12
  (TRAVERSED IN SAME DIRECTION AS LINE 40)
AREA NUMBER =     10
DEFINE AREA BY LIST OF LINES
  LINE LIST = 42 15 43 13
  (TRAVERSED IN SAME DIRECTION AS LINE 42)
AREA NUMBER =     11
DEFINE AREA BY LIST OF LINES
  LINE LIST = 43 16 44 14
  (TRAVERSED IN SAME DIRECTION AS LINE 43)
AREA NUMBER =     12
DEFINE AREA BY LIST OF LINES
  LINE LIST = 45 17 46 15
  (TRAVERSED IN SAME DIRECTION AS LINE 45)
AREA NUMBER =     13
DEFINE AREA BY LIST OF LINES
  LINE LIST = 46 18 47 16
  (TRAVERSED IN SAME DIRECTION AS LINE 46)
AREA NUMBER =     14
DEFINE AREA BY LIST OF LINES
  LINE LIST = 48 19 49 17
  (TRAVERSED IN SAME DIRECTION AS LINE 48)
AREA NUMBER =     15
DEFINE AREA BY LIST OF LINES
  LINE LIST = 49 20 50 18
  (TRAVERSED IN SAME DIRECTION AS LINE 49)
AREA NUMBER =     16
DEFINE AREA BY LIST OF LINES
  LINE LIST = 51 21 52 19
  (TRAVERSED IN SAME DIRECTION AS LINE 51)
AREA NUMBER =     17
DEFINE AREA BY LIST OF LINES
  LINE LIST = 52 22 53 20
  (TRAVERSED IN SAME DIRECTION AS LINE 52)
AREA NUMBER =     18
*****
      Define center and axis keypoints for drift
      (K's 36,37,38,39,40,41,42,43)
KEYPOINT 36 X,Y,Z= .000000E+00 .000000E+00 .000000E+00 IN CSYS= 0
KEYPOINT 37 X,Y,Z= .000000E+00 .000000E+00 2.74100 IN CSYS= 0

```


KEYPOINT 38 X,Y,Z= .000000E+00 .000000E+00 2.84100 IN CSYS= 0
 KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.74100 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.84100 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .137000 8.08250 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .137000 -8.08250 IN CSYS= 0
 Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .8008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .9008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.36300 .000000E+00 IN CSYS= 0

KEYPOINT 53 X,Y,Z= 1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 55 X,Y,Z= .000000E+00 2.63700 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.66300 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44

LINE NO.=	82	KP1=	36	TAN1=	.0000	1.0000	.0000
		KP2=	44	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 36 45							
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 36 46							
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000	.0000
		KP2=	46	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 36 47							
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 44 48							
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000	.0000
		KP2=	48	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 45 49							
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 46 50							
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000	.0000
		KP2=	50	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 47 51							
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 50 55							
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000	.0000
		KP2=	55	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 48 58							
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000	.0000
		KP2=	58	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 58 52							
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000	.0000
		KP2=	52	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 57 58							
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 58 53							
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 52 59							
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000	.0000
		KP2=	59	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 54 60							
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 55 61							
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000	.0000
		KP2=	61	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 56 62							
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 59 63							
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000	.0000
		KP2=	63	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 60 64
 LINE NO.= 100 KP1= 60 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 61 65
 LINE NO.= 101 KP1= 61 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 62 66
 LINE NO.= 102 KP1= 62 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= -1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 63 19
 LINE NO.= 103 KP1= 63 TAN1= .0000 1.0000 .0000
 KP2= 19 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 64 17
 LINE NO.= 104 KP1= 64 TAN1= -1.0000 .0000 .0000
 KP2= 17 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 65 14
 LINE NO.= 105 KP1= 65 TAN1= .0000 -1.0000 .0000
 KP2= 14 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 66 16
 LINE NO.= 106 KP1= 66 TAN1= 1.0000 .0000 .0000
 KP2= 16 TAN2= -1.0000 .0000 .0000

Define areas around drift
 (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
 (35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 82 60 83
 (TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
 LINE LIST = 83 61 84
 (TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
 LINE LIST = 85 84 62
 (TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
 LINE LIST = 63 82 85
 (TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
 LINE LIST = 86 64 87 60
 (TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
 LINE LIST = 61 87 65 88
 (TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
 LINE LIST = 89 62 88 66

(TRAVERSED IN SAME DIRECTION AS LINE 89)
AREA NUMBER = 25
DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)
AREA NUMBER = 26
DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)
AREA NUMBER = 27
DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)
AREA NUMBER = 28
DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)
AREA NUMBER = 29
DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)
AREA NUMBER = 30
DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)
AREA NUMBER = 31
DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)
AREA NUMBER = 32
DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)
AREA NUMBER = 33
DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)
AREA NUMBER = 34
DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)
AREA NUMBER = 35
DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)
AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES

LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 93 TO 94 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1
1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1
10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert
ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock
SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters
SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide

(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 5.900

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 5.900

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000

12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = .300

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 3.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TSw3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHN1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHN1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES

LINES = 36 10
COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14
CONCATENATE LINES
LINES = 9 35
COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16
CONCATENATE LINES
LINES = 37 11
COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)
Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132
Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS
IN AREAS 27 TO 28 IN STEPS OF 1
** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144
Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS
IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 275
MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 395
MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
IN AREAS 37 TO 40 IN STEPS OF 1

*** WARNING *** CP= 5.420 TIME= 19:41:52
Meshing of area 37 produced 1 poorly shaped elements.

*** NOTE *** CP= 5.420 TIME= 19:41:52
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
353

*** WARNING *** CP= 5.470 TIME= 19:41:52
Meshing of area 38 produced 1 poorly shaped elements.

*** NOTE *** CP= 5.470 TIME= 19:41:52
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
398

*** WARNING *** CP= 5.520 TIME= 19:41:52
Meshing of area 39 produced 1 poorly shaped elements.

*** NOTE *** CP= 5.520 TIME= 19:41:52
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
432

*** WARNING *** CP= 5.570 TIME= 19:41:52
Meshing of area 40 produced 1 poorly shaped elements.

*** NOTE *** CP= 5.570 TIME= 19:41:52
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
442

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 515
MAXIMUM ELEMENT NUMBER = 464

GENERATE NODES AND ELEMENTS
IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 683
MAXIMUM ELEMENT NUMBER = 608

TSW1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 746
MAXIMUM ELEMENT NUMBER = 662
PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 767
MAXIMUM ELEMENT NUMBER = 680
TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 788
MAXIMUM ELEMENT NUMBER = 698
TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 809
MAXIMUM ELEMENT NUMBER = 716
CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 823
MAXIMUM ELEMENT NUMBER = 728
CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 872
MAXIMUM ELEMENT NUMBER = 770
CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 6.340 TIME= 19:41:53
Meshing of area 17 produced 12 poorly shaped elements.

*** NOTE *** CP= 6.340 TIME= 19:41:53
Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

779 780 781 782 791 792 793 794 803 804
805 806

*** WARNING *** CP= 6.390 TIME= 19:41:53
Meshing of area 18 produced 12 poorly shaped elements.

*** NOTE *** CP= 6.390 TIME= 19:41:53
Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

815 816 817 818 827 828 829 830 839 840
841 842

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 956
MAXIMUM ELEMENT NUMBER = 842

Delete concatenated lines
(L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
(V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
54,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
54,

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,

ALONG LINES

56,

(plot area numbers before next drag commands)

DRAG AREAS

44, 47, 50, 52,

ALONG LINES

55,

DRAG AREAS

57, 61, 65, 68,

ALONG LINES

55,

DRAG AREAS

72, 75, 78, 80,

ALONG LINES

57,

DRAG AREAS

85, 89, 93, 96,

ALONG LINES

57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117
LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172
LINE	175 USED FOR LINE(S)	187
LINE	176 USED FOR LINE(S)	193
LINE	177 USED FOR LINE(S)	192
LINE	179 USED FOR LINE(S)	194
LINE	180 USED FOR LINE(S)	195

LINE 183 USED FOR LINE(S) 200
LINE 184 USED FOR LINE(S) 203
LINE 185 USED FOR LINE(S) 205
LINE 208 USED FOR LINE(S) 220
LINE 209 USED FOR LINE(S) 226
LINE 210 USED FOR LINE(S) 225
LINE 212 USED FOR LINE(S) 227
LINE 213 USED FOR LINE(S) 228
LINE 216 USED FOR LINE(S) 233
LINE 217 USED FOR LINE(S) 236
LINE 218 USED FOR LINE(S) 238
AREA 42 USED FOR AREA(S) 56
AREA 45 USED FOR AREA(S) 58
AREA 49 USED FOR AREA(S) 64
AREA 51 USED FOR AREA(S) 67
AREA 70 USED FOR AREA(S) 84
AREA 73 USED FOR AREA(S) 86
AREA 77 USED FOR AREA(S) 92
AREA 79 USED FOR AREA(S) 95
AREA 98 USED FOR AREA(S) 112
AREA 101 USED FOR AREA(S) 114
AREA 105 USED FOR AREA(S) 120
AREA 107 USED FOR AREA(S) 123
AREA 126 USED FOR AREA(S) 140
AREA 129 USED FOR AREA(S) 142
AREA 133 USED FOR AREA(S) 148
AREA 135 USED FOR AREA(S) 151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1561
MAXIMUM ELEMENT NUMBER = 1382

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1681
MAXIMUM ELEMENT NUMBER = 1502

GENERATE NODES AND ELEMENTS
IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 1826
MAXIMUM ELEMENT NUMBER = 1634

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2431
MAXIMUM ELEMENT NUMBER = 2174

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2551
MAXIMUM ELEMENT NUMBER = 2294

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2696
MAXIMUM ELEMENT NUMBER = 2426

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2791
MAXIMUM ELEMENT NUMBER = 2486
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3106
MAXIMUM ELEMENT NUMBER = 2686

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3271
MAXIMUM ELEMENT NUMBER = 2786

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3436
MAXIMUM ELEMENT NUMBER = 2886

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3856
MAXIMUM ELEMENT NUMBER = 3186

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4076
MAXIMUM ELEMENT NUMBER = 3336

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4296
MAXIMUM ELEMENT NUMBER = 3486
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 21.700 TIME= 19:42:09
Meshing of volume 43 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3517 3518 3519 3520 3521 3522 3523 3524
3525 3526 3527 3528 3529 3530 3531

*** WARNING *** CP= 22.060 TIME= 19:42:09
Meshing of volume 44 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
3742 3743 3744 3745 3746 3747 3748 3749
3750 3751 3752 3753 3754 3755 3756

MAXIMUM NODE NUMBER = 4716
MAXIMUM ELEMENT NUMBER = 3786

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,

ALONG LINES
58,

*** WARNING *** CP= 22.560 TIME= 19:42:09
Meshing of volume 46 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
3822 3823 3824 3825 3826 3872 3873 3874
3875 3876 3922 3923 3924 3925 3926

MAXIMUM NODE NUMBER = 4936
MAXIMUM ELEMENT NUMBER = 3936
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 22.860 TIME= 19:42:10
Meshing of area 200 produced 1 poorly shaped faces.

*** NOTE *** CP= 22.860 TIME= 19:42:10
Worst shape angle is 41 degrees.

*** WARNING *** CP= 23.170 TIME= 19:42:10
Meshing of volume 45 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
4042 4043 4044 4045 4046 4047 4048 4049
4050 4051 4052 4053 4054 4055 4056

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 5156
MAXIMUM ELEMENT NUMBER = 4086

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSW2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,

ALONG LINES
58,

MAXIMUM NODE NUMBER = 6066
MAXIMUM ELEMENT NUMBER = 4806
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6416
MAXIMUM ELEMENT NUMBER = 5076
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6556
MAXIMUM ELEMENT NUMBER = 5166
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6696
MAXIMUM ELEMENT NUMBER = 5256
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6836
MAXIMUM ELEMENT NUMBER = 5346
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6941
MAXIMUM ELEMENT NUMBER = 5406
Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7221
MAXIMUM ELEMENT NUMBER = 5616
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 27.440 TIME= 19:42:14
Meshing of volume 63 produced 63 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***			
5642	5647	5652	5653
5663	5664	5665	5667
5672	5673	5674	5675
5713	5717	5718	5719
5727	5728	5729	5730
5735	5736	5762	5767
5779	5782	5783	5784
5790	5791	5792	5793

*** WARNING *** CP= 27.810 TIME= 19:42:15
Meshing of volume 64 produced 63 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***			
5822	5827	5832	5833
5843	5844	5845	5847
5852	5853	5854	5855
5893	5897	5898	5899
5907	5908	5909	5910
5915	5916	5942	5947
5959	5962	5963	5964
5970	5971	5972	5973

MAXIMUM NODE NUMBER = 7676
MAXIMUM ELEMENT NUMBER = 5976

MERGE COINCIDENT NODES WITHIN TOLERANCE OF 10000E-03

NODE 5613	USED FOR NODES 6697
NODE 6698	USED FOR NODES 6837
NODE 6108	USED FOR NODES 6442
NODE 6943	USED FOR NODES 7222
NODE 6109	USED FOR NODES 6443
NODE 4765	USED FOR NODES 5664
NODE 4766	USED FOR NODES 5665
NODE 4767	USED FOR NODES 5666
NODE 4768	USED FOR NODES 5667
NODE 5672	USED FOR NODES 6713
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NODE	3769	USED FOR NODES	4629
NODE	3537	USED FOR NODES	4397
NODE	3443	USED FOR NODES	4315
NODE	3539	USED FOR NODES	4399
NODE	3540	USED FOR NODES	4400
NODE	3538	USED FOR NODES	4398
NODE	2762	USED FOR NODES	2831
NODE	2763	USED FOR NODES	2832
NODE	2760	USED FOR NODES	2829
NODE	2752	USED FOR NODES	2807
NODE	2761	USED FOR NODES	2830
NODE	3053	USED FOR NODES	3727
NODE	3054	USED FOR NODES	3728
NODE	2963	USED FOR NODES	3675
NODE	3051	USED FOR NODES	3725

NODE	3052	USED FOR NODES	3726
NODE	2890	USED FOR NODES	3510
NODE	2889	USED FOR NODES	3509
NODE	2891	USED FOR NODES	3511
NODE	2799	USED FOR NODES	3457
NODE	2892	USED FOR NODES	3512
NODE	2962	USED FOR NODES	3674
NODE	3049	USED FOR NODES	3723
NODE	3047	USED FOR NODES	3721
NODE	3048	USED FOR NODES	3722
NODE	3050	USED FOR NODES	3724
NODE	2800	USED FOR NODES	3458
NODE	2893	USED FOR NODES	3513
NODE	2896	USED FOR NODES	3516
NODE	2894	USED FOR NODES	3514
NODE	2895	USED FOR NODES	3515
NODE	3664	USED FOR NODES	4536
NODE	3768	USED FOR NODES	4628
NODE	3765	USED FOR NODES	4625
NODE	3766	USED FOR NODES	4626
NODE	3767	USED FOR NODES	4627
NODE	3542	USED FOR NODES	4402
NODE	3444	USED FOR NODES	4316
NODE	3541	USED FOR NODES	4401
NODE	3543	USED FOR NODES	4403
NODE	3544	USED FOR NODES	4404
NODE	3043	USED FOR NODES	3717
NODE	3044	USED FOR NODES	3718
NODE	2961	USED FOR NODES	3673
NODE	3046	USED FOR NODES	3720
NODE	3045	USED FOR NODES	3719
NODE	2801	USED FOR NODES	3459
NODE	2900	USED FOR NODES	3520
NODE	2898	USED FOR NODES	3518
NODE	2897	USED FOR NODES	3517
NODE	2899	USED FOR NODES	3519
NODE	2802	USED FOR NODES	3460
NODE	2960	USED FOR NODES	3672
NODE	2901	USED FOR NODES	3521
NODE	2902	USED FOR NODES	3522
NODE	2903	USED FOR NODES	3523
NODE	2904	USED FOR NODES	3524
NODE	3039	USED FOR NODES	3713
NODE	3040	USED FOR NODES	3714
NODE	3041	USED FOR NODES	3715
NODE	3042	USED FOR NODES	3716
NODE	3445	USED FOR NODES	4317
NODE	3761	USED FOR NODES	4621
NODE	3762	USED FOR NODES	4622
NODE	3763	USED FOR NODES	4623
NODE	3764	USED FOR NODES	4624
NODE	3545	USED FOR NODES	4405
NODE	3546	USED FOR NODES	4406
NODE	3547	USED FOR NODES	4407
NODE	3548	USED FOR NODES	4408
NODE	3663	USED FOR NODES	4535
NODE	2959	USED FOR NODES	3671
NODE	3036	USED FOR NODES	3710
NODE	3035	USED FOR NODES	3709
NODE	3037	USED FOR NODES	3711
NODE	3038	USED FOR NODES	3712
NODE	2906	USED FOR NODES	3526
NODE	2803	USED FOR NODES	3461
NODE	2905	USED FOR NODES	3525
NODE	2907	USED FOR NODES	3527
NODE	2908	USED FOR NODES	3528
NODE	3034	USED FOR NODES	3708
NODE	2958	USED FOR NODES	3670
NODE	3031	USED FOR NODES	3705
NODE	3032	USED FOR NODES	3706

NODE 3033	USED FOR NODES	3707
NODE 2909	USED FOR NODES	3529
NODE 2910	USED FOR NODES	3530
NODE 2911	USED FOR NODES	3531
NODE 2912	USED FOR NODES	3532
NODE 2804	USED FOR NODES	3462
NODE 2795	USED FOR NODES	3451
NODE 2841	USED FOR NODES	3485
NODE 2842	USED FOR NODES	3486
NODE 2843	USED FOR NODES	3487
NODE 2844	USED FOR NODES	3488
NODE 6923	USED FOR NODES	7135
NODE 6805	USED FOR NODES	6914
NODE 4364	USED FOR NODES	5922
NODE 5927	USED FOR NODES	6797
NODE 7144	USED FOR NODES	7531
NODE 4363	USED FOR NODES	5921
NODE 5928	USED FOR NODES	6798
NODE 6519	USED FOR NODES	6667
NODE 6279	USED FOR NODES	6498
NODE 5930	USED FOR NODES	6800
NODE 4302	USED FOR NODES	5887
NODE 4361	USED FOR NODES	5919
NODE 6778	USED FOR NODES	6902
NODE 5929	USED FOR NODES	6799
NODE 6307	USED FOR NODES	6527
NODE 7143	USED FOR NODES	7530
NODE 5873	USED FOR NODES	6783
NODE 6518	USED FOR NODES	6666
NODE 7145	USED FOR NODES	7532
NODE 4572	USED FOR NODES	5475
NODE 4362	USED FOR NODES	5920
NODE 4525	USED FOR NODES	5418
NODE 4570	USED FOR NODES	5473
NODE 5466	USED FOR NODES	6315
NODE 6898	USED FOR NODES	7112
NODE 6517	USED FOR NODES	6665
NODE 6924	USED FOR NODES	7136
NODE 6308	USED FOR NODES	6528
NODE 6807	USED FOR NODES	6916
NODE 6306	USED FOR NODES	6526
NODE 4569	USED FOR NODES	5472
NODE 4571	USED FOR NODES	5474
NODE 6925	USED FOR NODES	7137
NODE 6520	USED FOR NODES	6668
NODE 6922	USED FOR NODES	7134
NODE 5432	USED FOR NODES	6268
NODE 6808	USED FOR NODES	6917
NODE 6806	USED FOR NODES	6915
NODE 5467	USED FOR NODES	6316
NODE 6305	USED FOR NODES	6525
NODE 7142	USED FOR NODES	7529
NODE 5464	USED FOR NODES	6313
NODE 7103	USED FOR NODES	7497
NODE 5465	USED FOR NODES	6314
NODE 6503	USED FOR NODES	6638
NODE 3757	USED FOR NODES	4617
NODE 3758	USED FOR NODES	4618
NODE 3759	USED FOR NODES	4619
NODE 3760	USED FOR NODES	4620
NODE 3662	USED FOR NODES	4534
NODE 3951	USED FOR NODES	4411
NODE 3446	USED FOR NODES	4318
NODE 3552	USED FOR NODES	4412
NODE 3550	USED FOR NODES	4410
NODE 3549	USED FOR NODES	4409
NODE 3447	USED FOR NODES	4319
NODE 3755	USED FOR NODES	4615
NODE 3756	USED FOR NODES	4616
NODE 3553	USED FOR NODES	4413

NODE 3554	USED FOR NODES	4414
NODE 3555	USED FOR NODES	4415
NODE 3556	USED FOR NODES	4416
NODE 3661	USED FOR NODES	4533
NODE 3753	USED FOR NODES	4613
NODE 3754	USED FOR NODES	4614
NODE 3448	USED FOR NODES	4320
NODE 3557	USED FOR NODES	4417
NODE 3558	USED FOR NODES	4418
NODE 3559	USED FOR NODES	4419
NODE 3560	USED FOR NODES	4420
NODE 3660	USED FOR NODES	4532
NODE 3749	USED FOR NODES	4609
NODE 3750	USED FOR NODES	4610
NODE 3751	USED FOR NODES	4611
NODE 3752	USED FOR NODES	4612
NODE 3449	USED FOR NODES	4321
NODE 3561	USED FOR NODES	4421
NODE 3562	USED FOR NODES	4422
NODE 3563	USED FOR NODES	4423
NODE 3564	USED FOR NODES	4424
NODE 3659	USED FOR NODES	4531
NODE 3745	USED FOR NODES	4605
NODE 3746	USED FOR NODES	4606
NODE 3747	USED FOR NODES	4607
NODE 3748	USED FOR NODES	4608
NODE 3743	USED FOR NODES	4603
NODE 3658	USED FOR NODES	4530
NODE 3741	USED FOR NODES	4601
NODE 3742	USED FOR NODES	4602
NODE 3744	USED FOR NODES	4604
NODE 3450	USED FOR NODES	4322
NODE 3566	USED FOR NODES	4426
NODE 3568	USED FOR NODES	4428
NODE 3567	USED FOR NODES	4427
NODE 3565	USED FOR NODES	4425
NODE 3441	USED FOR NODES	4311
NODE 3493	USED FOR NODES	4357
NODE 3494	USED FOR NODES	4358
NODE 3495	USED FOR NODES	4359
NODE 3496	USED FOR NODES	4360
NODE 4303	USED FOR NODES	5888
NODE 6504	USED FOR NODES	6639
NODE 4365	USED FOR NODES	5923
NODE 6521	USED FOR NODES	6669
NODE 6522	USED FOR NODES	6670
NODE 6523	USED FOR NODES	6671
NODE 6524	USED FOR NODES	6672
NODE 4366	USED FOR NODES	5924
NODE 4367	USED FOR NODES	5925
NODE 4368	USED FOR NODES	5926
NODE 5931	USED FOR NODES	6801
NODE 5932	USED FOR NODES	6802
NODE 5933	USED FOR NODES	6803
NODE 5934	USED FOR NODES	6804
NODE 7146	USED FOR NODES	7533
NODE 4573	USED FOR NODES	5476
NODE 4574	USED FOR NODES	5477
NODE 4575	USED FOR NODES	5478
NODE 4576	USED FOR NODES	5479
NODE 6779	USED FOR NODES	6903
NODE 5874	USED FOR NODES	6784
NODE 6809	USED FOR NODES	6918
NODE 6810	USED FOR NODES	6919
NODE 6811	USED FOR NODES	6920
NODE 6812	USED FOR NODES	6921
NODE 4526	USED FOR NODES	5419
NODE 6899	USED FOR NODES	7113
NODE 5468	USED FOR NODES	6317
NODE 5469	USED FOR NODES	6318

NODE 7147 USED FOR NODES 7534
 NODE 7148 USED FOR NODES 7535
 NODE 7149 USED FOR NODES 7536
 NODE 5470 USED FOR NODES 6319
 NODE 5471 USED FOR NODES 6320
 NODE 6280 USED FOR NODES 6499
 NODE 6926 USED FOR NODES 7138
 NODE 6927 USED FOR NODES 7139
 NODE 6928 USED FOR NODES 7140
 NODE 6929 USED FOR NODES 7141
 NODE 7104 USED FOR NODES 7498
 NODE 6309 USED FOR NODES 6529
 NODE 6310 USED FOR NODES 6530
 NODE 6311 USED FOR NODES 6531
 NODE 6312 USED FOR NODES 6532
 NODE 5433 USED FOR NODES 6269
 NODE 6509 USED FOR NODES 6653
 NODE 6510 USED FOR NODES 6654
 NODE 6511 USED FOR NODES 6655
 NODE 6512 USED FOR NODES 6656
 NODE 4349 USED FOR NODES 5911
 NODE 4350 USED FOR NODES 5912
 NODE 4351 USED FOR NODES 5913
 NODE 4352 USED FOR NODES 5914
 NODE 5915 USED FOR NODES 6789
 NODE 5916 USED FOR NODES 6790
 NODE 5917 USED FOR NODES 6791
 NODE 5918 USED FOR NODES 6792
 NODE 5458 USED FOR NODES 6303
 NODE 5459 USED FOR NODES 6304
 NODE 4517 USED FOR NODES 5417
 NODE 4561 USED FOR NODES 5460
 NODE 4562 USED FOR NODES 5461
 NODE 4563 USED FOR NODES 5462
 NODE 4564 USED FOR NODES 5463
 NODE 6777 USED FOR NODES 6900
 NODE 5872 USED FOR NODES 6780
 NODE 6793 USED FOR NODES 6906
 NODE 6794 USED FOR NODES 6907
 NODE 6795 USED FOR NODES 6908
 NODE 6796 USED FOR NODES 6909
 NODE 5420 USED FOR NODES 6267
 NODE 6297 USED FOR NODES 6513
 NODE 6298 USED FOR NODES 6514
 NODE 6299 USED FOR NODES 6515
 NODE 6300 USED FOR NODES 6516
 NODE 4301 USED FOR NODES 5875
 NODE 6897 USED FOR NODES 7105
 NODE 6910 USED FOR NODES 7126
 NODE 6911 USED FOR NODES 7127
 NODE 6270 USED FOR NODES 6497
 NODE 6912 USED FOR NODES 7128
 NODE 6913 USED FOR NODES 7129
 NODE 7102 USED FOR NODES 7485
 NODE 7130 USED FOR NODES 7521
 NODE 7131 USED FOR NODES 7522
 NODE 7132 USED FOR NODES 7523
 NODE 7133 USED FOR NODES 7524
 NODE 6500 USED FOR NODES 6637
 NODE 5456 USED FOR NODES 6301
 NODE 5457 USED FOR NODES 6302

*** WARNING *** CP= 42.820 TIME= 19:42:30
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
 KEYPOINT 67 USED FOR KEYPOINT(S) 115
 KEYPOINT 72 USED FOR KEYPOINT(S) 78 114

KEYPOINT	76 USED FOR KEYPOINT(S)	89		
KEYPOINT	80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85 USED FOR KEYPOINT(S)	122		
KEYPOINT	91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93 USED FOR KEYPOINT(S)	104		
KEYPOINT	98 USED FOR KEYPOINT(S)	117		
KEYPOINT	101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121 USED FOR KEYPOINT(S)	137		
KEYPOINT	123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT	134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT	135 USED FOR KEYPOINT(S)	162		
KEYPOINT	138 USED FOR KEYPOINT(S)	155		
KEYPOINT	139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT	142 USED FOR KEYPOINT(S)	146		
KEYPOINT	143 USED FOR KEYPOINT(S)	152		
KEYPOINT	147 USED FOR KEYPOINT(S)	157		
KEYPOINT	151 USED FOR KEYPOINT(S)	164		
KEYPOINT	154 USED FOR KEYPOINT(S)	165		
KEYPOINT	156 USED FOR KEYPOINT(S)	167		
KEYPOINT	158 USED FOR KEYPOINT(S)	181		
KEYPOINT	159 USED FOR KEYPOINT(S)	184		
KEYPOINT	161 USED FOR KEYPOINT(S)	186		
KEYPOINT	163 USED FOR KEYPOINT(S)	170		
KEYPOINT	166 USED FOR KEYPOINT(S)	171		
KEYPOINT	168 USED FOR KEYPOINT(S)	173		
KEYPOINT	169 USED FOR KEYPOINT(S)	176		
KEYPOINT	172 USED FOR KEYPOINT(S)	177		
KEYPOINT	174 USED FOR KEYPOINT(S)	179		
KEYPOINT	182 USED FOR KEYPOINT(S)	187		
KEYPOINT	183 USED FOR KEYPOINT(S)	190		
KEYPOINT	185 USED FOR KEYPOINT(S)	192		
KEYPOINT	188 USED FOR KEYPOINT(S)	193		
KEYPOINT	189 USED FOR KEYPOINT(S)	196		
KEYPOINT	191 USED FOR KEYPOINT(S)	198		
KEYPOINT	194 USED FOR KEYPOINT(S)	199		
KEYPOINT	195 USED FOR KEYPOINT(S)	202		
KEYPOINT	197 USED FOR KEYPOINT(S)	204		
LINE	108 USED FOR LINE(S)	240		
LINE	121 USED FOR LINE(S)	241		
LINE	126 USED FOR LINE(S)	154	239	
LINE	134 USED FOR LINE(S)	174		
LINE	137 USED FOR LINE(S)	172		
LINE	141 USED FOR LINE(S)	238		
LINE	159 USED FOR LINE(S)	236	246	270
LINE	160 USED FOR LINE(S)	252		
LINE	161 USED FOR LINE(S)	251		
LINE	187 USED FOR LINE(S)	257		
LINE	192 USED FOR LINE(S)	220	256	264
LINE	193 USED FOR LINE(S)	225		
LINE	194 USED FOR LINE(S)	226		
LINE	200 USED FOR LINE(S)	244		
LINE	203 USED FOR LINE(S)	243		
LINE	205 USED FOR LINE(S)	233	259	272
LINE	207 USED FOR LINE(S)	265		
LINE	228 USED FOR LINE(S)	271		
LINE	245 USED FOR LINE(S)	269		
LINE	247 USED FOR LINE(S)	268	275	307
LINE	248 USED FOR LINE(S)	283		
LINE	249 USED FOR LINE(S)	282		
LINE	253 USED FOR LINE(S)	290		
LINE	254 USED FOR LINE(S)	262	289	299
LINE	255 USED FOR LINE(S)	263		
LINE	258 USED FOR LINE(S)	273		
LINE	260 USED FOR LINE(S)	267	292	309
LINE	261 USED FOR LINE(S)	300		
LINE	266 USED FOR LINE(S)	308		
LINE	274 USED FOR LINE(S)	306		
LINE	276 USED FOR LINE(S)	305	330	

LINE	277	USED FOR LINE(S)	336	
LINE	278	USED FOR LINE(S)	335	
LINE	285	USED FOR LINE(S)	320	
LINE	286	USED FOR LINE(S)	319	
LINE	287	USED FOR LINE(S)	297	315
LINE	288	USED FOR LINE(S)	298	
LINE	291	USED FOR LINE(S)	310	
LINE	293	USED FOR LINE(S)	302	
LINE	295	USED FOR LINE(S)	313	
LINE	296	USED FOR LINE(S)	314	
LINE	303	USED FOR LINE(S)	325	
LINE	304	USED FOR LINE(S)	331	
LINE	312	USED FOR LINE(S)	339	
LINE	317	USED FOR LINE(S)	341	
LINE	318	USED FOR LINE(S)	340	
LINE	322	USED FOR LINE(S)	346	
LINE	323	USED FOR LINE(S)	345	
LINE	326	USED FOR LINE(S)	377	
LINE	327	USED FOR LINE(S)	383	
LINE	328	USED FOR LINE(S)	382	
LINE	332	USED FOR LINE(S)	388	
LINE	333	USED FOR LINE(S)	387	
LINE	338	USED FOR LINE(S)	352	
LINE	343	USED FOR LINE(S)	354	
LINE	344	USED FOR LINE(S)	353	
LINE	348	USED FOR LINE(S)	359	
LINE	349	USED FOR LINE(S)	358	
LINE	351	USED FOR LINE(S)	365	
LINE	356	USED FOR LINE(S)	367	
LINE	357	USED FOR LINE(S)	366	
LINE	361	USED FOR LINE(S)	372	
LINE	362	USED FOR LINE(S)	371	
LINE	378	USED FOR LINE(S)	390	
LINE	379	USED FOR LINE(S)	396	
LINE	380	USED FOR LINE(S)	395	
LINE	384	USED FOR LINE(S)	401	
LINE	385	USED FOR LINE(S)	400	
LINE	391	USED FOR LINE(S)	403	
LINE	392	USED FOR LINE(S)	409	
LINE	393	USED FOR LINE(S)	408	
LINE	397	USED FOR LINE(S)	414	
LINE	398	USED FOR LINE(S)	413	
LINE	404	USED FOR LINE(S)	416	
LINE	405	USED FOR LINE(S)	422	
LINE	406	USED FOR LINE(S)	421	
LINE	410	USED FOR LINE(S)	427	
LINE	411	USED FOR LINE(S)	426	
AREA	56	USED FOR AREA(S)	161	
AREA	84	USED FOR AREA(S)	123	
AREA	95	USED FOR AREA(S)	160	
AREA	112	USED FOR AREA(S)	168	
AREA	142	USED FOR AREA(S)	172	
AREA	148	USED FOR AREA(S)	156	
AREA	154	USED FOR AREA(S)	163	
AREA	155	USED FOR AREA(S)	177	
AREA	159	USED FOR AREA(S)	181	
AREA	165	USED FOR AREA(S)	180	
AREA	166	USED FOR AREA(S)	188	
AREA	170	USED FOR AREA(S)	193	
AREA	171	USED FOR AREA(S)	176	
AREA	174	USED FOR AREA(S)	182	
AREA	175	USED FOR AREA(S)	199	
AREA	179	USED FOR AREA(S)	204	
AREA	184	USED FOR AREA(S)	203	
AREA	185	USED FOR AREA(S)	223	
AREA	191	USED FOR AREA(S)	212	
AREA	192	USED FOR AREA(S)	198	
AREA	195	USED FOR AREA(S)	205	
AREA	197	USED FOR AREA(S)	208	
AREA	202	USED FOR AREA(S)	219	

AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
 27, 28,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 7771
 MAXIMUM ELEMENT NUMBER = 6036
 Rock around drift
 (V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
 29, 30,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 8086
 MAXIMUM ELEMENT NUMBER = 6236

ELEMENT TYPE SET TO 1

DRAG AREAS
 31,
 ALONG LINES
 59,

ELEMENT TYPE SET TO 2

DRAG AREAS
 32,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 8251
 MAXIMUM ELEMENT NUMBER = 6336

GENERATE NODES AND ELEMENTS
 IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 8416

MAXIMUM ELEMENT NUMBER = 6436

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8836
MAXIMUM ELEMENT NUMBER = 6736

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9056
MAXIMUM ELEMENT NUMBER = 6886

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 9276
MAXIMUM ELEMENT NUMBER = 7036
Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 49.460 TIME= 19:42:37
Meshing of volume 75 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
7067 7068 7069 7070 7071 7072 7073 7074
7075 7076 7077 7078 7079 7080 7081

*** WARNING *** CP= 49.830 TIME= 19:42:37
Meshing of volume 76 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
7292 7293 7294 7295 7296 7297 7298 7299
7300 7301 7302 7303 7304 7305 7306

MAXIMUM NODE NUMBER = 9696
MAXIMUM ELEMENT NUMBER = 7336

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS

40,
ALONG LINES
59,

*** WARNING *** CP= 50.340 TIME= 19:42:37
Meshing of volume 78 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
7372 7373 7374 7375 7376 7422 7423 7424
7425 7426 7472 7473 7474 7475 7476

MAXIMUM NODE NUMBER = 9916
MAXIMUM ELEMENT NUMBER = 7486
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 50.630 TIME= 19:42:38
Meshing of area 314 produced 1 poorly shaped faces.

*** NOTE *** CP= 50.640 TIME= 19:42:38
Worst shape angle is 41 degrees.

*** WARNING *** CP= 50.950 TIME= 19:42:38
Meshing of volume 77 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
7592 7593 7594 7595 7596 7597 7598 7599
7600 7601 7602 7603 7604 7605 7606

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 10136
MAXIMUM ELEMENT NUMBER = 7636

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
Extrude rest of Tsw2
(V's 79,80,81,82)

DRAG AREAS

7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11046
MAXIMUM ELEMENT NUMBER = 8356
Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11396
MAXIMUM ELEMENT NUMBER = 8626
Extrude PTh
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11536
MAXIMUM ELEMENT NUMBER = 8716
Extrude TCw
(V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11676
MAXIMUM ELEMENT NUMBER = 8806
Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11816
MAXIMUM ELEMENT NUMBER = 8896
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11921
MAXIMUM ELEMENT NUMBER = 8956
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12201
MAXIMUM ELEMENT NUMBER = 9166
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 55.360 TIME= 19:42:43
Meshing of volume 95 produced 63 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

9192	9197	9202	9203	9207	9208	9209	9212
9213	9214	9215	9217	9218	9219	9220	9221
9222	9223	9224	9225	9226	9252	9257	9262
9263	9267	9268	9269	9272	9273	9274	9275
9277	9278	9279	9280	9281	9282	9283	9284
9285	9286	9312	9317	9322	9323	9327	9328
9329	9332	9333	9334	9335	9337	9338	9339
9340	9341	9342	9343	9344	9345	9346	

*** WARNING *** CP= 55.740 TIME= 19:42:43
Meshing of volume 96 produced 63 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

9372	9377	9382	9383	9387	9388	9389	9392
9393	9394	9395	9397	9398	9399	9400	9401
9402	9403	9404	9405	9406	9432	9437	9442
9443	9447	9448	9449	9452	9453	9454	9455
9457	9458	9459	9460	9461	9462	9463	9464
9465	9466	9492	9497	9502	9503	9507	9508
9509	9512	9513	9514	9515	9517	9518	9519
9520	9521	9522	9523	9524	9525	9526	

MAXIMUM NODE NUMBER = 12656
MAXIMUM ELEMENT NUMBER = 9526

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 10593 USED FOR NODES 11677
NODE 11678 USED FOR NODES 11817
NODE 11818 USED FOR NODES 11922
NODE 11701 USED FOR NODES 11829
NODE 11702 USED FOR NODES 11830
NODE 11703 USED FOR NODES 11831
NODE 11704 USED FOR NODES 11832
NODE 11837 USED FOR NODES 11954
NODE 11838 USED FOR NODES 11955
NODE 11839 USED FOR NODES 11956
NODE 11840 USED FOR NODES 11957
NODE 11923 USED FOR NODES 12202
NODE 11962 USED FOR NODES 12254
NODE 11963 USED FOR NODES 12255
NODE 11964 USED FOR NODES 12256
NODE 11965 USED FOR NODES 12257
NODE 9697 USED FOR NODES 9917
NODE 9698 USED FOR NODES 10592

NODE 9741	USED FOR NODES	9918
NODE 9742	USED FOR NODES	9919
NODE 9743	USED FOR NODES	9920
NODE 9744	USED FOR NODES	9921
NODE 9745	USED FOR NODES	10644
NODE 9746	USED FOR NODES	10645
NODE 9747	USED FOR NODES	10646
NODE 9748	USED FOR NODES	10647
NODE 11047	USED FOR NODES	11398
NODE 10137	USED FOR NODES	11048
NODE 10652	USED FOR NODES	11693
NODE 11087	USED FOR NODES	11421
NODE 11088	USED FOR NODES	11422
NODE 11089	USED FOR NODES	11423
NODE 11090	USED FOR NODES	11424
NODE 10189	USED FOR NODES	11095
NODE 10190	USED FOR NODES	11096
NODE 10191	USED FOR NODES	11097
NODE 10192	USED FOR NODES	11098
NODE 10653	USED FOR NODES	11694
NODE 10654	USED FOR NODES	11695
NODE 10655	USED FOR NODES	11696
NODE 9937	USED FOR NODES	10138
NODE 9938	USED FOR NODES	10197
NODE 9939	USED FOR NODES	10198
NODE 9940	USED FOR NODES	10199
NODE 9941	USED FOR NODES	10200
NODE 11397	USED FOR NODES	11538
NODE 11413	USED FOR NODES	11561
NODE 11414	USED FOR NODES	11562
NODE 11415	USED FOR NODES	11563
NODE 11416	USED FOR NODES	11564
NODE 9722	USED FOR NODES	9924
NODE 9844	USED FOR NODES	9936
NODE 9841	USED FOR NODES	9933
NODE 9842	USED FOR NODES	9934
NODE 9843	USED FOR NODES	9935
NODE 11821	USED FOR NODES	11940
NODE 11682	USED FOR NODES	11825
NODE 11717	USED FOR NODES	11845
NODE 11718	USED FOR NODES	11846
NODE 11719	USED FOR NODES	11847
NODE 11720	USED FOR NODES	11848
NODE 11853	USED FOR NODES	11970
NODE 11854	USED FOR NODES	11971
NODE 11855	USED FOR NODES	11972
NODE 11856	USED FOR NODES	11973
NODE 11931	USED FOR NODES	12230
NODE 10606	USED FOR NODES	11687
NODE 11978	USED FOR NODES	12270
NODE 11979	USED FOR NODES	12271
NODE 11980	USED FOR NODES	12272
NODE 11981	USED FOR NODES	12273
NODE 10668	USED FOR NODES	11709
NODE 9706	USED FOR NODES	10620
NODE 10669	USED FOR NODES	11710
NODE 9761	USED FOR NODES	10660
NODE 9762	USED FOR NODES	10661
NODE 9763	USED FOR NODES	10662
NODE 9764	USED FOR NODES	10663
NODE 10165	USED FOR NODES	11058
NODE 11069	USED FOR NODES	11402
NODE 11103	USED FOR NODES	11437
NODE 11104	USED FOR NODES	11438
NODE 11105	USED FOR NODES	11439
NODE 11106	USED FOR NODES	11440
NODE 10205	USED FOR NODES	11111
NODE 10206	USED FOR NODES	11112
NODE 10207	USED FOR NODES	11113
NODE 10208	USED FOR NODES	11114

NODE 10670	USED FOR NODES	11711		
NODE 10671	USED FOR NODES	11712		
NODE 9977	USED FOR NODES	10151		
NODE 9979	USED FOR NODES	10213		
NODE 9980	USED FOR NODES	10214		
NODE 9981	USED FOR NODES	10215		
NODE 9982	USED FOR NODES	10216		
NODE 11407	USED FOR NODES	11542		
NODE 11429	USED FOR NODES	11577		
NODE 11430	USED FOR NODES	11578		
NODE 11431	USED FOR NODES	11579		
NODE 11432	USED FOR NODES	11580		
NODE 9839	USED FOR NODES	9931		
NODE 9840	USED FOR NODES	9932		
NODE 9721	USED FOR NODES	9923		
NODE 9837	USED FOR NODES	9929		
NODE 9838	USED FOR NODES	9930		
NODE 8837	USED FOR NODES	9057	9711	9922
NODE 8893	USED FOR NODES	9058	9757	9925
NODE 8894	USED FOR NODES	9059	9758	9926
NODE 8895	USED FOR NODES	9060	9759	9927
NODE 8896	USED FOR NODES	9061	9760	9928
NODE 9091	USED FOR NODES	10043		
NODE 9092	USED FOR NODES	10044		
NODE 9093	USED FOR NODES	10045		
NODE 9094	USED FOR NODES	10046		
NODE 9082	USED FOR NODES	10010		
NODE 8936	USED FOR NODES	9796		
NODE 8935	USED FOR NODES	9795		
NODE 8934	USED FOR NODES	9794		
NODE 8839	USED FOR NODES	9712		
NODE 8933	USED FOR NODES	9793		
NODE 9095	USED FOR NODES	10039		
NODE 9096	USED FOR NODES	10040		
NODE 9097	USED FOR NODES	10041		
NODE 9098	USED FOR NODES	10042		
NODE 8840	USED FOR NODES	9713		
NODE 8937	USED FOR NODES	9797		
NODE 8938	USED FOR NODES	9798		
NODE 8939	USED FOR NODES	9799		
NODE 8940	USED FOR NODES	9800		
NODE 9083	USED FOR NODES	10009		
NODE 9099	USED FOR NODES	10035		
NODE 9100	USED FOR NODES	10036		
NODE 9101	USED FOR NODES	10037		
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NODE 8841	USED FOR NODES	9714		
NODE 8941	USED FOR NODES	9801		
NODE 8942	USED FOR NODES	9802		
NODE 8943	USED FOR NODES	9803		
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NODE 9084	USED FOR NODES	10008		
NODE 8982	USED FOR NODES	9074		
NODE 8981	USED FOR NODES	9073		
NODE 8862	USED FOR NODES	9064		
NODE 8983	USED FOR NODES	9075		
NODE 8984	USED FOR NODES	9076		
NODE 9103	USED FOR NODES	10031		
NODE 9104	USED FOR NODES	10032		
NODE 9105	USED FOR NODES	10033		
NODE 8842	USED FOR NODES	9715		
NODE 9106	USED FOR NODES	10034		
NODE 8945	USED FOR NODES	9805		
NODE 8946	USED FOR NODES	9806		
NODE 8947	USED FOR NODES	9807		
NODE 8948	USED FOR NODES	9808		
NODE 9085	USED FOR NODES	10007		
NODE 8980	USED FOR NODES	9072		
NODE 8861	USED FOR NODES	9063		
NODE 8977	USED FOR NODES	9069		

NODE 8979	USED FOR NODES	9071		
NODE 8978	USED FOR NODES	9070		
NODE 9107	USED FOR NODES	10027		
NODE 9108	USED FOR NODES	10028		
NODE 9109	USED FOR NODES	10029		
NODE 9110	USED FOR NODES	10030		
NODE 9086	USED FOR NODES	10006		
NODE 8843	USED FOR NODES	9716		
NODE 8951	USED FOR NODES	9811		
NODE 8952	USED FOR NODES	9812		
NODE 8949	USED FOR NODES	9809		
NODE 8950	USED FOR NODES	9810		
NODE 9978	USED FOR NODES	10152		
NODE 9983	USED FOR NODES	10217		
NODE 9985	USED FOR NODES	10219		
NODE 9986	USED FOR NODES	10220		
NODE 9984	USED FOR NODES	10218		
NODE 11722	USED FOR NODES	11850		
NODE 11436	USED FOR NODES	11584		
NODE 11107	USED FOR NODES	11441		
NODE 11723	USED FOR NODES	11851		
NODE 11857	USED FOR NODES	11974		
NODE 9765	USED FOR NODES	10664		
NODE 11724	USED FOR NODES	11852		
NODE 11108	USED FOR NODES	11442		
NODE 11433	USED FOR NODES	11581		
NODE 11721	USED FOR NODES	11849		
NODE 11435	USED FOR NODES	11583		
NODE 11408	USED FOR NODES	11543		
NODE 11983	USED FOR NODES	12275		
NODE 11109	USED FOR NODES	11443		
NODE 11858	USED FOR NODES	11975		
NODE 10674	USED FOR NODES	11715		
NODE 9707	USED FOR NODES	10621		
NODE 11683	USED FOR NODES	11826		
NODE 11982	USED FOR NODES	12274		
NODE 11984	USED FOR NODES	12276		
NODE 11434	USED FOR NODES	11582		
NODE 9768	USED FOR NODES	10667		
NODE 10211	USED FOR NODES	11117		
NODE 10166	USED FOR NODES	11059		
NODE 11932	USED FOR NODES	12231		
NODE 11110	USED FOR NODES	11444		
NODE 10209	USED FOR NODES	11115		
NODE 11985	USED FOR NODES	12277		
NODE 11859	USED FOR NODES	11976		
NODE 11860	USED FOR NODES	11977		
NODE 10672	USED FOR NODES	11713		
NODE 10675	USED FOR NODES	11716		
NODE 10210	USED FOR NODES	11116		
NODE 10212	USED FOR NODES	11118		
NODE 11822	USED FOR NODES	11941		
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NODE 9766	USED FOR NODES	10665		
NODE 9767	USED FOR NODES	10666		
NODE 10673	USED FOR NODES	11714		
NODE 11070	USED FOR NODES	11403		
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NODE 8136	USED FOR NODES	8253	8885	9065
NODE 8137	USED FOR NODES	8254	8886	9066
NODE 8138	USED FOR NODES	8255	8887	9067
NODE 8139	USED FOR NODES	8256	8888	9068
NODE 8281	USED FOR NODES	9183		
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NODE 8272	USED FOR NODES	9150		
NODE 8175	USED FOR NODES	8900		
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NODE 8285	USED FOR NODES	9179
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NODE 8287	USED FOR NODES	9181
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NODE 8273	USED FOR NODES	9149
NODE 8090	USED FOR NODES	8853
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NODE 8178	USED FOR NODES	8903
NODE 8176	USED FOR NODES	8901
NODE 8177	USED FOR NODES	8902
NODE 8953	USED FOR NODES	9813
NODE 8954	USED FOR NODES	9814
NODE 8844	USED FOR NODES	9717
NODE 8955	USED FOR NODES	9815
NODE 8956	USED FOR NODES	9816
NODE 9111	USED FOR NODES	10023
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NODE 9113	USED FOR NODES	10025
NODE 9114	USED FOR NODES	10026
NODE 9087	USED FOR NODES	10005
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NODE 8292	USED FOR NODES	9178
NODE 8274	USED FOR NODES	9148
NODE 8180	USED FOR NODES	8905
NODE 8181	USED FOR NODES	8906
NODE 8182	USED FOR NODES	8907
NODE 8183	USED FOR NODES	8908
NODE 8214	USED FOR NODES	8265
NODE 8212	USED FOR NODES	8263
NODE 8110	USED FOR NODES	8258
NODE 8213	USED FOR NODES	8264
NODE 8215	USED FOR NODES	8266
NODE 8293	USED FOR NODES	9171
NODE 8294	USED FOR NODES	9172
NODE 8295	USED FOR NODES	9173
NODE 8296	USED FOR NODES	9174
NODE 8275	USED FOR NODES	9147
NODE 8185	USED FOR NODES	8910
NODE 8092	USED FOR NODES	8855
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NODE 8184	USED FOR NODES	8909
NODE 8186	USED FOR NODES	8911
NODE 8104	USED FOR NODES	8257
NODE 8124	USED FOR NODES	8259
NODE 8125	USED FOR NODES	8260
NODE 8126	USED FOR NODES	8261
NODE 8127	USED FOR NODES	8262
NODE 9115	USED FOR NODES	10019
NODE 9116	USED FOR NODES	10020
NODE 9117	USED FOR NODES	10021
NODE 9118	USED FOR NODES	10022
NODE 9088	USED FOR NODES	10004
NODE 8959	USED FOR NODES	9819
NODE 8960	USED FOR NODES	9820
NODE 8845	USED FOR NODES	9718
NODE 8958	USED FOR NODES	9818
NODE 8957	USED FOR NODES	9817
NODE 8297	USED FOR NODES	9167
NODE 8298	USED FOR NODES	9168
NODE 8299	USED FOR NODES	9169
NODE 8300	USED FOR NODES	9170
NODE 8276	USED FOR NODES	9146
NODE 8191	USED FOR NODES	8916
NODE 8188	USED FOR NODES	8913
NODE 8190	USED FOR NODES	8915

NODE	8189	USED FOR NODES	8914
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NODE	8301	USED FOR NODES	9163
NODE	8302	USED FOR NODES	9164
NODE	8303	USED FOR NODES	9165
NODE	8304	USED FOR NODES	9166
NODE	8277	USED FOR NODES	9145
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NODE	8192	USED FOR NODES	8917
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NODE	9119	USED FOR NODES	10015
NODE	9120	USED FOR NODES	10016
NODE	9121	USED FOR NODES	10017
NODE	9122	USED FOR NODES	10018
NODE	9089	USED FOR NODES	10003
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NODE	8962	USED FOR NODES	9822
NODE	8964	USED FOR NODES	9824
NODE	8963	USED FOR NODES	9823
NODE	8961	USED FOR NODES	9821
NODE	8305	USED FOR NODES	9159
NODE	8306	USED FOR NODES	9160
NODE	8307	USED FOR NODES	9161
NODE	8308	USED FOR NODES	9162
NODE	8095	USED FOR NODES	8858
NODE	8196	USED FOR NODES	8921
NODE	8197	USED FOR NODES	8922
NODE	8198	USED FOR NODES	8923
NODE	8199	USED FOR NODES	8924
NODE	8278	USED FOR NODES	9144
NODE	7700	USED FOR NODES	8160
NODE	7701	USED FOR NODES	8161
NODE	7702	USED FOR NODES	8162
NODE	7703	USED FOR NODES	8163
NODE	7679	USED FOR NODES	8101
NODE	8309	USED FOR NODES	9155
NODE	8310	USED FOR NODES	9156
NODE	8311	USED FOR NODES	9157
NODE	8312	USED FOR NODES	9158
NODE	8096	USED FOR NODES	8859
NODE	8200	USED FOR NODES	8925
NODE	8201	USED FOR NODES	8926
NODE	8202	USED FOR NODES	8927
NODE	8203	USED FOR NODES	8928
NODE	8279	USED FOR NODES	9143
NODE	7704	USED FOR NODES	8164
NODE	7705	USED FOR NODES	8165
NODE	7706	USED FOR NODES	8166
NODE	7707	USED FOR NODES	8167
NODE	7680	USED FOR NODES	8102
NODE	9123	USED FOR NODES	10011
NODE	9124	USED FOR NODES	10012
NODE	9125	USED FOR NODES	10013
NODE	9126	USED FOR NODES	10014
NODE	9090	USED FOR NODES	10002
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NODE	8967	USED FOR NODES	9827
NODE	8847	USED FOR NODES	9720
NODE	8968	USED FOR NODES	9828
NODE	8966	USED FOR NODES	9826
NODE	8313	USED FOR NODES	9151
NODE	8314	USED FOR NODES	9152
NODE	8315	USED FOR NODES	9153

NODE 8316	USED FOR NODES	9154		
NODE 8280	USED FOR NODES	9142		
NODE 8205	USED FOR NODES	8930		
NODE 8207	USED FOR NODES	8932		
NODE 8204	USED FOR NODES	8929		
NODE 8206	USED FOR NODES	8931		
NODE 8097	USED FOR NODES	8860		
NODE 7708	USED FOR NODES	8168		
NODE 7709	USED FOR NODES	8169		
NODE 7681	USED FOR NODES	8103		
NODE 7710	USED FOR NODES	8170		
NODE 7711	USED FOR NODES	8171		
NODE 11404	USED FOR NODES	11541		
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NODE 11419	USED FOR NODES	11567		
NODE 11417	USED FOR NODES	11565		
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NODE 11092	USED FOR NODES	11426		
NODE 11093	USED FOR NODES	11427		
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NODE 11966	USED FOR NODES	12258		
NODE 11967	USED FOR NODES	12259		
NODE 11930	USED FOR NODES	12218		
NODE 11968	USED FOR NODES	12260		
NODE 11969	USED FOR NODES	12261		
NODE 11843	USED FOR NODES	11960		
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NODE 11820	USED FOR NODES	11933		
NODE 11841	USED FOR NODES	11958		
NODE 11842	USED FOR NODES	11959		
NODE 10194	USED FOR NODES	11100		
NODE 10195	USED FOR NODES	11101		
NODE 10196	USED FOR NODES	11102		
NODE 10153	USED FOR NODES	11057		
NODE 10193	USED FOR NODES	11099		
NODE 11681	USED FOR NODES	11823		
NODE 11706	USED FOR NODES	11834		
NODE 11707	USED FOR NODES	11835		
NODE 11708	USED FOR NODES	11836		
NODE 11705	USED FOR NODES	11833		
NODE 10605	USED FOR NODES	11684		
NODE 10659	USED FOR NODES	11700		
NODE 10656	USED FOR NODES	11697		
NODE 10658	USED FOR NODES	11699		
NODE 10657	USED FOR NODES	11698		
NODE 9325	USED FOR NODES	9749	10648	
NODE 9326	USED FOR NODES	9750	10649	
NODE 9327	USED FOR NODES	9751	10650	
NODE 9328	USED FOR NODES	9752	10651	
NODE 9278	USED FOR NODES	9705	10608	
NODE 9537	USED FOR NODES	9973	10201	
NODE 9538	USED FOR NODES	9974	10202	
NODE 9539	USED FOR NODES	9975	10203	
NODE 9504	USED FOR NODES	9972	10150	
NODE 9540	USED FOR NODES	9976	10204	
NODE 9509	USED FOR NODES	9992		
NODE 9621	USED FOR NODES	9994		
NODE 9622	USED FOR NODES	9995		
NODE 9623	USED FOR NODES	9996		
NODE 9624	USED FOR NODES	9997		
NODE 9508	USED FOR NODES	9993		
NODE 9617	USED FOR NODES	9998		
NODE 9618	USED FOR NODES	9999		
NODE 9619	USED FOR NODES	10000		
NODE 9620	USED FOR NODES	10001		
NODE 8681	USED FOR NODES	9078	9545	9988
NODE 8469	USED FOR NODES	8889	9333	9753
NODE 8471	USED FOR NODES	8891	9335	9755

NODE 8683	USED FOR NODES	9080	9547	9990
NODE 8682	USED FOR NODES	9079	9546	9989
NODE 8470	USED FOR NODES	8890	9334	9754
NODE 8472	USED FOR NODES	8892	9336	9756
NODE 8418	USED FOR NODES	8838	9277	9708
NODE 8637	USED FOR NODES	9077	9507	9987
NODE 8684	USED FOR NODES	9081	9548	9991
NODE 8649	USED FOR NODES	9132		
NODE 8764	USED FOR NODES	9137		
NODE 8761	USED FOR NODES	9134		
NODE 8762	USED FOR NODES	9135		
NODE 8763	USED FOR NODES	9136		
NODE 8757	USED FOR NODES	9138		
NODE 8648	USED FOR NODES	9133		
NODE 8760	USED FOR NODES	9141		
NODE 8758	USED FOR NODES	9139		
NODE 8759	USED FOR NODES	9140		
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NODE 7973	USED FOR NODES	8270	8679	9130
NODE 7971	USED FOR NODES	8268	8677	9128
NODE 7972	USED FOR NODES	8269	8678	9129
NODE 7819	USED FOR NODES	8134	8463	8883
NODE 7974	USED FOR NODES	8271	8680	9131
NODE 7773	USED FOR NODES	8088	8417	8848
NODE 7817	USED FOR NODES	8132	8461	8881
NODE 7818	USED FOR NODES	8133	8462	8882
NODE 7820	USED FOR NODES	8135	8464	8884
NODE 8047	USED FOR NODES	8323		
NODE 8048	USED FOR NODES	8324		
NODE 7948	USED FOR NODES	8322		
NODE 8050	USED FOR NODES	8326		
NODE 8049	USED FOR NODES	8325		
NODE 7969	USED FOR NODES	8320		
NODE 7689	USED FOR NODES	7806	8121	
NODE 7968	USED FOR NODES	8319		
NODE 7947	USED FOR NODES	8317		
NODE 7690	USED FOR NODES	7807	8122	
NODE 7688	USED FOR NODES	7805	8120	
NODE 7678	USED FOR NODES	7772	8098	
NODE 7691	USED FOR NODES	7808	8123	
NODE 7970	USED FOR NODES	8321		
NODE 7967	USED FOR NODES	8318		
NODE 8550	USED FOR NODES	8970		
NODE 9413	USED FOR NODES	9833		
NODE 9414	USED FOR NODES	9834		
NODE 8554	USED FOR NODES	8974		
NODE 9279	USED FOR NODES	9709		
NODE 9411	USED FOR NODES	9831		
NODE 8552	USED FOR NODES	8972		
NODE 9416	USED FOR NODES	9836		
NODE 9280	USED FOR NODES	9710		
NODE 8555	USED FOR NODES	8975		
NODE 8556	USED FOR NODES	8976		
NODE 9410	USED FOR NODES	9830		
NODE 8553	USED FOR NODES	8973		
NODE 7893	USED FOR NODES	8208		
NODE 7894	USED FOR NODES	8209		
NODE 7895	USED FOR NODES	8210		
NODE 9409	USED FOR NODES	9829		
NODE 8549	USED FOR NODES	8969		
NODE 9412	USED FOR NODES	9832		
NODE 8551	USED FOR NODES	8971		
NODE 7896	USED FOR NODES	8211		
NODE 9415	USED FOR NODES	9835		
NODE 8419	USED FOR NODES	8849		
NODE 8420	USED FOR NODES	8850		
NODE 7774	USED FOR NODES	8099		
NODE 7744	USED FOR NODES	7825		
NODE 7745	USED FOR NODES	7826		
NODE 7746	USED FOR NODES	7827		

NODE 7747	USED FOR NODES	7828
NODE 7733	USED FOR NODES	7793
NODE 7946	USED FOR NODES	8658
NODE 8046	USED FOR NODES	8720
NODE 8044	USED FOR NODES	8718
NODE 8045	USED FOR NODES	8719
NODE 8043	USED FOR NODES	8717
NODE 7776	USED FOR NODES	8434
NODE 7859	USED FOR NODES	8479
NODE 7857	USED FOR NODES	8477
NODE 7858	USED FOR NODES	8478
NODE 7860	USED FOR NODES	8480
NODE 8754	USED FOR NODES	9614
NODE 8755	USED FOR NODES	9615
NODE 8756	USED FOR NODES	9616
NODE 8646	USED FOR NODES	9518
NODE 8753	USED FOR NODES	9613
NODE 8515	USED FOR NODES	9375
NODE 8422	USED FOR NODES	9294
NODE 8514	USED FOR NODES	9374
NODE 8516	USED FOR NODES	9376
NODE 8513	USED FOR NODES	9373
NODE 7734	USED FOR NODES	7794
NODE 7749	USED FOR NODES	7830
NODE 7750	USED FOR NODES	7831
NODE 7748	USED FOR NODES	7829
NODE 7751	USED FOR NODES	7832
NODE 7777	USED FOR NODES	8435
NODE 7861	USED FOR NODES	8481
NODE 7862	USED FOR NODES	8482
NODE 7863	USED FOR NODES	8483
NODE 7864	USED FOR NODES	8484
NODE 8039	USED FOR NODES	8713
NODE 8040	USED FOR NODES	8714
NODE 8041	USED FOR NODES	8715
NODE 8042	USED FOR NODES	8716
NODE 7945	USED FOR NODES	8657
NODE 7735	USED FOR NODES	7795
NODE 7752	USED FOR NODES	7833
NODE 7753	USED FOR NODES	7834
NODE 7754	USED FOR NODES	7835
NODE 7755	USED FOR NODES	7836
NODE 7778	USED FOR NODES	8436
NODE 7944	USED FOR NODES	8656
NODE 7865	USED FOR NODES	8485
NODE 7866	USED FOR NODES	8486
NODE 7867	USED FOR NODES	8487
NODE 7868	USED FOR NODES	8488
NODE 8035	USED FOR NODES	8709
NODE 8036	USED FOR NODES	8710
NODE 8037	USED FOR NODES	8711
NODE 8038	USED FOR NODES	8712
NODE 8749	USED FOR NODES	9609
NODE 8750	USED FOR NODES	9610
NODE 8751	USED FOR NODES	9611
NODE 8752	USED FOR NODES	9612
NODE 8645	USED FOR NODES	9517
NODE 8517	USED FOR NODES	9377
NODE 8519	USED FOR NODES	9379
NODE 8518	USED FOR NODES	9378
NODE 8520	USED FOR NODES	9380
NODE 8423	USED FOR NODES	9295
NODE 7742	USED FOR NODES	7811
NODE 7732	USED FOR NODES	7787
NODE 7740	USED FOR NODES	7809
NODE 7743	USED FOR NODES	7812
NODE 7741	USED FOR NODES	7810
NODE 8032	USED FOR NODES	8706
NODE 8033	USED FOR NODES	8707
NODE 8031	USED FOR NODES	8705

NODE	7943	USED FOR NODES	8655
NODE	8034	USED FOR NODES	8708
NODE	7871	USED FOR NODES	8491
NODE	7870	USED FOR NODES	8490
NODE	7869	USED FOR NODES	8489
NODE	7779	USED FOR NODES	8437
NODE	7872	USED FOR NODES	8492
NODE	8027	USED FOR NODES	8701
NODE	7942	USED FOR NODES	8654
NODE	8030	USED FOR NODES	8704
NODE	8028	USED FOR NODES	8702
NODE	8029	USED FOR NODES	8703
NODE	7780	USED FOR NODES	8438
NODE	7876	USED FOR NODES	8496
NODE	7875	USED FOR NODES	8495
NODE	7874	USED FOR NODES	8494
NODE	7873	USED FOR NODES	8493
NODE	8644	USED FOR NODES	9516
NODE	8746	USED FOR NODES	9606
NODE	8745	USED FOR NODES	9605
NODE	8747	USED FOR NODES	9607
NODE	8748	USED FOR NODES	9608
NODE	8524	USED FOR NODES	9384
NODE	8521	USED FOR NODES	9381
NODE	8522	USED FOR NODES	9382
NODE	8523	USED FOR NODES	9383
NODE	8424	USED FOR NODES	9296
NODE	8024	USED FOR NODES	8698
NODE	8025	USED FOR NODES	8699
NODE	8026	USED FOR NODES	8700
NODE	8023	USED FOR NODES	8697
NODE	7941	USED FOR NODES	8653
NODE	7879	USED FOR NODES	8499
NODE	7781	USED FOR NODES	8439
NODE	7877	USED FOR NODES	8497
NODE	7878	USED FOR NODES	8498
NODE	7880	USED FOR NODES	8500
NODE	8020	USED FOR NODES	8694
NODE	7782	USED FOR NODES	8440
NODE	8021	USED FOR NODES	8695
NODE	8022	USED FOR NODES	8696
NODE	7940	USED FOR NODES	8652
NODE	8019	USED FOR NODES	8693
NODE	7881	USED FOR NODES	8501
NODE	7882	USED FOR NODES	8502
NODE	7883	USED FOR NODES	8503
NODE	7884	USED FOR NODES	8504
NODE	8741	USED FOR NODES	9601
NODE	8742	USED FOR NODES	9602
NODE	8743	USED FOR NODES	9603
NODE	8744	USED FOR NODES	9604
NODE	8525	USED FOR NODES	9385
NODE	8526	USED FOR NODES	9386
NODE	8527	USED FOR NODES	9387
NODE	8528	USED FOR NODES	9388
NODE	8643	USED FOR NODES	9515
NODE	8425	USED FOR NODES	9297
NODE	7939	USED FOR NODES	8651
NODE	8015	USED FOR NODES	8689
NODE	8017	USED FOR NODES	8691
NODE	8018	USED FOR NODES	8692
NODE	8016	USED FOR NODES	8690
NODE	7783	USED FOR NODES	8441
NODE	7887	USED FOR NODES	8507
NODE	7885	USED FOR NODES	8505
NODE	7888	USED FOR NODES	8508
NODE	7886	USED FOR NODES	8506
NODE	7938	USED FOR NODES	8650
NODE	8013	USED FOR NODES	8687
NODE	8011	USED FOR NODES	8685

NODE	8012	USED	FOR	NODES	8686
NODE	8014	USED	FOR	NODES	8688
NODE	7784	USED	FOR	NODES	8442
NODE	7889	USED	FOR	NODES	8509
NODE	7890	USED	FOR	NODES	8510
NODE	7892	USED	FOR	NODES	8512
NODE	7891	USED	FOR	NODES	8511
NODE	7775	USED	FOR	NODES	8431
NODE	7821	USED	FOR	NODES	8465
NODE	7822	USED	FOR	NODES	8466
NODE	7823	USED	FOR	NODES	8467
NODE	7824	USED	FOR	NODES	8468
NODE	11785	USED	FOR	NODES	11894
NODE	9342	USED	FOR	NODES	10900
NODE	11902	USED	FOR	NODES	12114
NODE	11904	USED	FOR	NODES	12116
NODE	11787	USED	FOR	NODES	11896
NODE	9343	USED	FOR	NODES	10901
NODE	10853	USED	FOR	NODES	11763
NODE	10446	USED	FOR	NODES	11295
NODE	11878	USED	FOR	NODES	12092
NODE	12122	USED	FOR	NODES	12509
NODE	10447	USED	FOR	NODES	11296
NODE	10910	USED	FOR	NODES	11780
NODE	10412	USED	FOR	NODES	11248
NODE	9552	USED	FOR	NODES	10455
NODE	9550	USED	FOR	NODES	10453
NODE	11788	USED	FOR	NODES	11897
NODE	10445	USED	FOR	NODES	11294
NODE	11903	USED	FOR	NODES	12115
NODE	11498	USED	FOR	NODES	11646
NODE	11758	USED	FOR	NODES	11882
NODE	12083	USED	FOR	NODES	12477
NODE	12125	USED	FOR	NODES	12512
NODE	11483	USED	FOR	NODES	11618
NODE	9344	USED	FOR	NODES	10902
NODE	9551	USED	FOR	NODES	10454
NODE	11905	USED	FOR	NODES	12117
NODE	11499	USED	FOR	NODES	11647
NODE	11286	USED	FOR	NODES	11506
NODE	9282	USED	FOR	NODES	10867
NODE	10444	USED	FOR	NODES	11293
NODE	11285	USED	FOR	NODES	11505
NODE	11497	USED	FOR	NODES	11645
NODE	9505	USED	FOR	NODES	10398
NODE	11259	USED	FOR	NODES	11478
NODE	11786	USED	FOR	NODES	11895
NODE	9341	USED	FOR	NODES	10899
NODE	10908	USED	FOR	NODES	11778
NODE	10909	USED	FOR	NODES	11779
NODE	11287	USED	FOR	NODES	11507
NODE	11288	USED	FOR	NODES	11508
NODE	10907	USED	FOR	NODES	11777
NODE	11500	USED	FOR	NODES	11648
NODE	12123	USED	FOR	NODES	12510
NODE	9549	USED	FOR	NODES	10452
NODE	12124	USED	FOR	NODES	12511
NODE	8737	USED	FOR	NODES	9597
NODE	8738	USED	FOR	NODES	9598
NODE	8739	USED	FOR	NODES	9599
NODE	8740	USED	FOR	NODES	9600
NODE	8642	USED	FOR	NODES	9514
NODE	8426	USED	FOR	NODES	9298
NODE	8532	USED	FOR	NODES	9392
NODE	8531	USED	FOR	NODES	9391
NODE	8529	USED	FOR	NODES	9389
NODE	8530	USED	FOR	NODES	9390
NODE	8427	USED	FOR	NODES	9299
NODE	8536	USED	FOR	NODES	9396
NODE	8733	USED	FOR	NODES	9593

NODE 8734	USED FOR NODES	9594
NODE 8735	USED FOR NODES	9595
NODE 8736	USED FOR NODES	9596
NODE 8641	USED FOR NODES	9513
NODE 8533	USED FOR NODES	9393
NODE 8534	USED FOR NODES	9394
NODE 8535	USED FOR NODES	9395
NODE 8428	USED FOR NODES	9300
NODE 8729	USED FOR NODES	9589
NODE 8730	USED FOR NODES	9590
NODE 8731	USED FOR NODES	9591
NODE 8732	USED FOR NODES	9592
NODE 8640	USED FOR NODES	9512
NODE 8537	USED FOR NODES	9397
NODE 8538	USED FOR NODES	9398
NODE 8539	USED FOR NODES	9399
NODE 8540	USED FOR NODES	9400
NODE 8726	USED FOR NODES	9586
NODE 8429	USED FOR NODES	9301
NODE 8725	USED FOR NODES	9585
NODE 8727	USED FOR NODES	9587
NODE 8728	USED FOR NODES	9588
NODE 8639	USED FOR NODES	9511
NODE 8541	USED FOR NODES	9401
NODE 8542	USED FOR NODES	9402
NODE 8543	USED FOR NODES	9403
NODE 8544	USED FOR NODES	9404
NODE 8721	USED FOR NODES	9581
NODE 8722	USED FOR NODES	9582
NODE 8723	USED FOR NODES	9583
NODE 8724	USED FOR NODES	9584
NODE 8638	USED FOR NODES	9510
NODE 8430	USED FOR NODES	9302
NODE 8545	USED FOR NODES	9405
NODE 8546	USED FOR NODES	9406
NODE 8547	USED FOR NODES	9407
NODE 8548	USED FOR NODES	9408
NODE 8473	USED FOR NODES	9337
NODE 8474	USED FOR NODES	9338
NODE 8475	USED FOR NODES	9339
NODE 8476	USED FOR NODES	9340
NODE 8421	USED FOR NODES	9291
NODE 11759	USED FOR NODES	11883
NODE 10854	USED FOR NODES	11764
NODE 10911	USED FOR NODES	11781
NODE 10912	USED FOR NODES	11782
NODE 10913	USED FOR NODES	11783
NODE 10914	USED FOR NODES	11784
NODE 11789	USED FOR NODES	11898
NODE 11790	USED FOR NODES	11899
NODE 11791	USED FOR NODES	11900
NODE 11792	USED FOR NODES	11901
NODE 9553	USED FOR NODES	10456
NODE 9554	USED FOR NODES	10457
NODE 9555	USED FOR NODES	10458
NODE 9556	USED FOR NODES	10459
NODE 9283	USED FOR NODES	10868
NODE 11879	USED FOR NODES	12093
NODE 10448	USED FOR NODES	11297
NODE 9345	USED FOR NODES	10903
NODE 9346	USED FOR NODES	10904
NODE 9347	USED FOR NODES	10905
NODE 9348	USED FOR NODES	10906
NODE 11906	USED FOR NODES	12118
NODE 11907	USED FOR NODES	12119
NODE 11908	USED FOR NODES	12120
NODE 11909	USED FOR NODES	12121
NODE 10449	USED FOR NODES	11298
NODE 10450	USED FOR NODES	11299
NODE 10451	USED FOR NODES	11300

NODE 12084 USED FOR NODES 12478
 NODE 12126 USED FOR NODES 12513
 NODE 9506 USED FOR NODES 10399
 NODE 12127 USED FOR NODES 12514
 NODE 12128 USED FOR NODES 12515
 NODE 12129 USED FOR NODES 12516
 NODE 11484 USED FOR NODES 11619
 NODE 10413 USED FOR NODES 11249
 NODE 11260 USED FOR NODES 11479
 NODE 11501 USED FOR NODES 11649
 NODE 11289 USED FOR NODES 11509
 NODE 11290 USED FOR NODES 11510
 NODE 11291 USED FOR NODES 11511
 NODE 11292 USED FOR NODES 11512
 NODE 11502 USED FOR NODES 11650
 NODE 11503 USED FOR NODES 11651
 NODE 11504 USED FOR NODES 11652
 NODE 11489 USED FOR NODES 11633
 NODE 11757 USED FOR NODES 11880
 NODE 10852 USED FOR NODES 11760
 NODE 10895 USED FOR NODES 11769
 NODE 10896 USED FOR NODES 11770
 NODE 10897 USED FOR NODES 11771
 NODE 10898 USED FOR NODES 11772
 NODE 11773 USED FOR NODES 11886
 NODE 11774 USED FOR NODES 11887
 NODE 11775 USED FOR NODES 11888
 NODE 11776 USED FOR NODES 11889
 NODE 9541 USED FOR NODES 10440
 NODE 9542 USED FOR NODES 10441
 NODE 9543 USED FOR NODES 10442
 NODE 9544 USED FOR NODES 10443
 NODE 9281 USED FOR NODES 10855
 NODE 11877 USED FOR NODES 12085
 NODE 9329 USED FOR NODES 10891
 NODE 9330 USED FOR NODES 10892
 NODE 9331 USED FOR NODES 10893
 NODE 9332 USED FOR NODES 10894
 NODE 11890 USED FOR NODES 12106
 NODE 11891 USED FOR NODES 12107
 NODE 11892 USED FOR NODES 12108
 NODE 11893 USED FOR NODES 12109
 NODE 11490 USED FOR NODES 11634
 NODE 11491 USED FOR NODES 11635
 NODE 11492 USED FOR NODES 11636
 NODE 11480 USED FOR NODES 11617
 NODE 9497 USED FOR NODES 10397
 NODE 12082 USED FOR NODES 12465
 NODE 12110 USED FOR NODES 12501
 NODE 12111 USED FOR NODES 12502
 NODE 12112 USED FOR NODES 12503
 NODE 12113 USED FOR NODES 12504
 NODE 10400 USED FOR NODES 11247
 NODE 11250 USED FOR NODES 11477
 NODE 11277 USED FOR NODES 11493
 NODE 11278 USED FOR NODES 11494
 NODE 11279 USED FOR NODES 11495
 NODE 11280 USED FOR NODES 11496
 NODE 10436 USED FOR NODES 11281
 NODE 10437 USED FOR NODES 11282
 NODE 10438 USED FOR NODES 11283
 NODE 10439 USED FOR NODES 11284

*** WARNING ***

CP= 99.140 TIME= 19:43:27

Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
 KEYPOINT 78 USED FOR KEYPOINT(S) 132

KEYPOINT	89	USED FOR KEYPOINT(S)	106	131
KEYPOINT	104	USED FOR KEYPOINT(S)	117	
KEYPOINT	111	USED FOR KEYPOINT(S)	130	137 157
KEYPOINT	114	USED FOR KEYPOINT(S)	144	
KEYPOINT	119	USED FOR KEYPOINT(S)	127	146 152
KEYPOINT	122	USED FOR KEYPOINT(S)	128	
KEYPOINT	124	USED FOR KEYPOINT(S)	133	
KEYPOINT	125	USED FOR KEYPOINT(S)	129	148 160
KEYPOINT	140	USED FOR KEYPOINT(S)	155	162 193
KEYPOINT	141	USED FOR KEYPOINT(S)	170	
KEYPOINT	145	USED FOR KEYPOINT(S)	150	176 186
KEYPOINT	149	USED FOR KEYPOINT(S)	153	177 196
KEYPOINT	164	USED FOR KEYPOINT(S)	192	210
KEYPOINT	165	USED FOR KEYPOINT(S)	212	
KEYPOINT	171	USED FOR KEYPOINT(S)	205	
KEYPOINT	173	USED FOR KEYPOINT(S)	184	202
KEYPOINT	179	USED FOR KEYPOINT(S)	187	
KEYPOINT	181	USED FOR KEYPOINT(S)	199	
KEYPOINT	190	USED FOR KEYPOINT(S)	207	
KEYPOINT	198	USED FOR KEYPOINT(S)	214	
KEYPOINT	204	USED FOR KEYPOINT(S)	215	
KEYPOINT	206	USED FOR KEYPOINT(S)	217	
KEYPOINT	208	USED FOR KEYPOINT(S)	231	
KEYPOINT	209	USED FOR KEYPOINT(S)	234	
KEYPOINT	211	USED FOR KEYPOINT(S)	236	
KEYPOINT	213	USED FOR KEYPOINT(S)	220	
KEYPOINT	216	USED FOR KEYPOINT(S)	221	
KEYPOINT	218	USED FOR KEYPOINT(S)	223	
KEYPOINT	219	USED FOR KEYPOINT(S)	226	
KEYPOINT	222	USED FOR KEYPOINT(S)	227	
KEYPOINT	224	USED FOR KEYPOINT(S)	229	
KEYPOINT	232	USED FOR KEYPOINT(S)	237	
KEYPOINT	233	USED FOR KEYPOINT(S)	240	
KEYPOINT	235	USED FOR KEYPOINT(S)	242	
KEYPOINT	238	USED FOR KEYPOINT(S)	243	
KEYPOINT	239	USED FOR KEYPOINT(S)	246	
KEYPOINT	241	USED FOR KEYPOINT(S)	248	
KEYPOINT	244	USED FOR KEYPOINT(S)	249	
KEYPOINT	245	USED FOR KEYPOINT(S)	252	
KEYPOINT	247	USED FOR KEYPOINT(S)	254	
LINE	154	USED FOR LINE(S)	297	
LINE	172	USED FOR LINE(S)	298	
LINE	174	USED FOR LINE(S)	240	292
LINE	233	USED FOR LINE(S)	257	
LINE	236	USED FOR LINE(S)	256	
LINE	239	USED FOR LINE(S)	290	
LINE	241	USED FOR LINE(S)	289	306 359
LINE	243	USED FOR LINE(S)	314	
LINE	244	USED FOR LINE(S)	313	
LINE	259	USED FOR LINE(S)	330	
LINE	262	USED FOR LINE(S)	271	325 345
LINE	263	USED FOR LINE(S)	272	
LINE	264	USED FOR LINE(S)	273	
LINE	267	USED FOR LINE(S)	302	
LINE	268	USED FOR LINE(S)	300	
LINE	269	USED FOR LINE(S)	283	335 366
LINE	270	USED FOR LINE(S)	346	
LINE	282	USED FOR LINE(S)	365	
LINE	305	USED FOR LINE(S)	358	
LINE	307	USED FOR LINE(S)	354	372 439
LINE	308	USED FOR LINE(S)	396	
LINE	309	USED FOR LINE(S)	395	
LINE	315	USED FOR LINE(S)	414	
LINE	319	USED FOR LINE(S)	340	413 431
LINE	320	USED FOR LINE(S)	341	
LINE	331	USED FOR LINE(S)	367	
LINE	336	USED FOR LINE(S)	353	421 441
LINE	339	USED FOR LINE(S)	432	
LINE	352	USED FOR LINE(S)	440	
LINE	371	USED FOR LINE(S)	438	

LINE	377 USED FOR LINE(S)	437	462
LINE	382 USED FOR LINE(S)	468	
LINE	383 USED FOR LINE(S)	467	
LINE	401 USED FOR LINE(S)	452	
LINE	403 USED FOR LINE(S)	451	
LINE	408 USED FOR LINE(S)	429	447
LINE	409 USED FOR LINE(S)	430	
LINE	416 USED FOR LINE(S)	442	
LINE	422 USED FOR LINE(S)	434	
LINE	427 USED FOR LINE(S)	445	
LINE	428 USED FOR LINE(S)	446	
LINE	435 USED FOR LINE(S)	457	
LINE	436 USED FOR LINE(S)	463	
LINE	444 USED FOR LINE(S)	471	
LINE	449 USED FOR LINE(S)	473	
LINE	450 USED FOR LINE(S)	472	
LINE	454 USED FOR LINE(S)	478	
LINE	455 USED FOR LINE(S)	477	
LINE	458 USED FOR LINE(S)	509	
LINE	459 USED FOR LINE(S)	515	
LINE	460 USED FOR LINE(S)	514	
LINE	464 USED FOR LINE(S)	520	
LINE	465 USED FOR LINE(S)	519	
LINE	470 USED FOR LINE(S)	484	
LINE	475 USED FOR LINE(S)	486	
LINE	476 USED FOR LINE(S)	485	
LINE	480 USED FOR LINE(S)	491	
LINE	481 USED FOR LINE(S)	490	
LINE	483 USED FOR LINE(S)	497	
LINE	488 USED FOR LINE(S)	499	
LINE	489 USED FOR LINE(S)	498	
LINE	493 USED FOR LINE(S)	504	
LINE	494 USED FOR LINE(S)	503	
LINE	510 USED FOR LINE(S)	522	
LINE	511 USED FOR LINE(S)	528	
LINE	512 USED FOR LINE(S)	527	
LINE	516 USED FOR LINE(S)	533	
LINE	517 USED FOR LINE(S)	532	
LINE	523 USED FOR LINE(S)	535	
LINE	524 USED FOR LINE(S)	541	
LINE	525 USED FOR LINE(S)	540	
LINE	529 USED FOR LINE(S)	546	
LINE	530 USED FOR LINE(S)	545	
LINE	536 USED FOR LINE(S)	548	
LINE	537 USED FOR LINE(S)	554	
LINE	538 USED FOR LINE(S)	553	
LINE	542 USED FOR LINE(S)	559	
LINE	543 USED FOR LINE(S)	558	
AREA	123 USED FOR AREA(S)	230	
AREA	163 USED FOR AREA(S)	182	
AREA	176 USED FOR AREA(S)	226	
AREA	177 USED FOR AREA(S)	264	
AREA	193 USED FOR AREA(S)	282	
AREA	198 USED FOR AREA(S)	208	
AREA	204 USED FOR AREA(S)	239	
AREA	205 USED FOR AREA(S)	291	
AREA	223 USED FOR AREA(S)	295	
AREA	248 USED FOR AREA(S)	294	
AREA	255 USED FOR AREA(S)	302	
AREA	273 USED FOR AREA(S)	307	
AREA	277 USED FOR AREA(S)	290	
AREA	288 USED FOR AREA(S)	296	
AREA	289 USED FOR AREA(S)	313	
AREA	293 USED FOR AREA(S)	318	
AREA	298 USED FOR AREA(S)	317	
AREA	299 USED FOR AREA(S)	337	
AREA	305 USED FOR AREA(S)	326	
AREA	306 USED FOR AREA(S)	312	
AREA	309 USED FOR AREA(S)	319	
AREA	311 USED FOR AREA(S)	322	

AREA 316 USED FOR AREA(S) 333
 AREA 324 USED FOR AREA(S) 340
 AREA 328 USED FOR AREA(S) 344
 AREA 331 USED FOR AREA(S) 369
 AREA 335 USED FOR AREA(S) 373
 AREA 342 USED FOR AREA(S) 349
 AREA 346 USED FOR AREA(S) 353
 AREA 351 USED FOR AREA(S) 358
 AREA 355 USED FOR AREA(S) 362
 AREA 367 USED FOR AREA(S) 378
 AREA 371 USED FOR AREA(S) 382
 AREA 376 USED FOR AREA(S) 387
 AREA 380 USED FOR AREA(S) 391
 AREA 385 USED FOR AREA(S) 396
 AREA 389 USED FOR AREA(S) 400

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
 IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 102.050 TIME= 19:43:30
 Nodes cannot be cleared from area 1 because volume 55 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.060 TIME= 19:43:30
 Nodes cannot be cleared from area 2 because volume 56 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.060 TIME= 19:43:30
 Nodes cannot be cleared from area 3 because volume 53 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.070 TIME= 19:43:30
 Nodes cannot be cleared from area 4 because volume 54 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.070 TIME= 19:43:30
 Nodes cannot be cleared from area 5 because volume 51 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.080 TIME= 19:43:30
 Nodes cannot be cleared from area 6 because volume 52 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.090 TIME= 19:43:30
 Nodes cannot be cleared from area 7 because volume 47 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.100 TIME= 19:43:30
 Nodes cannot be cleared from area 8 because volume 48 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.120 TIME= 19:43:30
 Nodes cannot be cleared from area 9 because volume 49 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.130 TIME= 19:43:30
 Nodes cannot be cleared from area 10 because volume 50 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.140 TIME= 19:43:30
 Nodes cannot be cleared from area 11 because volume 57 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.150 TIME= 19:43:30

Nodes cannot be cleared from area 12 because volume 58 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.150 TIME= 19:43:30
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.150 TIME= 19:43:30
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.160 TIME= 19:43:30
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.170 TIME= 19:43:30
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.170 TIME= 19:43:30
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.190 TIME= 19:43:30
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.200 TIME= 19:43:30
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.210 TIME= 19:43:30
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.220 TIME= 19:43:30
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.230 TIME= 19:43:30
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.240 TIME= 19:43:30
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.250 TIME= 19:43:30
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.250 TIME= 19:43:30
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.250 TIME= 19:43:30
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.260 TIME= 19:43:30
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.260 TIME= 19:43:30
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.260 TIME= 19:43:30
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.270 TIME= 19:43:30
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.280 TIME= 19:43:30
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.290 TIME= 19:43:30
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.300 TIME= 19:43:30
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.310 TIME= 19:43:30
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.320 TIME= 19:43:30
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.330 TIME= 19:43:30
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.340 TIME= 19:43:30
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.350 TIME= 19:43:30
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.360 TIME= 19:43:30
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only
elements are deleted.

*** NOTE *** CP= 102.370 TIME= 19:43:30
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only
elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT

KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 10806 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 10806 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

99 NODES (OF 10806 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 80
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=

```
IN RANGE      120 TO      120 STEP      1
  1 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      151 TO      151 STEP      1
  2 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      157 TO      157 STEP      1
  3 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      162 TO      162 STEP      1
  4 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      181 TO      181 STEP      1
  5 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      199 TO      199 STEP      1
  6 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      212 TO      212 STEP      1
  7 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      235 TO      235 STEP      1
  8 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
SELECT        ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
              KEYPOINTS) RELATED TO SELECTED AREA SET.
  363 NODES (OF 10806 DEFINED) SELECTED FROM
  8 SELECTED AREAS BY NSLA COMMAND.
GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL=      1 MATERIAL=      4 ESYS= 0
NUMBER OF ELEMENTS GENERATED=      320
ALL SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      1 TO      401 STEP      1
  364 AREAS (OF  364 DEFINED) SELECTED BY ASEL COMMAND.
ALL SELECT   FOR ITEM=NODE COMPONENT=
IN RANGE      1 TO     12656 STEP      1
 10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.
MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03
*** NOTE ***                                CP=   149.850   TIME= 19:44:18
Zero nodes were merged.
MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
***** ROUTINE COMPLETED ***** CP =      150.280
```

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 19:44:19 MAR 29, 1995 CP= 150.290
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 9636 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

994 NODES (OF 10806 DEFINED) SELECTED FROM
952 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c21x5a.sub

*** WARNING *** CP= 150.660 TIME= 19:44:19
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 952 NUMBER OF NODES= 994
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10478 STEP 1

9636 ELEMENTS (OF 9636 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1677.660

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:09:55 MAR 29, 1995 CP= 1677.660
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 10479 c21x5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 10479

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 10479
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 9637 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1678.400

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 1678.410 TIME= 20:09:56
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.64 AND 308.64
KABS= 0. TOLERANCE= 1.54319

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 10806 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12656 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.36 AND -991.36
KABS= 0. TOLERANCE= 4.95682

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 10806 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12656 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 1680.370 TIME= 20:09:59
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:09:59 MAR 29, 1995 CP= 1680.370
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 1681.960 TIME= 20:10:01
This load step will be a static (steady-state) step.

*** NOTE *** CP= 1681.980 TIME= 20:10:01
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER.1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPINGON
INITIAL NUMBER OF SUBSTEPS0
MAXIMUM NUMBER OF SUBSTEPS0
MINIMUM NUMBER OF SUBSTEPS1

MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS OFF
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .61084E+06

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.49070E-09	IXX = .1214E+12	IXX = .7872E+11
YC = -.264.43	IYY = .3102E+08	IYY = .3102E+08
ZC = .43011E-15	IZZ = .1214E+12	IZZ = .7872E+11
	IXY = -.2246	IXY = -.1454
	IYZ = .6187E-07	IYZ = -.7598E-08
	IZX = -.3456E-10	IZX = -.3456E-10

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
 2 610842.

Range of element maximum matrix coefficients in global coordinates
 Maximum= 171.296869 at element 9222.
 Minimum= 6.196026003E-08 at element 10479.

*** WARNING *** CP= 1721.730 TIME= 20:10:46
 Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8684	SOLID70	28.320	.003
18	1	MATRIX50	1.130	1.130

Time at end of element matrix formulation CP= 1721.73.
 HT FLOW CONVERGENCE VALUE= 124.6 CRITERION= .1246

Estimated number of active DOF= 10652.
 Maximum wavefront= 1211.

Time at end of matrix triangularization CP= 2074.36.
 Equation solver maximum pivot= 724.643235 at node 7390 TEMP.
 Equation solver minimum pivot= 0.975901741 at node 1968 TEMP.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
 HT FLOW CONVERGENCE VALUE= .1690 CRITERION= .2562E-02
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3748E-02
 HT FLOW CONVERGENCE VALUE= .8405E-05 CRITERION= .2562E-02 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8684	SOLID70	18.940	.002
18	1	MATRIX50	1.240	1.240

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8684	SOLID70	1.550	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 10652
R.M.S. WAVEFRONT SIZE = 443.9

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
14.781 MB WRITTEN ON ELEMENT MATRIX FILE: c21x5a.emat
7.828 MB WRITTEN ON ELEMENT SAVED DATA FILE: c21x5a.esav
27.656 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c21x5a.tri
.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c21x5a.dsub
6.813 MB WRITTEN ON RESULTS FILE: c21x5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 2537.170

1 Store drift side temperature

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:24:36 MAR 29, 1995 CP= 2537.220
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.13794

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 2546.240

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 10806 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12656 BY 1
REAL= 26.1379438 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.

Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:24:48 MAR 29, 1995 CP= 2546.870
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM. TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 2548.470 TIME= 20:24:50
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2549.040 TIME= 20:24:50
The step data was checked and warning messages were found.
Please review output or errors file (c21x5a.err) for these warning
messages.

*** NOTE *** CP= 2549.040 TIME= 20:24:50
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:24:51 MAR 29, 1995 CP= 2549.350
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

```

LOAD STEP NUMBER. . . . . 2
TIME AT END OF THE LOAD STEP. . . . . .20000E-05
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 0
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 0
  MINIMUM NUMBER OF SUBSTEPS . . . . . 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS . . . . . OFF
TERMINATE ANALYSIS IF NOT CONVERGED . . . . . YES (EXIT)
CONVERGENCE CONTROLS. . . . . USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . . NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . . ALL DATA WRITTEN
                                     FOR THE LAST SUBSTEP
    
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      HT FLOW CONVERGENCE VALUE= 293.1      CRITERION= .2931
      EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 151.0
      HT FLOW CONVERGENCE VALUE= 143.4      CRITERION= .2931
      EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -9.223
      HT FLOW CONVERGENCE VALUE= 7.130      CRITERION= .2931
      EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3532
      HT FLOW CONVERGENCE VALUE= .9076E-01 CRITERION= .2931    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
      Release drift wall temperatures
    
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SELECT      FOR ITEM=AREA COMPONENT=
IN RANGE    64 TO      64 STEP      1

      1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    86 TO      86 STEP      1

      2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    120 TO     120 STEP      1

      3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    151 TO     151 STEP      1

      4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    157 TO     157 STEP      1

      5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    162 TO     162 STEP      1

      6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    160 TO     160 STEP      1

      7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
    
```

IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 10806 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 12656 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 440

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE 80 SUBSTEPS AS A MAXIMUM
USE 4 SUBSTEPS AS A MINIMUM
USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

Begin Transient
Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2836.530 TIME= 20:29:43
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:29:43 MAR 29, 1995 CP= 2836.530
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 31.558
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 550.1 CRITERION= .2931
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9371E-04
HT FLOW CONVERGENCE VALUE= .9740E-04 CRITERION= .6233 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
*** TIME = .394472 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9694E-05 OSCILLATION LIMIT = .3824E-05
*** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6234
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1874E-03
HT FLOW CONVERGENCE VALUE= .1948E-03 CRITERION= .6233 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8

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*** TIME = .788942      TIME INC = .394470
*** RESPONSE EIGENVALUE = .9694E-05  OSCILLATION LIMIT = .3824E-05
*** AUTO TIME STEP: NEXT TIME INC = 1.1834      INCREASED (FACTOR = 3.0000)

  HT FLOW CONVERGENCE VALUE= 1100.      CRITERION= .6234
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5623E-03
  HT FLOW CONVERGENCE VALUE= .5844E-03 CRITERION= .6233      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
*** TIME = 1.97235      TIME INC = 1.18341
*** RESPONSE EIGENVALUE = .9693E-05  OSCILLATION LIMIT = .1147E-04
*** AUTO TIME STEP: NEXT TIME INC = 3.5502      INCREASED (FACTOR = 3.0000)

  HT FLOW CONVERGENCE VALUE= 1100.      CRITERION= .6234
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1687E-02
  HT FLOW CONVERGENCE VALUE= .1753E-02 CRITERION= .6232      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
*** TIME = 5.52258      TIME INC = 3.55023
*** RESPONSE EIGENVALUE = .9690E-05  OSCILLATION LIMIT = .3440E-04
*** AUTO TIME STEP: NEXT TIME INC = 7.8894      INCREASED (FACTOR = 2.2222)

  HT FLOW CONVERGENCE VALUE= 1100.      CRITERION= .6233
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3748E-02
  HT FLOW CONVERGENCE VALUE= .3895E-02 CRITERION= .6232      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
*** TIME = 13.4120      TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9683E-05  OSCILLATION LIMIT = .7640E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894      UNCHANGED

  HT FLOW CONVERGENCE VALUE= 1100.      CRITERION= .6233
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3747E-02
  HT FLOW CONVERGENCE VALUE= .3894E-02 CRITERION= .6231      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
*** TIME = 21.3014      TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9675E-05  OSCILLATION LIMIT = .7633E-04
*** AUTO TIME STEP: NEXT TIME INC = 5.1281      DECREASED (FACTOR = .6500)

  HT FLOW CONVERGENCE VALUE= 1100.      CRITERION= .6232
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2435E-02
  HT FLOW CONVERGENCE VALUE= .2531E-02 CRITERION= .6231      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
*** TIME = 26.4295      TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9669E-05  OSCILLATION LIMIT = .4958E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281      UNCHANGED

  HT FLOW CONVERGENCE VALUE= 1100.      CRITERION= .6232
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2435E-02
  HT FLOW CONVERGENCE VALUE= .2530E-02 CRITERION= .6231      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
*** TIME = 31.5576      TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9664E-05  OSCILLATION LIMIT = .4956E-04

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303      VERSION=HP 9000/7XX 20:50:33 MAR 29, 1995 CP= 4068.600
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6231

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 12.92
HT FLOW CONVERGENCE VALUE= 13.04 CRITERION= .4624
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2798
HT FLOW CONVERGENCE VALUE= .3799 CRITERION= .4618 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
*** TIME = 39478.6 TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .7907E-05 OSCILLATION LIMIT = .3119
*** AUTO STEP TIME: NEXT TIME INC = 39447. UNCHANGED

HT FLOW CONVERGENCE VALUE= 736.5 CRITERION= .4796
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.380
HT FLOW CONVERGENCE VALUE= 7.459 CRITERION= .4112
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1272
HT FLOW CONVERGENCE VALUE= .2027 CRITERION= .4128 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
*** TIME = 78925.6 TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4755E-05 OSCILLATION LIMIT = .1876
*** AUTO TIME STEP: NEXT TIME INC = .10515E+06 INCREASED (FACTOR = 2.6656)

HT FLOW CONVERGENCE VALUE= 622.6 CRITERION= .4420
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.590
HT FLOW CONVERGENCE VALUE= 13.05 CRITERION= .3780
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3045
HT FLOW CONVERGENCE VALUE= .5400 CRITERION= .3806
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1051E-01
HT FLOW CONVERGENCE VALUE= .1334E-01 CRITERION= .3804 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 21
*** TIME = 184074. TIME INC = 105149.
*** RESPONSE EIGENVALUE = .2463E-05 OSCILLATION LIMIT = .2590
*** AUTO STEP TIME: NEXT TIME INC = .10515E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 536.1 CRITERION= .4132
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.179
HT FLOW CONVERGENCE VALUE= 8.605 CRITERION= .3687
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1649
HT FLOW CONVERGENCE VALUE= .3221 CRITERION= .3705 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
*** TIME = 289223. TIME INC = 105149.
*** RESPONSE EIGENVALUE = .1228E-05 OSCILLATION LIMIT = .1292
*** AUTO TIME STEP: NEXT TIME INC = .31545E+06 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 502.4 CRITERION= .4009
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.952
HT FLOW CONVERGENCE VALUE= 17.99 CRITERION= .3598
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4928
HT FLOW CONVERGENCE VALUE= 1.012 CRITERION= .3622
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2943E-01
HT FLOW CONVERGENCE VALUE= .5396E-01 CRITERION= .3620 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 26
*** TIME = 604669. TIME INC = 315446.
*** RESPONSE EIGENVALUE = .7449E-06 OSCILLATION LIMIT = .2350
*** AUTO STEP TIME: NEXT TIME INC = .31545E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 457.4 CRITERION= .3811
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.156
HT FLOW CONVERGENCE VALUE= 11.42 CRITERION= .3549
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3056
HT FLOW CONVERGENCE VALUE= .6502 CRITERION= .3562
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1774E-01
HT FLOW CONVERGENCE VALUE= .3388E-01 CRITERION= .3561 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 29
*** TIME = 920116. TIME INC = 315446.
*** RESPONSE EIGENVALUE = .4673E-06 OSCILLATION LIMIT = .1474
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.5010)

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HT FLOW CONVERGENCE VALUE= 429.7 CRITERION= .3703
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.558
 HT FLOW CONVERGENCE VALUE= 19.66 CRITERION= .3518
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6640
 HT FLOW CONVERGENCE VALUE= 1.447 CRITERION= .3530
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5053E-01
 HT FLOW CONVERGENCE VALUE= .1116 CRITERION= .3528 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 32
 *** TIME = .170906E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3083E-06 OSCILLATION LIMIT = .2432
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 404.9 CRITERION= .3591
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.646
 HT FLOW CONVERGENCE VALUE= 12.53 CRITERION= .3526
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4241
 HT FLOW CONVERGENCE VALUE= .9395 CRITERION= .3532
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3022E-01
 HT FLOW CONVERGENCE VALUE= .6829E-01 CRITERION= .3531 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 35
 *** TIME = .249800E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1913E-06 OSCILLATION LIMIT = .1510
 *** AUTO TIME STEP: NEXT TIME INC = .65780E+06 DECREASED (FACTOR = .8338)

HT FLOW CONVERGENCE VALUE= 405.7 CRITERION= .3590
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.909
 HT FLOW CONVERGENCE VALUE= 8.158 CRITERION= .3552
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2614
 HT FLOW CONVERGENCE VALUE= .5815 CRITERION= .3556
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1703E-01
 HT FLOW CONVERGENCE VALUE= .3814E-01 CRITERION= .3555 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 38
 *** TIME = .315579E+07 TIME INC = 657796.
 *** RESPONSE EIGENVALUE = .1359E-06 OSCILLATION LIMIT = .8938E-01

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 21:38:12 MAR 29, 1995 CP= 6893.250
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 410.4 CRITERION= .3590
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.392
 HT FLOW CONVERGENCE VALUE= 6.790 CRITERION= .3559
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2156
 HT FLOW CONVERGENCE VALUE= .4802 CRITERION= .3562
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1376E-01
 HT FLOW CONVERGENCE VALUE= .3103E-01 CRITERION= .3562 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 41
 *** TIME = .381359E+07 TIME INC = 657796.
 *** RESPONSE EIGENVALUE = .1085E-06 OSCILLATION LIMIT = .7136E-01
 *** AUTO STEP TIME: NEXT TIME INC = .65780E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 414.3 CRITERION= .3604
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.029
 HT FLOW CONVERGENCE VALUE= 5.877 CRITERION= .3576
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1854
 HT FLOW CONVERGENCE VALUE= .4130 CRITERION= .3578
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1161E-01
 HT FLOW CONVERGENCE VALUE= .2628E-01 CRITERION= .3578 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 44
 *** TIME = .447138E+07 TIME INC = 657796.
 *** RESPONSE EIGENVALUE = .9076E-07 OSCILLATION LIMIT = .5970E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.1994)

HT FLOW CONVERGENCE VALUE= 416.9 CRITERION= .3601
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.117
 HT FLOW CONVERGENCE VALUE= 6.173 CRITERION= .3576
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2003
 HT FLOW CONVERGENCE VALUE= .4464 CRITERION= .3578
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1316E-01
 HT FLOW CONVERGENCE VALUE= .3040E-01 CRITERION= .3578 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 47
 *** TIME = .526032E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7770E-07 OSCILLATION LIMIT = .6130E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52561E+06 DECREASED (FACTOR = .6662)

HT FLOW CONVERGENCE VALUE= 418.9 CRITERION= .3611
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.283
 HT FLOW CONVERGENCE VALUE= 3.668 CRITERION= .3586
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1086
 HT FLOW CONVERGENCE VALUE= .2408 CRITERION= .3587 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 49
 *** TIME = .578594E+07 TIME INC = 525614.
 *** RESPONSE EIGENVALUE = .6871E-07 OSCILLATION LIMIT = .3612E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52561E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 419.8 CRITERION= .3605
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.202
 HT FLOW CONVERGENCE VALUE= 3.403 CRITERION= .3581
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1000
 HT FLOW CONVERGENCE VALUE= .2211 CRITERION= .3582 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 51
 *** TIME = .631155E+07 TIME INC = 525614.
 *** RESPONSE EIGENVALUE = .6309E-07 OSCILLATION LIMIT = .3316E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 22:04:17 MAR 29, 1995 CP= 8435.990
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 420.5 CRITERION= .3612
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.130
 HT FLOW CONVERGENCE VALUE= 3.170 CRITERION= .3590
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9311E-01
 HT FLOW CONVERGENCE VALUE= .2059 CRITERION= .3591 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 53
 *** TIME = .683717E+07 TIME INC = 525614.
 *** RESPONSE EIGENVALUE = .5819E-07 OSCILLATION LIMIT = .3058E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52561E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 421.0 CRITERION= .3605
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.068
 HT FLOW CONVERGENCE VALUE= 2.982 CRITERION= .3584
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8688E-01
 HT FLOW CONVERGENCE VALUE= .1915 CRITERION= .3585 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 55
 *** TIME = .736278E+07 TIME INC = 525614.
 *** RESPONSE EIGENVALUE = .5393E-07 OSCILLATION LIMIT = .2835E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5010)

HT FLOW CONVERGENCE VALUE= 421.5 CRITERION= .3612
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.502
 HT FLOW CONVERGENCE VALUE= 4.195 CRITERION= .3593
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1333
 HT FLOW CONVERGENCE VALUE= .2951 CRITERION= .3594 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 57
 *** TIME = .815172E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4922E-07 OSCILLATION LIMIT = .3884E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 422.2 CRITERION= .3605
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.399
 HT FLOW CONVERGENCE VALUE= 3.877 CRITERION= .3588
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1222
 HT FLOW CONVERGENCE VALUE= .2696 CRITERION= .3589 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 59
 *** TIME = .894066E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4438E-07 OSCILLATION LIMIT = .3501E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52665E+06 DECREASED (FACTOR = .6675)

HT FLOW CONVERGENCE VALUE= 423.0 CRITERION= .3612
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8835
 HT FLOW CONVERGENCE VALUE= 2.413 CRITERION= .3596
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6950E-01
 HT FLOW CONVERGENCE VALUE= .1524 CRITERION= .3596 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 61
 *** TIME = .946731E+07 TIME INC = 526652.
 *** RESPONSE EIGENVALUE = .4086E-07 OSCILLATION LIMIT = .2152E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 22:25:45 MAR 29, 1995 CP= 9699.120
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 423.5 CRITERION= .3606
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8474
 HT FLOW CONVERGENCE VALUE= 2.309 CRITERION= .3590
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6605E-01
 HT FLOW CONVERGENCE VALUE= .1445 CRITERION= .3591 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 63
 *** TIME = .999396E+07 TIME INC = 526652.
 *** RESPONSE EIGENVALUE = .3829E-07 OSCILLATION LIMIT = .2017E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52665E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 424.1 CRITERION= .3613
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8151
 HT FLOW CONVERGENCE VALUE= 2.213 CRITERION= .3599
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6332E-01
 HT FLOW CONVERGENCE VALUE= .1384 CRITERION= .3599 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 65
 *** TIME = .105206E+08 TIME INC = 526652.
 *** RESPONSE EIGENVALUE = .3592E-07 OSCILLATION LIMIT = .1892E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4980)

HT FLOW CONVERGENCE VALUE= 424.7 CRITERION= .3607
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.165
 HT FLOW CONVERGENCE VALUE= 3.173 CRITERION= .3594
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9850E-01
 HT FLOW CONVERGENCE VALUE= .2159 CRITERION= .3595 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 67
*** TIME = .113096E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3321E-07 OSCILLATION LIMIT = .2620E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 425.7 CRITERION= .3615
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.105
HT FLOW CONVERGENCE VALUE= 2.993 CRITERION= .3604
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9275E-01
HT FLOW CONVERGENCE VALUE= .2030 CRITERION= .3604 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 69
*** TIME = .120985E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3035E-07 OSCILLATION LIMIT = .2394E-01
*** AUTO TIME STEP: NEXT TIME INC = .52458E+06 DECREASED (FACTOR = .6649)

HT FLOW CONVERGENCE VALUE= 426.8 CRITERION= .3611
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7045
HT FLOW CONVERGENCE VALUE= 1.888 CRITERION= .3599
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5314E-01
HT FLOW CONVERGENCE VALUE= .1154 CRITERION= .3599 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 71
*** TIME = .126231E+08 TIME INC = 524576.
*** RESPONSE EIGENVALUE = .2829E-07 OSCILLATION LIMIT = .1484E-01
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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 22:47:06 MAR 29, 1995 CP= 10969.660
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 427.5 CRITERION= .3618
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6817
HT FLOW CONVERGENCE VALUE= 1.821 CRITERION= .3607
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5137E-01
HT FLOW CONVERGENCE VALUE= .1115 CRITERION= .3607 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 73
*** TIME = .131476E+08 TIME INC = 524576.
*** RESPONSE EIGENVALUE = .2671E-07 OSCILLATION LIMIT = .1401E-01
*** AUTO STEP TIME: NEXT TIME INC = .52458E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 428.2 CRITERION= .3613
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6609
HT FLOW CONVERGENCE VALUE= 1.764 CRITERION= .3602
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4944E-01
HT FLOW CONVERGENCE VALUE= .1070 CRITERION= .3602 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 75
*** TIME = .136722E+08 TIME INC = 524576.
*** RESPONSE EIGENVALUE = .2529E-07 OSCILLATION LIMIT = .1326E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5040)

HT FLOW CONVERGENCE VALUE= 429.0 CRITERION= .3620
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9565
HT FLOW CONVERGENCE VALUE= 2.560 CRITERION= .3611
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7849E-01
HT FLOW CONVERGENCE VALUE= .1707 CRITERION= .3611 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 77
*** TIME = .144612E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2355E-07 OSCILLATION LIMIT = .1858E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 430.1 CRITERION= .3616
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9161
HT FLOW CONVERGENCE VALUE= 2.446 CRITERION= .3607
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7447E-01
HT FLOW CONVERGENCE VALUE= .1615 CRITERION= .3607 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 79
*** TIME = .152501E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2178E-07 OSCILLATION LIMIT = .1718E-01
*** AUTO TIME STEP: NEXT TIME INC = .52873E+06 DECREASED (FACTOR = .6702)

HT FLOW CONVERGENCE VALUE= 431.3 CRITERION= .3624
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5935
HT FLOW CONVERGENCE VALUE= 1.566 CRITERION= .3615
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4374E-01
HT FLOW CONVERGENCE VALUE= .9426E-01 CRITERION= .3615 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 81
*** TIME = .157788E+08 TIME INC = 528728.
*** RESPONSE EIGENVALUE = .2050E-07 OSCILLATION LIMIT = .1084E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 23:08:37 MAR 29, 1995 CP= 12238.540
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 432.0 CRITERION= .3619
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5777
HT FLOW CONVERGENCE VALUE= 1.525 CRITERION= .3610
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4231E-01
HT FLOW CONVERGENCE VALUE= .9097E-01 CRITERION= .3610 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 83
*** TIME = .163076E+08 TIME INC = 528728.
*** RESPONSE EIGENVALUE = .1952E-07 OSCILLATION LIMIT = .1032E-01
*** AUTO STEP TIME: NEXT TIME INC = .52873E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 432.8 CRITERION= .3627
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5633
HT FLOW CONVERGENCE VALUE= 1.483 CRITERION= .3618
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4124E-01
HT FLOW CONVERGENCE VALUE= .8860E-01 CRITERION= .3618 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 85
*** TIME = .168363E+08 TIME INC = 528728.
*** RESPONSE EIGENVALUE = .1858E-07 OSCILLATION LIMIT = .9825E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4921)

HT FLOW CONVERGENCE VALUE= 433.5 CRITERION= .3621
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8140
HT FLOW CONVERGENCE VALUE= 2.155 CRITERION= .3614
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6494E-01
HT FLOW CONVERGENCE VALUE= .1399 CRITERION= .3614 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 87
*** TIME = .176252E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1747E-07 OSCILLATION LIMIT = .1379E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 434.6 CRITERION= .3629
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7859
HT FLOW CONVERGENCE VALUE= 2.073 CRITERION= .3623
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6246E-01
HT FLOW CONVERGENCE VALUE= .1344 CRITERION= .3623 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 89
 *** TIME = .184142E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1633E-07 OSCILLATION LIMIT = .1289E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52042E+06 DECREASED (FACTOR = .6597)

HT FLOW CONVERGENCE VALUE= 435.6 CRITERION= .3625
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5043
 HT FLOW CONVERGENCE VALUE= 1.319 CRITERION= .3617
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3604E-01
 HT FLOW CONVERGENCE VALUE= .7696E-01 CRITERION= .3618 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 91
 *** TIME = .189346E+08 TIME INC = 520425.
 *** RESPONSE EIGENVALUE = .1558E-07 OSCILLATION LIMIT = .8106E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 23:30:07 MAR 29, 1995 CP= 13507.420
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 436.3 CRITERION= .3633
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4932
 HT FLOW CONVERGENCE VALUE= 1.286 CRITERION= .3625
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3528E-01
 HT FLOW CONVERGENCE VALUE= .7530E-01 CRITERION= .3625 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 93
 *** TIME = .194550E+08 TIME INC = 520425.
 *** RESPONSE EIGENVALUE = .1493E-07 OSCILLATION LIMIT = .7771E-02
 *** AUTO STEP TIME: NEXT TIME INC = .52042E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 436.9 CRITERION= .3627
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4830
 HT FLOW CONVERGENCE VALUE= 1.261 CRITERION= .3620
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3435E-01
 HT FLOW CONVERGENCE VALUE= .7314E-01 CRITERION= .3620 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 95
 *** TIME = .199754E+08 TIME INC = 520425.
 *** RESPONSE EIGENVALUE = .1436E-07 OSCILLATION LIMIT = .7475E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5160)

HT FLOW CONVERGENCE VALUE= 437.6 CRITERION= .3634
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7128
 HT FLOW CONVERGENCE VALUE= 1.868 CRITERION= .3628
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5579E-01
 HT FLOW CONVERGENCE VALUE= .1194 CRITERION= .3628 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 97
 *** TIME = .207644E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1360E-07 OSCILLATION LIMIT = .1073E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 438.5 CRITERION= .3630
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6924
 HT FLOW CONVERGENCE VALUE= 1.830 CRITERION= .3624
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5679E-01
 HT FLOW CONVERGENCE VALUE= .1184 CRITERION= .3624 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 99
 *** TIME = .215533E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1288E-07 OSCILLATION LIMIT = .1016E-01
 *** AUTO TIME STEP: NEXT TIME INC = .53703E+06 DECREASED (FACTOR = .6807)

HT FLOW CONVERGENCE VALUE= 439.4 CRITERION= .3638

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4605
HT FLOW CONVERGENCE VALUE= 1.265 CRITERION= .3631
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3718E-01
HT FLOW CONVERGENCE VALUE= .7679E-01 CRITERION= .3631 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 101
*** TIME = .220904E+08 TIME INC = 537031.
*** RESPONSE EIGENVALUE = .1239E-07 OSCILLATION LIMIT = .6655E-02

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 23:51:42 MAR 29, 1995 CP= 14776.530
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 440.0 CRITERION= .3632
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4513
HT FLOW CONVERGENCE VALUE= 1.250 CRITERION= .3626
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3704E-01
HT FLOW CONVERGENCE VALUE= .7602E-01 CRITERION= .3626 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 103
*** TIME = .226274E+08 TIME INC = 537031.
*** RESPONSE EIGENVALUE = .1198E-07 OSCILLATION LIMIT = .6435E-02
*** AUTO STEP TIME: NEXT TIME INC = .53703E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 440.5 CRITERION= .3639
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4424
HT FLOW CONVERGENCE VALUE= 1.268 CRITERION= .3633
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3695E-01
HT FLOW CONVERGENCE VALUE= .7525E-01 CRITERION= .3633 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 105
*** TIME = .231644E+08 TIME INC = 537031.
*** RESPONSE EIGENVALUE = .1156E-07 OSCILLATION LIMIT = .6210E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4691)

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HT FLOW CONVERGENCE VALUE= 441.1 CRITERION= .3634
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6340
HT FLOW CONVERGENCE VALUE= 1.822 CRITERION= .3628
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6081E-01
HT FLOW CONVERGENCE VALUE= .1218 CRITERION= .3628 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 107
*** TIME = .239534E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1104E-07 OSCILLATION LIMIT = .8711E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 441.8 CRITERION= .3641
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6162
HT FLOW CONVERGENCE VALUE= 1.720 CRITERION= .3635
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5777E-01
HT FLOW CONVERGENCE VALUE= .1131 CRITERION= .3635 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 109
*** TIME = .247423E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1050E-07 OSCILLATION LIMIT = .8284E-02
*** AUTO TIME STEP: NEXT TIME INC = .50382E+06 DECREASED (FACTOR = .6386)

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HT FLOW CONVERGENCE VALUE= 442.5 CRITERION= .3636
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3852
HT FLOW CONVERGENCE VALUE= 1.053 CRITERION= .3630
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3027E-01
HT FLOW CONVERGENCE VALUE= .5832E-01 CRITERION= .3630 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 111

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*** TIME = .252461E+08 TIME INC = 503819.
 *** RESPONSE EIGENVALUE = .1020E-07 OSCILLATION LIMIT = .5137E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 00:13:07 MAR 30, 1995 CP= 16047.600
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 442.9 CRITERION= .3642
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3789
 HT FLOW CONVERGENCE VALUE= .9961 CRITERION= .3636
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2823E-01
 HT FLOW CONVERGENCE VALUE= .5573E-01 CRITERION= .3636 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 113
 *** TIME = .257499E+08 TIME INC = 503819.
 *** RESPONSE EIGENVALUE = .9894E-08 OSCILLATION LIMIT = .4985E-02
 *** AUTO STEP TIME: NEXT TIME INC = .50382E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 443.3 CRITERION= .3637
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3729
 HT FLOW CONVERGENCE VALUE= .9712 CRITERION= .3631
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2707E-01
 HT FLOW CONVERGENCE VALUE= .5409E-01 CRITERION= .3631 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 115
 *** TIME = .262537E+08 TIME INC = 503819.
 *** RESPONSE EIGENVALUE = .9640E-08 OSCILLATION LIMIT = .4857E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5659)

HT FLOW CONVERGENCE VALUE= 443.6 CRITERION= .3642
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5723
 HT FLOW CONVERGENCE VALUE= 1.456 CRITERION= .3637
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4552E-01
 HT FLOW CONVERGENCE VALUE= .9304E-01 CRITERION= .3637 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 117
 *** TIME = .270427E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .9207E-08 OSCILLATION LIMIT = .7263E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 444.2 CRITERION= .3637
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5600
 HT FLOW CONVERGENCE VALUE= 1.442 CRITERION= .3632
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4438E-01
 HT FLOW CONVERGENCE VALUE= .8875E-01 CRITERION= .3632 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 119
 *** TIME = .278316E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .8850E-08 OSCILLATION LIMIT = .6982E-02
 *** AUTO TIME STEP: NEXT TIME INC = .57024E+06 DECREASED (FACTOR = .7228)

HT FLOW CONVERGENCE VALUE= 444.7 CRITERION= .3644
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3979
 HT FLOW CONVERGENCE VALUE= 1.035 CRITERION= .3638
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2892E-01
 HT FLOW CONVERGENCE VALUE= .5798E-01 CRITERION= .3638 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 121
 *** TIME = .284019E+08 TIME INC = 570243.
 *** RESPONSE EIGENVALUE = .8612E-08 OSCILLATION LIMIT = .4911E-02
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
906.986869 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 17317.350 TIME= 00:34:43
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 00:34:43 MAR 30, 1995 CP= 17317.350
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
TIME AT END OF THE LOAD STEP.31558E+08
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 445.1 CRITERION= .3638
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3921
HT FLOW CONVERGENCE VALUE= 1.059 CRITERION= .3632
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2866E-01
HT FLOW CONVERGENCE VALUE= .5648E-01 CRITERION= .3632 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 123

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*** TIME = .289721E+08    TIME INC = 570243.
*** RESPONSE EIGENVALUE = .8411E-08    OSCILLATION LIMIT = .4797E-02
*** AUTO STEP TIME: NEXT TIME INC = .57024E+06    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 445.4    CRITERION= .3644
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3864
    HT FLOW CONVERGENCE VALUE= 1.065    CRITERION= .3639
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2854E-01
    HT FLOW CONVERGENCE VALUE= .5554E-01    CRITERION= .3639    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 125
*** TIME = .295424E+08    TIME INC = 570243.
*** RESPONSE EIGENVALUE = .8190E-08    OSCILLATION LIMIT = .4670E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06    INCREASED (FACTOR = 1.3835)

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    HT FLOW CONVERGENCE VALUE= 445.8    CRITERION= .3638
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5254
    HT FLOW CONVERGENCE VALUE= 1.421    CRITERION= .3633
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4235E-01
    HT FLOW CONVERGENCE VALUE= .8287E-01    CRITERION= .3633    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 127
*** TIME = .303313E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7911E-08    OSCILLATION LIMIT = .6242E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06    UNCHANGED

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    HT FLOW CONVERGENCE VALUE= 446.2    CRITERION= .3644
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5155
    HT FLOW CONVERGENCE VALUE= 1.343    CRITERION= .3640
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3940E-01
    HT FLOW CONVERGENCE VALUE= .7853E-01    CRITERION= .3639    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 129
*** TIME = .311202E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7635E-08    OSCILLATION LIMIT = .6023E-02
*** AUTO TIME STEP: NEXT TIME INC = .43739E+06    DECREASED (FACTOR = .5544)

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    HT FLOW CONVERGENCE VALUE= 446.6    CRITERION= .3639
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2821
    HT FLOW CONVERGENCE VALUE= .7045    CRITERION= .3634
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1755E-01
    HT FLOW CONVERGENCE VALUE= .3625E-01    CRITERION= .3634    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 131
*** TIME = .315576E+08    TIME INC = 437394.
*** RESPONSE EIGENVALUE = .7582E-08    OSCILLATION LIMIT = .3316E-02

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1
 ***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 00:56:12 MAR 30, 1995 CP= 18587.760
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

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    HT FLOW CONVERGENCE VALUE= 446.9    CRITERION= .3645
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2794
    HT FLOW CONVERGENCE VALUE= .6952    CRITERION= .3639
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1716E-01
    HT FLOW CONVERGENCE VALUE= .3560E-01    CRITERION= .3639    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 133
*** TIME = .319950E+08    TIME INC = 437394.
*** RESPONSE EIGENVALUE = .7429E-08    OSCILLATION LIMIT = .3249E-02
*** AUTO STEP TIME: NEXT TIME INC = .43739E+06    UNCHANGED

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HT FLOW CONVERGENCE VALUE= 447.1 CRITERION= .3639
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2770
 HT FLOW CONVERGENCE VALUE= .6936 CRITERION= .3634
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1698E-01
 HT FLOW CONVERGENCE VALUE= .3524E-01 CRITERION= .3634 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 135
 *** TIME = .324324E+08 TIME INC = 437394.
 *** RESPONSE EIGENVALUE = .7323E-08 OSCILLATION LIMIT = .3203E-02
 *** AUTO TIME STEP: NEXT TIME INC = .13122E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 447.3 CRITERION= .3644
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8161
 HT FLOW CONVERGENCE VALUE= 2.189 CRITERION= .3640
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7122E-01
 HT FLOW CONVERGENCE VALUE= .1458 CRITERION= .3640 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 137
 *** TIME = .337446E+08 TIME INC = .131218E+07
 *** RESPONSE EIGENVALUE = .6943E-08 OSCILLATION LIMIT = .9111E-02
 *** AUTO TIME STEP: NEXT TIME INC = .39365E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 447.9 CRITERION= .3634
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.336
 HT FLOW CONVERGENCE VALUE= 6.397 CRITERION= .3638
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2776
 HT FLOW CONVERGENCE VALUE= .6178 CRITERION= .3634
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1368E-01
 HT FLOW CONVERGENCE VALUE= .2829E-01 CRITERION= .3634 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 140
 *** TIME = .376812E+08 TIME INC = .393655E+07
 *** RESPONSE EIGENVALUE = .6377E-08 OSCILLATION LIMIT = .2510E-01
 *** AUTO STEP TIME: NEXT TIME INC = .39365E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 449.4 CRITERION= .3639
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.167
 HT FLOW CONVERGENCE VALUE= 5.930 CRITERION= .3641
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2434
 HT FLOW CONVERGENCE VALUE= .5244 CRITERION= .3637
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9819E-02
 HT FLOW CONVERGENCE VALUE= .2198E-01 CRITERION= .3637 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 143
 *** TIME = .416177E+08 TIME INC = .393655E+07
 *** RESPONSE EIGENVALUE = .5701E-08 OSCILLATION LIMIT = .2244E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.0041)

HT FLOW CONVERGENCE VALUE= 450.3 CRITERION= .3625
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.994
 HT FLOW CONVERGENCE VALUE= 10.24 CRITERION= .3631
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5140
 HT FLOW CONVERGENCE VALUE= 1.155 CRITERION= .3622
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1803E-01
 HT FLOW CONVERGENCE VALUE= .4296E-01 CRITERION= .3621 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 146
 *** TIME = .495071E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .4880E-08 OSCILLATION LIMIT = .3850E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 450.6 CRITERION= .3620
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.674
 HT FLOW CONVERGENCE VALUE= 9.725 CRITERION= .3623
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4771
 HT FLOW CONVERGENCE VALUE= 1.140 CRITERION= .3613
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2547E-01
 HT FLOW CONVERGENCE VALUE= .4247E-01 CRITERION= .3613 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 149

*** TIME = .573965E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .4172E-08 OSCILLATION LIMIT = .3291E-01
 *** AUTO TIME STEP: NEXT TIME INC = .57187E+07 DECREASED (FACTOR = .7249)

HT FLOW CONVERGENCE VALUE= 449.4 CRITERION= .3603
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.481
 HT FLOW CONVERGENCE VALUE= 7.855 CRITERION= .3601
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2629
 HT FLOW CONVERGENCE VALUE= .6653 CRITERION= .3594
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9508E-02
 HT FLOW CONVERGENCE VALUE= .1695E-01 CRITERION= .3594 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 152
 *** TIME = .631152E+08 TIME INC = .571873E+07
 *** RESPONSE EIGENVALUE = .3758E-08 OSCILLATION LIMIT = .2149E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 01:38:17 MAR 30, 1995 CP= 21079.640
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 447.7 CRITERION= .3596
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.342
 HT FLOW CONVERGENCE VALUE= 8.416 CRITERION= .3593
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2245
 HT FLOW CONVERGENCE VALUE= .6426 CRITERION= .3586
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1325E-01
 HT FLOW CONVERGENCE VALUE= .2758E-01 CRITERION= .3586 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 155
 *** TIME = .688340E+08 TIME INC = .571873E+07
 *** RESPONSE EIGENVALUE = .3413E-08 OSCILLATION LIMIT = .1952E-01
 *** AUTO STEP TIME: NEXT TIME INC = .57187E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 445.6 CRITERION= .3576
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.212
 HT FLOW CONVERGENCE VALUE= 8.487 CRITERION= .3573
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1985
 HT FLOW CONVERGENCE VALUE= .5508 CRITERION= .3566
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1033E-01
 HT FLOW CONVERGENCE VALUE= .1953E-01 CRITERION= .3566 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 158
 *** TIME = .745527E+08 TIME INC = .571873E+07
 *** RESPONSE EIGENVALUE = .3141E-08 OSCILLATION LIMIT = .1796E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3796)

HT FLOW CONVERGENCE VALUE= 443.3 CRITERION= .3564
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.861
 HT FLOW CONVERGENCE VALUE= 9.985 CRITERION= .3559
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2598
 HT FLOW CONVERGENCE VALUE= .7622 CRITERION= .3550
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1276E-01
 HT FLOW CONVERGENCE VALUE= .3169E-01 CRITERION= .3550 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 161
 *** TIME = .824421E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2838E-08 OSCILLATION LIMIT = .2239E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 439.7 CRITERION= .3537
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.661
 HT FLOW CONVERGENCE VALUE= 10.67 CRITERION= .3532
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2493
 HT FLOW CONVERGENCE VALUE= .7907 CRITERION= .3522

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1502E-01
 HT FLOW CONVERGENCE VALUE= .3814E-01 CRITERION= .3522 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 164
 *** TIME = .903315E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2572E-08 OSCILLATION LIMIT = .2029E-01
 *** AUTO TIME STEP: NEXT TIME INC = .43413E+07 DECREASED (FACTOR = .5503)

HT FLOW CONVERGENCE VALUE= 435.7 CRITERION= .3525
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.384
 HT FLOW CONVERGENCE VALUE= 6.379 CRITERION= .3520
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9744E-01
 HT FLOW CONVERGENCE VALUE= .3157 CRITERION= .3515 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 166
 *** TIME = .946728E+08 TIME INC = .434134E+07
 *** RESPONSE EIGENVALUE = .2432E-08 OSCILLATION LIMIT = .1056E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 02:05:55 MAR 30, 1995 CP= 22723.720
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 433.5 CRITERION= .3507
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.334
 HT FLOW CONVERGENCE VALUE= 6.474 CRITERION= .3502
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1151
 HT FLOW CONVERGENCE VALUE= .2983 CRITERION= .3497 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 168
 *** TIME = .990142E+08 TIME INC = .434134E+07
 *** RESPONSE EIGENVALUE = .2316E-08 OSCILLATION LIMIT = .1006E-01
 *** AUTO STEP TIME: NEXT TIME INC = .43413E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 431.2 CRITERION= .3500
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.285
 HT FLOW CONVERGENCE VALUE= 5.409 CRITERION= .3495
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9152E-01
 HT FLOW CONVERGENCE VALUE= .2267 CRITERION= .3491 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 170
 *** TIME = .103356E+09 TIME INC = .434134E+07
 *** RESPONSE EIGENVALUE = .2199E-08 OSCILLATION LIMIT = .9548E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8173)

HT FLOW CONVERGENCE VALUE= 428.9 CRITERION= .3478
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.228
 HT FLOW CONVERGENCE VALUE= 10.55 CRITERION= .3471
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1627
 HT FLOW CONVERGENCE VALUE= .6474 CRITERION= .3462
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1814E-01
 HT FLOW CONVERGENCE VALUE= .4839E-01 CRITERION= .3462 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 173
 *** TIME = .111245E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2020E-08 OSCILLATION LIMIT = .1594E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 424.6 CRITERION= .3461
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.096
 HT FLOW CONVERGENCE VALUE= 10.66 CRITERION= .3455
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1638
 HT FLOW CONVERGENCE VALUE= .5859 CRITERION= .3446
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1509E-01
 HT FLOW CONVERGENCE VALUE= .4253E-01 CRITERION= .3446 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 176
*** TIME = .119134E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1877E-08 OSCILLATION LIMIT = .1481E-01
*** AUTO TIME STEP: NEXT TIME INC = .70961E+07 DECREASED (FACTOR = .8995)
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HT FLOW CONVERGENCE VALUE= 420.5 CRITERION= .3433
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.781
HT FLOW CONVERGENCE VALUE= 9.407 CRITERION= .3428
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1275
HT FLOW CONVERGENCE VALUE= .4373 CRITERION= .3420
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9191E-02
HT FLOW CONVERGENCE VALUE= .3204E-01 CRITERION= .3420 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 179
*** TIME = .126230E+09 TIME INC = .709613E+07
*** RESPONSE EIGENVALUE = .1765E-08 OSCILLATION LIMIT = .1252E-01
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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 02:32:06 MAR 30, 1995 CP= 24273.220
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX
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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 416.8 CRITERION= .3420
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.692
HT FLOW CONVERGENCE VALUE= 9.660 CRITERION= .3414
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1250
HT FLOW CONVERGENCE VALUE= .4804 CRITERION= .3406
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1017E-01
HT FLOW CONVERGENCE VALUE= .3452E-01 CRITERION= .3407 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 182
*** TIME = .133327E+09 TIME INC = .709613E+07
*** RESPONSE EIGENVALUE = .1638E-08 OSCILLATION LIMIT = .1162E-01
*** AUTO STEP TIME: NEXT TIME INC = .70961E+07 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 413.1 CRITERION= .3395
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.610
HT FLOW CONVERGENCE VALUE= 9.556 CRITERION= .3389
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1268
HT FLOW CONVERGENCE VALUE= .5668 CRITERION= .3381
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1061E-01
HT FLOW CONVERGENCE VALUE= .4185E-01 CRITERION= .3381 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 185
*** TIME = .140423E+09 TIME INC = .709613E+07
*** RESPONSE EIGENVALUE = .1554E-08 OSCILLATION LIMIT = .1103E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1118)
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HT FLOW CONVERGENCE VALUE= 409.3 CRITERION= .3380
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.702
HT FLOW CONVERGENCE VALUE= 10.19 CRITERION= .3375
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1334
HT FLOW CONVERGENCE VALUE= .4915 CRITERION= .3366
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8939E-02
HT FLOW CONVERGENCE VALUE= .3293E-01 CRITERION= .3366 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 188
*** TIME = .148312E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1471E-08 OSCILLATION LIMIT = .1161E-01
*** AUTO TIME STEP: NEXT TIME INC = .47380E+07 DECREASED (FACTOR = .6005)
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HT FLOW CONVERGENCE VALUE= 405.4 CRITERION= .3357
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9788
HT FLOW CONVERGENCE VALUE= 6.384 CRITERION= .3353
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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7076E-01
 HT FLOW CONVERGENCE VALUE= .2849 CRITERION= .3348 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 190
 *** TIME = .153050E+09 TIME INC = .473797E+07
 *** RESPONSE EIGENVALUE = .1421E-08 OSCILLATION LIMIT = .6731E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47380E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 403.1 CRITERION= .3350
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9501
 HT FLOW CONVERGENCE VALUE= 8.134 CRITERION= .3348
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1358
 HT FLOW CONVERGENCE VALUE= .5694 CRITERION= .3342
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1133E-01
 HT FLOW CONVERGENCE VALUE= .5833E-01 CRITERION= .3342 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 193
 *** TIME = .157788E+09 TIME INC = .473797E+07
 *** RESPONSE EIGENVALUE = .1425E-08 OSCILLATION LIMIT = .6749E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 02:59:52 MAR 30, 1995 CP= 25915.410
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 401.0 CRITERION= .3332
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9231
 HT FLOW CONVERGENCE VALUE= 9.184 CRITERION= .3332
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1135
 HT FLOW CONVERGENCE VALUE= .5945 CRITERION= .3324
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9299E-02
 HT FLOW CONVERGENCE VALUE= .5215E-01 CRITERION= .3325 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 196
 *** TIME = .162526E+09 TIME INC = .473797E+07
 *** RESPONSE EIGENVALUE = .1455E-08 OSCILLATION LIMIT = .6896E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47380E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 399.0 CRITERION= .3327
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8971
 HT FLOW CONVERGENCE VALUE= 11.85 CRITERION= .3330
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1222
 HT FLOW CONVERGENCE VALUE= .8854 CRITERION= .3320
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1269E-01
 HT FLOW CONVERGENCE VALUE= .8679E-01 CRITERION= .3321 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 199
 *** TIME = .167264E+09 TIME INC = .473797E+07
 *** RESPONSE EIGENVALUE = .1458E-08 OSCILLATION LIMIT = .6906E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6651)

HT FLOW CONVERGENCE VALUE= 397.4 CRITERION= .3308
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.441
 HT FLOW CONVERGENCE VALUE= 17.00 CRITERION= .3316
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2104
 HT FLOW CONVERGENCE VALUE= 1.230 CRITERION= .3299
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2189E-01
 HT FLOW CONVERGENCE VALUE= .1238 CRITERION= .3299 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 202
 *** TIME = .175153E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1397E-08 OSCILLATION LIMIT = .1102E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 395.2 CRITERION= .3298

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.373
 HT FLOW CONVERGENCE VALUE= 15.04 CRITERION= .3303
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1970
 HT FLOW CONVERGENCE VALUE= 1.262 CRITERION= .3289
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3115E-01
 HT FLOW CONVERGENCE VALUE= .1705 CRITERION= .3290 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 205
 *** TIME = .183043E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1320E-08 OSCILLATION LIMIT = .1041E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63029E+07 DECREASED (FACTOR = .7989)

HT FLOW CONVERGENCE VALUE= 393.0 CRITERION= .3279
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.054
 HT FLOW CONVERGENCE VALUE= 14.91 CRITERION= .3285
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1672
 HT FLOW CONVERGENCE VALUE= 1.175 CRITERION= .3271
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1564E-01
 HT FLOW CONVERGENCE VALUE= .1169 CRITERION= .3272 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 208
 *** TIME = .189346E+09 TIME INC = .630286E+07
 *** RESPONSE EIGENVALUE = .1351E-08 OSCILLATION LIMIT = .8512E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 03:29:20 MAR 30, 1995 CP= 27654.690
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 391.2 CRITERION= .3272
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.020
 HT FLOW CONVERGENCE VALUE= 18.61 CRITERION= .3285
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1598
 HT FLOW CONVERGENCE VALUE= 1.603 CRITERION= .3265
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2305E-01
 HT FLOW CONVERGENCE VALUE= .1918 CRITERION= .3266 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 211
 *** TIME = .195648E+09 TIME INC = .630286E+07
 *** RESPONSE EIGENVALUE = .1409E-08 OSCILLATION LIMIT = .8878E-02
 *** AUTO STEP TIME: NEXT TIME INC = .63029E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 389.5 CRITERION= .3255
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9868
 HT FLOW CONVERGENCE VALUE= 14.30 CRITERION= .3263
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1510
 HT FLOW CONVERGENCE VALUE= .8986 CRITERION= .3249
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1770E-01
 HT FLOW CONVERGENCE VALUE= .8669E-01 CRITERION= .3249 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 214
 *** TIME = .201951E+09 TIME INC = .630286E+07
 *** RESPONSE EIGENVALUE = .1421E-08 OSCILLATION LIMIT = .8958E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2517)

HT FLOW CONVERGENCE VALUE= 388.1 CRITERION= .3248
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.189
 HT FLOW CONVERGENCE VALUE= 15.47 CRITERION= .3256
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1776
 HT FLOW CONVERGENCE VALUE= 1.324 CRITERION= .3240
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2208E-01
 HT FLOW CONVERGENCE VALUE= .1724 CRITERION= .3241 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 217
 *** TIME = .209841E+09 TIME INC = .788940E+07


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*** RESPONSE EIGENVALUE = .1262E-08 OSCILLATION LIMIT = .9955E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 386.3 CRITERION= .3228
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.143
HT FLOW CONVERGENCE VALUE= 18.01 CRITERION= .3243
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1920
HT FLOW CONVERGENCE VALUE= 1.112 CRITERION= .3221
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2131E-01
HT FLOW CONVERGENCE VALUE= .9245E-01 CRITERION= .3222 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 220
*** TIME = .217730E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1197E-08 OSCILLATION LIMIT = .9447E-02
*** AUTO TIME STEP: NEXT TIME INC = .31731E+07 DECREASED (FACTOR = .4022)

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HT FLOW CONVERGENCE VALUE= 384.5 CRITERION= .3226
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4470
HT FLOW CONVERGENCE VALUE= 4.719 CRITERION= .3227
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2694E-01
HT FLOW CONVERGENCE VALUE= .1572 CRITERION= .3223 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 222
*** TIME = .220903E+09 TIME INC = .317308E+07
*** RESPONSE EIGENVALUE = .1248E-08 OSCILLATION LIMIT = .3961E-02

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 03:57:17 MAR 30, 1995 CP= 29301.900
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 383.9 CRITERION= .3215
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4404
HT FLOW CONVERGENCE VALUE= 4.457 CRITERION= .3216
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3011E-01
HT FLOW CONVERGENCE VALUE= .1405 CRITERION= .3212 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 224
*** TIME = .224076E+09 TIME INC = .317308E+07
*** RESPONSE EIGENVALUE = .1129E-08 OSCILLATION LIMIT = .3582E-02
*** AUTO STEP TIME: NEXT TIME INC = .31731E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 383.3 CRITERION= .3217
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4341
HT FLOW CONVERGENCE VALUE= 4.326 CRITERION= .3217
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3626E-01
HT FLOW CONVERGENCE VALUE= .1607 CRITERION= .3214 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 226
*** TIME = .227249E+09 TIME INC = .317308E+07
*** RESPONSE EIGENVALUE = .1066E-08 OSCILLATION LIMIT = .3382E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.4864)

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HT FLOW CONVERGENCE VALUE= 382.7 CRITERION= .3202
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.063
HT FLOW CONVERGENCE VALUE= 14.32 CRITERION= .3211
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1484
HT FLOW CONVERGENCE VALUE= 1.257 CRITERION= .3194
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1572E-01
HT FLOW CONVERGENCE VALUE= .1367 CRITERION= .3196 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 229
*** TIME = .235139E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1054E-08 OSCILLATION LIMIT = .8314E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 381.0 CRITERION= .3196
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.051
 HT FLOW CONVERGENCE VALUE= 16.79 CRITERION= .3210
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1446
 HT FLOW CONVERGENCE VALUE= 1.559 CRITERION= .3187
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3079E-01
 HT FLOW CONVERGENCE VALUE= .2098 CRITERION= .3189 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 232
 *** TIME = .243028E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1161E-08 OSCILLATION LIMIT = .9156E-02
 *** AUTO TIME STEP: NEXT TIME INC = .47163E+07 DECREASED (FACTOR = .5978)

HT FLOW CONVERGENCE VALUE= 379.0 CRITERION= .3180
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6396
 HT FLOW CONVERGENCE VALUE= 10.62 CRITERION= .3189
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7881E-01
 HT FLOW CONVERGENCE VALUE= .7267 CRITERION= .3175
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9133E-02
 HT FLOW CONVERGENCE VALUE= .6804E-01 CRITERION= .3176 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 235
 *** TIME = .247745E+09 TIME INC = .471632E+07
 *** RESPONSE EIGENVALUE = .1303E-08 OSCILLATION LIMIT = .6145E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47163E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 377.8 CRITERION= .3179
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5933
 HT FLOW CONVERGENCE VALUE= 9.198 CRITERION= .3186
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5858E-01
 HT FLOW CONVERGENCE VALUE= .5677 CRITERION= .3173
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7279E-02
 HT FLOW CONVERGENCE VALUE= .4832E-01 CRITERION= .3174 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 6 COMPLETED. CUM ITER = 238
 *** TIME = .252461E+09 TIME INC = .471632E+07
 *** RESPONSE EIGENVALUE = .1364E-08 OSCILLATION LIMIT = .6434E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 04:29:21 MAR 30, 1995 CP= 31204.520
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 376.6 CRITERION= .3161
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5951
 HT FLOW CONVERGENCE VALUE= 8.905 CRITERION= .3167
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7128E-01
 HT FLOW CONVERGENCE VALUE= .5319 CRITERION= .3155
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5572E-02
 HT FLOW CONVERGENCE VALUE= .4113E-01 CRITERION= .3156 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 241
 *** TIME = .257177E+09 TIME INC = .471632E+07
 *** RESPONSE EIGENVALUE = .1629E-08 OSCILLATION LIMIT = .7685E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47163E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 375.1 CRITERION= .3154
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5763
 HT FLOW CONVERGENCE VALUE= 9.227 CRITERION= .3160
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7200E-01
 HT FLOW CONVERGENCE VALUE= .5486 CRITERION= .3148
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5541E-02
 HT FLOW CONVERGENCE VALUE= .3999E-01 CRITERION= .3148 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 244
 *** TIME = .261893E+09 TIME INC = .471632E+07
 *** RESPONSE EIGENVALUE = .1735E-08 OSCILLATION LIMIT = .8183E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6728)

HT FLOW CONVERGENCE VALUE= 373.3 CRITERION= .3130
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9116
 HT FLOW CONVERGENCE VALUE= 14.85 CRITERION= .3141
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1328
 HT FLOW CONVERGENCE VALUE= .8732 CRITERION= .3120
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9575E-02
 HT FLOW CONVERGENCE VALUE= .6805E-01 CRITERION= .3121 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 247
 *** TIME = .269783E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1627E-08 OSCILLATION LIMIT = .1283E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 370.6 CRITERION= .3114
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8734
 HT FLOW CONVERGENCE VALUE= 11.22 CRITERION= .3119
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9423E-01
 HT FLOW CONVERGENCE VALUE= .6966 CRITERION= .3105
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8787E-02
 HT FLOW CONVERGENCE VALUE= .5454E-01 CRITERION= .3106 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 250
 *** TIME = .277672E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1545E-08 OSCILLATION LIMIT = .1219E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63462E+07 DECREASED (FACTOR = .8044)

HT FLOW CONVERGENCE VALUE= 368.0 CRITERION= .3089
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6823
 HT FLOW CONVERGENCE VALUE= 9.597 CRITERION= .3095
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6751E-01
 HT FLOW CONVERGENCE VALUE= .4977 CRITERION= .3082
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4585E-02
 HT FLOW CONVERGENCE VALUE= .3065E-01 CRITERION= .3083 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 253
 *** TIME = .284018E+09 TIME INC = .634617E+07
 *** RESPONSE EIGENVALUE = .1462E-08 OSCILLATION LIMIT = .9279E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09
 TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 769.132473 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 32946.980 TIME= 04:58:52
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 04:58:52 MAR 30, 1995 CP= 32946.980
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
TIME AT END OF THE LOAD STEP.31558E+09
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 366.0 CRITERION= .3081
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6663
HT FLOW CONVERGENCE VALUE= 7.837 CRITERION= .3085
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5086E-01
HT FLOW CONVERGENCE VALUE= .3259 CRITERION= .3076
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3146E-02
HT FLOW CONVERGENCE VALUE= .1668E-01 CRITERION= .3076 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 256
*** TIME = .290365E+09 TIME INC = .634617E+07
*** RESPONSE EIGENVALUE = .1208E-08 OSCILLATION LIMIT = .7664E-02
*** AUTO STEP TIME: NEXT TIME INC = .63462E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 364.4 CRITERION= .3063
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6499
HT FLOW CONVERGENCE VALUE= 6.779 CRITERION= .3067
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6034E-01
HT FLOW CONVERGENCE VALUE= .2940 CRITERION= .3058 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 258
*** TIME = .296711E+09 TIME INC = .634617E+07
*** RESPONSE EIGENVALUE = .1082E-08 OSCILLATION LIMIT = .6868E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2432)

HT FLOW CONVERGENCE VALUE= 362.8 CRITERION= .3054
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7861
HT FLOW CONVERGENCE VALUE= 10.48 CRITERION= .3062
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8372E-01
HT FLOW CONVERGENCE VALUE= .6288 CRITERION= .3048
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6075E-02
HT FLOW CONVERGENCE VALUE= .4389E-01 CRITERION= .3049 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 261
*** TIME = .304600E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1079E-08 OSCILLATION LIMIT = .8515E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 361.1 CRITERION= .3034
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7634
HT FLOW CONVERGENCE VALUE= 9.339 CRITERION= .3041
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6735E-01
HT FLOW CONVERGENCE VALUE= .3775 CRITERION= .3027
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3485E-02
HT FLOW CONVERGENCE VALUE= .1962E-01 CRITERION= .3028 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 264
*** TIME = .312490E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1042E-08 OSCILLATION LIMIT = .8224E-02
*** AUTO TIME STEP: NEXT TIME INC = .30865E+07 DECREASED (FACTOR = .3912)

HT FLOW CONVERGENCE VALUE= 359.3 CRITERION= .3030
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2927
HT FLOW CONVERGENCE VALUE= 3.005 CRITERION= .3032
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1298E-01
HT FLOW CONVERGENCE VALUE= .6470E-01 CRITERION= .3028 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 266
*** TIME = .315576E+09 TIME INC = .308646E+07
*** RESPONSE EIGENVALUE = .1060E-08 OSCILLATION LIMIT = .3270E-02
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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 05:25:08 MAR 30, 1995 CP= 34501.840
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX
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HT FLOW CONVERGENCE VALUE= 358.6 CRITERION= .3018
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3698
HT FLOW CONVERGENCE VALUE= 4.003 CRITERION= .3020
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1672E-01
HT FLOW CONVERGENCE VALUE= .1227 CRITERION= .3015 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 268
*** TIME = .319521E+09 TIME INC = .394470E+07
*** RESPONSE EIGENVALUE = .9172E-09 OSCILLATION LIMIT = .3618E-02
*** AUTO STEP TIME: NEXT TIME INC = .39447E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 357.7 CRITERION= .3018
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3651
HT FLOW CONVERGENCE VALUE= 4.567 CRITERION= .3020
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2213E-01
HT FLOW CONVERGENCE VALUE= .1338 CRITERION= .3015 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 270
*** TIME = .323465E+09 TIME INC = .394470E+07
*** RESPONSE EIGENVALUE = .8873E-09 OSCILLATION LIMIT = .3500E-02
*** AUTO TIME STEP: NEXT TIME INC = .11834E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 356.8 CRITERION= .2998
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.070
HT FLOW CONVERGENCE VALUE= 10.77 CRITERION= .3003
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1361
HT FLOW CONVERGENCE VALUE= .6976 CRITERION= .2989
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1130E-01
HT FLOW CONVERGENCE VALUE= .6257E-01 CRITERION= .2990 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 273
*** TIME = .335300E+09 TIME INC = .118341E+08
*** RESPONSE EIGENVALUE = .8624E-09 OSCILLATION LIMIT = .1021E-01
*** AUTO STEP TIME: NEXT TIME INC = .11834E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 354.4 CRITERION= .2985
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.035
HT FLOW CONVERGENCE VALUE= 12.90 CRITERION= .2988
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1343
HT FLOW CONVERGENCE VALUE= .8818 CRITERION= .2976
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1467E-01
HT FLOW CONVERGENCE VALUE= .8391E-01 CRITERION= .2977 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 276
*** TIME = .347134E+09 TIME INC = .118341E+08
*** RESPONSE EIGENVALUE = .8519E-09 OSCILLATION LIMIT = .1008E-01
*** AUTO TIME STEP: NEXT TIME INC = .35502E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 351.8 CRITERION= .2937
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.922
HT FLOW CONVERGENCE VALUE= 29.39 CRITERION= .2950
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3537
HT FLOW CONVERGENCE VALUE= 2.895 CRITERION= .2909
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5957E-01
HT FLOW CONVERGENCE VALUE= .4640 CRITERION= .2915
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1144E-01
HT FLOW CONVERGENCE VALUE= .6927E-01 CRITERION= .2914 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 280
*** TIME = .382636E+09 TIME INC = .355023E+08
*** RESPONSE EIGENVALUE = .7667E-09 OSCILLATION LIMIT = .2722E-01
*** AUTO STEP TIME: NEXT TIME INC = .35502E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 344.2 CRITERION= .2886
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.662
HT FLOW CONVERGENCE VALUE= 32.85 CRITERION= .2917
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4040
HT FLOW CONVERGENCE VALUE= 2.639 CRITERION= .2867
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4283E-01
HT FLOW CONVERGENCE VALUE= .3314 CRITERION= .2871
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6872E-02
HT FLOW CONVERGENCE VALUE= .4099E-01 CRITERION= .2871 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 284
*** TIME = .418138E+09 TIME INC = .355023E+08
*** RESPONSE EIGENVALUE = .7754E-09 OSCILLATION LIMIT = .2753E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 339.2 CRITERION= .2789
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.572
HT FLOW CONVERGENCE VALUE= 45.41 CRITERION= .2825
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7173
HT FLOW CONVERGENCE VALUE= 7.793 CRITERION= .2749
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2318
HT FLOW CONVERGENCE VALUE= 1.367 CRITERION= .2761
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3813E-01
HT FLOW CONVERGENCE VALUE= .2553 CRITERION= .2761 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 288
*** TIME = .497032E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7556E-09 OSCILLATION LIMIT = .5961E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 329.8 CRITERION= .2691
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.435
HT FLOW CONVERGENCE VALUE= 76.30 CRITERION= .2826
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.782
HT FLOW CONVERGENCE VALUE= 8.587 CRITERION= .2698
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2855

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HT FLOW CONVERGENCE VALUE= 2.334 CRITERION= .2715
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6611E-01
HT FLOW CONVERGENCE VALUE= .5121 CRITERION= .2714
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1697E-01
HT FLOW CONVERGENCE VALUE= .1516 CRITERION= .2716 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 293
*** TIME = .575926E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1158E-08 OSCILLATION LIMIT = .9136E-01
*** AUTO TIME STEP: NEXT TIME INC = .55226E+08 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 337.6 CRITERION= .2658
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.090
HT FLOW CONVERGENCE VALUE= 21.89 CRITERION= .2676
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5935
HT FLOW CONVERGENCE VALUE= 3.775 CRITERION= .2701
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8472E-01
HT FLOW CONVERGENCE VALUE= .6958 CRITERION= .2708
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1457E-01
HT FLOW CONVERGENCE VALUE= .1665 CRITERION= .2708 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 9 COMPLETED. CUM ITER = 297
*** TIME = .631152E+09 TIME INC = .552258E+08
*** RESPONSE EIGENVALUE = .1083E-08 OSCILLATION LIMIT = .5980E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 06:24:24 MAR 30, 1995 CP= 38003.410
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 353.0 CRITERION= .2676
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.610
HT FLOW CONVERGENCE VALUE= 54.87 CRITERION= .2772
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5334
HT FLOW CONVERGENCE VALUE= 1.405 CRITERION= .2662
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4559E-01
HT FLOW CONVERGENCE VALUE= .1631 CRITERION= .2663 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 300
*** TIME = .686378E+09 TIME INC = .552258E+08
*** RESPONSE EIGENVALUE = .7387E-09 OSCILLATION LIMIT = .4080E-01
*** AUTO STEP TIME: NEXT TIME INC = .55226E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 349.4 CRITERION= .2621
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.278
HT FLOW CONVERGENCE VALUE= 41.14 CRITERION= .2681
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4116
HT FLOW CONVERGENCE VALUE= 5.527 CRITERION= .2626
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8890E-01
HT FLOW CONVERGENCE VALUE= 1.415 CRITERION= .2643
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2265E-01
HT FLOW CONVERGENCE VALUE= .3755 CRITERION= .2640
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5676E-02
HT FLOW CONVERGENCE VALUE= .1104 CRITERION= .2641 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 305
*** TIME = .741604E+09 TIME INC = .552258E+08
*** RESPONSE EIGENVALUE = .8678E-09 OSCILLATION LIMIT = .4793E-01
*** AUTO STEP TIME: NEXT TIME INC = .55226E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 355.3 CRITERION= .2609
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.150
HT FLOW CONVERGENCE VALUE= 40.88 CRITERION= .2707
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3675
HT FLOW CONVERGENCE VALUE= 1.479 CRITERION= .2634

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3382E-01
 HT FLOW CONVERGENCE VALUE= .2375 CRITERION= .2636 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 308
 *** TIME = .796829E+09 TIME INC = .552258E+08
 *** RESPONSE EIGENVALUE = .7472E-09 OSCILLATION LIMIT = .4126E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 363.3 CRITERION= .2580
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.967
 HT FLOW CONVERGENCE VALUE= 37.68 CRITERION= .2552
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5072
 HT FLOW CONVERGENCE VALUE= 2.158 CRITERION= .2542
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5825E-01
 HT FLOW CONVERGENCE VALUE= .3682 CRITERION= .2544
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8801E-02
 HT FLOW CONVERGENCE VALUE= .1009 CRITERION= .2545 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 312
 *** TIME = .875723E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6898E-09 OSCILLATION LIMIT = .5442E-01
 *** AUTO TIME STEP: NEXT TIME INC = .71005E+08 DECREASED (FACTOR = .9000)

HT FLOW CONVERGENCE VALUE= 353.4 CRITERION= .2505
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.403
 HT FLOW CONVERGENCE VALUE= 54.57 CRITERION= .2529
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5928
 HT FLOW CONVERGENCE VALUE= 9.022 CRITERION= .2427
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1232
 HT FLOW CONVERGENCE VALUE= 3.117 CRITERION= .2456
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4867E-01
 HT FLOW CONVERGENCE VALUE= 1.016 CRITERION= .2451
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2074E-01
 HT FLOW CONVERGENCE VALUE= .3704 CRITERION= .2454
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8645E-02
 HT FLOW CONVERGENCE VALUE= .1345 CRITERION= .2454 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 318
 *** TIME = .946728E+09 TIME INC = .710046E+08
 *** RESPONSE EIGENVALUE = .9575E-09 OSCILLATION LIMIT = .6799E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 07:03:27 MAR 30, 1995 CP= 40314.820
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 338.9 CRITERION= .2408
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.266
 HT FLOW CONVERGENCE VALUE= 38.36 CRITERION= .2492
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4293
 HT FLOW CONVERGENCE VALUE= 9.242 CRITERION= .2368
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1153
 HT FLOW CONVERGENCE VALUE= 3.184 CRITERION= .2399
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3954E-01
 HT FLOW CONVERGENCE VALUE= 1.028 CRITERION= .2388
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1318E-01
 HT FLOW CONVERGENCE VALUE= .3397 CRITERION= .2392
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4396E-02
 HT FLOW CONVERGENCE VALUE= .1115 CRITERION= .2391 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 324
 *** TIME = .101773E+10 TIME INC = .710046E+08
 *** RESPONSE EIGENVALUE = .7492E-09 OSCILLATION LIMIT = .5319E-01
 *** AUTO STEP TIME: NEXT TIME INC = .71005E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 334.0 CRITERION= .2356
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.877
 HT FLOW CONVERGENCE VALUE= 30.34 CRITERION= .2384
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4168
 HT FLOW CONVERGENCE VALUE= 5.885 CRITERION= .2301
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1123
 HT FLOW CONVERGENCE VALUE= 1.844 CRITERION= .2315
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3277E-01
 HT FLOW CONVERGENCE VALUE= .5114 CRITERION= .2311
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9377E-02
 HT FLOW CONVERGENCE VALUE= .1527 CRITERION= .2312 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 329
 *** TIME = .108874E+10 TIME INC = .710046E+08
 *** RESPONSE EIGENVALUE = .6011E-09 OSCILLATION LIMIT = .4268E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 321.5 CRITERION= .2263
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.825
 HT FLOW CONVERGENCE VALUE= 27.91 CRITERION= .2145
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3865
 HT FLOW CONVERGENCE VALUE= .6088E-01 CRITERION= .2207 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 331
 *** TIME = .116763E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7939E-09 OSCILLATION LIMIT = .6264E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+08 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 305.6 CRITERION= .2185
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.774
 HT FLOW CONVERGENCE VALUE= 41.85 CRITERION= .2276
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3307
 HT FLOW CONVERGENCE VALUE= 2.687 CRITERION= .2141
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2638E-01
 HT FLOW CONVERGENCE VALUE= .5072 CRITERION= .2148
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6679E-02
 HT FLOW CONVERGENCE VALUE= .9669E-01 CRITERION= .2147 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 335
 *** TIME = .121497E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .8948E-09 OSCILLATION LIMIT = .4235E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 294.5 CRITERION= .2114
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.558
 HT FLOW CONVERGENCE VALUE= 19.13 CRITERION= .2059
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3658
 HT FLOW CONVERGENCE VALUE= 3.933 CRITERION= .2090
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8650E-01
 HT FLOW CONVERGENCE VALUE= 1.594 CRITERION= .2095
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3658E-01
 HT FLOW CONVERGENCE VALUE= .6860 CRITERION= .2096
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1610E-01
 HT FLOW CONVERGENCE VALUE= .3026 CRITERION= .2097
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7194E-02
 HT FLOW CONVERGENCE VALUE= .1350 CRITERION= .2097 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 341
 *** TIME = .126230E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .1198E-08 OSCILLATION LIMIT = .5672E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 07:45:40 MAR 30, 1995 CP= 42811.130
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 289.5 CRITERION= .2083
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.637
 HT FLOW CONVERGENCE VALUE= 10.11 CRITERION= .2059
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2957
 HT FLOW CONVERGENCE VALUE= .2237E-01 CRITERION= .2076 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 343
 *** TIME = .130964E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .7517E-09 OSCILLATION LIMIT = .3558E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 287.5 CRITERION= .2051
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.597
 HT FLOW CONVERGENCE VALUE= 25.03 CRITERION= .2101
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1952
 HT FLOW CONVERGENCE VALUE= 3.984 CRITERION= .2015
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3188E-01
 HT FLOW CONVERGENCE VALUE= .7667 CRITERION= .2028
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6428E-02
 HT FLOW CONVERGENCE VALUE= .1647 CRITERION= .2026 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 347
 *** TIME = .135698E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .5411E-09 OSCILLATION LIMIT = .2561E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 280.3 CRITERION= .2011
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.370
 HT FLOW CONVERGENCE VALUE= 22.56 CRITERION= .2050
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2331
 HT FLOW CONVERGENCE VALUE= .4297E-01 CRITERION= .1987 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 349
 *** TIME = .140431E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .6173E-09 OSCILLATION LIMIT = .2922E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 273.3 CRITERION= .1948
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.032
 HT FLOW CONVERGENCE VALUE= 16.16 CRITERION= .1884
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2840
 HT FLOW CONVERGENCE VALUE= .3094E-01 CRITERION= .1914 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 351
 *** TIME = .148321E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6657E-09 OSCILLATION LIMIT = .5252E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+08 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 263.4 CRITERION= .1899
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.346
 HT FLOW CONVERGENCE VALUE= 21.63 CRITERION= .1885
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1708
 HT FLOW CONVERGENCE VALUE= 3.772 CRITERION= .1867
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3602E-01
 HT FLOW CONVERGENCE VALUE= .6434 CRITERION= .1878
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6993E-02
 HT FLOW CONVERGENCE VALUE= .1171 CRITERION= .1878 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 355
 *** TIME = .153054E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .7436E-09 OSCILLATION LIMIT = .3520E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.2 CRITERION= .1852
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.352
 HT FLOW CONVERGENCE VALUE= 15.06 CRITERION= .1862
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1495
 HT FLOW CONVERGENCE VALUE= 2.482 CRITERION= .1826
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3299E-01

HT FLOW CONVERGENCE VALUE= .5914 CRITERION= .1832
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7802E-02
 HT FLOW CONVERGENCE VALUE= .1370 CRITERION= .1831 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 26 SUBSTEP 6 COMPLETED. CUM ITER = 359
 *** TIME = .157788E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .8252E-09 OSCILLATION LIMIT = .3906E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 08:21:16 MAR 30, 1995 CP= 44899.020
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 251.0 CRITERION= .1821
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.208
 HT FLOW CONVERGENCE VALUE= 19.03 CRITERION= .1823
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2381
 HT FLOW CONVERGENCE VALUE= .1555E-01 CRITERION= .1806 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 361
 *** TIME = .162522E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .7784E-09 OSCILLATION LIMIT = .3685E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 246.6 CRITERION= .1785
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.214
 HT FLOW CONVERGENCE VALUE= .3469 CRITERION= .1771
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1468E-01
 HT FLOW CONVERGENCE VALUE= .1447E-01 CRITERION= .1773 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 363
 *** TIME = .167255E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .5770E-09 OSCILLATION LIMIT = .2731E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 242.9 CRITERION= .1752
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.801
 HT FLOW CONVERGENCE VALUE= 23.42 CRITERION= .1724
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4330
 HT FLOW CONVERGENCE VALUE= 3.235 CRITERION= .1720
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5896E-01
 HT FLOW CONVERGENCE VALUE= .7857 CRITERION= .1727
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1409E-01
 HT FLOW CONVERGENCE VALUE= .1835 CRITERION= .1725
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3311E-02
 HT FLOW CONVERGENCE VALUE= .4331E-01 CRITERION= .1726 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 368
 *** TIME = .175145E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6221E-09 OSCILLATION LIMIT = .4908E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 235.2 CRITERION= .1695
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.859
 HT FLOW CONVERGENCE VALUE= 26.11 CRITERION= .1756
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2603
 HT FLOW CONVERGENCE VALUE= .1623 CRITERION= .1673 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 370
 *** TIME = .183034E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6150E-09 OSCILLATION LIMIT = .4852E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+08 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 228.8 CRITERION= .1657
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.257

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HT FLOW CONVERGENCE VALUE= 12.26    CRITERION= .1614
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1845
HT FLOW CONVERGENCE VALUE= .1577E-01 CRITERION= .1637    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 372
*** TIME = .189346E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .6675E-09 OSCILLATION LIMIT = .4213E-01

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***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 08:47:32 MAR 30, 1995 CP= 46463.240
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 222.7    CRITERION= .1615
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.361
HT FLOW CONVERGENCE VALUE= 18.92    CRITERION= .1647
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1780
HT FLOW CONVERGENCE VALUE= 2.243    CRITERION= .1596
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2228E-01
HT FLOW CONVERGENCE VALUE= .2969    CRITERION= .1601
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2930E-02
HT FLOW CONVERGENCE VALUE= .3873E-01 CRITERION= .1601    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 376
*** TIME = .195657E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .5239E-09 OSCILLATION LIMIT = .3307E-01
*** AUTO STEP TIME: NEXT TIME INC = .63115E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 218.6    CRITERION= .1590
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.158
HT FLOW CONVERGENCE VALUE= 3.124    CRITERION= .1583
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2891E-01
HT FLOW CONVERGENCE VALUE= .1163E-01 CRITERION= .1576    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 378
*** TIME = .201969E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .4988E-09 OSCILLATION LIMIT = .3148E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2500)

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HT FLOW CONVERGENCE VALUE= 214.5    CRITERION= .1550
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.374
HT FLOW CONVERGENCE VALUE= 18.92    CRITERION= .1505
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3165
HT FLOW CONVERGENCE VALUE= 3.152    CRITERION= .1524
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4258E-01
HT FLOW CONVERGENCE VALUE= .8476    CRITERION= .1532
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1009E-01
HT FLOW CONVERGENCE VALUE= .1734    CRITERION= .1532
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2553E-02
HT FLOW CONVERGENCE VALUE= .4403E-01 CRITERION= .1533    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 383
*** TIME = .209858E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6207E-09 OSCILLATION LIMIT = .4897E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 209.5    CRITERION= .1517
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.492
HT FLOW CONVERGENCE VALUE= 13.02    CRITERION= .1526
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1815
HT FLOW CONVERGENCE VALUE= .2331    CRITERION= .1498
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5440E-02
HT FLOW CONVERGENCE VALUE= .7792E-01 CRITERION= .1498    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 386

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*** TIME = .217747E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6223E-09 OSCILLATION LIMIT = .4910E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+08 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 203.9 CRITERION= .1485
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5466
 HT FLOW CONVERGENCE VALUE= 9.205 CRITERION= .1486
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8402E-01
 HT FLOW CONVERGENCE VALUE= .8158 CRITERION= .1471
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7766E-02
 HT FLOW CONVERGENCE VALUE= .7897E-01 CRITERION= .1472 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 389
 *** TIME = .220903E+10 TIME INC = .315576E+08
 *** RESPONSE EIGENVALUE = .5986E-09 OSCILLATION LIMIT = .1889E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 09:20:22 MAR 30, 1995 CP= 48398.600
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 200.1 CRITERION= .1470
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5221
 HT FLOW CONVERGENCE VALUE= 6.380 CRITERION= .1469
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4767E-01
 HT FLOW CONVERGENCE VALUE= .4529 CRITERION= .1458
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3450E-02
 HT FLOW CONVERGENCE VALUE= .3356E-01 CRITERION= .1459 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 392
 *** TIME = .224059E+10 TIME INC = .315576E+08
 *** RESPONSE EIGENVALUE = .5960E-09 OSCILLATION LIMIT = .1881E-01
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 196.9 CRITERION= .1446
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5017
 HT FLOW CONVERGENCE VALUE= 1.386 CRITERION= .1439
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1002E-01
 HT FLOW CONVERGENCE VALUE= .2799E-02 CRITERION= .1437 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 394
 *** TIME = .227215E+10 TIME INC = .315576E+08
 *** RESPONSE EIGENVALUE = .5525E-09 OSCILLATION LIMIT = .1744E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 194.2 CRITERION= .1423
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.217
 HT FLOW CONVERGENCE VALUE= 3.803 CRITERION= .1398
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6706E-01
 HT FLOW CONVERGENCE VALUE= .8257 CRITERION= .1403
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1487E-01
 HT FLOW CONVERGENCE VALUE= .1875 CRITERION= .1405
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3381E-02
 HT FLOW CONVERGENCE VALUE= .4285E-01 CRITERION= .1405 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 398
 *** TIME = .235104E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .5393E-09 OSCILLATION LIMIT = .4254E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 188.9 CRITERION= .1380
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.283
 HT FLOW CONVERGENCE VALUE= 22.65 CRITERION= .1401
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2021
 HT FLOW CONVERGENCE VALUE= 1.553 CRITERION= .1364

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2221E-01
 HT FLOW CONVERGENCE VALUE= .3076 CRITERION= .1367
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4209E-02
 HT FLOW CONVERGENCE VALUE= .5718E-01 CRITERION= .1368 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 402
 *** TIME = .242994E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6707E-09 OSCILLATION LIMIT = .5291E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+08 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 185.1 CRITERION= .1361
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8043
 HT FLOW CONVERGENCE VALUE= 10.14 CRITERION= .1377
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7125E-01
 HT FLOW CONVERGENCE VALUE= .7718 CRITERION= .1355
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5667E-02
 HT FLOW CONVERGENCE VALUE= .6308E-01 CRITERION= .1357 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 405
 *** TIME = .247727E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .7613E-09 OSCILLATION LIMIT = .3604E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 183.8 CRITERION= .1340
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8053
 HT FLOW CONVERGENCE VALUE= 2.721 CRITERION= .1339
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1852E-01
 HT FLOW CONVERGENCE VALUE= .3786E-02 CRITERION= .1333 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 6 COMPLETED. CUM ITER = 407
 *** TIME = .252461E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .6861E-09 OSCILLATION LIMIT = .3248E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 09:57:42 MAR 30, 1995 CP= 50514.220
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 181.7 CRITERION= .1330
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6522
 HT FLOW CONVERGENCE VALUE= .1915 CRITERION= .1323
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4195E-02
 HT FLOW CONVERGENCE VALUE= .2668E-02 CRITERION= .1324 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 409
 *** TIME = .257194E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .4841E-09 OSCILLATION LIMIT = .2291E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 179.8 CRITERION= .1310
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6389
 HT FLOW CONVERGENCE VALUE= .1701 CRITERION= .1302
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3763E-02
 HT FLOW CONVERGENCE VALUE= .2502E-02 CRITERION= .1303 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 411
 *** TIME = .261928E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .4185E-09 OSCILLATION LIMIT = .1981E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 177.7 CRITERION= .1295
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.041
 HT FLOW CONVERGENCE VALUE= 4.627 CRITERION= .1276
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8991E-01
 HT FLOW CONVERGENCE VALUE= .8969 CRITERION= .1282

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1800E-01
 HT FLOW CONVERGENCE VALUE= .1851 CRITERION= .1283
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3738E-02
 HT FLOW CONVERGENCE VALUE= .3872E-01 CRITERION= .1283 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 415
 *** TIME = .269817E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4425E-09 OSCILLATION LIMIT = .3491E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 174.3 CRITERION= .1264
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.017
 HT FLOW CONVERGENCE VALUE= 7.627 CRITERION= .1259
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1075
 HT FLOW CONVERGENCE VALUE= 1.235 CRITERION= .1249
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1790E-01
 HT FLOW CONVERGENCE VALUE= .2719 CRITERION= .1252
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4053E-02
 HT FLOW CONVERGENCE VALUE= .5945E-01 CRITERION= .1251 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 419
 *** TIME = .277707E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4802E-09 OSCILLATION LIMIT = .3788E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+08 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 170.6 CRITERION= .1246
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8050
 HT FLOW CONVERGENCE VALUE= 14.79 CRITERION= .1266
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1254
 HT FLOW CONVERGENCE VALUE= 1.361 CRITERION= .1227
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1254E-01
 HT FLOW CONVERGENCE VALUE= .1420 CRITERION= .1230
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1320E-02
 HT FLOW CONVERGENCE VALUE= .1459E-01 CRITERION= .1230 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 423
 *** TIME = .284018E+10 TIME INC = .631152E+08
 *** RESPONSE EIGENVALUE = .5318E-09 OSCILLATION LIMIT = .3356E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10
 TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 265.631169 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 52369.750 TIME= 10:33:14

Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 10:33:15 MAR 30, 1995 CP= 52369.750
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
 TIME AT END OF THE LOAD STEP.31558E+10
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 166.0 CRITERION= .1215
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7654
 HT FLOW CONVERGENCE VALUE= 6.967 CRITERION= .1194
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7419E-01
 HT FLOW CONVERGENCE VALUE= .8309 CRITERION= .1199
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9792E-02
 HT FLOW CONVERGENCE VALUE= .1121 CRITERION= .1200 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 426
 *** TIME = .290330E+10 TIME INC = .631152E+08
 *** RESPONSE EIGENVALUE = .5091E-09 OSCILLATION LIMIT = .3213E-01
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 161.5 CRITERION= .1196
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7474
 HT FLOW CONVERGENCE VALUE= 1.904 CRITERION= .1183
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2439E-01
 HT FLOW CONVERGENCE VALUE= .2786E-02 CRITERION= .1187 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 428
 *** TIME = .296641E+10 TIME INC = .631152E+08
 *** RESPONSE EIGENVALUE = .4593E-09 OSCILLATION LIMIT = .2899E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 158.5 CRITERION= .1169
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9061
 HT FLOW CONVERGENCE VALUE= .2442 CRITERION= .1158
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6056E-02
 HT FLOW CONVERGENCE VALUE= .3357E-02 CRITERION= .1159 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 430
 *** TIME = .304531E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4084E-09 OSCILLATION LIMIT = .3222E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 155.3 CRITERION= .1152
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8830
 HT FLOW CONVERGENCE VALUE= 11.25 CRITERION= .1166
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1162
 HT FLOW CONVERGENCE VALUE= 1.017 CRITERION= .1140
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1094E-01
 HT FLOW CONVERGENCE VALUE= .9974E-01 CRITERION= .1142 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 433
 *** TIME = .312420E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4043E-09 OSCILLATION LIMIT = .3190E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+08 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 152.1 CRITERION= .1132
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3465
 HT FLOW CONVERGENCE VALUE= 5.160 CRITERION= .1137
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1960E-01
 HT FLOW CONVERGENCE VALUE= .2587 CRITERION= .1127
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1244E-02
 HT FLOW CONVERGENCE VALUE= .1567E-01 CRITERION= .1128 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 436
 *** TIME = .315576E+10 TIME INC = .315576E+08
 *** RESPONSE EIGENVALUE = .4569E-09 OSCILLATION LIMIT = .1442E-01

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 11:03:04 MAR 30, 1995 CP= 53932.890
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 150.8 CRITERION= .1130
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4276
 HT FLOW CONVERGENCE VALUE= 6.150 CRITERION= .1132
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2958E-01
 HT FLOW CONVERGENCE VALUE= .3893 CRITERION= .1124
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2127E-02
 HT FLOW CONVERGENCE VALUE= .2602E-01 CRITERION= .1125 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 439
 *** TIME = .319521E+10 TIME INC = .394470E+08
 *** RESPONSE EIGENVALUE = .3673E-09 OSCILLATION LIMIT = .1449E-01
 *** AUTO STEP TIME: NEXT TIME INC = .39447E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 149.4 CRITERION= .1117
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4209
 HT FLOW CONVERGENCE VALUE= 4.700 CRITERION= .1120
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2103E-01
 HT FLOW CONVERGENCE VALUE= .1972 CRITERION= .1113
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1011E-02
 HT FLOW CONVERGENCE VALUE= .9582E-02 CRITERION= .1113 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 442
 *** TIME = .323465E+10 TIME INC = .394470E+08
 *** RESPONSE EIGENVALUE = .3423E-09 OSCILLATION LIMIT = .1350E-01
 *** AUTO TIME STEP: NEXT TIME INC = .11834E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 148.4 CRITERION= .1110
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.227
 HT FLOW CONVERGENCE VALUE= 7.329 CRITERION= .1097
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2040
 HT FLOW CONVERGENCE VALUE= 1.953 CRITERION= .1103
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6048E-01
 HT FLOW CONVERGENCE VALUE= .1824E-02 CRITERION= .1106 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 445
*** TIME = .335300E+10 TIME INC = .118341E+09
*** RESPONSE EIGENVALUE = .3109E-09 OSCILLATION LIMIT = .3679E-01
*** AUTO TIME STEP: NEXT TIME INC = .35502E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 147.2 CRITERION= .1073
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.464
HT FLOW CONVERGENCE VALUE= 14.36 CRITERION= .1063
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4069
HT FLOW CONVERGENCE VALUE= 1.386 CRITERION= .1046
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6746E-01
HT FLOW CONVERGENCE VALUE= .7243 CRITERION= .1050
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3446E-01
HT FLOW CONVERGENCE VALUE= .3616 CRITERION= .1048
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1740E-01
HT FLOW CONVERGENCE VALUE= .1848 CRITERION= .1049
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8840E-02
HT FLOW CONVERGENCE VALUE= .9331E-01 CRITERION= .1048 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
*** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 451
*** TIME = .370802E+10 TIME INC = .355023E+09
*** RESPONSE EIGENVALUE = .2117E-09 OSCILLATION LIMIT = .7516E-01
*** AUTO STEP TIME: NEXT TIME INC = .35502E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 139.9 CRITERION= .1027
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.164
HT FLOW CONVERGENCE VALUE= 17.36 CRITERION= .1030
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3495
HT FLOW CONVERGENCE VALUE= 1.155 CRITERION= .9933E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4552E-01
HT FLOW CONVERGENCE VALUE= .3083E-02 CRITERION= .9952E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 454
*** TIME = .406304E+10 TIME INC = .355023E+09
*** RESPONSE EIGENVALUE = .2053E-09 OSCILLATION LIMIT = .7289E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 130.7 CRITERION= .9300E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.209
HT FLOW CONVERGENCE VALUE= 25.82 CRITERION= .9367E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7557
HT FLOW CONVERGENCE VALUE= 7.220 CRITERION= .8758E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3941
HT FLOW CONVERGENCE VALUE= 2.945 CRITERION= .8989E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1617
HT FLOW CONVERGENCE VALUE= 1.638 CRITERION= .8886E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1016
HT FLOW CONVERGENCE VALUE= 1.006 CRITERION= .8943E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6478E-01
HT FLOW CONVERGENCE VALUE= .6018 CRITERION= .8910E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4091E-01
HT FLOW CONVERGENCE VALUE= .3763 CRITERION= .8929E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2600E-01
HT FLOW CONVERGENCE VALUE= .2329 CRITERION= .8917E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1646E-01
HT FLOW CONVERGENCE VALUE= .1469 CRITERION= .8924E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1044E-01
HT FLOW CONVERGENCE VALUE= .9223E-01 CRITERION= .8920E-01
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6616E-02
HT FLOW CONVERGENCE VALUE= .5836E-01 CRITERION= .8923E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 11
*** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 465
*** TIME = .485198E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .2399E-09 OSCILLATION LIMIT = .1893
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 119.5 CRITERION= .8387E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.252
HT FLOW CONVERGENCE VALUE= 25.35 CRITERION= .8490E-01

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8491
HT FLOW CONVERGENCE VALUE= 1.993 CRITERION= .7829E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1242
HT FLOW CONVERGENCE VALUE= .7875 CRITERION= .7880E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4799E-01
HT FLOW CONVERGENCE VALUE= .2960 CRITERION= .7860E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1825E-01
HT FLOW CONVERGENCE VALUE= .1136 CRITERION= .7867E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6986E-02
HT FLOW CONVERGENCE VALUE= .4328E-01 CRITERION= .7864E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
*** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 471
*** TIME = .564092E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .2960E-09 OSCILLATION LIMIT = .2335
*** AUTO TIME STEP: NEXT TIME INC = .67060E+09 DECREASED (FACTOR = .8500)

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HT FLOW CONVERGENCE VALUE= 104.3 CRITERION= .7309E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.574
HT FLOW CONVERGENCE VALUE= 11.69 CRITERION= .7185E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4210
HT FLOW CONVERGENCE VALUE= .9697 CRITERION= .7042E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6809E-01
HT FLOW CONVERGENCE VALUE= .3140 CRITERION= .7055E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2236E-01
HT FLOW CONVERGENCE VALUE= .1177E-02 CRITERION= .7060E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 475
*** TIME = .631152E+10 TIME INC = .670599E+09
*** RESPONSE EIGENVALUE = .4075E-09 OSCILLATION LIMIT = .2733

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 12:18:03 MAR 30, 1995 CP= 58166.970
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 96.86 CRITERION= .6943E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.382
HT FLOW CONVERGENCE VALUE= 9.109 CRITERION= .6784E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4200
HT FLOW CONVERGENCE VALUE= 1.175 CRITERION= .6563E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7554E-01
HT FLOW CONVERGENCE VALUE= .4271 CRITERION= .6587E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2666E-01
HT FLOW CONVERGENCE VALUE= .1470 CRITERION= .6579E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9291E-02
HT FLOW CONVERGENCE VALUE= .5170E-01 CRITERION= .6582E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 480
*** TIME = .698212E+10 TIME INC = .670599E+09
*** RESPONSE EIGENVALUE = .2031E-09 OSCILLATION LIMIT = .1362
*** AUTO STEP TIME: NEXT TIME INC = .67060E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 86.10 CRITERION= .6353E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.016
HT FLOW CONVERGENCE VALUE= 11.47 CRITERION= .6380E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3515
HT FLOW CONVERGENCE VALUE= 1.749 CRITERION= .6096E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8908E-01
HT FLOW CONVERGENCE VALUE= .4895 CRITERION= .6134E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2436E-01
HT FLOW CONVERGENCE VALUE= .1305 CRITERION= .6124E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6544E-02
HT FLOW CONVERGENCE VALUE= .3529E-01 CRITERION= .6127E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 485

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*** TIME = .765272E+10 TIME INC = .670599E+09
 *** RESPONSE EIGENVALUE = .1396E-09 OSCILLATION LIMIT = .9362E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1765)

HT FLOW CONVERGENCE VALUE= 79.08 CRITERION= .5974E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.152
 HT FLOW CONVERGENCE VALUE= 6.039 CRITERION= .5901E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2213
 HT FLOW CONVERGENCE VALUE= .4714 CRITERION= .5844E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3389E-01
 HT FLOW CONVERGENCE VALUE= .1850 CRITERION= .5854E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1315E-01
 HT FLOW CONVERGENCE VALUE= .7099E-01 CRITERION= .5850E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5065E-02
 HT FLOW CONVERGENCE VALUE= .2746E-01 CRITERION= .5851E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 490
 *** TIME = .844166E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1458E-09 OSCILLATION LIMIT = .1150
 *** AUTO TIME STEP: NEXT TIME INC = .51281E+09 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 75.09 CRITERION= .5662E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.876
 HT FLOW CONVERGENCE VALUE= 7.975 CRITERION= .5691E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2606
 HT FLOW CONVERGENCE VALUE= .7814 CRITERION= .5525E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3481E-01
 HT FLOW CONVERGENCE VALUE= .1364 CRITERION= .5540E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5865E-02
 HT FLOW CONVERGENCE VALUE= .2363E-01 CRITERION= .5539E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 494
 *** TIME = .895447E+10 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .1420E-09 OSCILLATION LIMIT = .7279E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 71.07 CRITERION= .5458E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.750
 HT FLOW CONVERGENCE VALUE= 1.888 CRITERION= .5344E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6352E-01
 HT FLOW CONVERGENCE VALUE= .1673 CRITERION= .5360E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6929E-02
 HT FLOW CONVERGENCE VALUE= .2184E-01 CRITERION= .5363E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 497
 *** TIME = .946728E+10 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .1615E-09 OSCILLATION LIMIT = .8284E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 13:03:11 MAR 30, 1995 CP= 60608.100
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 67.84 CRITERION= .5229E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.655
 HT FLOW CONVERGENCE VALUE= 6.070 CRITERION= .5274E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1825
 HT FLOW CONVERGENCE VALUE= .5269E-02 CRITERION= .5151E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 499
 *** TIME = .998009E+10 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .1123E-09 OSCILLATION LIMIT = .5760E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 65.06 CRITERION= .5128E-01

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.564
 HT FLOW CONVERGENCE VALUE= .4277 CRITERION= .5067E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1734E-01
 HT FLOW CONVERGENCE VALUE= .4617E-01 CRITERION= .5071E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 501
 *** TIME = .104929E+11 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .1002E-09 OSCILLATION LIMIT = .5138E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5385)

HT FLOW CONVERGENCE VALUE= 62.94 CRITERION= .4895E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.255
 HT FLOW CONVERGENCE VALUE= 4.401 CRITERION= .4785E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1807
 HT FLOW CONVERGENCE VALUE= .5467 CRITERION= .4795E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3653E-01
 HT FLOW CONVERGENCE VALUE= .1453 CRITERION= .4805E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9607E-02
 HT FLOW CONVERGENCE VALUE= .3774E-01 CRITERION= .4802E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 505
 *** TIME = .112818E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .9959E-10 OSCILLATION LIMIT = .7857E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 59.30 CRITERION= .4736E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.085
 HT FLOW CONVERGENCE VALUE= 3.158 CRITERION= .4712E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1678
 HT FLOW CONVERGENCE VALUE= .1733E-01 CRITERION= .4655E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 507
 *** TIME = .120708E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1012E-09 OSCILLATION LIMIT = .7982E-01
 *** AUTO TIME STEP: NEXT TIME INC = .55226E+09 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 55.89 CRITERION= .4516E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.369
 HT FLOW CONVERGENCE VALUE= 3.161 CRITERION= .4438E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1209
 HT FLOW CONVERGENCE VALUE= .3489 CRITERION= .4454E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1142E-01
 HT FLOW CONVERGENCE VALUE= .4191E-01 CRITERION= .4463E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 510
 *** TIME = .126230E+11 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .1089E-09 OSCILLATION LIMIT = .6013E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 13:32:09 MAR 30, 1995 CP= 62191.440
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 53.49 CRITERION= .4458E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.307
 HT FLOW CONVERGENCE VALUE= 3.830 CRITERION= .4499E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1129
 HT FLOW CONVERGENCE VALUE= .2258E-01 CRITERION= .4428E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 512
 *** TIME = .131753E+11 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .9647E-10 OSCILLATION LIMIT = .5327E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55226E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 51.82 CRITERION= .4314E-01

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.262
 HT FLOW CONVERGENCE VALUE= 2.156 CRITERION= .4264E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1302
 HT FLOW CONVERGENCE VALUE= .4128 CRITERION= .4287E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2589E-01
 HT FLOW CONVERGENCE VALUE= .8534E-01 CRITERION= .4291E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5394E-02
 HT FLOW CONVERGENCE VALUE= .1792E-01 CRITERION= .4292E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 516
 *** TIME = .137276E+11 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .8831E-10 OSCILLATION LIMIT = .4877E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55226E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 50.34 CRITERION= .4288E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.227
 HT FLOW CONVERGENCE VALUE= .6569 CRITERION= .4265E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4542E-01
 HT FLOW CONVERGENCE VALUE= .5276E-03 CRITERION= .4265E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 518
 *** TIME = .142798E+11 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .8389E-10 OSCILLATION LIMIT = .4633E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 48.80 CRITERION= .4128E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.691
 HT FLOW CONVERGENCE VALUE= 5.950 CRITERION= .4165E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3371
 HT FLOW CONVERGENCE VALUE= .9482 CRITERION= .4056E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6034E-01
 HT FLOW CONVERGENCE VALUE= .1766 CRITERION= .4071E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1138E-01
 HT FLOW CONVERGENCE VALUE= .3175E-01 CRITERION= .4068E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 522
 *** TIME = .150688E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .8441E-10 OSCILLATION LIMIT = .6659E-01
 *** AUTO TIME STEP: NEXT TIME INC = .71005E+09 DECREASED (FACTOR = .9000)

HT FLOW CONVERGENCE VALUE= 45.52 CRITERION= .4047E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.408
 HT FLOW CONVERGENCE VALUE= 5.375 CRITERION= .4032E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1985
 HT FLOW CONVERGENCE VALUE= .4187 CRITERION= .4003E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2046E-01
 HT FLOW CONVERGENCE VALUE= .4570E-01 CRITERION= .4008E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2220E-02
 HT FLOW CONVERGENCE VALUE= .4932E-02 CRITERION= .4007E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 526
 *** TIME = .157788E+11 TIME INC = .710046E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 14:07:42 MAR 30, 1995 CP= 64056.610
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 42.93 CRITERION= .3888E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.307
 HT FLOW CONVERGENCE VALUE= 2.295 CRITERION= .3902E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1095
 HT FLOW CONVERGENCE VALUE= .2636 CRITERION= .3874E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1414E-01
 HT FLOW CONVERGENCE VALUE= .3413E-01 CRITERION= .3877E-01 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 529
*** TIME = .164888E+11 TIME INC = .710046E+09
*** AUTO STEP TIME: NEXT TIME INC = .71005E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 41.29 CRITERION= .3866E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.232
HT FLOW CONVERGENCE VALUE= 4.431 CRITERION= .3945E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1350
HT FLOW CONVERGENCE VALUE= .4291 CRITERION= .3854E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1674E-01
HT FLOW CONVERGENCE VALUE= .5587E-01 CRITERION= .3862E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2162E-02
HT FLOW CONVERGENCE VALUE= .7169E-02 CRITERION= .3861E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 533
*** TIME = .171989E+11 TIME INC = .710046E+09
*** AUTO STEP TIME: NEXT TIME INC = .71005E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 39.90 CRITERION= .3745E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.163
HT FLOW CONVERGENCE VALUE= 1.959 CRITERION= .3777E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9311E-01
HT FLOW CONVERGENCE VALUE= .1858 CRITERION= .3761E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1328E-01
HT FLOW CONVERGENCE VALUE= .2744E-01 CRITERION= .3763E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 536
*** TIME = .179089E+11 TIME INC = .710046E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 39.27 CRITERION= .3745E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.228
HT FLOW CONVERGENCE VALUE= 11.55 CRITERION= .4053E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2661
HT FLOW CONVERGENCE VALUE= 1.596 CRITERION= .3747E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4401E-01
HT FLOW CONVERGENCE VALUE= .3207 CRITERION= .3777E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8552E-02
HT FLOW CONVERGENCE VALUE= .6005E-01 CRITERION= .3771E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1612E-02
HT FLOW CONVERGENCE VALUE= .1140E-01 CRITERION= .3772E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 541
*** TIME = .186979E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .23668E+09 DECREASED (FACTOR = .3000)

HT FLOW CONVERGENCE VALUE= 38.90 CRITERION= .3701E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3540
HT FLOW CONVERGENCE VALUE= 1.759 CRITERION= .3755E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1416E-01
HT FLOW CONVERGENCE VALUE= .9986E-01 CRITERION= .3717E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8162E-03
HT FLOW CONVERGENCE VALUE= .5854E-02 CRITERION= .3719E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 544
*** TIME = .189346E+11 TIME INC = .236682E+09

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***** ANSYS SOLVE COMMAND *****

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 ***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 14:43:52 MAR 30, 1995 CP= 66101.330
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 39.16 CRITERION= .3754E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3485

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HT FLOW CONVERGENCE VALUE= 1.589 CRITERION= .3806E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1455E-01
 HT FLOW CONVERGENCE VALUE= .7880E-01 CRITERION= .3769E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9253E-03
 HT FLOW CONVERGENCE VALUE= .4059E-02 CRITERION= .3771E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 547
 *** TIME = .191712E+11 TIME INC = .236682E+09
 *** AUTO STEP TIME: NEXT TIME INC = .23668E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 39.41 CRITERION= .3707E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3428
 HT FLOW CONVERGENCE VALUE= .4723 CRITERION= .3728E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1580E-01
 HT FLOW CONVERGENCE VALUE= .2662E-01 CRITERION= .3722E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 549
 *** TIME = .194079E+11 TIME INC = .236682E+09
 *** AUTO TIME STEP: NEXT TIME INC = .71005E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 39.58 CRITERION= .3727E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9931
 HT FLOW CONVERGENCE VALUE= .2450 CRITERION= .3757E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1908E-01
 HT FLOW CONVERGENCE VALUE= .3262E-03 CRITERION= .3759E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 551
 *** TIME = .201180E+11 TIME INC = .710046E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 39.61 CRITERION= .3664E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.044
 HT FLOW CONVERGENCE VALUE= 3.201 CRITERION= .3715E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1710
 HT FLOW CONVERGENCE VALUE= .3429 CRITERION= .3670E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1965E-01
 HT FLOW CONVERGENCE VALUE= .4234E-01 CRITERION= .3674E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2406E-02
 HT FLOW CONVERGENCE VALUE= .5139E-02 CRITERION= .3673E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 555
 *** TIME = .209069E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 38.62 CRITERION= .3673E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9949
 HT FLOW CONVERGENCE VALUE= 1.311 CRITERION= .3683E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4726E-01
 HT FLOW CONVERGENCE VALUE= .6748E-01 CRITERION= .3679E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3459E-02
 HT FLOW CONVERGENCE VALUE= .5421E-02 CRITERION= .3680E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 558
 *** TIME = .216959E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .39447E+09 DECREASED (FACTOR = .5000)

HT FLOW CONVERGENCE VALUE= 37.56 CRITERION= .3611E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4811
 HT FLOW CONVERGENCE VALUE= .4628 CRITERION= .3610E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1611E-01
 HT FLOW CONVERGENCE VALUE= .2398E-01 CRITERION= .3615E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 6 COMPLETED. CUM ITER = 560
 *** TIME = .220903E+11 TIME INC = .394470E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 15:16:36 MAR 30, 1995 CP= 68020.630

FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 37.06 CRITERION= .3642E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4714
 HT FLOW CONVERGENCE VALUE= .7604E-01 CRITERION= .3646E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1446E-02
 HT FLOW CONVERGENCE VALUE= .2339E-03 CRITERION= .3646E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 562
 *** TIME = .224848E+11 TIME INC = .394470E+09
 *** AUTO STEP TIME: NEXT TIME INC = .39447E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 36.59 CRITERION= .3583E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4623
 HT FLOW CONVERGENCE VALUE= .6573E-01 CRITERION= .3586E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1371E-02
 HT FLOW CONVERGENCE VALUE= .2206E-03 CRITERION= .3586E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 564
 *** TIME = .228793E+11 TIME INC = .394470E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.0000)

HT FLOW CONVERGENCE VALUE= 36.04 CRITERION= .3596E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9000
 HT FLOW CONVERGENCE VALUE= 2.451 CRITERION= .3635E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1165
 HT FLOW CONVERGENCE VALUE= .6015 CRITERION= .3587E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3410E-01
 HT FLOW CONVERGENCE VALUE= .2018 CRITERION= .3597E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1104E-01
 HT FLOW CONVERGENCE VALUE= .6243E-01 CRITERION= .3594E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3466E-02
 HT FLOW CONVERGENCE VALUE= .1988E-01 CRITERION= .3595E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 569
 *** TIME = .236682E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 34.76 CRITERION= .3517E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8665
 HT FLOW CONVERGENCE VALUE= 4.918 CRITERION= .3626E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1362
 HT FLOW CONVERGENCE VALUE= .5176 CRITERION= .3506E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1642E-01
 HT FLOW CONVERGENCE VALUE= .6769E-01 CRITERION= .3517E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2173E-02
 HT FLOW CONVERGENCE VALUE= .8762E-02 CRITERION= .3515E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 573
 *** TIME = .244571E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 33.42 CRITERION= .3524E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8769
 HT FLOW CONVERGENCE VALUE= 2.409 CRITERION= .3583E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5608E-01
 HT FLOW CONVERGENCE VALUE= .6935E-01 CRITERION= .3534E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1968E-02
 HT FLOW CONVERGENCE VALUE= .6101E-02 CRITERION= .3535E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 576
 *** TIME = .252461E+11 TIME INC = .788940E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

900-38303 VERSION=HP 9000/7XX 15:48:04 MAR 30, 1995 CP= 69871.030
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 32.63 CRITERION= .3466E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7968
HT FLOW CONVERGENCE VALUE= .3883 CRITERION= .3479E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2857E-01
HT FLOW CONVERGENCE VALUE= .2602E-01 CRITERION= .3480E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 578
*** TIME = .260350E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 32.00 CRITERION= .3496E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7663
HT FLOW CONVERGENCE VALUE= .1113 CRITERION= .3506E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1925E-02
HT FLOW CONVERGENCE VALUE= .2667E-03 CRITERION= .3507E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 580
*** TIME = .268240E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 31.31 CRITERION= .3441E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7508
HT FLOW CONVERGENCE VALUE= .1068 CRITERION= .3449E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1961E-02
HT FLOW CONVERGENCE VALUE= .2711E-03 CRITERION= .3449E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 582
*** TIME = .276129E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 30.51 CRITERION= .3464E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7833
HT FLOW CONVERGENCE VALUE= .1073 CRITERION= .3471E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1897E-02
HT FLOW CONVERGENCE VALUE= .2587E-03 CRITERION= .3471E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 584
*** TIME = .284018E+11 TIME INC = .788940E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 16:05:37 MAR 30, 1995 CP= 70903.710
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 29.71 CRITERION= .3413E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6822
HT FLOW CONVERGENCE VALUE= .8844 CRITERION= .3429E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5523E-01
HT FLOW CONVERGENCE VALUE= .8226E-01 CRITERION= .3416E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5068E-02
HT FLOW CONVERGENCE VALUE= .8326E-02 CRITERION= .3418E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 587
*** TIME = .291908E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 28.79 CRITERION= .3438E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6748
HT FLOW CONVERGENCE VALUE= 2.522 CRITERION= .3507E-01

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4493E-01
HT FLOW CONVERGENCE VALUE= .1944 CRITERION= .3440E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3589E-02
HT FLOW CONVERGENCE VALUE= .1586E-01 CRITERION= .3444E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 590
*** TIME = .299797E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 28.02 CRITERION= .3388E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6521
HT FLOW CONVERGENCE VALUE= 1.674 CRITERION= .3442E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2626E-01
HT FLOW CONVERGENCE VALUE= .9795E-01 CRITERION= .3397E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1611E-02
HT FLOW CONVERGENCE VALUE= .6112E-02 CRITERION= .3399E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 593
*** TIME = .307687E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 27.50 CRITERION= .3419E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6703
HT FLOW CONVERGENCE VALUE= 1.073 CRITERION= .3459E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1571E-01
HT FLOW CONVERGENCE VALUE= .4408E-03 CRITERION= .3433E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 595
*** TIME = .315576E+11 TIME INC = .788940E+09
```

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 72221.700

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21x5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 16:28:22 MAR 30, 1995 CP= 72231.440
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 69.13814

PARAMETER WPSID(JINC) = 69.19196

PARAMETER WPBOT(JINC) = 69.25352
PARAMETER DFTOP(JINC) = 26.13832
PARAMETER DFSID(JINC) = 26.13830
PARAMETER DFEDG(JINC) = 26.13819
PARAMETER DFBOT(JINC) = 26.16068
PARAMETER WPTOP(JINC,0) = 31.55760
PARAMETER WPSID(JINC,0) = 31.55760
PARAMETER WPBOT(JINC,0) = 31.55760
PARAMETER DFTOP(JINC,0) = 31.55760
PARAMETER DFSID(JINC,0) = 31.55760
PARAMETER DFEDG(JINC,0) = 31.55760
PARAMETER DFBOT(JINC,0) = 31.55760
PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 131
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 123.6253
PARAMETER WPSID(JINC) = 124.6756
PARAMETER WPBOT(JINC) = 127.2826
PARAMETER DFTOP(JINC) = 83.13170
PARAMETER DFSID(JINC) = 83.03148
PARAMETER DFEDG(JINC) = 81.12192
PARAMETER DFBOT(JINC) = 73.38675
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08
PARAMETER DFSID(JINC,0) = .3155763E+08
PARAMETER DFEDG(JINC,0) = .3155763E+08
PARAMETER DFBOT(JINC,0) = .3155763E+08
PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 266
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 164.7546

PARAMETER WPSID(JINC) = 165.5361

PARAMETER WPBOT(JINC) = 167.5084

PARAMETER DFTOP(JINC) = 139.7950

PARAMETER DFSID(JINC) = 139.9737

PARAMETER DFEDG(JINC) = 138.4614

PARAMETER DFBOT(JINC) = 130.6119

PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09

PARAMETER WPBOT(JINC,0) = .3155760E+09

PARAMETER DFTOP(JINC,0) = .3155760E+09

PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 436
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 182.8691

PARAMETER WPSID(JINC) = 183.1365

PARAMETER WPBOT(JINC) = 183.7818

PARAMETER DFTOP(JINC) = 175.5360

PARAMETER DFSID(JINC) = 175.6962

PARAMETER DFEDG(JINC) = 175.1802

PARAMETER DFBOT(JINC) = 172.1852

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10
PARAMETER DFTOP(JINC,0) = .3155760E+10
PARAMETER DFSID(JINC,0) = .3155760E+10
PARAMETER DFEDG(JINC,0) = .3155760E+10
PARAMETER DFBOT(JINC,0) = .3155760E+10
PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 73931.120

*** NOTE *** CP= 73931.130 TIME= 16:58:08
Write parameters to file= c21x5a.parm.

*** NOTE *** CP= 73931.190 TIME= 16:58:09
Parameters written. Lines= 770.

*** WARNING *** CP= 73931.190 TIME= 16:58:09
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c21x5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 16:58:09 MAR 30, 1995 CP= 73931.240
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 21.23

DISTANCE MULTIPLIER FOR WINDOW 1 1.250

DISTANCE FOR WINDOW 1 26.54

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4342 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE MULTIPLIER FOR WINDOW 1 .8000

DISTANCE FOR WINDOW 1 21.23

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4342 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 12.18

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4342 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 73952.630 TIME= 16:58:45
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 81
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 73969.850 TIME= 16:59:04
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 131
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 73987.070 TIME= 16:59:23
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 193
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74004.320 TIME= 16:59:42
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 266
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74021.550 TIME= 17:00:01
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 359
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74038.770 TIME= 17:00:21
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 436
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74056.010 TIME= 17:00:40
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 526
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74073.130 TIME= 17:00:57
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 4 CUMULATIVE ITERATION= 595
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74090.240 TIME= 17:01:14
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 7.622

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2171 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74107.880 TIME= 17:01:32
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 81
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74122.090 TIME= 17:01:46
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 131
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74136.290 TIME= 17:02:00
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 193
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74150.490 TIME= 17:02:15
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 266
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74164.690 TIME= 17:02:29
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 359
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74178.880 TIME= 17:02:43
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 436
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74193.080 TIME= 17:02:57
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 526
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74207.260 TIME= 17:03:12
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 4 CUMULATIVE ITERATION= 595
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 74221.440 TIME= 17:03:26
The selected element set contains mixed materials.
This could invalidate error estimation.
; View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 74225.650

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 17:03:30 MAR 30, 1995 CP= 74225.660
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
VARIABLE 3 IS AT NODE 1804 ITEM= TEMP COMP= NAME= wwpeside
VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
VARIABLE 5 IS AT NODE 1810 ITEM= TEMP COMP= NAME= wwpetop
VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
VARIABLE 7 IS AT NODE 1803 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	188.3	.1578E+10
3	NSOL	1804 TEMP	wwpeside	26.14	.1000E-05	183.4	.1893E+10
4	NSOL	129 TEMP	wmidtop	26.13	.1000E-05	187.9	.1578E+10
5	NSOL	1810 TEMP	wwpetop	26.13	.1000E-05	183.2	.1893E+10
6	NSOL	122 TEMP	wmidbot	26.14	.1000E-05	189.3	.1578E+10
7	NSOL	1803 TEMP	wwpebot	26.14	.1000E-05	183.9	.1893E+10

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 17:03:34 MAR 30, 1995 CP= 74227.270
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1804 TEMP wwpeside	129 TEMP wmidtop	1810 TEMP wwpetop	122 TEMP wmidbot	1803 TEMP wwpebot
.10000E-05	26.1381	26.1379	26.1321	26.1338	26.1430	26.1409
.20000E-05	69.1920	56.4789	69.1381	56.3674	69.2535	56.9099
31.558	69.1920	56.4789	69.1381	56.3674	69.2535	56.9099
.31558E+07	98.2533	81.3487	97.1270	80.7748	100.945	82.8950
.63116E+07	105.025	88.3974	103.902	87.8314	107.733	89.9479
.94673E+07	109.408	93.0611	108.300	92.5082	112.095	94.5947
.12623E+08	112.771	96.6679	111.677	96.1253	115.446	98.1924
.15779E+08	115.509	99.6210	114.427	99.0878	118.164	101.131
.18935E+08	117.843	102.147	116.772	101.621	120.485	103.647
.22090E+08	119.870	104.352	118.812	103.833	122.497	105.840
.25246E+08	121.619	106.289	120.565	105.774	124.247	107.770
.28402E+08	123.206	108.029	122.152	107.516	125.822	109.501
.31558E+08	124.676	109.636	123.625	109.125	127.283	111.102
.63115E+08	135.157	121.110	134.148	120.618	137.648	122.505
.94673E+08	142.047	128.629	141.075	128.157	144.431	129.955
.12623E+09	147.484	134.596	146.549	134.143	149.786	135.865
.15779E+09	152.093	139.691	151.187	139.256	154.328	140.915
.18935E+09	155.982	144.013	155.106	143.597	158.162	145.203
.22090E+09	159.173	147.571	158.315	147.162	161.299	148.727
.25246E+09	162.082	150.790	161.252	150.398	164.163	151.919
.28402E+09	163.928	153.028	163.125	152.650	165.948	154.123
.31558E+09	165.536	154.937	164.755	154.571	167.508	156.004
.63115E+09	177.368	168.913	176.720	168.607	178.967	169.760
.94673E+09	185.120	178.106	184.576	177.850	186.462	178.809
.12623E+10	187.646	181.699	187.180	181.480	188.793	182.297
.15779E+10	188.275	183.069	187.865	182.876	189.281	183.591
.18935E+10	188.055	183.400	187.589	183.229	188.953	183.865
.22090E+10	187.256	183.027	186.920	182.869	188.075	183.451
.25246E+10	185.727	181.879	185.421	181.736	186.470	182.264
.28402E+10	184.391	180.818	184.107	180.685	185.080	181.174
.31558E+10	183.137	179.793	182.869	179.667	183.782	180.126
.63115E+10	175.965	173.849	175.794	173.768	176.371	174.059
.94673E+10	170.609	168.906	170.471	168.840	170.933	169.073
.12623E+11	167.705	166.250	167.586	166.193	167.983	166.394
.15779E+11	165.786	164.510	165.679	164.459	166.030	164.636
.18935E+11	163.648	162.529	163.553	162.482	163.863	162.641
.22090E+11	161.239	160.234	161.153	160.192	161.432	160.334
.25246E+11	158.664	157.749	158.586	157.711	158.836	157.838
.28402E+11	156.210	155.365	156.139	155.331	156.368	155.447
.31558E+11	154.003	153.213	153.938	153.181	154.150	153.289

 * Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 74227.530 TIME= 17:03:34
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 992 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1142 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 957 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	8 TEMP	smidside	26.14	.1000E-05	188.6	.1578E+10
3 NSOL	992 TEMP	swpeside	26.14	.1000E-05	183.7	.1893E+10
4 NSOL	38 TEMP	smidtop	26.13	.1000E-05	188.2	.1578E+10
5 NSOL	1142 TEMP	swpetop	26.13	.1000E-05	183.6	.1893E+10
6 NSOL	2 TEMP	smidbot	26.14	.1000E-05	189.6	.1578E+10
7 NSOL	957 TEMP	swpebot	26.14	.1000E-05	184.2	.1893E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:36 MAR 30, 1995 CP= 74228.880
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	992 TEMP swpeside	38 TEMP smidtop	1142 TEMP swpetop	2 TEMP smidbot	957 TEMP swpebot
.10000E-05	26.1381	26.1379	26.1322	26.1339	26.1430	26.1409
.20000E-05	69.9992	57.3448	69.9476	57.2515	70.0583	57.6980
31.558	69.9992	57.3448	69.9477	57.2515	70.0583	57.6980
.31558E+07	99.0464	82.2849	97.9243	81.7269	101.672	83.7351
.63116E+07	105.820	89.3298	104.702	88.7792	108.462	90.7848
.94673E+07	110.204	93.9876	109.099	93.4496	112.825	95.4271
.12623E+08	113.566	97.5895	112.476	97.0615	116.175	99.0207
.15779E+08	116.303	100.538	115.225	100.019	118.893	101.955
.18935E+08	118.635	103.059	117.568	102.547	121.212	104.468
.22090E+08	120.662	105.260	119.608	104.755	123.224	106.657
.25246E+08	122.409	107.193	121.359	106.691	124.972	108.584
.28402E+08	123.995	108.929	122.945	108.429	126.547	110.311
.31558E+08	125.463	110.532	124.417	110.034	128.005	111.909
.63115E+08	135.930	121.975	134.926	121.496	138.360	123.286
.94673E+08	142.807	129.470	141.839	129.011	145.131	130.716
.12623E+09	148.231	135.415	147.300	134.977	150.474	136.609
.15779E+09	152.828	140.492	151.926	140.070	155.007	141.642
.18935E+09	156.705	144.795	155.834	144.391	158.830	145.915
.22090E+09	159.886	148.337	159.032	147.940	161.958	149.425
.25246E+09	162.786	151.543	161.959	151.163	164.814	152.605
.28402E+09	164.614	153.759	163.814	153.393	166.582	154.790
.31558E+09	166.208	155.652	165.430	155.297	168.131	156.656
.63115E+09	177.937	169.505	177.292	169.209	179.495	170.303
.94673E+09	185.611	178.610	185.069	178.363	186.919	179.273
.12623E+10	188.068	182.130	187.604	181.918	189.184	182.693
.15779E+10	188.645	183.446	188.238	183.261	189.625	183.939
.18935E+10	188.386	183.738	188.022	183.572	189.261	184.176
.22090E+10	187.556	183.333	187.223	183.181	188.354	183.733
.25246E+10	185.998	182.157	185.694	182.018	186.721	182.519
.28402E+10	184.642	181.075	184.359	180.946	185.313	181.410
.31558E+10	183.369	180.032	183.104	179.910	183.998	180.346
.63115E+10	176.108	173.997	175.937	173.919	176.503	174.195
.94673E+10	170.721	169.023	170.583	168.959	171.037	169.181
.12623E+11	167.800	166.350	167.681	166.294	168.070	166.485
.15779E+11	165.868	164.597	165.762	164.547	166.106	164.716
.18935E+11	163.719	162.604	163.624	162.559	163.929	162.710
.22090E+11	161.302	160.301	161.217	160.261	161.490	160.396
.25246E+11	158.720	157.809	158.644	157.773	158.889	157.894
.28402E+11	156.261	155.421	156.191	155.388	156.416	155.498

.31558E+11 154.051 153.265 153.986 153.234 154.195 153.337

```
*****
*      Waste Package Center and Bottom of Invert      *
*****
      wmidcent = midlength center of WP
      shellcnt = end of WP center inside shell
      wwpecent = end of WP center surface
      imidbot  = midlength bottom of invert
      iwpebot  = end of WP bottom of invert
      idfebot  = end of drift bottom of invert
```

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 74229.130 TIME= 17:03:36
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 962 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1683 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2710 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2698 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	1 TEMP	wmidcent	26.14	.1000E-05	247.9	.2525E+09
3 NSOL	962 TEMP	shellcnt	26.14	.1000E-05	185.2	.1893E+10
4 NSOL	1683 TEMP	wwpecent	26.14	.1000E-05	184.9	.1893E+10
5 NSOL	147 TEMP	imidbot	26.16	.2000E-05	177.0	.2209E+10
6 NSOL	2710 TEMP	iwpebot	26.16	.2000E-05	175.4	.2209E+10
7 NSOL	2698 TEMP	idfebot	26.16	.2000E-05	173.3	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:37 MAR 30, 1995 CP= 74230.480
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	962 TEMP shellcnt	1683 TEMP wwpecent	147 TEMP imidbot	2710 TEMP iwpebot	2698 TEMP idfebot
.10000E-05	26.1378	26.1376	26.1376	26.1693	26.1682	26.1678
.20000E-05	167.714	62.6665	61.9241	26.1607	26.1607	26.1607
31.558	167.714	62.6666	61.9241	26.1607	26.1607	26.1607
.31558E+07	195.735	86.3151	85.5238	55.8130	48.0754	38.4628
.63116E+07	202.659	93.2819	92.4915	64.6768	56.8449	46.4852
.94673E+07	206.973	97.9170	97.1231	70.2496	62.5530	52.2113
.12623E+08	210.219	101.492	100.701	74.4574	66.9169	56.7459
.15779E+08	212.806	104.430	103.638	77.8750	70.4814	60.5120
.18935E+08	214.969	106.931	106.142	80.7680	73.5072	63.7353
.22090E+08	216.826	109.124	108.334	83.2889	76.1480	66.5598
.25246E+08	218.416	111.044	110.258	85.4996	78.4777	69.0664
.28402E+08	219.818	112.775	111.988	87.4876	80.5708	71.3212
.31558E+08	221.114	114.366	113.583	89.3126	82.4893	73.3867
.63115E+08	229.801	125.708	124.939	102.135	96.1528	88.2111
.94673E+08	234.972	133.098	132.338	110.567	104.825	97.5602
.12623E+09	238.781	138.945	138.200	117.331	111.728	104.686

.15779E+09	241.867	143.950	143.214	123.063	117.715	110.805
.18935E+09	244.290	148.184	147.462	127.943	122.842	116.194
.22090E+09	246.094	151.666	150.953	131.929	127.037	120.753
.25246E+09	247.876	154.823	154.119	135.514	130.773	124.690
.28402E+09	247.495	156.946	156.262	138.282	133.744	127.940
.31558E+09	247.457	158.777	158.104	140.584	136.192	130.612
.63115E+09	246.559	172.106	171.538	157.085	153.680	149.425
.94673E+09	244.697	180.835	180.342	168.123	165.347	161.910
.12623E+10	238.822	184.031	183.609	173.192	170.857	167.980
.15779E+10	233.253	185.115	184.744	175.611	173.577	171.078
.18935E+10	228.267	185.232	184.898	176.729	174.916	172.693
.22090E+10	223.684	184.683	184.383	176.994	175.350	173.335
.25246E+10	218.649	183.378	183.106	176.403	174.909	173.079
.28402E+10	214.797	182.207	181.954	175.757	174.370	172.672
.31558E+10	211.438	181.082	180.850	175.071	173.774	172.185
.63115E+10	193.326	174.643	174.501	170.915	170.095	169.092
.94673E+10	184.256	169.536	169.422	166.578	165.916	165.107
.12623E+11	179.210	166.779	166.686	164.279	163.713	163.021
.15779E+11	175.787	164.974	164.891	162.806	162.310	161.702
.18935E+11	172.337	162.929	162.858	161.049	160.612	160.078
.22090E+11	168.956	160.590	160.527	158.911	158.518	158.038
.25246E+11	165.606	158.073	158.015	156.545	156.188	155.749
.28402E+11	162.544	155.662	155.609	154.253	153.923	153.518
.31558E+11	159.872	153.488	153.439	152.172	151.863	151.482

 * Surface Temperature of Invert *

 imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 74230.730 TIME= 17:03:37
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2718 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2702 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2762 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2752 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	184.7	.1893E+10
3	NSOL	2718 TEMP	iwpecent	26.14	.2000E-05	181.0	.1893E+10
4	NSOL	2702 TEMP	idfecent	26.14	.2000E-05	178.0	.2209E+10
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	182.2	.1893E+10
6	NSOL	2762 TEMP	iwpeedge	26.14	.2000E-05	179.5	.1893E+10
7	NSOL	2752 TEMP	idfeedge	26.14	.2000E-05	177.2	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:39 MAR 30, 1995 CP= 74232.080
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2718 TEMP iwpecent	2702 TEMP idfecent	157 TEMP imidedge	2762 TEMP iwpeedge	2752 TEMP idfeedge
.10000E-05	26.1481	26.1450	26.1439	26.1514	26.1515	26.1529
.20000E-05	26.1379	26.1379	26.1379	26.1379	26.1379	26.1379
31.558	26.1528	26.1442	26.1384	26.1424	26.1399	26.1382
.31558E+07	79.7919	63.8102	47.8040	68.4357	56.7960	44.6743
.63116E+07	87.8663	72.3528	56.7835	77.0586	65.5642	53.3889
.94673E+07	93.0385	77.9338	62.8614	82.5786	71.3320	59.4152
.12623E+08	96.9539	82.1983	67.5612	86.7658	75.7494	64.1147
.15779E+08	100.143	85.6797	71.4148	90.1703	79.3583	67.9866
.18935E+08	102.842	88.6336	74.6902	93.0553	82.4238	71.2881
.22090E+08	105.191	91.2096	77.5487	95.5649	85.1000	74.1766
.25246E+08	107.220	93.4599	80.0622	97.6960	87.4454	76.7270
.28402E+08	109.058	95.4856	82.3191	99.6208	89.5545	79.0202
.31558E+08	110.747	97.3430	84.3853	101.435	91.4888	81.1219
.63115E+08	122.722	110.507	98.9870	114.259	105.148	96.0209
.94673E+08	130.538	119.009	108.286	122.683	114.016	105.444
.12623E+09	136.687	125.704	115.556	129.283	121.012	112.818
.15779E+09	141.890	131.406	121.761	134.838	126.943	119.137
.18935E+09	146.273	136.230	127.047	139.517	131.954	124.521
.22090E+09	149.869	140.189	131.396	143.358	136.074	128.961
.25246E+09	153.115	143.743	135.268	146.814	139.757	132.894
.28402E+09	155.333	146.326	138.219	149.277	142.500	135.937
.31558E+09	157.227	148.500	140.674	151.360	144.795	138.461
.63115E+09	170.978	164.164	158.179	166.413	161.301	156.468
.94673E+09	179.945	174.370	169.535	176.219	172.040	168.138
.12623E+10	183.294	178.599	174.556	180.159	176.646	173.385
.15779E+10	184.474	180.381	176.870	181.741	178.681	175.851
.18935E+10	184.657	181.007	177.884	182.218	179.492	176.976
.22090E+10	184.165	180.852	178.021	181.953	179.482	177.204
.25246E+10	182.904	179.892	177.321	180.891	178.647	176.580
.28402E+10	181.764	178.967	176.581	179.895	177.813	175.896
.31558E+10	180.669	178.051	175.819	178.919	176.973	175.180
.63115E+10	174.376	172.720	171.310	173.267	172.041	170.913
.94673E+10	169.313	167.977	166.838	168.417	167.431	166.522
.12623E+11	166.589	165.447	164.472	165.823	164.981	164.204
.15779E+11	164.806	163.803	162.947	164.135	163.397	162.716
.18935E+11	162.783	161.902	161.149	162.194	161.547	160.949
.22090E+11	160.457	159.664	158.987	159.927	159.345	158.808
.25246E+11	157.947	157.225	156.607	157.463	156.934	156.443
.28402E+11	155.542	154.876	154.304	155.094	154.606	154.152
.31558E+11	153.374	152.749	152.213	152.953	152.496	152.070

* Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING ***

CP= 74232.330 TIME= 17:03:39

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2835 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2805 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 2989 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 2967 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	177 TEMP	dmidside	26.14	.1000E-05	182.8	.1893E+10
3 NSOL	2835 TEMP	dwpeside	26.14	.2000E-05	180.1	.1893E+10
4 NSOL	2805 TEMP	ddfeside	26.14	.2000E-05	177.9	.2209E+10
5 NSOL	229 TEMP	dmidtop	26.12	.1000E-05	182.2	.1893E+10
6 NSOL	2989 TEMP	dwpetop	26.12	.1000E-05	179.8	.1893E+10
7 NSOL	2967 TEMP	ddfetop	26.12	.1000E-05	177.7	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:40 MAR 30, 1995 CP= 74233.680
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2835 TEMP dwpeside	2805 TEMP ddfeside	229 TEMP dmidtop	2989 TEMP dwpetop	2967 TEMP ddfetop
.10000E-05	26.1379	26.1389	26.1396	26.1238	26.1220	26.1186
.20000E-05	26.1379	26.1379	26.1379	26.1379	26.1379	26.1379
31.558	26.1439	26.1406	26.1383	26.1436	26.1405	26.1383
.31558E+07	70.6550	58.6490	46.4215	68.5546	57.9834	46.5530
.63116E+07	79.1796	67.4044	55.2933	77.1144	66.7557	55.4395
.94673E+07	84.6433	73.1533	61.3571	82.6305	72.5304	61.5123
.12623E+08	88.7879	77.5500	66.0590	86.8218	76.9522	66.2248
.15779E+08	92.1583	81.1407	69.9234	90.2304	80.5609	70.0939
.18935E+08	95.0154	84.1914	73.2166	93.1176	83.6222	73.3837
.22090E+08	97.4409	86.8562	76.0987	95.6302	86.2907	76.2549
.25246E+08	99.5465	89.1899	78.6433	97.7016	88.6234	78.7829
.28402E+08	101.503	91.2879	80.9324	99.6520	90.7178	81.0534
.31558E+08	103.303	93.2118	83.0315	101.463	92.6339	83.1317
.63115E+08	116.013	106.781	97.8179	114.265	106.146	97.7489
.94673E+08	124.370	115.635	107.224	122.677	114.969	107.063
.12623E+09	130.890	122.601	114.596	129.282	121.940	114.389
.15779E+09	136.383	128.485	120.927	134.828	127.843	120.699
.18935E+09	140.990	133.433	126.241	139.509	132.841	126.046
.22090E+09	144.793	137.521	130.638	143.341	136.907	130.399
.25246E+09	148.203	141.166	134.537	146.812	140.594	134.325
.28402E+09	150.609	143.849	137.502	149.274	143.304	137.310
.31558E+09	152.647	146.100	139.974	151.355	145.578	139.795
.63115E+09	167.470	162.411	157.775	166.393	161.889	157.466
.94673E+09	177.093	172.971	169.238	176.200	172.522	168.946
.12623E+10	180.897	177.435	174.318	180.137	177.045	174.057
.15779E+10	182.386	179.371	176.667	181.721	179.028	176.434
.18935E+10	182.796	180.110	177.706	182.204	179.805	177.499
.22090E+10	182.474	180.038	177.861	181.931	179.755	177.665
.25246E+10	181.366	179.154	177.178	180.873	178.897	176.999
.28402E+10	180.335	178.282	176.449	179.875	178.041	176.280
.31558E+10	179.330	177.410	175.696	178.899	177.183	175.536
.63115E+10	173.526	172.315	171.235	173.250	172.166	171.127
.94673E+10	168.625	167.649	166.777	168.402	167.529	166.690
.12623E+11	165.999	165.165	164.419	165.807	165.060	164.342
.15779E+11	164.285	163.555	162.901	164.114	163.459	162.828
.18935E+11	162.324	161.682	161.108	162.170	161.595	161.040
.22090E+11	160.043	159.467	158.950	159.905	159.388	158.889
.25246E+11	157.570	157.045	156.574	157.446	156.975	156.520
.28402E+11	155.195	154.710	154.274	155.081	154.646	154.225
.31558E+11	153.048	152.594	152.184	152.942	152.535	152.140

 * 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 74233.930 TIME= 17:03:41
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2795 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 2957 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2793 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	167 TEMP	1midside	26.14	.2000E-05	175.4	.2209E+10
3	NSOL	2795 TEMP	1dfeside	26.14	.2000E-05	172.8	.2209E+10
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	174.2	.2209E+10
5	NSOL	2957 TEMP	1dfetop	26.09	.1000E-05	171.8	.2209E+10
6	NSOL	165 TEMP	1midbot	26.18	.2000E-05	171.3	.2209E+10
7	NSOL	2793 TEMP	1dfebot	26.18	.2000E-05	169.3	.2525E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:42 MAR 30, 1995 CP= 74235.270
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2795 TEMP 1dfeside	219 TEMP 1midtop	2957 TEMP 1dfetop	165 TEMP 1midbot	2793 TEMP 1dfebot
.10000E-05	26.1394	26.1401	26.0972	26.0949	26.1896	26.1891
.20000E-05	26.1393	26.1393	26.1083	26.1083	26.1823	26.1823
31.558	26.1393	26.1393	26.1083	26.1083	26.1823	26.1823
.31558E+07	47.9210	36.1850	47.0193	36.2601	41.0295	32.5059
.63116E+07	56.5251	43.6337	55.5288	43.7177	49.2400	38.9850
.94673E+07	62.1054	49.1266	61.1275	49.2285	54.6576	44.0628
.12623E+08	66.3439	53.5232	65.4048	53.6487	58.8182	48.2445
.15779E+08	69.8072	57.2049	68.8939	57.3405	62.2279	51.7899
.18935E+08	72.7615	60.3838	71.8545	60.5102	65.1319	54.8621
.22090E+08	75.3515	63.1942	74.4393	63.2936	67.6750	57.5759
.25246E+08	77.6162	65.7130	76.6963	65.7711	69.9329	60.0064
.28402E+08	79.6919	67.9968	78.7153	68.0048	71.9682	62.2063
.31558E+08	81.6093	70.1012	80.5899	70.0531	73.8388	64.2274
.63115E+08	95.2610	85.3894	93.8849	84.8007	87.3082	79.0067
.94673E+08	104.273	94.9863	102.656	94.1114	96.0548	88.5975
.12623E+09	111.357	102.236	109.686	101.259	102.948	95.6190
.15779E+09	117.402	108.453	115.611	107.437	108.863	101.565

.18935E+09	122.338	113.806	120.702	112.861	114.017	106.836
.22090E+09	126.578	118.404	124.799	117.319	118.235	111.415
.25246E+09	130.253	122.436	128.625	121.405	122.045	115.373
.28402E+09	133.141	125.651	131.599	124.698	125.199	118.881
.31558E+09	135.542	128.337	134.053	127.419	127.792	121.743
.63115E+09	153.573	148.099	151.718	146.667	146.237	141.637
.94673E+09	165.330	160.904	163.622	159.507	158.814	155.095
.12623E+10	170.861	167.154	169.327	165.886	165.205	162.085
.15779E+10	173.592	170.372	172.220	169.228	168.591	165.879
.18935E+10	174.944	172.078	173.721	171.059	170.445	168.031
.22090E+10	175.363	172.766	174.217	171.804	171.313	169.125
.25246E+10	174.937	172.579	173.895	171.703	171.252	169.265
.28402E+10	174.393	172.205	173.415	171.382	171.002	169.158
.31558E+10	173.794	171.749	172.875	170.973	170.643	168.918
.63115E+10	170.115	168.825	169.515	168.315	168.185	167.096
.94673E+10	165.927	164.888	165.453	164.485	164.430	163.552
.12623E+11	163.717	162.828	163.307	162.478	162.468	161.717
.15779E+11	162.300	161.520	161.920	161.194	161.244	160.585
.18935E+11	160.595	159.910	160.247	159.608	159.696	159.117
.22090E+11	158.504	157.889	158.192	157.617	157.707	157.186
.25246E+11	156.182	155.621	155.907	155.384	155.454	154.980
.28402E+11	153.924	153.405	153.679	153.196	153.251	152.812
.31558E+11	151.868	151.381	151.645	151.191	151.238	150.827

* 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtopy = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 74235.520 TIME= 17:03:42
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 3441 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtopy

VARIABLE 5 IS AT NODE 3657 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3438 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	167.7	.2840E+10
3	NSOL	3441 TEMP	3dfeside	26.14	.1000E-05	166.9	.2840E+10
4	NSOL	309 TEMP	3midtopy	26.05	.1000E-05	165.0	.3156E+10
5	NSOL	3657 TEMP	3dfetop	26.05	.1000E-05	164.4	.3156E+10
6	NSOL	276 TEMP	3midbot	26.22	.2000E-05	164.0	.6312E+10
7	NSOL	3438 TEMP	3dfebot	26.22	.2000E-05	163.6	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:44 MAR 30, 1995 CP= 74236.870
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3441 TEMP 3dfeside	309 TEMP 3midtop	3657 TEMP 3dfetop	276 TEMP 3midbot	3438 TEMP 3dfebot
.10000E-05	26.1404	26.1405	26.0542	26.0536	26.2294	26.2293
.20000E-05	26.1406	26.1406	26.0623	26.0623	26.2238	26.2238
.31558E+07	26.1406	26.1406	26.0623	26.0623	26.2238	26.2238
.31558E+07	30.0505	28.0200	29.5495	27.8173	28.5152	27.2709
.63116E+07	35.6997	32.0321	34.9590	31.7254	33.1435	30.3597
.94673E+07	40.0983	35.8536	39.3363	35.5370	37.1299	33.6897
.12623E+08	43.6881	39.2604	42.9342	38.9454	40.4840	36.7976
.15779E+08	46.7631	42.3046	45.9859	41.9604	43.3689	39.6128
.18935E+08	49.4870	45.0584	48.6441	44.6438	45.9059	42.1555
.22090E+08	51.9558	47.5806	51.0103	47.0589	48.1798	44.4662
.25246E+08	54.2218	49.9141	53.1500	49.2574	50.2485	46.5846
.28402E+08	56.3208	52.0863	55.1000	51.2764	52.1492	48.5410
.31558E+08	58.2874	54.1228	56.9070	53.1488	53.9154	50.3625
.63115E+08	73.3483	69.7858	70.5488	67.3267	67.4159	64.3492
.94673E+08	83.5483	80.3174	79.9868	77.0340	76.8542	74.1054
.12623E+09	91.1300	88.1417	87.3063	84.5060	84.1860	81.6020
.15779E+09	97.0003	94.1989	93.2757	90.5863	90.1850	87.6974
.18935E+09	101.936	98.9720	98.1230	95.7493	95.2085	92.7958
.22090E+09	106.267	103.327	102.285	99.6436	99.1418	96.9160
.25246E+09	110.010	107.107	106.278	103.711	103.050	100.574
.28402E+09	113.240	110.422	109.692	107.174	106.439	104.068
.31558E+09	115.991	113.280	112.503	110.085	109.312	107.035
.63115E+09	137.945	135.971	133.003	131.254	130.030	128.330
.94673E+09	152.077	150.501	147.426	145.973	144.709	143.356
.12623E+10	159.531	158.204	155.316	154.119	153.019	151.879
.15779E+10	163.660	162.509	159.873	158.830	157.845	156.855
.18935E+10	166.077	165.053	162.692	161.759	160.809	159.929
.22090E+10	167.333	166.407	164.172	163.330	162.603	161.806
.25246E+10	167.679	166.837	164.800	164.035	163.345	162.621
.28402E+10	167.689	166.907	164.995	164.284	163.707	163.036
.31558E+10	167.552	166.822	165.023	164.359	163.853	163.225
.63115E+10	166.276	165.816	164.638	164.219	164.001	163.605
.94673E+10	162.901	162.529	161.616	161.278	161.157	160.838
.12623E+11	161.158	160.841	160.054	159.765	159.717	159.444
.15779E+11	160.075	159.797	159.064	158.810	158.878	158.639
.18935E+11	158.658	158.414	157.739	157.517	157.654	157.443
.22090E+11	156.782	156.562	155.959	155.759	155.891	155.701
.25246E+11	154.630	154.429	153.905	153.722	153.809	153.636
.28402E+11	152.505	152.320	151.858	151.689	151.739	151.580
.31558E+11	150.550	150.376	149.961	149.803	149.831	149.681

 * Upper Rock Layer Interface Temperatures *

surfTCW = center ground surface
 TCWPTn = center TCW and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 771 ITEM= TEMP COMP= NAME= surfTCW

*** WARNING *** CP= 74237.120 TIME= 17:03:44
 NSOL command erases all previously stored or calculated data
 unless \$STORE, MERGE is used.

VARIABLE 3 IS AT NODE 750 ITEM= TEMP COMP= NAME= TCWPTn

VARIABLE 4 IS AT NODE 693 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 528 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 436 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 402 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	771 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	750 TEMP	TCwPTn	19.53	.1000E-05	30.59	.3156E+11
4	NSOL	693 TEMP	PTnTSw1	21.24	.1000E-05	55.78	.3156E+11
5	NSOL	528 TEMP	TSw1TSw2	24.25	.1000E-05	107.4	.3156E+11
6	NSOL	436 TEMP	upmodel	25.95	.1000E-05	155.8	.6312E+10
7	NSOL	402 TEMP	middrift	26.14	.1000E-05	163.0	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:45 MAR 30, 1995 CP= 74238.460
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	771 TEMP surfTCw	750 TEMP TCwPTn	693 TEMP PTnTSw1	528 TEMP TSw1TSw2	436 TEMP upmodel	402 TEMP middrift
.10000E-05	18.7000	19.5284	21.2405	24.2522	25.9455	26.1408
.20000E-05	18.7000	19.5290	21.2424	24.2564	25.9514	26.1413
31.558	18.7000	19.5290	21.2424	24.2564	25.9514	26.1413
.31558E+07	18.7000	19.5290	21.2424	24.2564	25.9597	26.1665
.63116E+07	18.7000	19.5290	21.2424	24.2564	26.0935	26.5231
.94673E+07	18.7000	19.5290	21.2424	24.2564	26.4899	27.4544
.12623E+08	18.7000	19.5290	21.2424	24.2564	27.1271	28.8297
.15779E+08	18.7000	19.5290	21.2424	24.2564	27.9275	30.4695
.18935E+08	18.7000	19.5290	21.2424	24.2564	28.8246	32.2488
.22090E+08	18.7000	19.5290	21.2424	24.2564	29.7743	34.0902
.25246E+08	18.7000	19.5290	21.2424	24.2564	30.7496	35.9468
.28402E+08	18.7000	19.5290	21.2424	24.2564	31.7349	37.7899
.31558E+08	18.7000	19.5290	21.2424	24.2564	32.7206	39.6016
.63115E+08	18.7000	19.5290	21.2424	24.2564	42.0883	55.1251
.94673E+08	18.7000	19.5290	21.2424	24.2564	50.2951	66.5098
.12623E+09	18.7000	19.5290	21.2424	24.2564	57.3778	75.1814
.15779E+09	18.7000	19.5290	21.2424	24.2564	63.5110	82.0652
.18935E+09	18.7000	19.5290	21.2424	24.2564	68.8634	87.5957
.22090E+09	18.7000	19.5290	21.2424	24.2566	73.4441	91.8764
.25246E+09	18.7000	19.5290	21.2424	24.2571	77.5095	94.6411
.28402E+09	18.7000	19.5290	21.2424	24.2583	80.9785	96.7570
.31558E+09	18.7000	19.5290	21.2424	24.2606	83.9823	99.1655
.63115E+09	18.7000	19.5290	21.2424	24.5335	103.279	124.725
.94673E+09	18.7000	19.5290	21.2424	25.7156	119.989	140.834
.12623E+10	18.7000	19.5290	21.2426	27.8526	131.049	149.939
.15779E+10	18.7000	19.5290	21.2443	30.6364	138.251	155.246
.18935E+10	18.7000	19.5291	21.2511	33.7729	143.273	158.560
.22090E+10	18.7000	19.5297	21.2693	37.0504	146.409	160.533
.25246E+10	18.7000	19.5313	21.3074	40.3334	148.644	161.533
.28402E+10	18.7000	19.5351	21.3743	43.5370	149.997	162.016
.31558E+10	18.7000	19.5427	21.4781	46.6154	151.030	162.272
.63115E+10	18.7000	20.1769	25.0009	69.3114	155.841	163.037
.94673E+10	18.7000	21.9291	31.2383	81.7760	154.750	160.354
.12623E+11	18.7000	23.9959	37.4653	89.2721	154.237	159.005
.15779E+11	18.7000	25.8347	42.6732	94.3184	153.943	158.205
.18935E+11	18.7000	27.3173	46.7766	98.1565	153.228	157.032
.22090E+11	18.7000	28.4729	49.9554	101.472	151.939	155.336
.25246E+11	18.7000	29.3673	52.4043	104.032	150.304	153.329
.28402E+11	18.7000	30.0561	54.2943	105.981	148.590	151.316
.31558E+11	18.7000	30.5934	55.7779	107.434	146.947	149.448

```
*****
* Lower Rock Layer Interface Temperatures *
*****
dwnmodel = center TSw2 1/2 drift spacing below WP
TSw2TSw3 = center TSw2 and TSw3 interface
TSw3CHnv = center TSw3 and CHn1v interface
CHnvCHnz = center CHn1v and CHn1z interface
CHnzCHn2 = center CHn1z and CHn2 interface
CHn2bot = center actual lower contact of CHn2
```

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 74238.710 TIME= 17:03:45
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 612 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 4 IS AT NODE 792 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 5 IS AT NODE 812 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 6 IS AT NODE 831 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 888 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	396 TEMP	dwnmodel	26.33	.2000E-05	155.7 .6312E+10
3	NSOL	612 TEMP	TSw2TSw3	27.68	.3156E+07	117.8 .3156E+11
4	NSOL	792 TEMP	TSw3CHnv	28.15	.1262E+08	107.5 .3156E+11
5	NSOL	812 TEMP	CHnvCHnz	28.31	.2000E-05	104.0 .3156E+11
6	NSOL	831 TEMP	CHnzCHn2	31.42	.2000E-05	66.03 .3156E+11
7	NSOL	888 TEMP	CHn2bot	31.86	.2000E-05	62.12 .3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 17:03:47 MAR 30, 1995 CP= 74240.060
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	612 TEMP TSw2TSw3	792 TEMP TSw3CHnv	812 TEMP CHnvCHnz	831 TEMP CHnzCHn2	888 TEMP CHn2bot
.10000E-05	26.3368	27.6790	28.1504	28.3160	31.4194	31.8640
.20000E-05	26.3327	27.6754	28.1469	28.3125	31.4163	31.8610
31.558	26.3327	27.6754	28.1469	28.3125	31.4163	31.8610
.31558E+07	26.3381	27.6754	28.1469	28.3125	31.4163	31.8610
.63116E+07	26.4412	27.6754	28.1469	28.3125	31.4163	31.8610
.94673E+07	26.7731	27.6754	28.1469	28.3125	31.4163	31.8610
.12623E+08	27.3284	27.6754	28.1469	28.3125	31.4163	31.8610
.15779E+08	28.0414	27.6754	28.1469	28.3125	31.4163	31.8610
.18935E+08	28.8526	27.6754	28.1469	28.3125	31.4163	31.8610
.22090E+08	29.7211	27.6754	28.1469	28.3125	31.4163	31.8610
.25246E+08	30.6213	27.6754	28.1469	28.3125	31.4163	31.8610
.28402E+08	31.5378	27.6754	28.1469	28.3125	31.4163	31.8610
.31558E+08	32.4609	27.6754	28.1469	28.3125	31.4163	31.8610
.63115E+08	41.4300	27.6754	28.1469	28.3125	31.4163	31.8610
.94673E+08	49.4483	27.6754	28.1469	28.3125	31.4163	31.8610
.12623E+09	56.4209	27.6754	28.1469	28.3125	31.4163	31.8610
.15779E+09	62.4837	27.6758	28.1469	28.3125	31.4163	31.8610
.18935E+09	67.7825	27.6771	28.1470	28.3125	31.4163	31.8610

.22090E+09	72.3787	27.6809	28.1471	28.3125	31.4163	31.8610
.25246E+09	76.4096	27.6895	28.1474	28.3125	31.4163	31.8610
.28402E+09	79.8878	27.7055	28.1483	28.3127	31.4163	31.8610
.31558E+09	82.8983	27.7323	28.1502	28.3131	31.4163	31.8610
.63115E+09	102.038	29.0868	28.4037	28.4211	31.4163	31.8610
.94673E+09	118.476	32.4655	29.5264	29.0853	31.4163	31.8610
.12623E+10	129.810	36.9087	31.5691	30.5210	31.4164	31.8610
.15779E+10	137.131	41.7014	34.2390	32.5815	31.4171	31.8612
.18935E+10	142.127	46.4634	37.2564	35.0494	31.4199	31.8619
.22090E+10	145.680	50.9982	40.4170	37.7414	31.4278	31.8642
.25246E+10	147.892	55.2229	43.5863	40.5236	31.4453	31.8702
.28402E+10	149.453	59.1002	46.6792	43.3049	31.4776	31.8825
.31558E+10	150.569	62.6374	49.6475	46.0259	31.5299	31.9043
.63115E+10	155.742	84.6782	71.1150	66.8491	33.6976	33.1971
.94673E+10	154.766	94.8986	82.7654	78.7918	38.1911	36.5165
.12623E+11	154.369	102.486	90.7635	86.9646	43.3131	40.7454
.15779E+11	154.303	108.858	96.6307	93.0141	48.3003	45.1113
.18935E+11	153.713	113.205	100.470	96.5092	52.9154	49.3160
.22090E+11	152.386	115.446	102.900	98.8901	56.9617	53.1452
.25246E+11	150.627	116.666	104.945	101.127	60.4584	56.5397
.28402E+11	148.813	117.373	106.388	102.747	63.4498	59.5195
.31558E+11	147.106	117.797	107.501	104.048	66.0290	62.1241

***** ROUTINE COMPLETED ***** CP = 74240.070

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21x5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 52
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```

*****
          ANSYS RUN COMPLETED
*****
          REV. 5.0 A                      HP 9000/7XX
          CP TIME      (sec) =      74247.050    TIME = 17:04:00
          ELAPSED TIME (sec) =      76935.000    DATE  = 03/30/95
*****
    
```

```

*-----*
|               W E L C O M E   T O   T H E   A N S Y S   P R O G R A M               |
|-----|

```

```

***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = c21c5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

```

```

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED      = 16777216      64.000 MB  COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592      18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496   25.568 MB
WORK SPACE OBTAINED       = 16777214      64.000 MB
BYTES PER WORD            = 4

```

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RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON    TO START THE ANSYS MENU SYSTEM
ENTER HELP       FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 7/28/1995
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c21c5a.inp *
7 /COM, *
8 /COM, * 21 PWR WP/MPC (10 cm overpack) *
9 /COM, * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
10 /COM, * 5.0 m Diameter Drift with Concrete Invert *
11 /COM, * 100 MTU/acre (24.7 kgU/m^2) AML (High Thermal Loading) *
12 /COM, * Drift spacing = 30.0 m (15.0 m model half width) *
13 /COM, * WP c/c spacing = 12.124 m *
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat *
16 /COM, * SNF Heat Loads file: snf2242.dat *
17 /COM, *
18 /COM, *****

```

```

19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,21 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.9008,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.682,
40 *SET,WPWLL,0.10,
41 *SET,WSPC,12.124,
42 *SET,WPNUM,21.0,
43 *SET,MODEL,15.0,
44 *SET,OFFST,0.137,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep,dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242,dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM, Model is 6 elements wide
371 /COM, (3+7=10 divisions)
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 4,2.2,
378 /COM, Extrude WP 5 elements
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM, 1 element thick steel
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM, Extrude drift 4 elements with smallest
386 /COM, elements at WP mid-length
387 LESIZE, 58,,, 5,3.9,
388 LESIZE, 59,,, 5,3.9,
389 /COM, *****
390 /COM, Set element sizes in rock layers
391 /COM, 3 element thick TCw
392 LESIZE, 24,,, 3,
393 /COM, 3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM, 9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM, 12 elements above and below near field
398 /COM, with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,,11,0.556,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,,11,1.8,
403 LSEL,ALL,
404 /COM, 3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM, 2 element thick CHn1v
407 LESIZE, 46,,, 2,
408 /COM, 7 element thick CHn1z
409 LESIZE, 49,,, 7,
410 /COM, 12 element thick CHN2 with smaller elements
411 /COM, near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM, Concatenate lines for mapped meshing
417 /COM, (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM, Mesh 2-D areas
426 /COM, (first WP, then invert, DF wall and rock layers)
427 /COM, Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM, Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM, Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatenatd lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,      Rock around drift
513 /COM,      (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,,58,
527 VMESH,41,
528 /COM,      Mid-drift rock
529 /COM,      (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,,58,
535 /COM,      Concatenate to mesh volume 45
536 /COM,      (L's 311,312 used and freed up)
537 /COM,      (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,      Extrude rest of TSw2
546 /COM,      (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,      Extrude TSw1
549 /COM,      (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,      Extrude PTn
553 /COM,      (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,      Extrude TCw
557 /COM,      (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,      Extrude TSw3
561 /COM,      (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,      Extrude CHn1v
565 /COM,      (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,      Extrude CHn1z
569 /COM,      (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,      Extrude CHn2
573 /COM,      (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,      *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,, 110,
667 ASEL,A,AREA,, 116,
668 ASEL,A,AREA,, 119,
669 ASEL,A,AREA,, 122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,, 138,
675 ASEL,A,AREA,, 144,
676 ASEL,A,AREA,, 147,
677 ASEL,A,AREA,, 150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,, 100,
682 ASEL,A,AREA,, 103,
683 ASEL,A,AREA,, 106,
684 ASEL,A,AREA,, 108,
685 ASEL,A,AREA,, 113,
686 ASEL,A,AREA,, 117,
687 ASEL,A,AREA,, 121,
688 ASEL,A,AREA,, 124,
689 ASEL,A,AREA,, 128,
690 ASEL,A,AREA,, 131,
691 ASEL,A,AREA,, 134,
692 ASEL,A,AREA,, 136,
693 ASEL,A,AREA,, 141,
694 ASEL,A,AREA,, 145,
695 ASEL,A,AREA,, 149,
696 ASEL,A,AREA,, 152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,, 160,
704 ASEL,A,AREA,, 168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,, 120,
710 ASEL,A,AREA,, 151,
711 ASEL,A,AREA,, 157,
712 ASEL,A,AREA,, 162,
713 ASEL,A,AREA,, 181,
714 ASEL,A,AREA,, 199,
715 ASEL,A,AREA,, 212,
716 ASEL,A,AREA,, 235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TMI100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM,          *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TMI0,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TMI1,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TMI10,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TMI100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD), 0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAB,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 50.0,
984 /VCON,1, 25.000,
985 /TYPE,1,HIDP,
986 /SHADE,,GOUR,
987 /GLINE,,0,
988 /TITLE,
989 VSEL,S,LOC,Z,0,100
990 ESLV,S
991 /SHOW,meshdrift,grph,0,8,
992 EPLOT
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1,+90,YS,1
995 /DIST,1, 35.0,
996 VSEL,S,LOC,X,-100,0
997 ESLV,S
998 /SHOW,meshside,grph,0,8,

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999 EPLOT
1000 /COM, *****
1001 /COM, Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM, Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT, 1,
1009 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
1010 /VIEW,1, -.36934, .15899, -.91559,
1011 /FOC, 1, 2.7776, -.97308, 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088, ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM, Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM, Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0,100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05,100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1,100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5,100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10,100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50,100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100,100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500,100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k,100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM, View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPLOT
1065 /COM, *****
1066 /COM, Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM, Set view settings

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1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT , 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC,1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG,1, -.52088,ZS,
1079 /VCON,1, 25.000,
1080 /LIG,1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM, Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM, Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM, View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLOT
1131 FINISH
1132 /COM, *****
1133 /COM, Print time/temperature output at specific locations
1134 /POST26,
1135 /COM,
1136 /COM, *****
1137 /COM, * Waste Package Surface Temperatures *
1138 /COM, *****

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1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE(  WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE(  WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpside,
1147 NSOL,4,(NODE(      0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE(      0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE(      0.0, (0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE(      0.0, (0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWLL), 0.0,      0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWLL), 0.0, (WPLEN/2.0-WPWLL))),TEMP,,swpside,
1164 NSOL,4,(NODE(0.0,      (WPRAD-WPWLL), 0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0,      (WPRAD-WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWLL), 0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE( 0.0,      0.0,      0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE( 0.0,      0.0, (WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE( 0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE( 0.0, (DFCENT-DFRAD), 0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE( 0.0, (DFCENT-DFRAD), (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE( 0.0, (DFCENT-DFRAD), (WSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfecent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE( 0.0,      YYY,      0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE( 0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE( 0.0,      YYY,      (WSPC/2.0))),TEMP,,idfecent,
1199 NSOL,5,(NODE( XXX,      YYY,      0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE( XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE( XXX,      YYY,      (WSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpside = end of WP drift wall side surface

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1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddfetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmidside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WPSPC/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,,dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,,dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WPSPC/2.0))),TEMP,,ddfetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *          1 meter Rock Temperatures          *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dtetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WPSPC/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,, 1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WPSPC/2.0))),TEMP,, 1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,, 1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WPSPC/2.0))),TEMP,, 1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *          3 meter Rock Temperatures          *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WPSPC/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,, 3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WPSPC/2.0))),TEMP,, 3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,, 3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WPSPC/2.0))),TEMP,, 3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *          Upper Rock Layer Interface Temperatures          *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *          Lower Rock Layer Interface Temperatures          *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHnvCHnz = center CHn1v and CHn1z interface

```

```

1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1282 NSOL,3,(NODE( 0.0,(GSURF-393.5), 0.0)),TEMP,,TSw2TSw3,
1283 NSOL,4,(NODE( 0.0,(GSURF-409.3), 0.0)),TEMP,,TSw3CHnv,
1284 NSOL,5,(NODE( 0.0,(GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1285 NSOL,6,(NODE( 0.0,(GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2), 0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM,          *****
1291 /COM,          End of batch input file
1292 /COM,          *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE= 0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,1,

```


ABBREVIATION= RAS /show,,,0,
 ABBREVIATION= ON /menu,on,
 ABBREVIATION= OFF /menu,off,
 ABBREVIATION= NVP /config,nvpag,512,
 ABBREVIATION= QUIT /exit,nosav,
 XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

 END start.ans

To start ANSYS menu:

type: x3d for console
 x11 for X-term

type: on

 ANSYS REVISION 5.0A 7/28/1995
 3-D Model of Waste Package Drift Emplacement R.Bahney III

 *
 * File name: c21c5a.inp *
 *
 * 21 PWR WP/MPC (10 cm overpack) *
 * Average SNF: 22 years old, 42.2 Gwd/MTU burnup *
 * 5.0 m Diameter Drift with Concrete Invert *
 * 100 MTU/acre (24.7 kgU/m^2) AML (High Thermal Loading) *
 * Drift spacing = 30.0 m (15.0 m model half width) *
 * WP c/c spacing = 12.124 m *
 *
 * Material Properties file: Proprep.dat *
 * SNF Heat Loads file: snf2242.dat *
 *

 Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

TITLE=

21 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
 MASS = KILOGRAMS(KG)
 TIME = SECONDS(SEC)
 TEMPERATURE = CENTIGRADE
 CURRENT = AMPS

Define emplacement parameters

WPRAD = radius of waste package (m)
 DFRAD = radius of drift (m)
 INVRT = height of invert backfill floor (m)
 WPLEN = length of waste package (m)
 WPWLL = thickness of outer barrier (m)
 WSPC = waste package c/c spacing (m)
 WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .9008000
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.682000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 12.12400
 PARAMETER WPNUM = 21.00000
 PARAMETER MODEL = 15.00000
 PARAMETER OFFST = .1370000

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1

PARAMETER GSURF = 308.6370
 PARAMETER DFCENT = .1370000
 PARAMETER XXX = 1.734935

PARAMETER YYY = -1.663000
 PARAMETER WPVOL = 11.04426
 PARAMETER TM_START = 31.55760
 PARAMETER TM10 = 3155760.
 PARAMETER TM11 = .3155760E+08
 PARAMETER TM110 = .3155760E+09
 PARAMETER TM1100 = .3155760E+10
 PARAMETER TM11000 = .3155760E+11
 PARAMETER TME0 = .2840187E+08
 PARAMETER TME1 = .3155763E+08
 PARAMETER TME9 = .2840184E+09
 PARAMETER TME10 = .3155760E+09
 PARAMETER TME90 = .2840184E+10
 PARAMETER TME100 = .3155760E+10
 PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 14:19:58 JUL 28, 1995 CP= .710
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
 KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCW	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smearred Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **

** Emissivity EMIS **

** Conductivity: KXX (W/m/K) **

** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***

SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C	MAT= 4	NUM. POINTS= 8	
SLOC= 5	.1046900E+08	.1019840E+08	2006500. 2111400.
PROPERTY TABLE C	MAT= 4	NUM. POINTS= 11	
SLOC= 9	2191200.	2269200.	2341000.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 4	
SLOC= 1	1844300.	2031500.	2283100. 4559000.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 8	
SLOC= 5	4518800.	4480000.	2295300. 2448900.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 11	
SLOC= 9	2574000.	2679200.	2770200.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 4	
SLOC= 1	2443600.	2555700.	2696000. .3660130E+08
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 8	
SLOC= 5	.3532630E+08	.3417640E+08	1501300. 1601800.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 11	
SLOC= 9	1683600.	1752500.	1812000.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 4	
SLOC= 1	2603200.	2664700.	2744700. .3660690E+08
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 8	
SLOC= 5	.3534400E+08	.3420530E+08	2791400. 2741900.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 11	
SLOC= 9	2670700.	1581400.	1632000.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 4	
SLOC= 1	2430900.	2538500.	2680250. .2798690E+08
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 8	
SLOC= 5	.2705530E+08	.2621460E+08	2564400. 2593500.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 11	
SLOC= 9	2598500.	1981950.	2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***

SLOC= 1	21.11000	37.78000	65.56000
	93.33000	121.1100	148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***

SLOC= 7	176.6700	204.4400	232.2200
	260.0000	287.7800	315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***

SLOC= 13	343.3300	371.1100	398.8900
	426.6700	454.4400	482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***

SLOC= 19	510.0000	537.7800	565.5600
----------	----------	----------	----------

593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***

SLOC= 25 676.6700 704.4400 732.2200
760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
SLOC= 1 40.84000 41.36000 41.88000 42.23000
42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
SLOC= 7 42.06000 41.88000 41.36000 41.02000
40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
SLOC= 13 39.29000 38.77000 38.08000 37.56000
36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
SLOC= 19 35.48000 34.61000 33.92000 33.23000
32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
SLOC= 25 30.29000 28.90000 27.35000 26.48000
26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
SLOC= 1 428.7200 444.9500 460.9400 476.8700
486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
SLOC= 7 506.0900 517.0700 525.6400 536.9900
543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
SLOC= 13 562.2100 577.3200 589.1000 600.5700
611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
SLOC= 19 645.3200 665.1200 682.0700 694.5200
724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
SLOC= 25 806.3100 888.6000 1095.040 1638.780
808.6800 736.9000

** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
and calculate the volumetric heat generation
(Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

** Waste Package Heat Generation Rates **

** File name: snf2242.dat **

** Age 22.0 years 0.428 MTU/Assy **

** 42200 MWD/MTU burnup, type P **

** 12-8-1994 **

** Initial enrichment average for burnup **

** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
477.0000 467.8000

PARAMETER ASSY(13,1) =	459.2000 429.3000	451.1000 423.7000	443.5000	436.2000
PARAMETER ASSY(19,1) =	412.6000 252.6000	404.5000 222.0000	341.6000	294.1000
PARAMETER ASSY(25,1) =	198.5000 139.7000	179.8000 85.70000	162.5000	150.1000
PARAMETER ASSY(31,1) =	67.40000 38.10000	56.80000 34.30000	49.40000	42.90000
PARAMETER ASSY(37,1) =	31.30000 11.10000	29.00000 10.00000	15.50000	12.80000
PARAMETER ASSY(43,1) =	9.200000 7.200000	8.600000	8.000000	7.600000
PARAMETER ASSY(1,0) =	.1000000E-05 .4000000	.1000000 .5000000	.2000000	.3000000
PARAMETER ASSY(7,0) =	.6000000 1.000000	.7000000 2.000000	.8000000	.9000000
PARAMETER ASSY(13,0) =	3.000000 7.000000	4.000000 8.000000	5.000000	6.000000
PARAMETER ASSY(19,0) =	9.000000 40.00000	10.00000 50.00000	20.00000	30.00000
PARAMETER ASSY(25,0) =	60.00000 100.0000	70.00000 200.0000	80.00000	90.00000
PARAMETER ASSY(31,0) =	300.0000 700.0000	400.0000 800.0000	500.0000	600.0000
PARAMETER ASSY(37,0) =	900.0000 4000.000	1000.000 5000.000	2000.000	3000.000
PARAMETER ASSY(43,0) =	6000.000 10000.00	7000.000	8000.000	9000.000

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)

INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.9014
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
WPHOT(1) = COPY ASSY(1)
SCALE FACTORS RESULT= 1.9014 INPUT= 1.0000
VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000

PARAMETER WPTOP(0,1) = 1.000000

PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)

(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)

(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-15.0000	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	3	X,Y,Z=	15.0000	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	-15.0000	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	15.0000	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	-15.0000	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	15.0000	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	-15.0000	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	15.0000	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	-15.0000	15.1370	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.000000E+00	15.1370	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	15.0000	15.1370	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	-15.0000	.137000	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	15.0000	.137000	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	-15.0000	-14.8630	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.000000E+00	-14.8630	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	15.0000	-14.8630	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	-15.0000	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	15.0000	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	-15.0000	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	15.0000	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	-15.0000	-105.863	.000000E+00	IN CSYS=	0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.863	.000000E+00	IN CSYS=	0

KEYPOINT	29	X,Y,Z=	15.0000	-105.863	.000000E+00	IN CSYS= 0
KEYPOINT	30	X,Y,Z=	-15.0000	-209.863	.000000E+00	IN CSYS= 0
KEYPOINT	31	X,Y,Z=	.000000E+00	-209.863	.000000E+00	IN CSYS= 0
KEYPOINT	32	X,Y,Z=	15.0000	-209.863	.000000E+00	IN CSYS= 0
KEYPOINT	33	X,Y,Z=	-15.0000	-991.363	.000000E+00	IN CSYS= 0
KEYPOINT	34	X,Y,Z=	.000000E+00	-991.363	.000000E+00	IN CSYS= 0
KEYPOINT	35	X,Y,Z=	15.0000	-991.363	.000000E+00	IN CSYS= 0

Define lines connecting rock layers

(L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)

(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

(36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)

(52,53)

LINE CONNECTS KEYPOINTS		1	2			
LINE NO.=	1	KP1=	1	TAN1=	-1.0000	.0000 .0000
		KP2=	2	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		2	3			
LINE NO.=	2	KP1=	2	TAN1=	-1.0000	.0000 .0000
		KP2=	3	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		4	5			
LINE NO.=	3	KP1=	4	TAN1=	-1.0000	.0000 .0000
		KP2=	5	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		5	6			
LINE NO.=	4	KP1=	5	TAN1=	-1.0000	.0000 .0000
		KP2=	6	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		7	8			
LINE NO.=	5	KP1=	7	TAN1=	-1.0000	.0000 .0000
		KP2=	8	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		8	9			
LINE NO.=	6	KP1=	8	TAN1=	-1.0000	.0000 .0000
		KP2=	9	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		10	11			
LINE NO.=	7	KP1=	10	TAN1=	-1.0000	.0000 .0000
		KP2=	11	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		11	12			
LINE NO.=	8	KP1=	11	TAN1=	-1.0000	.0000 .0000
		KP2=	12	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		13	14			
LINE NO.=	9	KP1=	13	TAN1=	-1.0000	.0000 .0000
		KP2=	14	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		14	15			
LINE NO.=	10	KP1=	14	TAN1=	-1.0000	.0000 .0000
		KP2=	15	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		18	19			
LINE NO.=	11	KP1=	18	TAN1=	-1.0000	.0000 .0000
		KP2=	19	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		19	20			
LINE NO.=	12	KP1=	19	TAN1=	-1.0000	.0000 .0000
		KP2=	20	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		21	22			
LINE NO.=	13	KP1=	21	TAN1=	-1.0000	.0000 .0000
		KP2=	22	TAN2=	1.0000	.0000 .0000

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.= 31	KP1= 9	TAN1= .0000	1.0000	.0000
	KP2= 12	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13				
LINE NO.= 32	KP1= 10	TAN1= .0000	1.0000	.0000
	KP2= 13	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14				
LINE NO.= 33	KP1= 11	TAN1= .0000	1.0000	.0000
	KP2= 14	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15				
LINE NO.= 34	KP1= 12	TAN1= .0000	1.0000	.0000
	KP2= 15	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16				
LINE NO.= 35	KP1= 13	TAN1= .0000	1.0000	.0000
	KP2= 16	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17				
LINE NO.= 36	KP1= 15	TAN1= .0000	1.0000	.0000
	KP2= 17	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18				
LINE NO.= 37	KP1= 16	TAN1= .0000	1.0000	.0000
	KP2= 18	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20				
LINE NO.= 38	KP1= 17	TAN1= .0000	1.0000	.0000
	KP2= 20	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21				
LINE NO.= 39	KP1= 18	TAN1= .0000	1.0000	.0000
	KP2= 21	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22				
LINE NO.= 40	KP1= 19	TAN1= .0000	1.0000	.0000
	KP2= 22	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23				
LINE NO.= 41	KP1= 20	TAN1= .0000	1.0000	.0000
	KP2= 23	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24				
LINE NO.= 42	KP1= 21	TAN1= .0000	1.0000	.0000
	KP2= 24	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25				
LINE NO.= 43	KP1= 22	TAN1= .0000	1.0000	.0000
	KP2= 25	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26				
LINE NO.= 44	KP1= 23	TAN1= .0000	1.0000	.0000
	KP2= 26	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27				
LINE NO.= 45	KP1= 24	TAN1= .0000	1.0000	.0000
	KP2= 27	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28				
LINE NO.= 46	KP1= 25	TAN1= .0000	1.0000	.0000
	KP2= 28	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29				
LINE NO.= 47	KP1= 26	TAN1= .0000	1.0000	.0000
	KP2= 29	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30				
LINE NO.= 48	KP1= 27	TAN1= .0000	1.0000	.0000
	KP2= 30	TAN2= .0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES
 LINE LIST = 39 13 40 11
 (TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES
 LINE LIST = 40 14 41 12
 (TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES
 LINE LIST = 42 15 43 13
 (TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES
 LINE LIST = 43 16 44 14
 (TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES
 LINE LIST = 45 17 46 15
 (TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES
 LINE LIST = 46 18 47 16
 (TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES
 LINE LIST = 48 19 49 17
 (TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES
 LINE LIST = 49 20 50 18
 (TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES
 LINE LIST = 51 21 52 19
 (TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES
 LINE LIST = 52 22 53 20
 (TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
 (K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS= 0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.74100	IN CSYS= 0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.84100	IN CSYS= 0

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.74100 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.84100 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .137000 6.06200 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .137000 -6.06200 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .8008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .9008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.36300 .000000E+00 IN CSYS= 0
 KEYPOINT 53 X,Y,Z= 1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .137000 .000000E+00 IN CSYS= 0

KEYPOINT 55 X,Y,Z= .000000E+00 2.63700 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.66300 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS	36	45			
LINE NO.= 83 KP1=	36	TAN1=	-1.0000	.0000	.0000
KP2= 45	TAN2=	1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	36	46			
LINE NO.= 84 KP1=	36	TAN1=	.0000	-1.0000	.0000
KP2= 46	TAN2=	.0000	1.0000	.0000	
LINE CONNECTS KEYPOINTS	36	47			
LINE NO.= 85 KP1=	36	TAN1=	1.0000	.0000	.0000
KP2= 47	TAN2=	-1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	44	48			
LINE NO.= 86 KP1=	44	TAN1=	.0000	1.0000	.0000
KP2= 48	TAN2=	.0000	-1.0000	.0000	
LINE CONNECTS KEYPOINTS	45	49			
LINE NO.= 87 KP1=	45	TAN1=	-1.0000	.0000	.0000
KP2= 49	TAN2=	1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	46	50			
LINE NO.= 88 KP1=	46	TAN1=	.0000	-1.0000	.0000
KP2= 50	TAN2=	.0000	1.0000	.0000	
LINE CONNECTS KEYPOINTS	47	51			
LINE NO.= 89 KP1=	47	TAN1=	1.0000	.0000	.0000
KP2= 51	TAN2=	-1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	50	55			
LINE NO.= 90 KP1=	50	TAN1=	.0000	-1.0000	.0000
KP2= 55	TAN2=	.0000	1.0000	.0000	
LINE CONNECTS KEYPOINTS	48	58			
LINE NO.= 91 KP1=	48	TAN1=	.0000	1.0000	.0000
KP2= 58	TAN2=	.0000	-1.0000	.0000	
LINE CONNECTS KEYPOINTS	58	52			
LINE NO.= 92 KP1=	58	TAN1=	.0000	1.0000	.0000
KP2= 52	TAN2=	.0000	-1.0000	.0000	
LINE CONNECTS KEYPOINTS	57	58			
LINE NO.= 93 KP1=	57	TAN1=	-1.0000	.0000	.0000
KP2= 58	TAN2=	1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	58	53			
LINE NO.= 94 KP1=	58	TAN1=	-1.0000	.0000	.0000
KP2= 53	TAN2=	1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	52	59			
LINE NO.= 95 KP1=	52	TAN1=	.0000	1.0000	.0000
KP2= 59	TAN2=	.0000	-1.0000	.0000	
LINE CONNECTS KEYPOINTS	54	60			
LINE NO.= 96 KP1=	54	TAN1=	-1.0000	.0000	.0000
KP2= 60	TAN2=	1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	55	61			
LINE NO.= 97 KP1=	55	TAN1=	.0000	-1.0000	.0000
KP2= 61	TAN2=	.0000	1.0000	.0000	
LINE CONNECTS KEYPOINTS	56	62			
LINE NO.= 98 KP1=	56	TAN1=	1.0000	.0000	.0000
KP2= 62	TAN2=	-1.0000	.0000	.0000	
LINE CONNECTS KEYPOINTS	59	63			
LINE NO.= 99 KP1=	59	TAN1=	.0000	1.0000	.0000
KP2= 63	TAN2=	.0000	-1.0000	.0000	
LINE CONNECTS KEYPOINTS	60	64			
LINE NO.= 100 KP1=	60	TAN1=	-1.0000	.0000	.0000

```

      KP2=    64 TAN2=    1.0000    .0000    .0000
LINE CONNECTS KEYPOINTS    61    65
LINE NO.=   101 KP1=    61 TAN1=    .0000   -1.0000    .0000
      KP2=    65 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    62    66
LINE NO.=   102 KP1=    62 TAN1=    1.0000    .0000    .0000
      KP2=    66 TAN2=   -1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    63    19
LINE NO.=   103 KP1=    63 TAN1=    .0000    1.0000    .0000
      KP2=    19 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS    64    17
LINE NO.=   104 KP1=    64 TAN1=   -1.0000    .0000    .0000
      KP2=    17 TAN2=    1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    65    14
LINE NO.=   105 KP1=    65 TAN1=    .0000   -1.0000    .0000
      KP2=    14 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    66    16
LINE NO.=   106 KP1=    66 TAN1=    1.0000    .0000    .0000
      KP2=    16 TAN2=   -1.0000    .0000    .0000

```

Define areas around drift
 (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
 (35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 82 60 83
 (TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
 LINE LIST = 83 61 84
 (TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
 LINE LIST = 85 84 62
 (TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
 LINE LIST = 63 82 85
 (TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
 LINE LIST = 86 64 87 60
 (TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
 LINE LIST = 61 87 65 88
 (TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
 LINE LIST = 89 62 88 66
 (TRAVERSED IN SAME DIRECTION AS LINE 89)

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES
LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

```

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    68 TO      68 STEP      1

      3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    73 TO      73 STEP      1

      4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 4, SPACING RATIO = 1.000

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    69 TO      69 STEP      1

      1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    72 TO      72 STEP      1

      2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 6, SPACING RATIO = 1.000

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    70 TO      71 STEP      1

      2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    74 TO      81 STEP      1

     10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 10, SPACING RATIO = 1.000
      2 element deep invert

ALL SELECT  FOR ITEM=LINE COMPONENT=
IN RANGE    1 TO      106 STEP      1

    106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
  TO NDIV = 2, SPACING RATIO = 1.000
      2 elements in 1st meter of rock

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    95 TO      98 STEP      1

      4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 2, SPACING RATIO = 1.000
      3 elements in next 2 meters

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    99 TO     102 STEP      1

      4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 3, SPACING RATIO = 1.000
      Model is 6 elements wide
      (3+7=10 divisions)

SELECT      FOR ITEM=LINE COMPONENT=

```

IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 2.200
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 4 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 3.900

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 3.900

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 11, SPACING RATIO = .556

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 11, SPACING RATIO = 1.800

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TSw3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHn1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHn1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES
LINES = 36 10

COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)
Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132
Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS
IN AREAS 27 TO 28 IN STEPS OF 1
** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144
Drift wall and TSW2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS
IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 275
 MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
 IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 395
 MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
 IN AREAS 37 TO 40 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 555
 MAXIMUM ELEMENT NUMBER = 504

GENERATE NODES AND ELEMENTS
 IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 709
 MAXIMUM ELEMENT NUMBER = 636
 TSw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
 IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 772
 MAXIMUM ELEMENT NUMBER = 690
 PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
 IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 793
 MAXIMUM ELEMENT NUMBER = 708
 TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
 IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 814
 MAXIMUM ELEMENT NUMBER = 726
 TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
 IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 835
 MAXIMUM ELEMENT NUMBER = 744
 CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
 IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 849
 MAXIMUM ELEMENT NUMBER = 756
 CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
 IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 898
 MAXIMUM ELEMENT NUMBER = 798
 CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
 IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 7.640 TIME= 14:20:05
 Meshing of area 17 produced 9 poorly shaped elements.

*** NOTE *** CP= 7.640 TIME= 14:20:05
 Worst aspect ratio is 32.126098 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
 808 809 810 820 821 822 832 833 834

*** WARNING *** CP= 7.710 TIME= 14:20:05
 Meshing of area 18 produced 9 poorly shaped elements.

*** NOTE *** CP= 7.710 TIME= 14:20:05
 Worst aspect ratio is 32.126098 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
 844 845 846 856 857 858 868 869 870

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 982
 MAXIMUM ELEMENT NUMBER = 870

Delete concatenated lines
 (L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
(V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
54,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
54,

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
56,
(plot area numbers before next drag commands)

DRAG AREAS
44, 47, 50, 52,
ALONG LINES
55,

DRAG AREAS
57, 61, 65, 68,
ALONG LINES
55,

DRAG AREAS
72, 75, 78, 80,
ALONG LINES
57,

DRAG AREAS
85, 89, 93, 96,
ALONG LINES
57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172
LINE	175 USED FOR LINE(S)	187
LINE	176 USED FOR LINE(S)	193
LINE	177 USED FOR LINE(S)	192
LINE	179 USED FOR LINE(S)	194
LINE	180 USED FOR LINE(S)	195
LINE	183 USED FOR LINE(S)	200
LINE	184 USED FOR LINE(S)	203
LINE	185 USED FOR LINE(S)	205
LINE	208 USED FOR LINE(S)	220
LINE	209 USED FOR LINE(S)	226
LINE	210 USED FOR LINE(S)	225
LINE	212 USED FOR LINE(S)	227
LINE	213 USED FOR LINE(S)	228
LINE	216 USED FOR LINE(S)	233
LINE	217 USED FOR LINE(S)	236
LINE	218 USED FOR LINE(S)	238
AREA	42 USED FOR AREA(S)	56
AREA	45 USED FOR AREA(S)	58
AREA	49 USED FOR AREA(S)	64
AREA	51 USED FOR AREA(S)	67
AREA	70 USED FOR AREA(S)	84
AREA	73 USED FOR AREA(S)	86
AREA	77 USED FOR AREA(S)	92
AREA	79 USED FOR AREA(S)	95
AREA	98 USED FOR AREA(S)	112
AREA	101 USED FOR AREA(S)	114
AREA	105 USED FOR AREA(S)	120
AREA	107 USED FOR AREA(S)	123
AREA	126 USED FOR AREA(S)	140
AREA	129 USED FOR AREA(S)	142
AREA	133 USED FOR AREA(S)	148
AREA	135 USED FOR AREA(S)	151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE, NODES AND ELEMENTS
IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1587
MAXIMUM ELEMENT NUMBER = 1410

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1707
MAXIMUM ELEMENT NUMBER = 1530

GENERATE NODES AND ELEMENTS
IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 1852
MAXIMUM ELEMENT NUMBER = 1662

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2457
MAXIMUM ELEMENT NUMBER = 2202

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2577
MAXIMUM ELEMENT NUMBER = 2322

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2722
MAXIMUM ELEMENT NUMBER = 2454

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2817
MAXIMUM ELEMENT NUMBER = 2514
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3132

MAXIMUM ELEMENT NUMBER = 2714

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3297
MAXIMUM ELEMENT NUMBER = 2814

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3462
MAXIMUM ELEMENT NUMBER = 2914

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3882
MAXIMUM ELEMENT NUMBER = 3214

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4102
MAXIMUM ELEMENT NUMBER = 3364

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4322
MAXIMUM ELEMENT NUMBER = 3514
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 26.760 TIME= 14:20:24
Meshing of volume 43 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3560 3561 3562 3563 3564 3565 3566 3567

3568 3569 3570 3571 3572 3573 3574

*** WARNING *** CP= 27.300 TIME= 14:20:25
Meshing of volume 44 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
3860 3861 3862 3863 3864 3865 3866 3867
3868 3869 3870 3871 3872 3873 3874

MAXIMUM NODE NUMBER = 4847
MAXIMUM ELEMENT NUMBER = 3914

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 28.010 TIME= 14:20:25
Meshing of volume 46 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
3950 3951 3952 3953 3954 4000 4001 4002
4003 4004 4050 4051 4052 4053 4054

MAXIMUM NODE NUMBER = 5122
MAXIMUM ELEMENT NUMBER = 4114
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 28.890 TIME= 14:20:26
Meshing of volume 45 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
4256 4257 4258 4260 4261 4262 4264 4265
4266 4268 4269 4270 4272 4273 4274

NUMBER OF VOLUMES MESHED = 1

MAXIMUM NODE NUMBER = 5397
MAXIMUM ELEMENT NUMBER = 4314

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6237
MAXIMUM ELEMENT NUMBER = 4974
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6587
MAXIMUM ELEMENT NUMBER = 5244
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6727
MAXIMUM ELEMENT NUMBER = 5334
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6867
MAXIMUM ELEMENT NUMBER = 5424
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7007
 MAXIMUM ELEMENT NUMBER = 5514
 Extrude CHn1v
 (V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
 13, 14,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 7112
 MAXIMUM ELEMENT NUMBER = 5574
 Extrude CHn1z
 (V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
 15, 16,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 7392
 MAXIMUM ELEMENT NUMBER = 5784
 Extrude CHn2
 (V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
 17, 18,
 ALONG LINES
 58,

*** WARNING *** CP= 34.120 TIME= 14:20:32
 Meshing of volume 63 produced 63 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

5815	5820	5821	5825	5826	5827	5830	5831
5832	5833	5834	5835	5836	5837	5838	5839
5840	5841	5842	5843	5844	5875	5880	5881
5885	5886	5887	5890	5891	5892	5893	5894
5895	5896	5897	5898	5899	5900	5901	5902
5903	5904	5935	5940	5941	5945	5946	5947
5950	5951	5952	5953	5954	5955	5956	5957
5958	5959	5960	5961	5962	5963	5964	

*** WARNING *** CP= 34.580 TIME= 14:20:32
 Meshing of volume 64 produced 63 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

5995	6000	6001	6005	6006	6007	6010	6011
6012	6013	6014	6015	6016	6017	6018	6019
6020	6021	6022	6023	6024	6055	6060	6061
6065	6066	6067	6070	6071	6072	6073	6074
6075	6076	6077	6078	6079	6080	6081	6082
6083	6084	6115	6120	6121	6125	6126	6127
6130	6131	6132	6133	6134	6135	6136	6137
6138	6139	6140	6141	6142	6143	6144	

MAXIMUM NODE NUMBER = 7847
 MAXIMUM ELEMENT NUMBER = 6144

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE	5819	USED	FOR	NODES	6868
NODE	6869	USED	FOR	NODES	7008
NODE	5877	USED	FOR	NODES	6887
NODE	5874	USED	FOR	NODES	6884
NODE	5875	USED	FOR	NODES	6885
NODE	5876	USED	FOR	NODES	6886
NODE	6892	USED	FOR	NODES	7020
NODE	6893	USED	FOR	NODES	7021
NODE	6894	USED	FOR	NODES	7022
NODE	6895	USED	FOR	NODES	7023
NODE	4903	USED	FOR	NODES	5124
NODE	4904	USED	FOR	NODES	5125
NODE	6238	USED	FOR	NODES	6589
NODE	5398	USED	FOR	NODES	6239
NODE	4905	USED	FOR	NODES	5126
NODE	4906	USED	FOR	NODES	5127
NODE	7114	USED	FOR	NODES	7393
NODE	4907	USED	FOR	NODES	5866
NODE	4908	USED	FOR	NODES	5867
NODE	4909	USED	FOR	NODES	5868
NODE	5448	USED	FOR	NODES	6288
NODE	5449	USED	FOR	NODES	6289
NODE	5149	USED	FOR	NODES	5454
NODE	5150	USED	FOR	NODES	5455
NODE	6278	USED	FOR	NODES	6612
NODE	6279	USED	FOR	NODES	6613
NODE	6280	USED	FOR	NODES	6614
NODE	7153	USED	FOR	NODES	7445
NODE	7154	USED	FOR	NODES	7446
NODE	7155	USED	FOR	NODES	7447
NODE	7156	USED	FOR	NODES	7448
NODE	4910	USED	FOR	NODES	5869
NODE	6281	USED	FOR	NODES	6615
NODE	5446	USED	FOR	NODES	6286
NODE	5447	USED	FOR	NODES	6287
NODE	5151	USED	FOR	NODES	5456
NODE	5148	USED	FOR	NODES	5399
NODE	6604	USED	FOR	NODES	6752
NODE	5152	USED	FOR	NODES	5457
NODE	6605	USED	FOR	NODES	6753
NODE	6606	USED	FOR	NODES	6754
NODE	6607	USED	FOR	NODES	6755
NODE	7009	USED	FOR	NODES	7113
NODE	7028	USED	FOR	NODES	7145
NODE	7029	USED	FOR	NODES	7146
NODE	7030	USED	FOR	NODES	7147
NODE	7031	USED	FOR	NODES	7148
NODE	4849	USED	FOR	NODES	5818
NODE	4848	USED	FOR	NODES	5123
NODE	6588	USED	FOR	NODES	6729
NODE	5011	USED	FOR	NODES	5144
NODE	5013	USED	FOR	NODES	5146
NODE	5012	USED	FOR	NODES	5145
NODE	5014	USED	FOR	NODES	5147
NODE	4875	USED	FOR	NODES	5131
NODE	6873	USED	FOR	NODES	7016
NODE	5831	USED	FOR	NODES	6878
NODE	5192	USED	FOR	NODES	5472
NODE	5193	USED	FOR	NODES	5473
NODE	6620	USED	FOR	NODES	6768
NODE	6621	USED	FOR	NODES	6769
NODE	5890	USED	FOR	NODES	6900
NODE	5891	USED	FOR	NODES	6901
NODE	5892	USED	FOR	NODES	6902
NODE	5893	USED	FOR	NODES	6903
NODE	6908	USED	FOR	NODES	7036
NODE	6909	USED	FOR	NODES	7037
NODE	6910	USED	FOR	NODES	7038
NODE	6911	USED	FOR	NODES	7039
NODE	6622	USED	FOR	NODES	6770

NODE 6623	USED FOR NODES	6771		
NODE 4923	USED FOR NODES	5882		
NODE 4924	USED FOR NODES	5883		
NODE 4925	USED FOR NODES	5884		
NODE 5424	USED FOR NODES	6249		
NODE 6260	USED FOR NODES	6593		
NODE 7122	USED FOR NODES	7421		
NODE 5188	USED FOR NODES	5411		
NODE 5190	USED FOR NODES	5470		
NODE 5191	USED FOR NODES	5471		
NODE 6598	USED FOR NODES	6733		
NODE 4926	USED FOR NODES	5885		
NODE 7169	USED FOR NODES	7461		
NODE 6294	USED FOR NODES	6628		
NODE 7170	USED FOR NODES	7462		
NODE 6295	USED FOR NODES	6629		
NODE 7171	USED FOR NODES	7463		
NODE 6296	USED FOR NODES	6630		
NODE 6297	USED FOR NODES	6631		
NODE 7172	USED FOR NODES	7464		
NODE 5462	USED FOR NODES	6302		
NODE 5463	USED FOR NODES	6303		
NODE 5464	USED FOR NODES	6304		
NODE 5465	USED FOR NODES	6305		
NODE 7012	USED FOR NODES	7131		
NODE 7044	USED FOR NODES	7161		
NODE 7045	USED FOR NODES	7162		
NODE 7046	USED FOR NODES	7163		
NODE 7047	USED FOR NODES	7164		
NODE 4857	USED FOR NODES	5844		
NODE 5010	USED FOR NODES	5143		
NODE 4874	USED FOR NODES	5130		
NODE 5008	USED FOR NODES	5141		
NODE 5009	USED FOR NODES	5142		
NODE 5007	USED FOR NODES	5140		
NODE 5005	USED FOR NODES	5138		
NODE 5006	USED FOR NODES	5139		
NODE 4873	USED FOR NODES	5129		
NODE 5003	USED FOR NODES	5136		
NODE 5004	USED FOR NODES	5137		
NODE 3939	USED FOR NODES	4104	4919	5132
NODE 3940	USED FOR NODES	4105	4920	5133
NODE 3941	USED FOR NODES	4106	4921	5134
NODE 3942	USED FOR NODES	4107	4922	5135
NODE 3883	USED FOR NODES	4103	4863	5128
NODE 3885	USED FOR NODES	4864		
NODE 3979	USED FOR NODES	4955		
NODE 3980	USED FOR NODES	4956		
NODE 3981	USED FOR NODES	4957		
NODE 3982	USED FOR NODES	4958		
NODE 4128	USED FOR NODES	5226		
NODE 4137	USED FOR NODES	5259		
NODE 4138	USED FOR NODES	5260		
NODE 4139	USED FOR NODES	5261		
NODE 4140	USED FOR NODES	5262		
NODE 4141	USED FOR NODES	5255		
NODE 4142	USED FOR NODES	5256		
NODE 4143	USED FOR NODES	5257		
NODE 4144	USED FOR NODES	5258		
NODE 4129	USED FOR NODES	5225		
NODE 3984	USED FOR NODES	4960		
NODE 3985	USED FOR NODES	4961		
NODE 3986	USED FOR NODES	4962		
NODE 3983	USED FOR NODES	4959		
NODE 3886	USED FOR NODES	4865		
NODE 5196	USED FOR NODES	5476		
NODE 5195	USED FOR NODES	5475		
NODE 5194	USED FOR NODES	5474		
NODE 5197	USED FOR NODES	5477		
NODE 5189	USED FOR NODES	5412		

NODE	6913	USED	FOR	NODES	7041
NODE	6599	USED	FOR	NODES	6734
NODE	5897	USED	FOR	NODES	6907
NODE	5896	USED	FOR	NODES	6906
NODE	6874	USED	FOR	NODES	7017
NODE	6914	USED	FOR	NODES	7042
NODE	5895	USED	FOR	NODES	6905
NODE	7123	USED	FOR	NODES	7422
NODE	7049	USED	FOR	NODES	7166
NODE	6625	USED	FOR	NODES	6773
NODE	7173	USED	FOR	NODES	7465
NODE	6912	USED	FOR	NODES	7040
NODE	7175	USED	FOR	NODES	7467
NODE	6298	USED	FOR	NODES	6632
NODE	7051	USED	FOR	NODES	7168
NODE	4927	USED	FOR	NODES	5886
NODE	6626	USED	FOR	NODES	6774
NODE	6300	USED	FOR	NODES	6634
NODE	6299	USED	FOR	NODES	6633
NODE	5466	USED	FOR	NODES	6306
NODE	5467	USED	FOR	NODES	6307
NODE	6915	USED	FOR	NODES	7043
NODE	5425	USED	FOR	NODES	6250
NODE	5832	USED	FOR	NODES	6879
NODE	5894	USED	FOR	NODES	6904
NODE	6261	USED	FOR	NODES	6594
NODE	4858	USED	FOR	NODES	5845
NODE	7013	USED	FOR	NODES	7132
NODE	6624	USED	FOR	NODES	6772
NODE	6627	USED	FOR	NODES	6775
NODE	7048	USED	FOR	NODES	7165
NODE	7050	USED	FOR	NODES	7167
NODE	4929	USED	FOR	NODES	5888
NODE	4930	USED	FOR	NODES	5889
NODE	5469	USED	FOR	NODES	6309
NODE	6301	USED	FOR	NODES	6635
NODE	7174	USED	FOR	NODES	7466
NODE	5468	USED	FOR	NODES	6308
NODE	4928	USED	FOR	NODES	5887
NODE	7176	USED	FOR	NODES	7468
NODE	4145	USED	FOR	NODES	5251
NODE	4146	USED	FOR	NODES	5252
NODE	4147	USED	FOR	NODES	5253
NODE	4148	USED	FOR	NODES	5254
NODE	4130	USED	FOR	NODES	5224
NODE	3887	USED	FOR	NODES	4866
NODE	3987	USED	FOR	NODES	4963
NODE	3988	USED	FOR	NODES	4964
NODE	3990	USED	FOR	NODES	4966
NODE	3989	USED	FOR	NODES	4965
NODE	4030	USED	FOR	NODES	4122
NODE	3908	USED	FOR	NODES	4110
NODE	4027	USED	FOR	NODES	4119
NODE	4028	USED	FOR	NODES	4120
NODE	4029	USED	FOR	NODES	4121
NODE	4149	USED	FOR	NODES	5247
NODE	4150	USED	FOR	NODES	5248
NODE	4151	USED	FOR	NODES	5249
NODE	4152	USED	FOR	NODES	5250
NODE	4131	USED	FOR	NODES	5223
NODE	3888	USED	FOR	NODES	4867
NODE	3994	USED	FOR	NODES	4970
NODE	3992	USED	FOR	NODES	4968
NODE	3993	USED	FOR	NODES	4969
NODE	3991	USED	FOR	NODES	4967
NODE	3907	USED	FOR	NODES	4109
NODE	4023	USED	FOR	NODES	4115
NODE	4024	USED	FOR	NODES	4116
NODE	4025	USED	FOR	NODES	4117
NODE	4026	USED	FOR	NODES	4118

NODE 4153	USED FOR NODES	5243		
NODE 4154	USED FOR NODES	5244		
NODE 4155	USED FOR NODES	5245		
NODE 4156	USED FOR NODES	5246		
NODE 4132	USED FOR NODES	5222		
NODE 3995	USED FOR NODES	4971		
NODE 3996	USED FOR NODES	4972		
NODE 3997	USED FOR NODES	4973		
NODE 3889	USED FOR NODES	4868		
NODE 3998	USED FOR NODES	4974		
NODE 3133	USED FOR NODES	3298	3897	4108
NODE 3182	USED FOR NODES	3299	3931	4111
NODE 3183	USED FOR NODES	3300	3932	4112
NODE 3184	USED FOR NODES	3301	3933	4113
NODE 3185	USED FOR NODES	3302	3934	4114
NODE 3327	USED FOR NODES	4229		
NODE 3328	USED FOR NODES	4230		
NODE 3329	USED FOR NODES	4231		
NODE 3330	USED FOR NODES	4232		
NODE 3318	USED FOR NODES	4196		
NODE 3219	USED FOR NODES	3944		
NODE 3220	USED FOR NODES	3945		
NODE 3221	USED FOR NODES	3946		
NODE 3218	USED FOR NODES	3943		
NODE 3135	USED FOR NODES	3898		
NODE 3331	USED FOR NODES	4225		
NODE 3332	USED FOR NODES	4226		
NODE 3333	USED FOR NODES	4227		
NODE 3334	USED FOR NODES	4228		
NODE 3319	USED FOR NODES	4195		
NODE 3222	USED FOR NODES	3947		
NODE 3225	USED FOR NODES	3950		
NODE 3136	USED FOR NODES	3899		
NODE 3224	USED FOR NODES	3949		
NODE 3223	USED FOR NODES	3948		
NODE 3890	USED FOR NODES	4869		
NODE 4133	USED FOR NODES	5221		
NODE 3999	USED FOR NODES	4975		
NODE 4000	USED FOR NODES	4976		
NODE 4001	USED FOR NODES	4977		
NODE 4002	USED FOR NODES	4978		
NODE 4157	USED FOR NODES	5239		
NODE 4158	USED FOR NODES	5240		
NODE 4159	USED FOR NODES	5241		
NODE 4160	USED FOR NODES	5242		
NODE 3226	USED FOR NODES	3951		
NODE 3227	USED FOR NODES	3952		
NODE 3228	USED FOR NODES	3953		
NODE 3229	USED FOR NODES	3954		
NODE 3137	USED FOR NODES	3900		
NODE 3320	USED FOR NODES	4194		
NODE 3335	USED FOR NODES	4221		
NODE 3336	USED FOR NODES	4222		
NODE 3337	USED FOR NODES	4223		
NODE 3338	USED FOR NODES	4224		
NODE 3258	USED FOR NODES	3309		
NODE 3259	USED FOR NODES	3310		
NODE 3260	USED FOR NODES	3311		
NODE 3156	USED FOR NODES	3304		
NODE 3261	USED FOR NODES	3312		
NODE 3230	USED FOR NODES	3955		
NODE 3231	USED FOR NODES	3956		
NODE 3232	USED FOR NODES	3957		
NODE 3233	USED FOR NODES	3958		
NODE 3138	USED FOR NODES	3901		
NODE 3321	USED FOR NODES	4193		
NODE 3339	USED FOR NODES	4217		
NODE 3340	USED FOR NODES	4218		
NODE 3341	USED FOR NODES	4219		
NODE 3342	USED FOR NODES	4220		

NODE	3173	USED FOR NODES	3308
NODE	3150	USED FOR NODES	3303
NODE	3171	USED FOR NODES	3306
NODE	3172	USED FOR NODES	3307
NODE	3170	USED FOR NODES	3305
NODE	4161	USED FOR NODES	5235
NODE	4162	USED FOR NODES	5236
NODE	4163	USED FOR NODES	5237
NODE	4164	USED FOR NODES	5238
NODE	4134	USED FOR NODES	5220
NODE	4003	USED FOR NODES	4979
NODE	4004	USED FOR NODES	4980
NODE	4005	USED FOR NODES	4981
NODE	4006	USED FOR NODES	4982
NODE	3891	USED FOR NODES	4870
NODE	3343	USED FOR NODES	4213
NODE	3344	USED FOR NODES	4214
NODE	3345	USED FOR NODES	4215
NODE	3346	USED FOR NODES	4216
NODE	3322	USED FOR NODES	4192
NODE	3234	USED FOR NODES	3959
NODE	3235	USED FOR NODES	3960
NODE	3236	USED FOR NODES	3961
NODE	3139	USED FOR NODES	3902
NODE	3237	USED FOR NODES	3962
NODE	3347	USED FOR NODES	4209
NODE	3348	USED FOR NODES	4210
NODE	3349	USED FOR NODES	4211
NODE	3350	USED FOR NODES	4212
NODE	3323	USED FOR NODES	4191
NODE	3239	USED FOR NODES	3964
NODE	3140	USED FOR NODES	3903
NODE	3240	USED FOR NODES	3965
NODE	3241	USED FOR NODES	3966
NODE	3238	USED FOR NODES	3963
NODE	2740	USED FOR NODES	3176
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 NODE 7302 USED FOR NODES 7693
 NODE 7303 USED FOR NODES 7694
 NODE 7304 USED FOR NODES 7695

*** WARNING *** CP= 52.790 TIME= 14:20:50
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT 67 USED FOR KEYPOINT(S)	115		
KEYPOINT 72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT 76 USED FOR KEYPOINT(S)	89		
KEYPOINT 80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT 85 USED FOR KEYPOINT(S)	122		
KEYPOINT 91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT 93 USED FOR KEYPOINT(S)	104		
KEYPOINT 98 USED FOR KEYPOINT(S)	117		
KEYPOINT 101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT 120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT 121 USED FOR KEYPOINT(S)	137		
KEYPOINT 123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT 126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT 134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT 135 USED FOR KEYPOINT(S)	162		
KEYPOINT 138 USED FOR KEYPOINT(S)	155		
KEYPOINT 139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT 142 USED FOR KEYPOINT(S)	146		
KEYPOINT 143 USED FOR KEYPOINT(S)	152		
KEYPOINT 147 USED FOR KEYPOINT(S)	157		
KEYPOINT 151 USED FOR KEYPOINT(S)	164		
KEYPOINT 154 USED FOR KEYPOINT(S)	165		
KEYPOINT 156 USED FOR KEYPOINT(S)	167		
KEYPOINT 158 USED FOR KEYPOINT(S)	181		
KEYPOINT 159 USED FOR KEYPOINT(S)	184		
KEYPOINT 161 USED FOR KEYPOINT(S)	186		
KEYPOINT 163 USED FOR KEYPOINT(S)	170		
KEYPOINT 166 USED FOR KEYPOINT(S)	171		
KEYPOINT 168 USED FOR KEYPOINT(S)	173		
KEYPOINT 169 USED FOR KEYPOINT(S)	176		
KEYPOINT 172 USED FOR KEYPOINT(S)	177		
KEYPOINT 174 USED FOR KEYPOINT(S)	179		
KEYPOINT 182 USED FOR KEYPOINT(S)	187		
KEYPOINT 183 USED FOR KEYPOINT(S)	190		
KEYPOINT 185 USED FOR KEYPOINT(S)	192		
KEYPOINT 188 USED FOR KEYPOINT(S)	193		
KEYPOINT 189 USED FOR KEYPOINT(S)	196		
KEYPOINT 191 USED FOR KEYPOINT(S)	198		

KEYPOINT	194 USED FOR KEYPOINT(S)	199	
KEYPOINT	195 USED FOR KEYPOINT(S)	202	
KEYPOINT	197 USED FOR KEYPOINT(S)	204	
LINE	108 USED FOR LINE(S)	240	
LINE	121 USED FOR LINE(S)	241	
LINE	126 USED FOR LINE(S)	154	239
LINE	134 USED FOR LINE(S)	174	
LINE	137 USED FOR LINE(S)	172	
LINE	141 USED FOR LINE(S)	238	
LINE	159 USED FOR LINE(S)	236	246 270
LINE	160 USED FOR LINE(S)	252	
LINE	161 USED FOR LINE(S)	251	
LINE	187 USED FOR LINE(S)	257	
LINE	192 USED FOR LINE(S)	220	256 264
LINE	193 USED FOR LINE(S)	225	
LINE	194 USED FOR LINE(S)	226	
LINE	200 USED FOR LINE(S)	244	
LINE	203 USED FOR LINE(S)	243	
LINE	205 USED FOR LINE(S)	233	259 272
LINE	207 USED FOR LINE(S)	265	
LINE	228 USED FOR LINE(S)	271	
LINE	245 USED FOR LINE(S)	269	
LINE	247 USED FOR LINE(S)	268	275 307
LINE	248 USED FOR LINE(S)	283	
LINE	249 USED FOR LINE(S)	282	
LINE	253 USED FOR LINE(S)	290	
LINE	254 USED FOR LINE(S)	262	289 299
LINE	255 USED FOR LINE(S)	263	
LINE	258 USED FOR LINE(S)	273	
LINE	260 USED FOR LINE(S)	267	292 309
LINE	261 USED FOR LINE(S)	300	
LINE	266 USED FOR LINE(S)	308	
LINE	274 USED FOR LINE(S)	306	
LINE	276 USED FOR LINE(S)	305	330
LINE	277 USED FOR LINE(S)	336	
LINE	278 USED FOR LINE(S)	335	
LINE	285 USED FOR LINE(S)	320	
LINE	286 USED FOR LINE(S)	319	
LINE	287 USED FOR LINE(S)	297	315
LINE	288 USED FOR LINE(S)	298	
LINE	291 USED FOR LINE(S)	310	
LINE	293 USED FOR LINE(S)	302	
LINE	295 USED FOR LINE(S)	313	
LINE	296 USED FOR LINE(S)	314	
LINE	303 USED FOR LINE(S)	325	
LINE	304 USED FOR LINE(S)	331	
LINE	312 USED FOR LINE(S)	339	
LINE	317 USED FOR LINE(S)	341	
LINE	318 USED FOR LINE(S)	340	
LINE	322 USED FOR LINE(S)	346	
LINE	323 USED FOR LINE(S)	345	
LINE	326 USED FOR LINE(S)	377	
LINE	327 USED FOR LINE(S)	383	
LINE	328 USED FOR LINE(S)	382	
LINE	332 USED FOR LINE(S)	388	
LINE	333 USED FOR LINE(S)	387	
LINE	338 USED FOR LINE(S)	352	
LINE	343 USED FOR LINE(S)	354	
LINE	344 USED FOR LINE(S)	353	
LINE	348 USED FOR LINE(S)	359	
LINE	349 USED FOR LINE(S)	358	
LINE	351 USED FOR LINE(S)	365	
LINE	356 USED FOR LINE(S)	367	
LINE	357 USED FOR LINE(S)	366	
LINE	361 USED FOR LINE(S)	372	
LINE	362 USED FOR LINE(S)	371	
LINE	378 USED FOR LINE(S)	390	
LINE	379 USED FOR LINE(S)	396	
LINE	380 USED FOR LINE(S)	395	
LINE	384 USED FOR LINE(S)	401	

LINE	385	USED FOR LINE(S)	400
LINE	391	USED FOR LINE(S)	403
LINE	392	USED FOR LINE(S)	409
LINE	393	USED FOR LINE(S)	408
LINE	397	USED FOR LINE(S)	414
LINE	398	USED FOR LINE(S)	413
LINE	404	USED FOR LINE(S)	416
LINE	405	USED FOR LINE(S)	422
LINE	406	USED FOR LINE(S)	421
LINE	410	USED FOR LINE(S)	427
LINE	411	USED FOR LINE(S)	426
AREA	56	USED FOR AREA(S)	161
AREA	84	USED FOR AREA(S)	123
AREA	95	USED FOR AREA(S)	160
AREA	112	USED FOR AREA(S)	168
AREA	142	USED FOR AREA(S)	172
AREA	148	USED FOR AREA(S)	156
AREA	154	USED FOR AREA(S)	163
AREA	155	USED FOR AREA(S)	177
AREA	159	USED FOR AREA(S)	181
AREA	165	USED FOR AREA(S)	180
AREA	166	USED FOR AREA(S)	188
AREA	170	USED FOR AREA(S)	193
AREA	171	USED FOR AREA(S)	176
AREA	174	USED FOR AREA(S)	182
AREA	175	USED FOR AREA(S)	199
AREA	179	USED FOR AREA(S)	204
AREA	184	USED FOR AREA(S)	203
AREA	185	USED FOR AREA(S)	223
AREA	191	USED FOR AREA(S)	212
AREA	192	USED FOR AREA(S)	198
AREA	195	USED FOR AREA(S)	205
AREA	197	USED FOR AREA(S)	208
AREA	202	USED FOR AREA(S)	219
AREA	210	USED FOR AREA(S)	226
AREA	214	USED FOR AREA(S)	230
AREA	217	USED FOR AREA(S)	255
AREA	221	USED FOR AREA(S)	259
AREA	228	USED FOR AREA(S)	235
AREA	232	USED FOR AREA(S)	239
AREA	237	USED FOR AREA(S)	244
AREA	241	USED FOR AREA(S)	248
AREA	253	USED FOR AREA(S)	264
AREA	257	USED FOR AREA(S)	268
AREA	262	USED FOR AREA(S)	273
AREA	266	USED FOR AREA(S)	277
AREA	271	USED FOR AREA(S)	282
AREA	275	USED FOR AREA(S)	286

Extrude 2-D rock into back half 3-D
Invert
(V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7942
MAXIMUM ELEMENT NUMBER = 6204
Rock around drift
(V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8257
MAXIMUM ELEMENT NUMBER = 6404

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8422
MAXIMUM ELEMENT NUMBER = 6504

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 8587
MAXIMUM ELEMENT NUMBER = 6604

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9007
MAXIMUM ELEMENT NUMBER = 6904

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9227
MAXIMUM ELEMENT NUMBER = 7054

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 9447
MAXIMUM ELEMENT NUMBER = 7204

Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 61.180 TIME= 14:20:59
Meshing of volume 75 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
7250 7251 7252 7253 7254 7255 7256 7257
7258 7259 7260 7261 7262 7263 7264

*** WARNING *** CP= 61.730 TIME= 14:20:59
Meshing of volume 76 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
7550 7551 7552 7553 7554 7555 7556 7557
7558 7559 7560 7561 7562 7563 7564

MAXIMUM NODE NUMBER = 9972
MAXIMUM ELEMENT NUMBER = 7604

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
59,

*** WARNING *** CP= 62.460 TIME= 14:21:00
Meshing of volume 78 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
7640 7641 7642 7643 7644 7690 7691 7692
7693 7694 7740 7741 7742 7743 7744

MAXIMUM NODE NUMBER = 10247
MAXIMUM ELEMENT NUMBER = 7804
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 63.340 TIME= 14:21:01
 Meshing of volume 77 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
 7950 7951 7952 7953 7954 7955 7956 7957
 7958 7959 7960 7961 7962 7963 7964

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 10522
 MAXIMUM ELEMENT NUMBER = 8004

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
 Extrude rest of Tsw2
 (V's 79,80,81,82)

DRAG AREAS
 7, 8, 9, 10,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 11362
 MAXIMUM ELEMENT NUMBER = 8664
 Extrude Tsw1
 (V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
 5, 6,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 11712
 MAXIMUM ELEMENT NUMBER = 8934
 Extrude PTn
 (V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
 3, 4,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 11852
 MAXIMUM ELEMENT NUMBER = 9024
 Extrude TCw
 (V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
 1, 2,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 11992
 MAXIMUM ELEMENT NUMBER = 9114

Extrude TSW3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12132
MAXIMUM ELEMENT NUMBER = 9204
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12237
MAXIMUM ELEMENT NUMBER = 9264
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12517
MAXIMUM ELEMENT NUMBER = 9474
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 68.620 TIME= 14:21:06
Meshing of volume 95 produced 63 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

9505	9510	9511	9515	9516	9517	9520	9521
9522	9523	9524	9525	9526	9527	9528	9529
9530	9531	9532	9533	9534	9565	9570	9571
9575	9576	9577	9580	9581	9582	9583	9584
9585	9586	9587	9588	9589	9590	9591	9592
9593	9594	9625	9630	9631	9635	9636	9637
9640	9641	9642	9643	9644	9645	9646	9647
9648	9649	9650	9651	9652	9653	9654	

*** WARNING *** CP= 69.090 TIME= 14:21:07
Meshing of volume 96 produced 63 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

9685	9690	9691	9695	9696	9697	9700	9701
9702	9703	9704	9705	9706	9707	9708	9709
9710	9711	9712	9713	9714	9745	9750	9751
9755	9756	9757	9760	9761	9762	9763	9764

9765	9766	9767	9768	9769	9770	9771	9772
9773	9774	9805	9810	9811	9815	9816	9817
9820	9821	9822	9823	9824	9825	9826	9827
9828	9829	9830	9831	9832	9833	9834	

MAXIMUM NODE NUMBER = 12972
MAXIMUM ELEMENT NUMBER = 9834

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 10028 USED FOR NODES 10249
 NODE 10029 USED FOR NODES 10250
 NODE 10030 USED FOR NODES 10251
 NODE 10031 USED FOR NODES 10252
 NODE 10032 USED FOR NODES 10991
 NODE 10033 USED FOR NODES 10992
 NODE 10034 USED FOR NODES 10993
 NODE 10035 USED FOR NODES 10994
 NODE 11994 USED FOR NODES 12133
 NODE 12134 USED FOR NODES 12238
 NODE 12017 USED FOR NODES 12145
 NODE 12018 USED FOR NODES 12146
 NODE 12019 USED FOR NODES 12147
 NODE 12020 USED FOR NODES 12148
 NODE 12153 USED FOR NODES 12270
 NODE 12154 USED FOR NODES 12271
 NODE 12155 USED FOR NODES 12272
 NODE 12156 USED FOR NODES 12273
 NODE 11002 USED FOR NODES 12012
 NODE 12239 USED FOR NODES 12518
 NODE 11363 USED FOR NODES 11714
 NODE 10523 USED FOR NODES 11364
 NODE 10944 USED FOR NODES 11993
 NODE 11403 USED FOR NODES 11737
 NODE 11404 USED FOR NODES 11738
 NODE 11405 USED FOR NODES 11739
 NODE 11406 USED FOR NODES 11740
 NODE 9973 USED FOR NODES 10248
 NODE 10571 USED FOR NODES 11411
 NODE 10572 USED FOR NODES 11412
 NODE 10573 USED FOR NODES 11413
 NODE 10574 USED FOR NODES 11414
 NODE 12278 USED FOR NODES 12570
 NODE 12279 USED FOR NODES 12571
 NODE 12280 USED FOR NODES 12572
 NODE 12281 USED FOR NODES 12573
 NODE 10273 USED FOR NODES 10524
 NODE 9974 USED FOR NODES 10943
 NODE 10274 USED FOR NODES 10579
 NODE 10275 USED FOR NODES 10580
 NODE 10276 USED FOR NODES 10581
 NODE 10277 USED FOR NODES 10582
 NODE 11713 USED FOR NODES 11854
 NODE 10999 USED FOR NODES 12009
 NODE 11729 USED FOR NODES 11877
 NODE 11730 USED FOR NODES 11878
 NODE 11731 USED FOR NODES 11879
 NODE 11732 USED FOR NODES 11880
 NODE 11000 USED FOR NODES 12010
 NODE 11001 USED FOR NODES 12011
 NODE 10136 USED FOR NODES 10269
 NODE 10138 USED FOR NODES 10271
 NODE 10137 USED FOR NODES 10270
 NODE 10000 USED FOR NODES 10256
 NODE 10139 USED FOR NODES 10272
 NODE 10048 USED FOR NODES 11007
 NODE 10049 USED FOR NODES 11008
 NODE 10050 USED FOR NODES 11009
 NODE 10051 USED FOR NODES 11010
 NODE 12137 USED FOR NODES 12256

NODE 11998	USED FOR NODES	12141		
NODE 12033	USED FOR NODES	12161		
NODE 12034	USED FOR NODES	12162		
NODE 12035	USED FOR NODES	12163		
NODE 12036	USED FOR NODES	12164		
NODE 12169	USED FOR NODES	12286		
NODE 12170	USED FOR NODES	12287		
NODE 12171	USED FOR NODES	12288		
NODE 12172	USED FOR NODES	12289		
NODE 9982	USED FOR NODES	10969		
NODE 12247	USED FOR NODES	12546		
NODE 10549	USED FOR NODES	11374		
NODE 11385	USED FOR NODES	11718		
NODE 11015	USED FOR NODES	12025		
NODE 11016	USED FOR NODES	12026		
NODE 11419	USED FOR NODES	11753		
NODE 11420	USED FOR NODES	11754		
NODE 11421	USED FOR NODES	11755		
NODE 11422	USED FOR NODES	11756		
NODE 10587	USED FOR NODES	11427		
NODE 10588	USED FOR NODES	11428		
NODE 10589	USED FOR NODES	11429		
NODE 10590	USED FOR NODES	11430		
NODE 12294	USED FOR NODES	12586		
NODE 12295	USED FOR NODES	12587		
NODE 12296	USED FOR NODES	12588		
NODE 12297	USED FOR NODES	12589		
NODE 11017	USED FOR NODES	12027		
NODE 10313	USED FOR NODES	10536		
NODE 10315	USED FOR NODES	10595		
NODE 10316	USED FOR NODES	10596		
NODE 10317	USED FOR NODES	10597		
NODE 10318	USED FOR NODES	10598		
NODE 11018	USED FOR NODES	12028		
NODE 10956	USED FOR NODES	12003		
NODE 11723	USED FOR NODES	11858		
NODE 11745	USED FOR NODES	11893		
NODE 11746	USED FOR NODES	11894		
NODE 11747	USED FOR NODES	11895		
NODE 11748	USED FOR NODES	11896		
NODE 10132	USED FOR NODES	10265		
NODE 10133	USED FOR NODES	10266		
NODE 10134	USED FOR NODES	10267		
NODE 10135	USED FOR NODES	10268		
NODE 9999	USED FOR NODES	10255		
NODE 10128	USED FOR NODES	10261		
NODE 10129	USED FOR NODES	10262		
NODE 10130	USED FOR NODES	10263		
NODE 10131	USED FOR NODES	10264		
NODE 9998	USED FOR NODES	10254		
NODE 9064	USED FOR NODES	9229	10044	10257
NODE 9065	USED FOR NODES	9230	10045	10258
NODE 9066	USED FOR NODES	9231	10046	10259
NODE 9067	USED FOR NODES	9232	10047	10260
NODE 9008	USED FOR NODES	9228	9988	10253
NODE 9104	USED FOR NODES	10080		
NODE 9105	USED FOR NODES	10081		
NODE 9106	USED FOR NODES	10082		
NODE 9107	USED FOR NODES	10083		
NODE 9253	USED FOR NODES	10351		
NODE 9262	USED FOR NODES	10384		
NODE 9263	USED FOR NODES	10385		
NODE 9264	USED FOR NODES	10386		
NODE 9265	USED FOR NODES	10387		
NODE 9010	USED FOR NODES	9989		
NODE 9266	USED FOR NODES	10380		
NODE 9267	USED FOR NODES	10381		
NODE 9268	USED FOR NODES	10382		
NODE 9269	USED FOR NODES	10383		
NODE 9254	USED FOR NODES	10350		

NODE	9110	USED FOR NODES	10086
NODE	9109	USED FOR NODES	10085
NODE	9111	USED FOR NODES	10087
NODE	9108	USED FOR NODES	10084
NODE	9011	USED FOR NODES	9990
NODE	10321	USED FOR NODES	10601
NODE	10320	USED FOR NODES	10600
NODE	10319	USED FOR NODES	10599
NODE	10314	USED FOR NODES	10537
NODE	10322	USED FOR NODES	10602
NODE	12298	USED FOR NODES	12590
NODE	12173	USED FOR NODES	12290
NODE	12176	USED FOR NODES	12293
NODE	12174	USED FOR NODES	12291
NODE	10591	USED FOR NODES	11431
NODE	10053	USED FOR NODES	11012
NODE	12038	USED FOR NODES	12166
NODE	12138	USED FOR NODES	12257
NODE	10594	USED FOR NODES	11434
NODE	10054	USED FOR NODES	11013
NODE	11426	USED FOR NODES	11760
NODE	12037	USED FOR NODES	12165
NODE	10052	USED FOR NODES	11011
NODE	10592	USED FOR NODES	11432
NODE	11424	USED FOR NODES	11758
NODE	12040	USED FOR NODES	12168
NODE	12248	USED FOR NODES	12547
NODE	9983	USED FOR NODES	10970
NODE	12039	USED FOR NODES	12167
NODE	12299	USED FOR NODES	12591
NODE	12300	USED FOR NODES	12592
NODE	11999	USED FOR NODES	12142
NODE	10055	USED FOR NODES	11014
NODE	12175	USED FOR NODES	12292
NODE	12301	USED FOR NODES	12593
NODE	10957	USED FOR NODES	12004
NODE	11020	USED FOR NODES	12030
NODE	10593	USED FOR NODES	11433
NODE	11423	USED FOR NODES	11757
NODE	10550	USED FOR NODES	11375
NODE	11386	USED FOR NODES	11719
NODE	11749	USED FOR NODES	11897
NODE	11751	USED FOR NODES	11899
NODE	11752	USED FOR NODES	11900
NODE	11724	USED FOR NODES	11859
NODE	11019	USED FOR NODES	12029
NODE	11021	USED FOR NODES	12031
NODE	11425	USED FOR NODES	11759
NODE	11750	USED FOR NODES	11898
NODE	11022	USED FOR NODES	12032
NODE	9270	USED FOR NODES	10376
NODE	9271	USED FOR NODES	10377
NODE	9272	USED FOR NODES	10378
NODE	9273	USED FOR NODES	10379
NODE	9255	USED FOR NODES	10349
NODE	9115	USED FOR NODES	10091
NODE	9112	USED FOR NODES	10088
NODE	9114	USED FOR NODES	10090
NODE	9012	USED FOR NODES	9991
NODE	9113	USED FOR NODES	10089
NODE	9155	USED FOR NODES	9247
NODE	9152	USED FOR NODES	9244
NODE	9153	USED FOR NODES	9245
NODE	9154	USED FOR NODES	9246
NODE	9033	USED FOR NODES	9235
NODE	9274	USED FOR NODES	10372
NODE	9275	USED FOR NODES	10373
NODE	9276	USED FOR NODES	10374
NODE	9277	USED FOR NODES	10375
NODE	9256	USED FOR NODES	10348

NODE 9119	USED FOR NODES	10095		
NODE 9116	USED FOR NODES	10092		
NODE 9013	USED FOR NODES	9992		
NODE 9118	USED FOR NODES	10094		
NODE 9117	USED FOR NODES	10093		
NODE 9151	USED FOR NODES	9243		
NODE 9148	USED FOR NODES	9240		
NODE 9149	USED FOR NODES	9241		
NODE 9150	USED FOR NODES	9242		
NODE 9032	USED FOR NODES	9234		
NODE 9278	USED FOR NODES	10368		
NODE 9279	USED FOR NODES	10369		
NODE 9280	USED FOR NODES	10370		
NODE 9281	USED FOR NODES	10371		
NODE 9257	USED FOR NODES	10347		
NODE 9014	USED FOR NODES	9993		
NODE 9120	USED FOR NODES	10096		
NODE 9122	USED FOR NODES	10098		
NODE 9123	USED FOR NODES	10099		
NODE 9121	USED FOR NODES	10097		
NODE 8307	USED FOR NODES	8424	9056	9236
NODE 8310	USED FOR NODES	8427	9059	9239
NODE 8308	USED FOR NODES	8425	9057	9237
NODE 8309	USED FOR NODES	8426	9058	9238
NODE 8258	USED FOR NODES	8423	9022	9233
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NODE 12443	USED FOR NODES	12830
NODE 12444	USED FOR NODES	12831
NODE 12445	USED FOR NODES	12832
NODE 10778	USED FOR NODES	11565
NODE 11576	USED FOR NODES	11795
NODE 11605	USED FOR NODES	11825
NODE 11606	USED FOR NODES	11826
NODE 11607	USED FOR NODES	11827
NODE 11608	USED FOR NODES	11828
NODE 10811	USED FOR NODES	11613
NODE 10812	USED FOR NODES	11614
NODE 10813	USED FOR NODES	11615
NODE 10814	USED FOR NODES	11616
NODE 11185	USED FOR NODES	12080
NODE 11817	USED FOR NODES	11965
NODE 11818	USED FOR NODES	11966
NODE 11819	USED FOR NODES	11967
NODE 11820	USED FOR NODES	11968
NODE 9789	USED FOR NODES	10819
NODE 9790	USED FOR NODES	10820
NODE 9791	USED FOR NODES	10821
NODE 9792	USED FOR NODES	10822
NODE 12092	USED FOR NODES	12205
NODE 9511	USED FOR NODES	11219
NODE 9512	USED FOR NODES	11220
NODE 9513	USED FOR NODES	11221
NODE 9514	USED FOR NODES	11222
NODE 11223	USED FOR NODES	12085
NODE 11224	USED FOR NODES	12086
NODE 11225	USED FOR NODES	12087
NODE 11226	USED FOR NODES	12088
NODE 11805	USED FOR NODES	11949

NODE 11806 USED FOR NODES 11950
 NODE 12193 USED FOR NODES 12401
 NODE 12073 USED FOR NODES 12196
 NODE 12089 USED FOR NODES 12202
 NODE 12090 USED FOR NODES 12203
 NODE 12091 USED FOR NODES 12204
 NODE 12206 USED FOR NODES 12422
 NODE 12207 USED FOR NODES 12423
 NODE 12208 USED FOR NODES 12424
 NODE 12209 USED FOR NODES 12425
 NODE 11807 USED FOR NODES 11951
 NODE 11808 USED FOR NODES 11952
 NODE 11796 USED FOR NODES 11933
 NODE 10799 USED FOR NODES 11597
 NODE 12398 USED FOR NODES 12781
 NODE 12426 USED FOR NODES 12817
 NODE 12427 USED FOR NODES 12818
 NODE 12428 USED FOR NODES 12819
 NODE 12429 USED FOR NODES 12820
 NODE 10800 USED FOR NODES 11598
 NODE 10766 USED FOR NODES 11563
 NODE 11566 USED FOR NODES 11793
 NODE 10801 USED FOR NODES 11599
 NODE 11593 USED FOR NODES 11809
 NODE 11594 USED FOR NODES 11810
 NODE 11595 USED FOR NODES 11811
 NODE 11596 USED FOR NODES 11812
 NODE 10802 USED FOR NODES 11600
 NODE 9777 USED FOR NODES 10803
 NODE 9778 USED FOR NODES 10804
 NODE 9779 USED FOR NODES 10805
 NODE 11183 USED FOR NODES 12076
 NODE 9780 USED FOR NODES 10806
 NODE 9453 USED FOR NODES 11186
 NODE 9723 USED FOR NODES 10763

*** WARNING *** CP= 121.530 TIME= 14:21:59
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78 USED FOR KEYPOINT(S)	132		
KEYPOINT	89 USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104 USED FOR KEYPOINT(S)	117		
KEYPOINT	111 USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114 USED FOR KEYPOINT(S)	144		
KEYPOINT	119 USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122 USED FOR KEYPOINT(S)	128		
KEYPOINT	124 USED FOR KEYPOINT(S)	133		
KEYPOINT	125 USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140 USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141 USED FOR KEYPOINT(S)	170		
KEYPOINT	145 USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149 USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164 USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165 USED FOR KEYPOINT(S)	212		
KEYPOINT	171 USED FOR KEYPOINT(S)	205		
KEYPOINT	173 USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179 USED FOR KEYPOINT(S)	187		
KEYPOINT	181 USED FOR KEYPOINT(S)	199		
KEYPOINT	190 USED FOR KEYPOINT(S)	207		
KEYPOINT	198 USED FOR KEYPOINT(S)	214		
KEYPOINT	204 USED FOR KEYPOINT(S)	215		
KEYPOINT	206 USED FOR KEYPOINT(S)	217		
KEYPOINT	208 USED FOR KEYPOINT(S)	231		
KEYPOINT	209 USED FOR KEYPOINT(S)	234		
KEYPOINT	211 USED FOR KEYPOINT(S)	236		
KEYPOINT	213 USED FOR KEYPOINT(S)	220		
KEYPOINT	216 USED FOR KEYPOINT(S)	221		

KEYPOINT	218	USED FOR KEYPOINT(S)	223	
KEYPOINT	219	USED FOR KEYPOINT(S)	226	
KEYPOINT	222	USED FOR KEYPOINT(S)	227	
KEYPOINT	224	USED FOR KEYPOINT(S)	229	
KEYPOINT	232	USED FOR KEYPOINT(S)	237	
KEYPOINT	233	USED FOR KEYPOINT(S)	240	
KEYPOINT	235	USED FOR KEYPOINT(S)	242	
KEYPOINT	238	USED FOR KEYPOINT(S)	243	
KEYPOINT	239	USED FOR KEYPOINT(S)	246	
KEYPOINT	241	USED FOR KEYPOINT(S)	248	
KEYPOINT	244	USED FOR KEYPOINT(S)	249	
KEYPOINT	245	USED FOR KEYPOINT(S)	252	
KEYPOINT	247	USED FOR KEYPOINT(S)	254	
LINE	154	USED FOR LINE(S)	297	
LINE	172	USED FOR LINE(S)	298	
LINE	174	USED FOR LINE(S)	240	292
LINE	233	USED FOR LINE(S)	257	
LINE	236	USED FOR LINE(S)	256	
LINE	239	USED FOR LINE(S)	290	
LINE	241	USED FOR LINE(S)	289	306 359
LINE	243	USED FOR LINE(S)	314	
LINE	244	USED FOR LINE(S)	313	
LINE	259	USED FOR LINE(S)	330	
LINE	262	USED FOR LINE(S)	271	325 345
LINE	263	USED FOR LINE(S)	272	
LINE	264	USED FOR LINE(S)	273	
LINE	267	USED FOR LINE(S)	302	
LINE	268	USED FOR LINE(S)	300	
LINE	269	USED FOR LINE(S)	283	335 366
LINE	270	USED FOR LINE(S)	346	
LINE	282	USED FOR LINE(S)	365	
LINE	305	USED FOR LINE(S)	358	
LINE	307	USED FOR LINE(S)	354	372 439
LINE	308	USED FOR LINE(S)	396	
LINE	309	USED FOR LINE(S)	395	
LINE	315	USED FOR LINE(S)	414	
LINE	319	USED FOR LINE(S)	340	413 431
LINE	320	USED FOR LINE(S)	341	
LINE	331	USED FOR LINE(S)	367	
LINE	336	USED FOR LINE(S)	353	421 441
LINE	339	USED FOR LINE(S)	432	
LINE	352	USED FOR LINE(S)	440	
LINE	371	USED FOR LINE(S)	438	
LINE	377	USED FOR LINE(S)	437	462
LINE	382	USED FOR LINE(S)	468	
LINE	383	USED FOR LINE(S)	467	
LINE	401	USED FOR LINE(S)	452	
LINE	403	USED FOR LINE(S)	451	
LINE	408	USED FOR LINE(S)	429	447
LINE	409	USED FOR LINE(S)	430	
LINE	416	USED FOR LINE(S)	442	
LINE	422	USED FOR LINE(S)	434	
LINE	427	USED FOR LINE(S)	445	
LINE	428	USED FOR LINE(S)	446	
LINE	435	USED FOR LINE(S)	457	
LINE	436	USED FOR LINE(S)	463	
LINE	444	USED FOR LINE(S)	471	
LINE	449	USED FOR LINE(S)	473	
LINE	450	USED FOR LINE(S)	472	
LINE	454	USED FOR LINE(S)	478	
LINE	455	USED FOR LINE(S)	477	
LINE	458	USED FOR LINE(S)	509	
LINE	459	USED FOR LINE(S)	515	
LINE	460	USED FOR LINE(S)	514	
LINE	464	USED FOR LINE(S)	520	
LINE	465	USED FOR LINE(S)	519	
LINE	470	USED FOR LINE(S)	484	
LINE	475	USED FOR LINE(S)	486	
LINE	476	USED FOR LINE(S)	485	
LINE	480	USED FOR LINE(S)	491	

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LINE 481 USED FOR LINE(S) 490
LINE 483 USED FOR LINE(S) 497
LINE 488 USED FOR LINE(S) 499
LINE 489 USED FOR LINE(S) 498
LINE 493 USED FOR LINE(S) 504
LINE 494 USED FOR LINE(S) 503
LINE 510 USED FOR LINE(S) 522
LINE 511 USED FOR LINE(S) 528
LINE 512 USED FOR LINE(S) 527
LINE 516 USED FOR LINE(S) 533
LINE 517 USED FOR LINE(S) 532
LINE 523 USED FOR LINE(S) 535
LINE 524 USED FOR LINE(S) 541
LINE 525 USED FOR LINE(S) 540
LINE 529 USED FOR LINE(S) 546
LINE 530 USED FOR LINE(S) 545
LINE 536 USED FOR LINE(S) 548
LINE 537 USED FOR LINE(S) 554
LINE 538 USED FOR LINE(S) 553
LINE 542 USED FOR LINE(S) 559
LINE 543 USED FOR LINE(S) 558
AREA 123 USED FOR AREA(S) 230
AREA 163 USED FOR AREA(S) 182
AREA 176 USED FOR AREA(S) 226
AREA 177 USED FOR AREA(S) 264
AREA 193 USED FOR AREA(S) 282
AREA 198 USED FOR AREA(S) 208
AREA 204 USED FOR AREA(S) 239
AREA 205 USED FOR AREA(S) 291
AREA 223 USED FOR AREA(S) 295
AREA 248 USED FOR AREA(S) 294
AREA 255 USED FOR AREA(S) 302
AREA 273 USED FOR AREA(S) 307
AREA 277 USED FOR AREA(S) 290
AREA 288 USED FOR AREA(S) 296
AREA 289 USED FOR AREA(S) 313
AREA 293 USED FOR AREA(S) 318
AREA 298 USED FOR AREA(S) 317
AREA 299 USED FOR AREA(S) 337
AREA 305 USED FOR AREA(S) 326
AREA 306 USED FOR AREA(S) 312
AREA 309 USED FOR AREA(S) 319
AREA 311 USED FOR AREA(S) 322
AREA 316 USED FOR AREA(S) 333
AREA 324 USED FOR AREA(S) 340
AREA 328 USED FOR AREA(S) 344
AREA 331 USED FOR AREA(S) 369
AREA 335 USED FOR AREA(S) 373
AREA 342 USED FOR AREA(S) 349
AREA 346 USED FOR AREA(S) 353
AREA 351 USED FOR AREA(S) 358
AREA 355 USED FOR AREA(S) 362
AREA 367 USED FOR AREA(S) 378
AREA 371 USED FOR AREA(S) 382
AREA 376 USED FOR AREA(S) 387
AREA 380 USED FOR AREA(S) 391
AREA 385 USED FOR AREA(S) 396
AREA 389 USED FOR AREA(S) 400

```

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 125.190 TIME= 14:22:03
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only

elements are deleted.

*** NOTE *** CP= 125.200 TIME= 14:22:03
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.210 TIME= 14:22:03
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.210 TIME= 14:22:03
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.220 TIME= 14:22:03
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.230 TIME= 14:22:03
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.240 TIME= 14:22:03
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.260 TIME= 14:22:03
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.280 TIME= 14:22:03
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.290 TIME= 14:22:03
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.310 TIME= 14:22:03
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.310 TIME= 14:22:03
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.320 TIME= 14:22:03
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.320 TIME= 14:22:03
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.330 TIME= 14:22:03
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.340 TIME= 14:22:03
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.350 TIME= 14:22:03
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.370 TIME= 14:22:03
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.380 TIME= 14:22:03
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.400 TIME= 14:22:03
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.410 TIME= 14:22:03
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.420 TIME= 14:22:03
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.430 TIME= 14:22:04
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.440 TIME= 14:22:04
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.440 TIME= 14:22:04
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.450 TIME= 14:22:04
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.450 TIME= 14:22:04
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.460 TIME= 14:22:04
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.460 TIME= 14:22:04
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.470 TIME= 14:22:04
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.480 TIME= 14:22:04
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.490 TIME= 14:22:04
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.500 TIME= 14:22:04
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.520 TIME= 14:22:04
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.530 TIME= 14:22:04
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 125.540 TIME= 14:22:04
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only

elements are deleted.

*** NOTE *** CP= 125.560 TIME= 14:22:04
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only
elements are deleted.

*** NOTE *** CP= 125.580 TIME= 14:22:04
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only
elements are deleted.

*** NOTE *** CP= 125.590 TIME= 14:22:04
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only
elements are deleted.

*** NOTE *** CP= 125.610 TIME= 14:22:04
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only
elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 11092 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 11092 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

99 NODES (OF 11092 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 80
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

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6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

363 NODES (OF 11092 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 320

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12972 STEP 1

11092 NODES (OF 11092 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE *** CP= 183.320 TIME= 14:23:01
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 183.850

*****
Generate super-element

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 14:23:02 JUL 28, 1995 CP= 183.860
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 9916 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

994 NODES (OF 11092 DEFINED) SELECTED FROM
952 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

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THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c21c5a.sub

*** WARNING *** CP= 184.340 TIME= 14:23:03
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 952 NUMBER OF NODES= 994
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10786 STEP 1

9916 ELEMENTS (OF 9916 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12972 STEP 1

11092 NODES (OF 11092 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2064.290

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 14:54:28 JUL 28, 1995 CP= 2064.300
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 10787 c21c5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 10787

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 10787
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 9917 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10787 STEP 1

8965 ELEMENTS (OF 8965 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2065.250

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 2065.260 TIME= 14:54:29
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.64 AND 308.64
KABS= 0. TOLERANCE= 1.54319

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 11092 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12972 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.36 AND -991.36
KABS= 0. TOLERANCE= 4.95682

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 11092 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12972 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12972 STEP 1

11092 NODES (OF 11092 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2067.730 TIME= 14:54:31
All shape tests were bypassed for elements associated with the solid model, because most of them were already done at AMESH or VMESH. Use CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 14:54:31 JUL 28, 1995 CP= 2067.740
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY. 3-D
DEGREES OF FREEDOM. TEMP
ANALYSIS TYPE TRANSIENT
SOLUTION METHOD. FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTION PROGRAM CHOSEN

*** NOTE *** CP= 2069.770 TIME= 14:54:33
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2069.790 TIME= 14:54:33
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER. 1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS. ALL DATA WRITTEN
FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .59567E+06

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.49654E-09	IXX = .1214E+12	IXX = .7764E+11
YC = -.271.12	IYY = .4098E+08	IYY = .4098E+08
ZC = .24200E-15	IZZ = .1215E+12	IZZ = .7767E+11
	IXY = -.2220	IXY = -.1418

IYZ = .7878E-07 IYZ = .3970E-07
 IZX = -.4829E-09 IZX = -.4829E-09

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
 2 595675.

Range of element maximum matrix coefficients in global coordinates
 Maximum= 227.294252 at element 9530.
 Minimum= 4.216132733E-08 at element 10787.

*** WARNING *** CP= 2120.510 TIME= 14:55:28
 Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8964	SOLID70	35.990	.004
18	1	MATRIX50	1.100	1.100

Time at end of element matrix formulation CP= 2120.52.
 HT FLOW CONVERGENCE VALUE= 120.3 CRITERION= .1203

Estimated number of active DOF= 10938.
 Maximum wavefront= 1233.

Time at end of matrix triangularization CP= 2503.13.
 Equation solver maximum pivot= 909.032914 at node 924 TEMP.
 Equation solver minimum pivot= 0.97299214 at node 1994 TEMP.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
 HT FLOW CONVERGENCE VALUE= .1235 CRITERION= .2474E-02
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3628E-02
 HT FLOW CONVERGENCE VALUE= .5770E-05 CRITERION= .2474E-02 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8964	SOLID70	24.120	.003
18	1	MATRIX50	1.680	1.680

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8964	SOLID70	2.210	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
 *** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
 ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 10938
 R.M.S. WAVEFRONT SIZE = 453.0

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096
 15.016 MB WRITTEN ON ELEMENT MATRIX FILE: c21c5a.emat
 8.078 MB WRITTEN ON ELEMENT SAVED DATA FILE: c21c5a.esav
 29.547 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c21c5a.tri
 .016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c21c5a.dsub
 7.031 MB WRITTEN ON RESULTS FILE: c21c5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 3024.860

Store drift side temperature

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 15:12:55 JUL 28, 1995 CP= 3024.930
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.13902

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 3036.490

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 11092 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12972 BY 1
REAL= 26.1390151 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12972 STEP 1

11092 NODES (OF 11092 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10787 STEP 1

8965 ELEMENTS (OF 8965 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 15:13:07 JUL 28, 1995 CP= 3037.250
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
 DEGREES OF FREEDOM.TEMP
 ANALYSIS TYPETRANSIENT
 RESTART.ON
 SOLUTION METHOD.FULL
 OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
 NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 3039.290 TIME= 15:13:09
 This load step will be a static (steady-state) step.

*** NOTE *** CP= 3040.010 TIME= 15:13:10
 The step data was checked and warning messages were found.
 Please review output or errors file (c21c5a.err) for these warning messages.

*** NOTE *** CP= 3040.010 TIME= 15:13:10
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 15:13:11 JUL 28, 1995 CP= 3040.450
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER.2
 TIME AT END OF THE LOAD STEP.20000E-05
 AUTOMATIC TIME STEPPINGON
 INITIAL NUMBER OF SUBSTEPS0
 MAXIMUM NUMBER OF SUBSTEPS0
 MINIMUM NUMBER OF SUBSTEPS1
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONSNO
 TRANSIENT (INERTIA) EFFECTSOFF
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 293.1 CRITERION= .2931
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 151.3
 HT FLOW CONVERGENCE VALUE= 147.5 CRITERION= .2931
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -9.343
 HT FLOW CONVERGENCE VALUE= 7.494 CRITERION= .2931

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3679
HT FLOW CONVERGENCE VALUE= .9864E-01 CRITERION= .2931 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 11092 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 12972 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 440

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12972 STEP 1

11092 NODES (OF 11092 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE 80 SUBSTEPS AS A MAXIMUM
USE 4 SUBSTEPS AS A MINIMUM
USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.
Begin Transient
Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10787 STEP 1

8965 ELEMENTS (OF 8965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 3405.270 TIME= 15:23:11
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 15:23:11 JUL 28, 1995 CP= 3405.270

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 3
TIME AT END OF THE LOAD STEP. . . . . 31.558
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 10
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
  MINIMUM NUMBER OF SUBSTEPS . . . . . 4
  START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
  THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS
  THETA. . . . . .50000
  OSCILLATION LIMIT CRITERION. . . . . .50000
  TOLERANCE. . . . . .20000
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 531.5 CRITERION= .2931
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9407E-04
HT FLOW CONVERGENCE VALUE= .1019E-03 CRITERION= .6069 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
*** TIME = .394472 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9790E-05 OSCILLATION LIMIT = .3862E-05
*** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 1063. CRITERION= .6070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1881E-03
HT FLOW CONVERGENCE VALUE= .2038E-03 CRITERION= .6069 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
*** TIME = .788942 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9790E-05 OSCILLATION LIMIT = .3862E-05
*** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 1063. CRITERION= .6070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5644E-03
HT FLOW CONVERGENCE VALUE= .6115E-03 CRITERION= .6069 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
*** TIME = 1.97235 TIME INC = 1.18341
*** RESPONSE EIGENVALUE = .9789E-05 OSCILLATION LIMIT = .1158E-04
*** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 1063. CRITERION= .6070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1693E-02
HT FLOW CONVERGENCE VALUE= .1834E-02 CRITERION= .6069 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
*** TIME = 5.52258 TIME INC = 3.55023
*** RESPONSE EIGENVALUE = .9786E-05 OSCILLATION LIMIT = .3474E-04
*** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

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HT FLOW CONVERGENCE VALUE= 1063. CRITERION= .6070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3762E-02
HT FLOW CONVERGENCE VALUE= .4075E-02 CRITERION= .6069 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11

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*** TIME = 13.4120      TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9780E-05  OSCILLATION LIMIT = .7716E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894      UNCHANGED

  HT FLOW CONVERGENCE VALUE= 1063.      CRITERION= .6069
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3761E-02
  HT FLOW CONVERGENCE VALUE= .4074E-02 CRITERION= .6068      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
*** TIME = 21.3014      TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9772E-05  OSCILLATION LIMIT = .7709E-04
*** AUTO TIME STEP: NEXT TIME INC = 5.1281      DECREASED (FACTOR = .6500)

  HT FLOW CONVERGENCE VALUE= 1063.      CRITERION= .6069
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2444E-02
  HT FLOW CONVERGENCE VALUE= .2648E-02 CRITERION= .6068      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
*** TIME = 26.4295      TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9765E-05  OSCILLATION LIMIT = .5008E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281      UNCHANGED

  HT FLOW CONVERGENCE VALUE= 1063.      CRITERION= .6069
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2444E-02
  HT FLOW CONVERGENCE VALUE= .2647E-02 CRITERION= .6067      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
*** TIME = 31.5576      TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9761E-05  OSCILLATION LIMIT = .5005E-04

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303      VERSION=HP 9000/7XX 16:04:02 JUL 28, 1995 CP= 4930.780
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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  HT FLOW CONVERGENCE VALUE= 1063.      CRITERION= .6068
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 13.00
  HT FLOW CONVERGENCE VALUE= 13.62      CRITERION= .4540
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2870
  HT FLOW CONVERGENCE VALUE= .3871      CRITERION= .4535      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
*** TIME = 39478.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .7977E-05  OSCILLATION LIMIT = .3147
*** AUTO STEP TIME: NEXT TIME INC = 39447.      UNCHANGED

  HT FLOW CONVERGENCE VALUE= 716.5      CRITERION= .4724
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.473
  HT FLOW CONVERGENCE VALUE= 7.865      CRITERION= .4050
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1316
  HT FLOW CONVERGENCE VALUE= .2095      CRITERION= .4066      <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
*** TIME = 78925.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4801E-05  OSCILLATION LIMIT = .1894
*** AUTO TIME STEP: NEXT TIME INC = .10415E+06 INCREASED (FACTOR = 2.6403)

  HT FLOW CONVERGENCE VALUE= 608.3      CRITERION= .4377
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.813
  HT FLOW CONVERGENCE VALUE= 13.73      CRITERION= .3730
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3169
  HT FLOW CONVERGENCE VALUE= .5601      CRITERION= .3756
  EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1115E-01

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HT FLOW CONVERGENCE VALUE= .1467E-01 CRITERION= .3754 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 21
 *** TIME = 183076. TIME INC = 104151.
 *** RESPONSE EIGENVALUE = .2503E-05 OSCILLATION LIMIT = .2607
 *** AUTO STEP TIME: NEXT TIME INC = .10415E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 525.7 CRITERION= .4111
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.302
 HT FLOW CONVERGENCE VALUE= 9.309 CRITERION= .3640
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1789
 HT FLOW CONVERGENCE VALUE= .3471 CRITERION= .3659 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
 *** TIME = 287227. TIME INC = 104151.
 *** RESPONSE EIGENVALUE = .1240E-05 OSCILLATION LIMIT = .1291
 *** AUTO TIME STEP: NEXT TIME INC = .31245E+06 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 493.6 CRITERION= .3996
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.426
 HT FLOW CONVERGENCE VALUE= 20.10 CRITERION= .3559
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5444
 HT FLOW CONVERGENCE VALUE= 1.108 CRITERION= .3583
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3393E-01
 HT FLOW CONVERGENCE VALUE= .6377E-01 CRITERION= .3581 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 26
 *** TIME = 599680. TIME INC = 312453.
 *** RESPONSE EIGENVALUE = .7416E-06 OSCILLATION LIMIT = .2317
 *** AUTO STEP TIME: NEXT TIME INC = .31245E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 450.2 CRITERION= .3805
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.806
 HT FLOW CONVERGENCE VALUE= 13.31 CRITERION= .3515
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3523
 HT FLOW CONVERGENCE VALUE= .7326 CRITERION= .3529
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2130E-01
 HT FLOW CONVERGENCE VALUE= .4154E-01 CRITERION= .3527 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 29
 *** TIME = 912133. TIME INC = 312453.
 *** RESPONSE EIGENVALUE = .4571E-06 OSCILLATION LIMIT = .1428
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.5250)

HT FLOW CONVERGENCE VALUE= 423.4 CRITERION= .3698
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.771
 HT FLOW CONVERGENCE VALUE= 24.04 CRITERION= .3478
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7790
 HT FLOW CONVERGENCE VALUE= 1.632 CRITERION= .3490
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6453E-01
 HT FLOW CONVERGENCE VALUE= .1473 CRITERION= .3487 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 32
 *** TIME = .170107E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2968E-06 OSCILLATION LIMIT = .2341
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 394.4 CRITERION= .3571
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.583
 HT FLOW CONVERGENCE VALUE= 15.99 CRITERION= .3463
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5095
 HT FLOW CONVERGENCE VALUE= 1.069 CRITERION= .3469
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3969E-01
 HT FLOW CONVERGENCE VALUE= .9196E-01 CRITERION= .3468 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 35
 *** TIME = .249001E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1832E-06 OSCILLATION LIMIT = .1445
 *** AUTO TIME STEP: NEXT TIME INC = .66578E+06 DECREASED (FACTOR = .8439)

HT FLOW CONVERGENCE VALUE= 386.4 CRITERION= .3545
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.652
 HT FLOW CONVERGENCE VALUE= 10.67 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3215
 HT FLOW CONVERGENCE VALUE= .6738 CRITERION= .3478
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2293E-01
 HT FLOW CONVERGENCE VALUE= .5239E-01 CRITERION= .3478 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 38
 *** TIME = .315579E+07 TIME INC = 665779.
 *** RESPONSE EIGENVALUE = .1338E-06 OSCILLATION LIMIT = .8911E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 17:36:54 JUL 28, 1995 CP= 8380.480
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 385.5 CRITERION= .3528
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.138
 HT FLOW CONVERGENCE VALUE= 8.985 CRITERION= .3473
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2664
 HT FLOW CONVERGENCE VALUE= .5560 CRITERION= .3476
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1866E-01
 HT FLOW CONVERGENCE VALUE= .4281E-01 CRITERION= .3475 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 41
 *** TIME = .382157E+07 TIME INC = 665779.
 *** RESPONSE EIGENVALUE = .1088E-06 OSCILLATION LIMIT = .7241E-01
 *** AUTO STEP TIME: NEXT TIME INC = .66578E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 386.2 CRITERION= .3532
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.757
 HT FLOW CONVERGENCE VALUE= 7.815 CRITERION= .3486
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2291
 HT FLOW CONVERGENCE VALUE= .4767 CRITERION= .3488
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1578E-01
 HT FLOW CONVERGENCE VALUE= .3616E-01 CRITERION= .3488 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 44
 *** TIME = .448735E+07 TIME INC = 665779.
 *** RESPONSE EIGENVALUE = .9198E-07 OSCILLATION LIMIT = .6124E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.1850)

HT FLOW CONVERGENCE VALUE= 387.5 CRITERION= .3524
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.897
 HT FLOW CONVERGENCE VALUE= 8.139 CRITERION= .3486
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2434
 HT FLOW CONVERGENCE VALUE= .5044 CRITERION= .3488
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1764E-01
 HT FLOW CONVERGENCE VALUE= .4109E-01 CRITERION= .3487 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 47
 *** TIME = .527629E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7917E-07 OSCILLATION LIMIT = .6246E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51763E+06 DECREASED (FACTOR = .6561)

HT FLOW CONVERGENCE VALUE= 389.3 CRITERION= .3532
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.725
 HT FLOW CONVERGENCE VALUE= 4.788 CRITERION= .3497
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1303
 HT FLOW CONVERGENCE VALUE= .2684 CRITERION= .3498 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 49
 *** TIME = .579392E+07 TIME INC = 517631.
 *** RESPONSE EIGENVALUE = .7037E-07 OSCILLATION LIMIT = .3643E-01

*** AUTO STEP TIME: NEXT TIME INC = .51763E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 390.5 CRITERION= .3527
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.614
 HT FLOW CONVERGENCE VALUE= 4.454 CRITERION= .3493
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1200
 HT FLOW CONVERGENCE VALUE= .2462 CRITERION= .3495 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 51
 *** TIME = .631155E+07 TIME INC = 517631.
 *** RESPONSE EIGENVALUE = .6487E-07 OSCILLATION LIMIT = .3358E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:28:39 JUL 28, 1995 CP= 10276.260
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 391.7 CRITERION= .3535
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.514
 HT FLOW CONVERGENCE VALUE= 4.152 CRITERION= .3504
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1115
 HT FLOW CONVERGENCE VALUE= .2283 CRITERION= .3505 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 53
 *** TIME = .682918E+07 TIME INC = 517631.
 *** RESPONSE EIGENVALUE = .6014E-07 OSCILLATION LIMIT = .3113E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51763E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 392.7 CRITERION= .3529
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.428
 HT FLOW CONVERGENCE VALUE= 3.904 CRITERION= .3500
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1038
 HT FLOW CONVERGENCE VALUE= .2119 CRITERION= .3501 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 55
 *** TIME = .734681E+07 TIME INC = 517631.
 *** RESPONSE EIGENVALUE = .5609E-07 OSCILLATION LIMIT = .2903E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5241)

HT FLOW CONVERGENCE VALUE= 393.7 CRITERION= .3537
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.034
 HT FLOW CONVERGENCE VALUE= 5.560 CRITERION= .3511
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1605
 HT FLOW CONVERGENCE VALUE= .3274 CRITERION= .3512 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 57
 *** TIME = .813575E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .5170E-07 OSCILLATION LIMIT = .4079E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 395.1 CRITERION= .3531
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.885
 HT FLOW CONVERGENCE VALUE= 5.130 CRITERION= .3507
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1463
 HT FLOW CONVERGENCE VALUE= .2971 CRITERION= .3508 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 59
 *** TIME = .892469E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4724E-07 OSCILLATION LIMIT = .3727E-01
 *** AUTO TIME STEP: NEXT TIME INC = .54262E+06 DECREASED (FACTOR = .6878)

HT FLOW CONVERGENCE VALUE= 396.4 CRITERION= .3540
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.220
 HT FLOW CONVERGENCE VALUE= 3.286 CRITERION= .3516
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8655E-01

HT FLOW CONVERGENCE VALUE= .1749 CRITERION= .3517 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 61
 *** TIME = .946731E+07 TIME INC = 542617.
 *** RESPONSE EIGENVALUE = .4404E-07 OSCILLATION LIMIT = .2389E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:10:16 JUL 28, 1995 CP= 11833.210
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 397.1 CRITERION= .3533
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.165
 HT FLOW CONVERGENCE VALUE= 3.135 CRITERION= .3511
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8185E-01
 HT FLOW CONVERGENCE VALUE= .1648 CRITERION= .3512 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 63
 *** TIME = .100099E+08 TIME INC = 542617.
 *** RESPONSE EIGENVALUE = .4171E-07 OSCILLATION LIMIT = .2263E-01
 *** AUTO STEP TIME: NEXT TIME INC = .54262E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 397.8 CRITERION= .3541
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.116
 HT FLOW CONVERGENCE VALUE= 2.996 CRITERION= .3520
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7807E-01
 HT FLOW CONVERGENCE VALUE= .1569 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 65
 *** TIME = .105525E+08 TIME INC = 542617.
 *** RESPONSE EIGENVALUE = .3960E-07 OSCILLATION LIMIT = .2149E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4540)

HT FLOW CONVERGENCE VALUE= 398.5 CRITERION= .3535
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.543
 HT FLOW CONVERGENCE VALUE= 5.291 CRITERION= .3515
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2161
 HT FLOW CONVERGENCE VALUE= .4994 CRITERION= .3516
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1883E-01
 HT FLOW CONVERGENCE VALUE= .4499E-01 CRITERION= .3516 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 68
 *** TIME = .113415E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3722E-07 OSCILLATION LIMIT = .2936E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 399.3 CRITERION= .3542
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.440
 HT FLOW CONVERGENCE VALUE= 5.850 CRITERION= .3525
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2193
 HT FLOW CONVERGENCE VALUE= .4794 CRITERION= .3524
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2173E-01
 HT FLOW CONVERGENCE VALUE= .4032E-01 CRITERION= .3524 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 71
 *** TIME = .121304E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3477E-07 OSCILLATION LIMIT = .2743E-01
 *** AUTO TIME STEP: NEXT TIME INC = .49265E+06 DECREASED (FACTOR = .6244)

HT FLOW CONVERGENCE VALUE= 399.9 CRITERION= .3535
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8448
 HT FLOW CONVERGENCE VALUE= 2.962 CRITERION= .3518
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9014E-01
 HT FLOW CONVERGENCE VALUE= .1490 CRITERION= .3518 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 73
 *** TIME = .126231E+08 TIME INC = 492645.
 *** RESPONSE EIGENVALUE = .3294E-07 OSCILLATION LIMIT = .1623E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:58:03 JUL 28, 1995 CP= 13616.140
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 400.2 CRITERION= .3541
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8115
 HT FLOW CONVERGENCE VALUE= 2.585 CRITERION= .3525
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6556E-01
 HT FLOW CONVERGENCE VALUE= .1316 CRITERION= .3525 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 75
 *** TIME = .131157E+08 TIME INC = 492645.
 *** RESPONSE EIGENVALUE = .3126E-07 OSCILLATION LIMIT = .1540E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49265E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 400.4 CRITERION= .3534
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7816
 HT FLOW CONVERGENCE VALUE= 2.839 CRITERION= .3518
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6242E-01
 HT FLOW CONVERGENCE VALUE= .1326 CRITERION= .3518 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 77
 *** TIME = .136084E+08 TIME INC = 492645.
 *** RESPONSE EIGENVALUE = .2986E-07 OSCILLATION LIMIT = .1471E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.6014)

HT FLOW CONVERGENCE VALUE= 400.7 CRITERION= .3540
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.197
 HT FLOW CONVERGENCE VALUE= 3.553 CRITERION= .3525
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9986E-01
 HT FLOW CONVERGENCE VALUE= .1936 CRITERION= .3525 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 79
 *** TIME = .143973E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2808E-07 OSCILLATION LIMIT = .2215E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 401.1 CRITERION= .3533
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.141
 HT FLOW CONVERGENCE VALUE= 3.159 CRITERION= .3518
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8959E-01
 HT FLOW CONVERGENCE VALUE= .1649 CRITERION= .3518 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 81
 *** TIME = .151862E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2626E-07 OSCILLATION LIMIT = .2072E-01
 *** AUTO TIME STEP: NEXT TIME INC = .59259E+06 DECREASED (FACTOR = .7511)

HT FLOW CONVERGENCE VALUE= 401.4 CRITERION= .3539
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8240
 HT FLOW CONVERGENCE VALUE= 2.800 CRITERION= .3525
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6580E-01
 HT FLOW CONVERGENCE VALUE= .1319 CRITERION= .3525 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 83
 *** TIME = .157788E+08 TIME INC = 592590.
 *** RESPONSE EIGENVALUE = .2493E-07 OSCILLATION LIMIT = .1478E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:39:40 JUL 28, 1995 CP= 15173.230
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 401.7 CRITERION= .3532
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7939
 HT FLOW CONVERGENCE VALUE= 2.123 CRITERION= .3518
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5424E-01
 HT FLOW CONVERGENCE VALUE= .1060 CRITERION= .3519 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 85
 *** TIME = .163714E+08 TIME INC = 592590.
 *** RESPONSE EIGENVALUE = .2383E-07 OSCILLATION LIMIT = .1412E-01
 *** AUTO STEP TIME: NEXT TIME INC = .59259E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 402.0 CRITERION= .3539
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7716
 HT FLOW CONVERGENCE VALUE= 2.922 CRITERION= .3526
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6025E-01
 HT FLOW CONVERGENCE VALUE= .1433 CRITERION= .3526 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 87
 *** TIME = .169640E+08 TIME INC = 592590.
 *** RESPONSE EIGENVALUE = .2278E-07 OSCILLATION LIMIT = .1350E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3313)

HT FLOW CONVERGENCE VALUE= 402.3 CRITERION= .3531
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9867
 HT FLOW CONVERGENCE VALUE= 4.639 CRITERION= .3521
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1396
 HT FLOW CONVERGENCE VALUE= .3203 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 89
 *** TIME = .177530E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2188E-07 OSCILLATION LIMIT = .1727E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 402.8 CRITERION= .3538
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9386
 HT FLOW CONVERGENCE VALUE= 4.023 CRITERION= .3527
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1303
 HT FLOW CONVERGENCE VALUE= .2401 CRITERION= .3526 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 91
 *** TIME = .185419E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2083E-07 OSCILLATION LIMIT = .1643E-01
 *** AUTO TIME STEP: NEXT TIME INC = .39270E+06 DECREASED (FACTOR = .4978)

HT FLOW CONVERGENCE VALUE= 403.2 CRITERION= .3531
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4530
 HT FLOW CONVERGENCE VALUE= 1.631 CRITERION= .3520
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2757E-01
 HT FLOW CONVERGENCE VALUE= .6439E-01 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 93
 *** TIME = .189346E+08 TIME INC = 392701.
 *** RESPONSE EIGENVALUE = .2012E-07 OSCILLATION LIMIT = .7899E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:21:16 JUL 28, 1995 CP= 16730.920
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 403.4 CRITERION= .3538
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4446
 HT FLOW CONVERGENCE VALUE= 1.610 CRITERION= .3527
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2734E-01
 HT FLOW CONVERGENCE VALUE= .6397E-01 CRITERION= .3526 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 95
 *** TIME = .193273E+08 TIME INC = 392701.
 *** RESPONSE EIGENVALUE = .1940E-07 OSCILLATION LIMIT = .7618E-02
 *** AUTO STEP TIME: NEXT TIME INC = .39270E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 403.6 CRITERION= .3531
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4355
 HT FLOW CONVERGENCE VALUE= 2.063 CRITERION= .3520
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2843E-01
 HT FLOW CONVERGENCE VALUE= .7504E-01 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 97
 *** TIME = .197200E+08 TIME INC = 392701.
 *** RESPONSE EIGENVALUE = .1893E-07 OSCILLATION LIMIT = .7434E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.0090)

HT FLOW CONVERGENCE VALUE= 403.8 CRITERION= .3537
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8444
 HT FLOW CONVERGENCE VALUE= 3.399 CRITERION= .3528
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6726E-01
 HT FLOW CONVERGENCE VALUE= .1504 CRITERION= .3527 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 99
 *** TIME = .205089E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1790E-07 OSCILLATION LIMIT = .1412E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 404.2 CRITERION= .3530
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8078
 HT FLOW CONVERGENCE VALUE= 2.752 CRITERION= .3521
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6090E-01
 HT FLOW CONVERGENCE VALUE= .1371 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 101
 *** TIME = .212979E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1673E-07 OSCILLATION LIMIT = .1320E-01
 *** AUTO TIME STEP: NEXT TIME INC = .79248E+06 INCREASED (FACTOR = 1.0045)

HT FLOW CONVERGENCE VALUE= 404.6 CRITERION= .3536
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7786
 HT FLOW CONVERGENCE VALUE= 3.875 CRITERION= .3528
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6412E-01
 HT FLOW CONVERGENCE VALUE= .1589 CRITERION= .3527 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 103
 *** TIME = .220904E+08 TIME INC = 792478.
 *** RESPONSE EIGENVALUE = .1583E-07 OSCILLATION LIMIT = .1254E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 22:02:58 JUL 28, 1995 CP= 18290.700
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 405.0 CRITERION= .3529
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7428
 HT FLOW CONVERGENCE VALUE= 3.197 CRITERION= .3521
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7277E-01

HT FLOW CONVERGENCE VALUE= .2035 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 105
 *** TIME = .228793E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1505E-07 OSCILLATION LIMIT = .1188E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 405.3 CRITERION= .3535
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7128
 HT FLOW CONVERGENCE VALUE= 4.395 CRITERION= .3529
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7844E-01
 HT FLOW CONVERGENCE VALUE= .2254 CRITERION= .3527 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 107
 *** TIME = .236682E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1433E-07 OSCILLATION LIMIT = .1130E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 405.6 CRITERION= .3528
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6852
 HT FLOW CONVERGENCE VALUE= 3.520 CRITERION= .3522
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6386E-01
 HT FLOW CONVERGENCE VALUE= .1555 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 109
 *** TIME = .244572E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1369E-07 OSCILLATION LIMIT = .1080E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 405.9 CRITERION= .3535
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6613
 HT FLOW CONVERGENCE VALUE= 2.634 CRITERION= .3528
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7679E-01
 HT FLOW CONVERGENCE VALUE= .1175 CRITERION= .3527 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 111
 *** TIME = .252461E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1282E-07 OSCILLATION LIMIT = .1011E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 22:36:20 JUL 28, 1995 CP= 19541.070
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 406.3 CRITERION= .3528
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6411
 HT FLOW CONVERGENCE VALUE= 2.486 CRITERION= .3521
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5820E-01
 HT FLOW CONVERGENCE VALUE= .1017 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 113
 *** TIME = .260351E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1211E-07 OSCILLATION LIMIT = .9551E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 406.6 CRITERION= .3534
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6233
 HT FLOW CONVERGENCE VALUE= 2.688 CRITERION= .3527
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4342E-01
 HT FLOW CONVERGENCE VALUE= .1101 CRITERION= .3526 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 115
 *** TIME = .268240E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1148E-07 OSCILLATION LIMIT = .9060E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 406.9 CRITERION= .3527
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6149
 HT FLOW CONVERGENCE VALUE= 2.520 CRITERION= .3521
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4545E-01
 HT FLOW CONVERGENCE VALUE= .9167E-01 CRITERION= .3520 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 117
 *** TIME = .276129E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1093E-07 OSCILLATION LIMIT = .8624E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 407.2 CRITERION= .3533
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5978
 HT FLOW CONVERGENCE VALUE= 2.790 CRITERION= .3527
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4080E-01
 HT FLOW CONVERGENCE VALUE= .1070 CRITERION= .3526 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 119
 *** TIME = .284019E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1039E-07 OSCILLATION LIMIT = .8194E-02
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
 TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 906.986869 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 10787 STEP 1

8965 ELEMENTS (OF 8965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 20791.200 TIME= 23:09:44
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 23:09:44 JUL 28, 1995 CP= 20791.200
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
 TIME AT END OF THE LOAD STEP.31558E+08
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10

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MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
MINIMUM NUMBER OF SUBSTEPS . . . . . 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS
THETA. . . . . .50000
OSCILLATION LIMIT CRITERION. . . . . .50000
TOLERANCE. . . . . .20000
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 407.5 CRITERION= .3526
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5800
HT FLOW CONVERGENCE VALUE= 2.922 CRITERION= .3521
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3905E-01
HT FLOW CONVERGENCE VALUE= .1106 CRITERION= .3520 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 121
*** TIME = .291908E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .9978E-08 OSCILLATION LIMIT = .7872E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 407.9 CRITERION= .3532
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5617
HT FLOW CONVERGENCE VALUE= 2.947 CRITERION= .3527
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5633E-01
HT FLOW CONVERGENCE VALUE= .1394 CRITERION= .3526 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 123
*** TIME = .299798E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .9519E-08 OSCILLATION LIMIT = .7510E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 408.3 CRITERION= .3526
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5445
HT FLOW CONVERGENCE VALUE= 2.874 CRITERION= .3521
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5502E-01
HT FLOW CONVERGENCE VALUE= .1303 CRITERION= .3520 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 125
*** TIME = .307687E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .9238E-08 OSCILLATION LIMIT = .7288E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 408.6 CRITERION= .3532
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5267
HT FLOW CONVERGENCE VALUE= 2.037 CRITERION= .3526
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4774E-01
HT FLOW CONVERGENCE VALUE= .8460E-01 CRITERION= .3526 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 127
*** TIME = .315576E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8767E-08 OSCILLATION LIMIT = .6917E-02

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 23:43:09 JUL 28, 1995 CP= 22041.940
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 408.9    CRITERION= .3525
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5126
HT FLOW CONVERGENCE VALUE= 2.360    CRITERION= .3520
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4566E-01
HT FLOW CONVERGENCE VALUE= .1067    CRITERION= .3519    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 129
*** TIME = .323466E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8365E-08    OSCILLATION LIMIT = .6599E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06    UNCHANGED

HT FLOW CONVERGENCE VALUE= 409.2    CRITERION= .3531
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4989
HT FLOW CONVERGENCE VALUE= 2.784    CRITERION= .3526
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4381E-01
HT FLOW CONVERGENCE VALUE= .1022    CRITERION= .3525    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 131
*** TIME = .331355E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8082E-08    OSCILLATION LIMIT = .6376E-02
*** AUTO TIME STEP: NEXT TIME INC = .23668E+07    INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 409.4    CRITERION= .3522
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.448
HT FLOW CONVERGENCE VALUE= 7.885    CRITERION= .3523
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1249
HT FLOW CONVERGENCE VALUE= .3295    CRITERION= .3518    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 133
*** TIME = .355023E+08    TIME INC = .236682E+07
*** RESPONSE EIGENVALUE = .7359E-08    OSCILLATION LIMIT = .1742E-01
*** AUTO TIME STEP: NEXT TIME INC = .71005E+07    INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 410.3    CRITERION= .3521
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.042
HT FLOW CONVERGENCE VALUE= 15.97    CRITERION= .3533
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4421
HT FLOW CONVERGENCE VALUE= 1.765    CRITERION= .3521
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5433E-01
HT FLOW CONVERGENCE VALUE= .1857    CRITERION= .3521    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 136
*** TIME = .426028E+08    TIME INC = .710046E+07
*** RESPONSE EIGENVALUE = .5824E-08    OSCILLATION LIMIT = .4135E-01
*** AUTO STEP TIME: NEXT TIME INC = .71005E+07    UNCHANGED

HT FLOW CONVERGENCE VALUE= 412.4    CRITERION= .3510
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.477
HT FLOW CONVERGENCE VALUE= 15.42    CRITERION= .3519
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3401
HT FLOW CONVERGENCE VALUE= 1.024    CRITERION= .3508
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3537E-01
HT FLOW CONVERGENCE VALUE= .6283E-01    CRITERION= .3508    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 139
*** TIME = .497033E+08    TIME INC = .710046E+07
*** RESPONSE EIGENVALUE = .4592E-08    OSCILLATION LIMIT = .3260E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07    INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 413.4    CRITERION= .3508
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.348
HT FLOW CONVERGENCE VALUE= 15.45    CRITERION= .3516
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2679
HT FLOW CONVERGENCE VALUE= .8645    CRITERION= .3505
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2931E-01
HT FLOW CONVERGENCE VALUE= .9144E-01    CRITERION= .3506    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

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*** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 142
 *** TIME = .575927E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .3817E-08 OSCILLATION LIMIT = .3011E-01
 *** AUTO TIME STEP: NEXT TIME INC = .55226E+07 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 414.2 CRITERION= .3496
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.145
 HT FLOW CONVERGENCE VALUE= 10.06 CRITERION= .3497
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1693
 HT FLOW CONVERGENCE VALUE= .4077 CRITERION= .3492
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1278E-01
 HT FLOW CONVERGENCE VALUE= .3514E-01 CRITERION= .3492 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 145
 *** TIME = .631152E+08 TIME INC = .552258E+07
 *** RESPONSE EIGENVALUE = .3356E-08 OSCILLATION LIMIT = .1853E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:53:37 JUL 29, 1995 CP= 24672.660
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 414.2 CRITERION= .3495
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.088
 HT FLOW CONVERGENCE VALUE= 11.21 CRITERION= .3497
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2013
 HT FLOW CONVERGENCE VALUE= .6694 CRITERION= .3490
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2652E-01
 HT FLOW CONVERGENCE VALUE= .7220E-01 CRITERION= .3490 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 148
 *** TIME = .686378E+08 TIME INC = .552258E+07
 *** RESPONSE EIGENVALUE = .3063E-08 OSCILLATION LIMIT = .1692E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55226E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 414.0 CRITERION= .3480
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.956
 HT FLOW CONVERGENCE VALUE= 9.475 CRITERION= .3482
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1571
 HT FLOW CONVERGENCE VALUE= .3824 CRITERION= .3476
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1403E-01
 HT FLOW CONVERGENCE VALUE= .3081E-01 CRITERION= .3476 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 151
 *** TIME = .741604E+08 TIME INC = .552258E+07
 *** RESPONSE EIGENVALUE = .2826E-08 OSCILLATION LIMIT = .1561E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 413.7 CRITERION= .3475
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.682
 HT FLOW CONVERGENCE VALUE= 11.86 CRITERION= .3479
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1850
 HT FLOW CONVERGENCE VALUE= .4686 CRITERION= .3471
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1742E-01
 HT FLOW CONVERGENCE VALUE= .4892E-01 CRITERION= .3471 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 154
 *** TIME = .820498E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2557E-08 OSCILLATION LIMIT = .2017E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 413.3 CRITERION= .3457
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.557
 HT FLOW CONVERGENCE VALUE= 11.37 CRITERION= .3458
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1743

HT FLOW CONVERGENCE VALUE= .5619 CRITERION= .3451
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1957E-01
 HT FLOW CONVERGENCE VALUE= .5880E-01 CRITERION= .3451 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 157
 *** TIME = .899392E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2383E-08 OSCILLATION LIMIT = .1880E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 412.4 CRITERION= .3454
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.475
 HT FLOW CONVERGENCE VALUE= 8.770 CRITERION= .3454
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1554
 HT FLOW CONVERGENCE VALUE= .4025 CRITERION= .3448
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1373E-01
 HT FLOW CONVERGENCE VALUE= .3516E-01 CRITERION= .3448 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 160
 *** TIME = .946728E+08 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .2274E-08 OSCILLATION LIMIT = .1076E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 01:50:42 JUL 29, 1995 CP= 26798.620
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 411.4 CRITERION= .3439
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.434
 HT FLOW CONVERGENCE VALUE= 7.231 CRITERION= .3438
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1104
 HT FLOW CONVERGENCE VALUE= .3461 CRITERION= .3434
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7496E-02
 HT FLOW CONVERGENCE VALUE= .2667E-01 CRITERION= .3434 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 163
 *** TIME = .994065E+08 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .2134E-08 OSCILLATION LIMIT = .1010E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 410.5 CRITERION= .3437
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.394
 HT FLOW CONVERGENCE VALUE= 8.436 CRITERION= .3436
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1071
 HT FLOW CONVERGENCE VALUE= .3785 CRITERION= .3432
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8990E-02
 HT FLOW CONVERGENCE VALUE= .3077E-01 CRITERION= .3432 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 166
 *** TIME = .104140E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .2102E-08 OSCILLATION LIMIT = .9948E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 409.7 CRITERION= .3419
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.241
 HT FLOW CONVERGENCE VALUE= 9.557 CRITERION= .3417
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1482
 HT FLOW CONVERGENCE VALUE= .4659 CRITERION= .3412
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1373E-01
 HT FLOW CONVERGENCE VALUE= .5228E-01 CRITERION= .3412 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 169
 *** TIME = .112030E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1921E-08 OSCILLATION LIMIT = .1516E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 408.4 CRITERION= .3411
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.143
 HT FLOW CONVERGENCE VALUE= 11.79 CRITERION= .3411
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1665
 HT FLOW CONVERGENCE VALUE= .6017 CRITERION= .3403
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1471E-01
 HT FLOW CONVERGENCE VALUE= .6097E-01 CRITERION= .3403 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 172
 *** TIME = .119919E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1814E-08 OSCILLATION LIMIT = .1431E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 406.5 CRITERION= .3391
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.647
 HT FLOW CONVERGENCE VALUE= 7.453 CRITERION= .3389
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1407
 HT FLOW CONVERGENCE VALUE= .2994 CRITERION= .3385 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 174
 *** TIME = .126230E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1707E-08 OSCILLATION LIMIT = .1077E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 02:44:55 JUL 29, 1995 CP= 28812.930
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 405.2 CRITERION= .3386
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.592
 HT FLOW CONVERGENCE VALUE= 13.24 CRITERION= .3389
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2268
 HT FLOW CONVERGENCE VALUE= 1.390 CRITERION= .3379
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2729E-01
 HT FLOW CONVERGENCE VALUE= .2314 CRITERION= .3380 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 177
 *** TIME = .132542E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1675E-08 OSCILLATION LIMIT = .1057E-01
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 403.9 CRITERION= .3369
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.539
 HT FLOW CONVERGENCE VALUE= 16.99 CRITERION= .3379
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2329
 HT FLOW CONVERGENCE VALUE= 1.562 CRITERION= .3363
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3803E-01
 HT FLOW CONVERGENCE VALUE= .2572 CRITERION= .3364 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 180
 *** TIME = .138853E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1804E-08 OSCILLATION LIMIT = .1139E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 403.0 CRITERION= .3363
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.849
 HT FLOW CONVERGENCE VALUE= 18.49 CRITERION= .3372
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2660
 HT FLOW CONVERGENCE VALUE= 1.027 CRITERION= .3357
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3206E-01
 HT FLOW CONVERGENCE VALUE= .1003 CRITERION= .3358 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 183
 *** TIME = .146743E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1728E-08 OSCILLATION LIMIT = .1363E-01

*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 401.9 CRITERION= .3344
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.769
 HT FLOW CONVERGENCE VALUE= 9.778 CRITERION= .3342
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1901
 HT FLOW CONVERGENCE VALUE= .7631 CRITERION= .3338
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2563E-01
 HT FLOW CONVERGENCE VALUE= .1152 CRITERION= .3338 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 186
 *** TIME = .154632E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1544E-08 OSCILLATION LIMIT = .1218E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+07 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 400.6 CRITERION= .3343
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6868
 HT FLOW CONVERGENCE VALUE= 5.834 CRITERION= .3341
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7922E-01
 HT FLOW CONVERGENCE VALUE= .4235 CRITERION= .3338
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6806E-02
 HT FLOW CONVERGENCE VALUE= .3716E-01 CRITERION= .3339 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 189
 *** TIME = .157788E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1504E-08 OSCILLATION LIMIT = .4746E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 03:42:25 JUL 29, 1995 CP= 30941.680
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 399.8 CRITERION= .3331
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6769
 HT FLOW CONVERGENCE VALUE= 7.284 CRITERION= .3330
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8384E-01
 HT FLOW CONVERGENCE VALUE= .5598 CRITERION= .3326
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7868E-02
 HT FLOW CONVERGENCE VALUE= .5030E-01 CRITERION= .3327 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 192
 *** TIME = .160944E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1551E-08 OSCILLATION LIMIT = .4893E-02
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 399.1 CRITERION= .3331
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6673
 HT FLOW CONVERGENCE VALUE= 7.762 CRITERION= .3332
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8431E-01
 HT FLOW CONVERGENCE VALUE= .5526 CRITERION= .3327
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7144E-02
 HT FLOW CONVERGENCE VALUE= .4887E-01 CRITERION= .3327 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 195
 *** TIME = .164100E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1625E-08 OSCILLATION LIMIT = .5127E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 398.4 CRITERION= .3314
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.626
 HT FLOW CONVERGENCE VALUE= 12.12 CRITERION= .3315
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2094
 HT FLOW CONVERGENCE VALUE= .7558 CRITERION= .3306
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1704E-01
 HT FLOW CONVERGENCE VALUE= .6809E-01 CRITERION= .3306 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 198
*** TIME = .171989E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1442E-08 OSCILLATION LIMIT = .1138E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 396.4 CRITERION= .3305
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.552
HT FLOW CONVERGENCE VALUE= 10.54 CRITERION= .3303
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1794
HT FLOW CONVERGENCE VALUE= .7209 CRITERION= .3297
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2149E-01
HT FLOW CONVERGENCE VALUE= .9410E-01 CRITERION= .3298 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 201
*** TIME = .179878E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1309E-08 OSCILLATION LIMIT = .1033E-01
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 394.3 CRITERION= .3288
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8970
HT FLOW CONVERGENCE VALUE= 8.490 CRITERION= .3287
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1168
HT FLOW CONVERGENCE VALUE= .4984 CRITERION= .3283
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8595E-02
HT FLOW CONVERGENCE VALUE= .3629E-01 CRITERION= .3283 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 204
*** TIME = .184612E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1322E-08 OSCILLATION LIMIT = .6257E-02
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 393.2 CRITERION= .3285
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8767
HT FLOW CONVERGENCE VALUE= 10.37 CRITERION= .3289
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1134
HT FLOW CONVERGENCE VALUE= .7810 CRITERION= .3280
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9975E-02
HT FLOW CONVERGENCE VALUE= .7761E-01 CRITERION= .3281 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 6 COMPLETED. CUM ITER = 207
*** TIME = .189346E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1331E-08 OSCILLATION LIMIT = .6299E-02

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 04:50:56 JUL 29, 1995 CP= 33494.370
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 392.2 CRITERION= .3271
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8567
HT FLOW CONVERGENCE VALUE= 11.33 CRITERION= .3278
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9185E-01
HT FLOW CONVERGENCE VALUE= .6291 CRITERION= .3267
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6401E-02
HT FLOW CONVERGENCE VALUE= .4386E-01 CRITERION= .3267 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 210
*** TIME = .194079E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1417E-08 OSCILLATION LIMIT = .6707E-02
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 391.5 CRITERION= .3270
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8346
HT FLOW CONVERGENCE VALUE= 9.344 CRITERION= .3275

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1138
 HT FLOW CONVERGENCE VALUE= .5599 CRITERION= .3266
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9881E-02
 HT FLOW CONVERGENCE VALUE= .4857E-01 CRITERION= .3267 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 213
 *** TIME = .198813E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1420E-08 OSCILLATION LIMIT = .6720E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 390.8 CRITERION= .3254
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.343
 HT FLOW CONVERGENCE VALUE= 14.87 CRITERION= .3262
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1830
 HT FLOW CONVERGENCE VALUE= .8854 CRITERION= .3248
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1547E-01
 HT FLOW CONVERGENCE VALUE= .8743E-01 CRITERION= .3249 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 216
 *** TIME = .206702E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1314E-08 OSCILLATION LIMIT = .1037E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 389.8 CRITERION= .3248
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.290
 HT FLOW CONVERGENCE VALUE= 12.23 CRITERION= .3254
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1530
 HT FLOW CONVERGENCE VALUE= .8444 CRITERION= .3242
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1620E-01
 HT FLOW CONVERGENCE VALUE= .9050E-01 CRITERION= .3243 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 219
 *** TIME = .214592E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1177E-08 OSCILLATION LIMIT = .9283E-02
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 388.4 CRITERION= .3231
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.000
 HT FLOW CONVERGENCE VALUE= 11.02 CRITERION= .3236
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1091
 HT FLOW CONVERGENCE VALUE= .6268 CRITERION= .3225
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9828E-02
 HT FLOW CONVERGENCE VALUE= .4922E-01 CRITERION= .3226 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 222
 *** TIME = .220903E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1132E-08 OSCILLATION LIMIT = .7146E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 05:48:04 JUL 29, 1995 CP= 35623.510
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 387.0 CRITERION= .3228
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9767
 HT FLOW CONVERGENCE VALUE= 13.21 CRITERION= .3234
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1612
 HT FLOW CONVERGENCE VALUE= 1.018 CRITERION= .3222
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1606E-01
 HT FLOW CONVERGENCE VALUE= .1128 CRITERION= .3223 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 225
 *** TIME = .227215E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1109E-08 OSCILLATION LIMIT = .6999E-02
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 385.7 CRITERION= .3213
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9524
 HT FLOW CONVERGENCE VALUE= 10.80 CRITERION= .3218
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1152
 HT FLOW CONVERGENCE VALUE= .6682 CRITERION= .3207
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9959E-02
 HT FLOW CONVERGENCE VALUE= .5835E-01 CRITERION= .3207 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 228
 *** TIME = .233526E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1146E-08 OSCILLATION LIMIT = .7232E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 384.4 CRITERION= .3208
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.143
 HT FLOW CONVERGENCE VALUE= 14.69 CRITERION= .3220
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1329
 HT FLOW CONVERGENCE VALUE= .5765 CRITERION= .3202
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5549E-02
 HT FLOW CONVERGENCE VALUE= .2935E-01 CRITERION= .3203 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 231
 *** TIME = .241416E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1079E-08 OSCILLATION LIMIT = .8510E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 383.1 CRITERION= .3191
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.093
 HT FLOW CONVERGENCE VALUE= 11.33 CRITERION= .3199
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1976
 HT FLOW CONVERGENCE VALUE= .9926 CRITERION= .3185
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2319E-01
 HT FLOW CONVERGENCE VALUE= .1175 CRITERION= .3186 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 234
 *** TIME = .249305E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1028E-08 OSCILLATION LIMIT = .8112E-02
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+07 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 381.9 CRITERION= .3191
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4803
 HT FLOW CONVERGENCE VALUE= 8.069 CRITERION= .3197
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5960E-01
 HT FLOW CONVERGENCE VALUE= .4478 CRITERION= .3188
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6196E-02
 HT FLOW CONVERGENCE VALUE= .3426E-01 CRITERION= .3188 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 237
 *** TIME = .252461E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1245E-08 OSCILLATION LIMIT = .3929E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 06:45:14 JUL 29, 1995 CP= 37755.170
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 381.4 CRITERION= .3178
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4780
 HT FLOW CONVERGENCE VALUE= 7.280 CRITERION= .3184
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6711E-01
 HT FLOW CONVERGENCE VALUE= .3865 CRITERION= .3176
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1025E-01
 HT FLOW CONVERGENCE VALUE= .3305E-01 CRITERION= .3176 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 240
 *** TIME = .255617E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1687E-08 OSCILLATION LIMIT = .5325E-02
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 381.2 CRITERION= .3178
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4892
 HT FLOW CONVERGENCE VALUE= 5.226 CRITERION= .3181
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5754E-01
 HT FLOW CONVERGENCE VALUE= .2407 CRITERION= .3176 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 242
 *** TIME = .258772E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1766E-08 OSCILLATION LIMIT = .5572E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 381.0 CRITERION= .3158
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.076
 HT FLOW CONVERGENCE VALUE= 13.26 CRITERION= .3165
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1555
 HT FLOW CONVERGENCE VALUE= .9435 CRITERION= .3153
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2331E-01
 HT FLOW CONVERGENCE VALUE= .9835E-01 CRITERION= .3154 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 245
 *** TIME = .266662E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1503E-08 OSCILLATION LIMIT = .1186E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 379.9 CRITERION= .3147
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.028
 HT FLOW CONVERGENCE VALUE= 12.32 CRITERION= .3150
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2118
 HT FLOW CONVERGENCE VALUE= 1.160 CRITERION= .3142
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3729E-01
 HT FLOW CONVERGENCE VALUE= .2121 CRITERION= .3143 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 248
 *** TIME = .274551E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1577E-08 OSCILLATION LIMIT = .1244E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 378.6 CRITERION= .3129
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6857
 HT FLOW CONVERGENCE VALUE= 7.138 CRITERION= .3131
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1253
 HT FLOW CONVERGENCE VALUE= .3817 CRITERION= .3125
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1784E-01
 HT FLOW CONVERGENCE VALUE= .3289E-01 CRITERION= .3126 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 251
 *** TIME = .279285E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1561E-08 OSCILLATION LIMIT = .7388E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 377.6 CRITERION= .3124
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6827
 HT FLOW CONVERGENCE VALUE= 7.631 CRITERION= .3128
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6821E-01
 HT FLOW CONVERGENCE VALUE= .5064 CRITERION= .3119
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5309E-02
 HT FLOW CONVERGENCE VALUE= .4227E-01 CRITERION= .3119 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 21 SUBSTEP 6 COMPLETED. CUM ITER = 254
 *** TIME = .284018E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1363E-08 OSCILLATION LIMIT = .6452E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
769.132473 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10787 STEP 1

8965 ELEMENTS (OF 8965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 40199.090 TIME= 07:50:42
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 07:50:42 JUL 29, 1995 CP= 40199.090
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
TIME AT END OF THE LOAD STEP.31558E+09
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 376.2 CRITERION= .3108
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5728
HT FLOW CONVERGENCE VALUE= 9.002 CRITERION= .3113
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6908E-01
HT FLOW CONVERGENCE VALUE= .5844 CRITERION= .3101
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4802E-02
HT FLOW CONVERGENCE VALUE= .4450E-01 CRITERION= .3102 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 257
*** TIME = .288752E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1208E-08 OSCILLATION LIMIT = .5721E-02
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 374.4 CRITERION= .3103
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5493
HT FLOW CONVERGENCE VALUE= 7.516 CRITERION= .3107
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4926E-01
HT FLOW CONVERGENCE VALUE= .3270 CRITERION= .3097
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3286E-02
HT FLOW CONVERGENCE VALUE= .1836E-01 CRITERION= .3097 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 260
*** TIME = .293486E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1194E-08 OSCILLATION LIMIT = .5652E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 372.6 CRITERION= .3082
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8876
HT FLOW CONVERGENCE VALUE= 11.26 CRITERION= .3087
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1434
HT FLOW CONVERGENCE VALUE= .8033 CRITERION= .3072
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2710E-01
HT FLOW CONVERGENCE VALUE= .1009 CRITERION= .3073 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 263
*** TIME = .301375E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1206E-08 OSCILLATION LIMIT = .9512E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 369.9 CRITERION= .3070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9297
HT FLOW CONVERGENCE VALUE= 14.53 CRITERION= .3082
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1796
HT FLOW CONVERGENCE VALUE= 1.340 CRITERION= .3061
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3260E-01
HT FLOW CONVERGENCE VALUE= .1616 CRITERION= .3063 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 266
*** TIME = .309265E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1290E-08 OSCILLATION LIMIT = .1018E-01
*** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 367.7 CRITERION= .3049
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7843
HT FLOW CONVERGENCE VALUE= 10.60 CRITERION= .3058
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6747E-01
HT FLOW CONVERGENCE VALUE= .5914 CRITERION= .3043
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6765E-02
HT FLOW CONVERGENCE VALUE= .4485E-01 CRITERION= .3044 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 269
*** TIME = .315576E+09 TIME INC = .631152E+07
*** RESPONSE EIGENVALUE = .1296E-08 OSCILLATION LIMIT = .8179E-02

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 08:47:55 JUL 29, 1995 CP= 42330.850
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 366.1 CRITERION= .3045

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6952
 HT FLOW CONVERGENCE VALUE= 11.22 CRITERION= .3055
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9520E-01
 HT FLOW CONVERGENCE VALUE= .7777 CRITERION= .3037
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1001E-01
 HT FLOW CONVERGENCE VALUE= .7546E-01 CRITERION= .3039 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 272
 *** TIME = .321888E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1186E-08 OSCILLATION LIMIT = .7483E-02
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 364.3 CRITERION= .3027
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6582
 HT FLOW CONVERGENCE VALUE= 10.04 CRITERION= .3036
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6194E-01
 HT FLOW CONVERGENCE VALUE= .6886 CRITERION= .3020
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8139E-02
 HT FLOW CONVERGENCE VALUE= .6649E-01 CRITERION= .3021 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 275
 *** TIME = .328199E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1209E-08 OSCILLATION LIMIT = .7633E-02
 *** AUTO TIME STEP: NEXT TIME INC = .18935E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 362.4 CRITERION= .3009
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.866
 HT FLOW CONVERGENCE VALUE= 26.30 CRITERION= .3041
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2938
 HT FLOW CONVERGENCE VALUE= 2.099 CRITERION= .2990
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4004E-01
 HT FLOW CONVERGENCE VALUE= .2772 CRITERION= .2993 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 278
 *** TIME = .347134E+09 TIME INC = .189346E+08
 *** RESPONSE EIGENVALUE = .1112E-08 OSCILLATION LIMIT = .2106E-01
 *** AUTO TIME STEP: NEXT TIME INC = .56804E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 357.3 CRITERION= .2933
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.913
 HT FLOW CONVERGENCE VALUE= 47.30 CRITERION= .2984
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9337
 HT FLOW CONVERGENCE VALUE= 6.819 CRITERION= .2887
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1880
 HT FLOW CONVERGENCE VALUE= 1.557 CRITERION= .2899
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3316E-01
 HT FLOW CONVERGENCE VALUE= .3733 CRITERION= .2896
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1015E-01
 HT FLOW CONVERGENCE VALUE= .1004 CRITERION= .2897 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 283
 *** TIME = .403937E+09 TIME INC = .568037E+08
 *** RESPONSE EIGENVALUE = .9283E-09 OSCILLATION LIMIT = .5273E-01
 *** AUTO STEP TIME: NEXT TIME INC = .56804E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 345.3 CRITERION= .2849
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.303
 HT FLOW CONVERGENCE VALUE= 36.84 CRITERION= .2869
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6547
 HT FLOW CONVERGENCE VALUE= 4.173 CRITERION= .2806
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1314
 HT FLOW CONVERGENCE VALUE= .6811 CRITERION= .2814
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2267E-01
 HT FLOW CONVERGENCE VALUE= .1213 CRITERION= .2813 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 287
 *** TIME = .460741E+09 TIME INC = .568037E+08
 *** RESPONSE EIGENVALUE = .8543E-09 OSCILLATION LIMIT = .4853E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.3889)

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HT FLOW CONVERGENCE VALUE= 333.6    CRITERION= .2731
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.103
HT FLOW CONVERGENCE VALUE= 52.46    CRITERION= .2806
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8797
HT FLOW CONVERGENCE VALUE= 6.898    CRITERION= .2688
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1531
HT FLOW CONVERGENCE VALUE= 1.097    CRITERION= .2701
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2661E-01
HT FLOW CONVERGENCE VALUE= .1726    CRITERION= .2699    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 291
*** TIME = .539635E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8476E-09 OSCILLATION LIMIT = .6687E-01
*** AUTO TIME STEP: NEXT TIME INC = .45759E+08 DECREASED (FACTOR = .5800)

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HT FLOW CONVERGENCE VALUE= 322.9    CRITERION= .2662
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.839
HT FLOW CONVERGENCE VALUE= 24.87    CRITERION= .2671
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2655
HT FLOW CONVERGENCE VALUE= 2.825    CRITERION= .2640
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4369E-01
HT FLOW CONVERGENCE VALUE= .4860    CRITERION= .2645
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8360E-02
HT FLOW CONVERGENCE VALUE= .8456E-01 CRITERION= .2644    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 295
*** TIME = .585394E+09 TIME INC = .457585E+08
*** RESPONSE EIGENVALUE = .9380E-09 OSCILLATION LIMIT = .4292E-01
*** AUTO STEP TIME: NEXT TIME INC = .45759E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 317.2    CRITERION= .2595
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.819
HT FLOW CONVERGENCE VALUE= 31.97    CRITERION= .2602
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5262
HT FLOW CONVERGENCE VALUE= 3.256    CRITERION= .2569
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7392E-01
HT FLOW CONVERGENCE VALUE= .5616    CRITERION= .2575
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1023E-01
HT FLOW CONVERGENCE VALUE= .9693E-01 CRITERION= .2575    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 299
*** TIME = .631152E+09 TIME INC = .457585E+08
*** RESPONSE EIGENVALUE = .1109E-08 OSCILLATION LIMIT = .5074E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 10:37:48 JUL 29, 1995 CP= 46419.930
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 310.6    CRITERION= .2548
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.999
HT FLOW CONVERGENCE VALUE= 30.67    CRITERION= .2544
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.272
HT FLOW CONVERGENCE VALUE= 5.278    CRITERION= .2534
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2223
HT FLOW CONVERGENCE VALUE= 1.095    CRITERION= .2542
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3968E-01
HT FLOW CONVERGENCE VALUE= .2181    CRITERION= .2543    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 303
*** TIME = .676911E+09 TIME INC = .457585E+08
*** RESPONSE EIGENVALUE = .1256E-08 OSCILLATION LIMIT = .5749E-01
*** AUTO STEP TIME: NEXT TIME INC = .45759E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 309.1 CRITERION= .2504

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.500
 HT FLOW CONVERGENCE VALUE= 33.99 CRITERION= .2554
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6100
 HT FLOW CONVERGENCE VALUE= 5.260 CRITERION= .2505
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1180
 HT FLOW CONVERGENCE VALUE= 1.272 CRITERION= .2518
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2341E-01
 HT FLOW CONVERGENCE VALUE= .2898 CRITERION= .2516
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4070E-02
 HT FLOW CONVERGENCE VALUE= .7057E-01 CRITERION= .2517 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 308
 *** TIME = .722669E+09 TIME INC = .457585E+08
 *** RESPONSE EIGENVALUE = .1182E-08 OSCILLATION LIMIT = .5408E-01
 *** AUTO STEP TIME: NEXT TIME INC = .45759E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 313.0 CRITERION= .2490
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.079
 HT FLOW CONVERGENCE VALUE= 39.70 CRITERION= .2594
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5866
 HT FLOW CONVERGENCE VALUE= 3.194 CRITERION= .2509
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5771E-01
 HT FLOW CONVERGENCE VALUE= .4931 CRITERION= .2516
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1114E-01
 HT FLOW CONVERGENCE VALUE= .6802E-01 CRITERION= .2516 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 312
 *** TIME = .768428E+09 TIME INC = .457585E+08
 *** RESPONSE EIGENVALUE = .1144E-08 OSCILLATION LIMIT = .5237E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7241)

HT FLOW CONVERGENCE VALUE= 321.2 CRITERION= .2455
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.581
 HT FLOW CONVERGENCE VALUE= 39.49 CRITERION= .2543
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6623
 HT FLOW CONVERGENCE VALUE= 1.794 CRITERION= .2502
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7595E-01
 HT FLOW CONVERGENCE VALUE= .3054 CRITERION= .2505
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1243E-01
 HT FLOW CONVERGENCE VALUE= .4918E-01 CRITERION= .2505 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 316
 *** TIME = .847322E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9560E-09 OSCILLATION LIMIT = .7543E-01
 *** AUTO TIME STEP: NEXT TIME INC = .49703E+08 DECREASED (FACTOR = .6300)

HT FLOW CONVERGENCE VALUE= 336.1 CRITERION= .2477
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.556
 HT FLOW CONVERGENCE VALUE= 26.51 CRITERION= .2473
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3918
 HT FLOW CONVERGENCE VALUE= 4.301 CRITERION= .2470
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7626E-01
 HT FLOW CONVERGENCE VALUE= 1.027 CRITERION= .2480
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1778E-01
 HT FLOW CONVERGENCE VALUE= .2440 CRITERION= .2479 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 320
 *** TIME = .897025E+09 TIME INC = .497032E+08
 *** RESPONSE EIGENVALUE = .8771E-09 OSCILLATION LIMIT = .4359E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49703E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 336.8 CRITERION= .2441
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.403
 HT FLOW CONVERGENCE VALUE= 44.23 CRITERION= .2498
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4463
 HT FLOW CONVERGENCE VALUE= 5.274 CRITERION= .2420
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7492E-01
 HT FLOW CONVERGENCE VALUE= 1.317 CRITERION= .2434
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1960E-01
 HT FLOW CONVERGENCE VALUE= .3482 CRITERION= .2432

EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5998E-02
 HT FLOW CONVERGENCE VALUE= .8323E-01 CRITERION= .2432 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 24 SUBSTEP 6 COMPLETED. CUM ITER = 325
 *** TIME = .946728E+09 TIME INC = .497032E+08
 *** RESPONSE EIGENVALUE = .9982E-09 OSCILLATION LIMIT = .4961E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 12:11:15 JUL 29, 1995 CP= 49889.550
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 334.2 CRITERION= .2409
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.308
 HT FLOW CONVERGENCE VALUE= 30.48 CRITERION= .2418
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4049
 HT FLOW CONVERGENCE VALUE= 2.019 CRITERION= .2395
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5302E-01
 HT FLOW CONVERGENCE VALUE= .3904 CRITERION= .2398
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1031E-01
 HT FLOW CONVERGENCE VALUE= .7804E-01 CRITERION= .2399 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 329
 *** TIME = .996431E+09 TIME INC = .497032E+08
 *** RESPONSE EIGENVALUE = .9667E-09 OSCILLATION LIMIT = .4805E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49703E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 331.2 CRITERION= .2365
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.227
 HT FLOW CONVERGENCE VALUE= 32.28 CRITERION= .2423
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2839
 HT FLOW CONVERGENCE VALUE= 3.611 CRITERION= .2341
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5066E-01
 HT FLOW CONVERGENCE VALUE= .6977 CRITERION= .2349
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1160E-01
 HT FLOW CONVERGENCE VALUE= .1366 CRITERION= .2348 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 333
 *** TIME = .104613E+10 TIME INC = .497032E+08
 *** RESPONSE EIGENVALUE = .7974E-09 OSCILLATION LIMIT = .3964E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5873)

HT FLOW CONVERGENCE VALUE= 326.2 CRITERION= .2308
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.138
 HT FLOW CONVERGENCE VALUE= 37.17 CRITERION= .2331
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3609
 HT FLOW CONVERGENCE VALUE= 7.896 CRITERION= .2249
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1026
 HT FLOW CONVERGENCE VALUE= 2.994 CRITERION= .2281
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4194E-01
 HT FLOW CONVERGENCE VALUE= 1.079 CRITERION= .2270
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1693E-01
 HT FLOW CONVERGENCE VALUE= .4053 CRITERION= .2274
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6686E-02
 HT FLOW CONVERGENCE VALUE= .1515 CRITERION= .2273 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 339
 *** TIME = .112503E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8301E-09 OSCILLATION LIMIT = .6549E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 316.0 CRITERION= .2223
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.797
 HT FLOW CONVERGENCE VALUE= 29.15 CRITERION= .2218
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4049

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HT FLOW CONVERGENCE VALUE= 4.712 CRITERION= .2174
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1119
HT FLOW CONVERGENCE VALUE= 2.108 CRITERION= .2185
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4389E-01
HT FLOW CONVERGENCE VALUE= .9037 CRITERION= .2180
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2196E-01
HT FLOW CONVERGENCE VALUE= .4098 CRITERION= .2182
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1073E-01
HT FLOW CONVERGENCE VALUE= .1847 CRITERION= .2181 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 345
*** TIME = .120392E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .9227E-09 OSCILLATION LIMIT = .7280E-01
*** AUTO TIME STEP: NEXT TIME INC = .58382E+08 DECREASED (FACTOR = .7400)

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HT FLOW CONVERGENCE VALUE= 304.1 CRITERION= .2153
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.187
HT FLOW CONVERGENCE VALUE= 25.58 CRITERION= .2131
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4304
HT FLOW CONVERGENCE VALUE= 3.893 CRITERION= .2117
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6676E-01
HT FLOW CONVERGENCE VALUE= 1.224 CRITERION= .2122
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2257E-01
HT FLOW CONVERGENCE VALUE= .3815 CRITERION= .2123
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7271E-02
HT FLOW CONVERGENCE VALUE= .1207 CRITERION= .2124 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 350
*** TIME = .126230E+10 TIME INC = .583816E+08
*** RESPONSE EIGENVALUE = .1087E-08 OSCILLATION LIMIT = .6349E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 13:39:32 JUL 29, 1995 CP= 53165.140
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 295.6 CRITERION= .2094
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.933
HT FLOW CONVERGENCE VALUE= 22.36 CRITERION= .2026
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4067
HT FLOW CONVERGENCE VALUE= 5.145 CRITERION= .2066
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1158
HT FLOW CONVERGENCE VALUE= 1.357 CRITERION= .2074
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4458E-01
HT FLOW CONVERGENCE VALUE= .4285 CRITERION= .2076
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1513E-01
HT FLOW CONVERGENCE VALUE= .1357 CRITERION= .2076 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 355
*** TIME = .132069E+10 TIME INC = .583816E+08
*** RESPONSE EIGENVALUE = .9661E-09 OSCILLATION LIMIT = .5640E-01
*** AUTO STEP TIME: NEXT TIME INC = .58382E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 290.5 CRITERION= .2057
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.108
HT FLOW CONVERGENCE VALUE= 44.48 CRITERION= .2185
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3944
HT FLOW CONVERGENCE VALUE= 4.086 CRITERION= .2021
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6119E-01
HT FLOW CONVERGENCE VALUE= .7676 CRITERION= .2034
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1183E-01
HT FLOW CONVERGENCE VALUE= .1440 CRITERION= .2032 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 359
*** TIME = .137907E+10 TIME INC = .583816E+08

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*** RESPONSE EIGENVALUE = .7661E-09 OSCILLATION LIMIT = .4472E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.3514)

HT FLOW CONVERGENCE VALUE= 283.2 CRITERION= .1993
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.320
 HT FLOW CONVERGENCE VALUE= 4.678 CRITERION= .1969
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8174E-01
 HT FLOW CONVERGENCE VALUE= .4381E-01 CRITERION= .1956 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 361
 *** TIME = .145796E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7260E-09 OSCILLATION LIMIT = .5728E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 272.6 CRITERION= .1929
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.022
 HT FLOW CONVERGENCE VALUE= 8.656 CRITERION= .1878
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2015
 HT FLOW CONVERGENCE VALUE= 2.235 CRITERION= .1889
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5404E-01
 HT FLOW CONVERGENCE VALUE= .6290 CRITERION= .1892
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1540E-01
 HT FLOW CONVERGENCE VALUE= .1721 CRITERION= .1893 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 365
 *** TIME = .153686E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6901E-09 OSCILLATION LIMIT = .5444E-01
 *** AUTO TIME STEP: NEXT TIME INC = .41025E+08 DECREASED (FACTOR = .5200)

HT FLOW CONVERGENCE VALUE= 262.3 CRITERION= .1870
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.133
 HT FLOW CONVERGENCE VALUE= 22.85 CRITERION= .1887
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1670
 HT FLOW CONVERGENCE VALUE= 3.092 CRITERION= .1835
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2551E-01
 HT FLOW CONVERGENCE VALUE= .5107 CRITERION= .1846
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4679E-02
 HT FLOW CONVERGENCE VALUE= .8205E-01 CRITERION= .1845 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 369
 *** TIME = .157788E+10 TIME INC = .410249E+08
 *** RESPONSE EIGENVALUE = .8478E-09 OSCILLATION LIMIT = .3478E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 14:49:19 JUL 29, 1995 CP= 55762.440
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 254.9 CRITERION= .1837
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.188
 HT FLOW CONVERGENCE VALUE= 20.24 CRITERION= .1859
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1162
 HT FLOW CONVERGENCE VALUE= 1.194 CRITERION= .1810
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1573E-01
 HT FLOW CONVERGENCE VALUE= .1945 CRITERION= .1812
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2563E-02
 HT FLOW CONVERGENCE VALUE= .3197E-01 CRITERION= .1812 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 373
 *** TIME = .161890E+10 TIME INC = .410249E+08
 *** RESPONSE EIGENVALUE = .8474E-09 OSCILLATION LIMIT = .3477E-01
 *** AUTO STEP TIME: NEXT TIME INC = .41025E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 247.8 CRITERION= .1793
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.063

HT FLOW CONVERGENCE VALUE= 13.19 CRITERION= .1742
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1331
 HT FLOW CONVERGENCE VALUE= 1.835 CRITERION= .1770
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2174E-01
 HT FLOW CONVERGENCE VALUE= .2146 CRITERION= .1774
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3367E-02
 HT FLOW CONVERGENCE VALUE= .2930E-01 CRITERION= .1774 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 377
 *** TIME = .165993E+10 TIME INC = .410249E+08
 *** RESPONSE EIGENVALUE = .8042E-09 OSCILLATION LIMIT = .3299E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.9231)

HT FLOW CONVERGENCE VALUE= 242.1 CRITERION= .1754
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.955
 HT FLOW CONVERGENCE VALUE= 5.449 CRITERION= .1717
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1346
 HT FLOW CONVERGENCE VALUE= 1.260 CRITERION= .1727
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3725E-01
 HT FLOW CONVERGENCE VALUE= .3638 CRITERION= .1728
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1083E-01
 HT FLOW CONVERGENCE VALUE= .1072 CRITERION= .1729 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 381
 *** TIME = .173882E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6865E-09 OSCILLATION LIMIT = .5416E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 234.9 CRITERION= .1697
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.731
 HT FLOW CONVERGENCE VALUE= 24.70 CRITERION= .1714
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3917
 HT FLOW CONVERGENCE VALUE= .2112E-01 CRITERION= .1681 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 383
 *** TIME = .181772E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7100E-09 OSCILLATION LIMIT = .5601E-01
 *** AUTO TIME STEP: NEXT TIME INC = .75738E+08 DECREASED (FACTOR = .9600)

HT FLOW CONVERGENCE VALUE= 229.9 CRITERION= .1661
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.680
 HT FLOW CONVERGENCE VALUE= 13.09 CRITERION= .1664
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2231
 HT FLOW CONVERGENCE VALUE= 3.129 CRITERION= .1635
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5847E-01
 HT FLOW CONVERGENCE VALUE= .9311 CRITERION= .1642
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1716E-01
 HT FLOW CONVERGENCE VALUE= .2606 CRITERION= .1640
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4905E-02
 HT FLOW CONVERGENCE VALUE= .7443E-01 CRITERION= .1641 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 388
 *** TIME = .189346E+10 TIME INC = .757382E+08
 *** RESPONSE EIGENVALUE = .7224E-09 OSCILLATION LIMIT = .5471E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 15:59:05 JUL 29, 1995 CP= 58361.080
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 223.9 CRITERION= .1616
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.443
 HT FLOW CONVERGENCE VALUE= 22.25 CRITERION= .1588
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4518
 HT FLOW CONVERGENCE VALUE= .9277E-01 CRITERION= .1591 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 390
*** TIME = .196919E+10 TIME INC = .757382E+08
*** RESPONSE EIGENVALUE = .7103E-09 OSCILLATION LIMIT = .5379E-01
*** AUTO STEP TIME: NEXT TIME INC = .75738E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 216.8 CRITERION= .1577
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.657
HT FLOW CONVERGENCE VALUE= 16.45 CRITERION= .1586
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2541
HT FLOW CONVERGENCE VALUE= 2.460 CRITERION= .1554
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4155E-01
HT FLOW CONVERGENCE VALUE= .4441 CRITERION= .1559
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7443E-02
HT FLOW CONVERGENCE VALUE= .7767E-01 CRITERION= .1558 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 394
*** TIME = .204493E+10 TIME INC = .757382E+08
*** RESPONSE EIGENVALUE = .6338E-09 OSCILLATION LIMIT = .4800E-01
*** AUTO STEP TIME: NEXT TIME INC = .75738E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.3 CRITERION= .1533
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.379
HT FLOW CONVERGENCE VALUE= 11.77 CRITERION= .1491
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1843
HT FLOW CONVERGENCE VALUE= 2.099 CRITERION= .1499
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3523E-01
HT FLOW CONVERGENCE VALUE= .3808 CRITERION= .1502
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7188E-02
HT FLOW CONVERGENCE VALUE= .7312E-01 CRITERION= .1503 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 398
*** TIME = .212067E+10 TIME INC = .757382E+08
*** RESPONSE EIGENVALUE = .6316E-09 OSCILLATION LIMIT = .4784E-01
*** AUTO TIME STEP: NEXT TIME INC = .44181E+08 DECREASED (FACTOR = .5833)

HT FLOW CONVERGENCE VALUE= 202.4 CRITERION= .1497
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8606
HT FLOW CONVERGENCE VALUE= 7.642 CRITERION= .1502
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5728E-01
HT FLOW CONVERGENCE VALUE= .9142 CRITERION= .1483
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7129E-02
HT FLOW CONVERGENCE VALUE= .1178 CRITERION= .1486 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 401
*** TIME = .216485E+10 TIME INC = .441806E+08
*** RESPONSE EIGENVALUE = .6337E-09 OSCILLATION LIMIT = .2800E-01
*** AUTO STEP TIME: NEXT TIME INC = .44181E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 199.1 CRITERION= .1468
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7972
HT FLOW CONVERGENCE VALUE= 13.18 CRITERION= .1496
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7873E-01
HT FLOW CONVERGENCE VALUE= 1.040 CRITERION= .1455
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6387E-02
HT FLOW CONVERGENCE VALUE= .8686E-01 CRITERION= .1458 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 404
*** TIME = .220903E+10 TIME INC = .441806E+08
*** RESPONSE EIGENVALUE = .6323E-09 OSCILLATION LIMIT = .2794E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 16:59:35 JUL 29, 1995 CP= 60620.800
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 196.0 CRITERION= .1453
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7519
 HT FLOW CONVERGENCE VALUE= 8.391 CRITERION= .1466
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6734E-01
 HT FLOW CONVERGENCE VALUE= .8163 CRITERION= .1442
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6788E-02
 HT FLOW CONVERGENCE VALUE= .8515E-01 CRITERION= .1444 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 407
 *** TIME = .225321E+10 TIME INC = .441806E+08
 *** RESPONSE EIGENVALUE = .6065E-09 OSCILLATION LIMIT = .2679E-01
 *** AUTO STEP TIME: NEXT TIME INC = .44181E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 193.4 CRITERION= .1427
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7572
 HT FLOW CONVERGENCE VALUE= 8.665 CRITERION= .1440
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5918E-01
 HT FLOW CONVERGENCE VALUE= .1039 CRITERION= .1419 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 409
 *** TIME = .229739E+10 TIME INC = .441806E+08
 *** RESPONSE EIGENVALUE = .6185E-09 OSCILLATION LIMIT = .2733E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7857)

HT FLOW CONVERGENCE VALUE= 191.0 CRITERION= .1406
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.437
 HT FLOW CONVERGENCE VALUE= 6.242 CRITERION= .1385
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1413
 HT FLOW CONVERGENCE VALUE= 1.571 CRITERION= .1393
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3760E-01
 HT FLOW CONVERGENCE VALUE= .4364 CRITERION= .1395
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1065E-01
 HT FLOW CONVERGENCE VALUE= .1245 CRITERION= .1395 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 413
 *** TIME = .237629E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6658E-09 OSCILLATION LIMIT = .5253E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 187.9 CRITERION= .1370
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.506
 HT FLOW CONVERGENCE VALUE= 12.20 CRITERION= .1328
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1735
 HT FLOW CONVERGENCE VALUE= 2.176 CRITERION= .1354
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3323E-01
 HT FLOW CONVERGENCE VALUE= .3567 CRITERION= .1358
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7058E-02
 HT FLOW CONVERGENCE VALUE= .6744E-01 CRITERION= .1359 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 417
 *** TIME = .245518E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7434E-09 OSCILLATION LIMIT = .5865E-01
 *** AUTO TIME STEP: NEXT TIME INC = .69427E+08 DECREASED (FACTOR = .8800)

HT FLOW CONVERGENCE VALUE= 184.4 CRITERION= .1347
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.375
 HT FLOW CONVERGENCE VALUE= .7856 CRITERION= .1333
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1637E-01
 HT FLOW CONVERGENCE VALUE= .6619E-02 CRITERION= .1334 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 419
 *** TIME = .252461E+10 TIME INC = .694267E+08
 *** RESPONSE EIGENVALUE = .7281E-09 OSCILLATION LIMIT = .5055E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 17:56:58 JUL 29, 1995 CP= 62767.820

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 180.5 CRITERION= .1316
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9908
 HT FLOW CONVERGENCE VALUE= 17.49 CRITERION= .1338
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1809
 HT FLOW CONVERGENCE VALUE= 2.212 CRITERION= .1289
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2614E-01
 HT FLOW CONVERGENCE VALUE= .3334 CRITERION= .1295
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4213E-02
 HT FLOW CONVERGENCE VALUE= .5001E-01 CRITERION= .1294 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 423
 *** TIME = .259403E+10 TIME INC = .694267E+08
 *** RESPONSE EIGENVALUE = .5455E-09 OSCILLATION LIMIT = .3787E-01
 *** AUTO STEP TIME: NEXT TIME INC = .69427E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 173.9 CRITERION= .1288
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9329
 HT FLOW CONVERGENCE VALUE= 8.059 CRITERION= .1288
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8612E-01
 HT FLOW CONVERGENCE VALUE= .6318E-02 CRITERION= .1267 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 425
 *** TIME = .266346E+10 TIME INC = .694267E+08
 *** RESPONSE EIGENVALUE = .5656E-09 OSCILLATION LIMIT = .3927E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1364)

HT FLOW CONVERGENCE VALUE= 167.7 CRITERION= .1247
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.092
 HT FLOW CONVERGENCE VALUE= .3697 CRITERION= .1231
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9498E-02
 HT FLOW CONVERGENCE VALUE= .5031E-02 CRITERION= .1232 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 427
 *** TIME = .274236E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .5108E-09 OSCILLATION LIMIT = .4030E-01
 *** AUTO TIME STEP: NEXT TIME INC = .48914E+08 DECREASED (FACTOR = .6200)

HT FLOW CONVERGENCE VALUE= 163.0 CRITERION= .1229
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6900
 HT FLOW CONVERGENCE VALUE= .6116 CRITERION= .1220
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6591E-02
 HT FLOW CONVERGENCE VALUE= .4007E-01 CRITERION= .1221 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 429
 *** TIME = .279127E+10 TIME INC = .489143E+08
 *** RESPONSE EIGENVALUE = .4852E-09 OSCILLATION LIMIT = .2373E-01
 *** AUTO STEP TIME: NEXT TIME INC = .48914E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 160.5 CRITERION= .1206
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7092
 HT FLOW CONVERGENCE VALUE= 8.970 CRITERION= .1191
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7037E-01
 HT FLOW CONVERGENCE VALUE= 1.031 CRITERION= .1195
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1124E-01
 HT FLOW CONVERGENCE VALUE= .1438 CRITERION= .1198
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1858E-02
 HT FLOW CONVERGENCE VALUE= .2200E-01 CRITERION= .1198 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 433
 *** TIME = .284018E+10 TIME INC = .489143E+08
 *** RESPONSE EIGENVALUE = .5539E-09 OSCILLATION LIMIT = .2709E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
265.631169 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10787 STEP 1

8965 ELEMENTS (OF 8965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 64800.560 TIME= 18:51:17
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:51:17 JUL 29, 1995 CP= 64800.560
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
TIME AT END OF THE LOAD STEP.31558E+10
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 158.1 CRITERION= .1197
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6063
HT FLOW CONVERGENCE VALUE= 9.714 CRITERION= .1190
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1309
HT FLOW CONVERGENCE VALUE= .3936 CRITERION= .1192
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2938E-02
HT FLOW CONVERGENCE VALUE= .2645E-01 CRITERION= .1193 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 436
*** TIME = .288910E+10 TIME INC = .489143E+08
*** RESPONSE EIGENVALUE = .6621E-09 OSCILLATION LIMIT = .3239E-01
*** AUTO STEP TIME: NEXT TIME INC = .48914E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 156.8 CRITERION= .1179
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6618
HT FLOW CONVERGENCE VALUE= 5.994 CRITERION= .1194
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4500E-01
HT FLOW CONVERGENCE VALUE= .5244 CRITERION= .1175
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4194E-02
HT FLOW CONVERGENCE VALUE= .4996E-01 CRITERION= .1177 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 439
*** TIME = .293801E+10 TIME INC = .489143E+08
*** RESPONSE EIGENVALUE = .5795E-09 OSCILLATION LIMIT = .2835E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6129)

HT FLOW CONVERGENCE VALUE= 155.9 CRITERION= .1171
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9277
HT FLOW CONVERGENCE VALUE= 9.860 CRITERION= .1188
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9202E-01
HT FLOW CONVERGENCE VALUE= .7587E-02 CRITERION= .1161 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 441
*** TIME = .301691E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .4881E-09 OSCILLATION LIMIT = .3851E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 153.2 CRITERION= .1144
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9236
HT FLOW CONVERGENCE VALUE= .2955 CRITERION= .1136
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7442E-02
HT FLOW CONVERGENCE VALUE= .3604E-02 CRITERION= .1136 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 443
*** TIME = .309580E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .4506E-09 OSCILLATION LIMIT = .3555E-01
*** AUTO TIME STEP: NEXT TIME INC = .59959E+08 DECREASED (FACTOR = .7600)

HT FLOW CONVERGENCE VALUE= 150.8 CRITERION= .1133
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7268
HT FLOW CONVERGENCE VALUE= .3586 CRITERION= .1126
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5455E-02
HT FLOW CONVERGENCE VALUE= .2603E-01 CRITERION= .1127 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 445
*** TIME = .315576E+10 TIME INC = .599594E+08
*** RESPONSE EIGENVALUE = .4352E-09 OSCILLATION LIMIT = .2609E-01

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:39:24 JUL 29, 1995 CP= 66605.480
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 149.0 CRITERION= .1116
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6495
HT FLOW CONVERGENCE VALUE= 5.882 CRITERION= .1108
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7996E-01
HT FLOW CONVERGENCE VALUE= .8594 CRITERION= .1108
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1314E-01
HT FLOW CONVERGENCE VALUE= .1394 CRITERION= .1110

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EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2241E-02
 HT FLOW CONVERGENCE VALUE= .2263E-01 CRITERION= .1110 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 449
 *** TIME = .321572E+10 TIME INC = .599594E+08
 *** RESPONSE EIGENVALUE = .3140E-09 OSCILLATION LIMIT = .1883E-01
 *** AUTO STEP TIME: NEXT TIME INC = .59959E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 146.9 CRITERION= .1111
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6362
 HT FLOW CONVERGENCE VALUE= 6.997 CRITERION= .1111
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7861E-01
 HT FLOW CONVERGENCE VALUE= .5273 CRITERION= .1105
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6862E-02
 HT FLOW CONVERGENCE VALUE= .4792E-01 CRITERION= .1105 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 452
 *** TIME = .327568E+10 TIME INC = .599594E+08
 *** RESPONSE EIGENVALUE = .3326E-09 OSCILLATION LIMIT = .1994E-01
 *** AUTO TIME STEP: NEXT TIME INC = .17988E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 145.3 CRITERION= .1086
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.842
 HT FLOW CONVERGENCE VALUE= 5.056 CRITERION= .1077
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1377
 HT FLOW CONVERGENCE VALUE= 1.266 CRITERION= .1064
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4227E-01
 HT FLOW CONVERGENCE VALUE= .4137 CRITERION= .1066
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1357E-01
 HT FLOW CONVERGENCE VALUE= .1304 CRITERION= .1065
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4301E-02
 HT FLOW CONVERGENCE VALUE= .4157E-01 CRITERION= .1066 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 457
 *** TIME = .345556E+10 TIME INC = .179878E+09
 *** RESPONSE EIGENVALUE = .2446E-09 OSCILLATION LIMIT = .4401E-01
 *** AUTO STEP TIME: NEXT TIME INC = .17988E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 139.2 CRITERION= .1058
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.748
 HT FLOW CONVERGENCE VALUE= 16.84 CRITERION= .1062
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2145
 HT FLOW CONVERGENCE VALUE= .4907 CRITERION= .1036
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1007E-01
 HT FLOW CONVERGENCE VALUE= .5799E-01 CRITERION= .1037 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 460
 *** TIME = .363544E+10 TIME INC = .179878E+09
 *** RESPONSE EIGENVALUE = .2337E-09 OSCILLATION LIMIT = .4204E-01
 *** AUTO TIME STEP: NEXT TIME INC = .53963E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 133.0 CRITERION= .9892E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.755
 HT FLOW CONVERGENCE VALUE= 18.22 CRITERION= .9868E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4301
 HT FLOW CONVERGENCE VALUE= .4592 CRITERION= .9618E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3135E-01
 HT FLOW CONVERGENCE VALUE= .2947E-02 CRITERION= .9625E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 463
 *** TIME = .417507E+10 TIME INC = .539635E+09
 *** RESPONSE EIGENVALUE = .2464E-09 OSCILLATION LIMIT = .1330
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4620)

HT FLOW CONVERGENCE VALUE= 125.0 CRITERION= .9077E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.952
 HT FLOW CONVERGENCE VALUE= 18.27 CRITERION= .8948E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7549
 HT FLOW CONVERGENCE VALUE= 4.970 CRITERION= .8493E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3696


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HT FLOW CONVERGENCE VALUE= 2.732    CRITERION= .8601E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1706
HT FLOW CONVERGENCE VALUE= 1.103    CRITERION= .8561E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7965E-01
HT FLOW CONVERGENCE VALUE= .5576    CRITERION= .8583E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3619E-01
HT FLOW CONVERGENCE VALUE= .2377    CRITERION= .8574E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1698E-01
HT FLOW CONVERGENCE VALUE= .1166    CRITERION= .8579E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7713E-02
HT FLOW CONVERGENCE VALUE= .5082E-01 CRITERION= .8577E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 8
*** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 471
*** TIME = .496401E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .2534E-09 OSCILLATION LIMIT = .1999
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 110.0    CRITERION= .7913E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -6.153
HT FLOW CONVERGENCE VALUE= 17.69    CRITERION= .7801E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6024
HT FLOW CONVERGENCE VALUE= 1.420    CRITERION= .7488E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8722E-01
HT FLOW CONVERGENCE VALUE= .5331    CRITERION= .7512E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3775E-01
HT FLOW CONVERGENCE VALUE= .2296    CRITERION= .7518E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1637E-01
HT FLOW CONVERGENCE VALUE= .1003    CRITERION= .7520E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7177E-02
HT FLOW CONVERGENCE VALUE= .4414E-01 CRITERION= .7522E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
*** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 477
*** TIME = .575295E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .3479E-09 OSCILLATION LIMIT = .2745
*** AUTO TIME STEP: NEXT TIME INC = .55857E+09 DECREASED (FACTOR = .7080)

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HT FLOW CONVERGENCE VALUE= 98.11    CRITERION= .7150E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.120
HT FLOW CONVERGENCE VALUE= 10.56    CRITERION= .7055E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3737
HT FLOW CONVERGENCE VALUE= .7825E-01 CRITERION= .6844E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3460E-02
HT FLOW CONVERGENCE VALUE= .1421E-01 CRITERION= .6845E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 480
*** TIME = .631152E+10 TIME INC = .558570E+09
*** RESPONSE EIGENVALUE = .4327E-09 OSCILLATION LIMIT = .2417

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:45:14 JUL 29, 1995 CP= 71293.900
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 88.79    CRITERION= .6640E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.808
HT FLOW CONVERGENCE VALUE= 10.03    CRITERION= .6637E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2768
HT FLOW CONVERGENCE VALUE= .1409E-01 CRITERION= .6396E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 482
*** TIME = .687009E+10 TIME INC = .558570E+09
*** RESPONSE EIGENVALUE = .2250E-09 OSCILLATION LIMIT = .1257
*** AUTO STEP TIME: NEXT TIME INC = .55857E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 81.18    CRITERION= .6305E-01

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.542
 HT FLOW CONVERGENCE VALUE= 6.695 CRITERION= .6147E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2413
 HT FLOW CONVERGENCE VALUE= .8810 CRITERION= .6149E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4827E-01
 HT FLOW CONVERGENCE VALUE= .1909 CRITERION= .6162E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1025E-01
 HT FLOW CONVERGENCE VALUE= .4082E-01 CRITERION= .6160E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 486
 *** TIME = .742866E+10 TIME INC = .558570E+09
 *** RESPONSE EIGENVALUE = .1555E-09 OSCILLATION LIMIT = .8684E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55857E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 76.52 CRITERION= .5949E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.343
 HT FLOW CONVERGENCE VALUE= 7.396 CRITERION= .5973E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2741
 HT FLOW CONVERGENCE VALUE= .8272 CRITERION= .5792E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3840E-01
 HT FLOW CONVERGENCE VALUE= .1650 CRITERION= .5807E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7588E-02
 HT FLOW CONVERGENCE VALUE= .3231E-01 CRITERION= .5804E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 490
 *** TIME = .798723E+10 TIME INC = .558570E+09
 *** RESPONSE EIGENVALUE = .1469E-09 OSCILLATION LIMIT = .8207E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4124)

HT FLOW CONVERGENCE VALUE= 71.72 CRITERION= .5650E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.011
 HT FLOW CONVERGENCE VALUE= 7.717 CRITERION= .5622E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2482
 HT FLOW CONVERGENCE VALUE= .7456 CRITERION= .5516E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6093E-01
 HT FLOW CONVERGENCE VALUE= .2345 CRITERION= .5527E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1885E-01
 HT FLOW CONVERGENCE VALUE= .7134E-01 CRITERION= .5524E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5763E-02
 HT FLOW CONVERGENCE VALUE= .2193E-01 CRITERION= .5525E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 495
 *** TIME = .877617E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1481E-09 OSCILLATION LIMIT = .1168
 *** AUTO TIME STEP: NEXT TIME INC = .69111E+09 DECREASED (FACTOR = .8760)

HT FLOW CONVERGENCE VALUE= 67.46 CRITERION= .5278E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.378
 HT FLOW CONVERGENCE VALUE= 4.438 CRITERION= .5209E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2285
 HT FLOW CONVERGENCE VALUE= .3153 CRITERION= .5172E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2086E-01
 HT FLOW CONVERGENCE VALUE= .5680E-01 CRITERION= .5176E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3988E-02
 HT FLOW CONVERGENCE VALUE= .1083E-01 CRITERION= .5177E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 499
 *** TIME = .946728E+10 TIME INC = .691111E+09
 *** RESPONSE EIGENVALUE = .1642E-09 OSCILLATION LIMIT = .1135

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 22:55:10 JUL 29, 1995 CP= 73905.990
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 63.81 CRITERION= .5128E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.210
 HT FLOW CONVERGENCE VALUE= 5.108 CRITERION= .5055E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2391
 HT FLOW CONVERGENCE VALUE= .2952 CRITERION= .5005E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1644E-01
 HT FLOW CONVERGENCE VALUE= .5010E-01 CRITERION= .5008E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2806E-02
 HT FLOW CONVERGENCE VALUE= .8579E-02 CRITERION= .5008E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 503
 *** TIME = .101584E+11 TIME INC = .691111E+09
 *** RESPONSE EIGENVALUE = .1146E-09 OSCILLATION LIMIT = .7923E-01
 *** AUTO STEP TIME: NEXT TIME INC = .69111E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 59.48 CRITERION= .4839E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.056
 HT FLOW CONVERGENCE VALUE= 4.398 CRITERION= .4826E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1792
 HT FLOW CONVERGENCE VALUE= .6225 CRITERION= .4749E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2724E-01
 HT FLOW CONVERGENCE VALUE= .9770E-01 CRITERION= .4762E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4280E-02
 HT FLOW CONVERGENCE VALUE= .1517E-01 CRITERION= .4760E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 507
 *** TIME = .108495E+11 TIME INC = .691111E+09
 *** RESPONSE EIGENVALUE = .1055E-09 OSCILLATION LIMIT = .7294E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1416)

HT FLOW CONVERGENCE VALUE= 56.31 CRITERION= .4695E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.165
 HT FLOW CONVERGENCE VALUE= 2.389 CRITERION= .4624E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1351
 HT FLOW CONVERGENCE VALUE= .3371 CRITERION= .4633E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2612E-01
 HT FLOW CONVERGENCE VALUE= .6774E-01 CRITERION= .4636E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5281E-02
 HT FLOW CONVERGENCE VALUE= .1379E-01 CRITERION= .4637E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 511
 *** TIME = .116384E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1031E-09 OSCILLATION LIMIT = .8135E-01
 *** AUTO TIME STEP: NEXT TIME INC = .49230E+09 DECREASED (FACTOR = .6240)

HT FLOW CONVERGENCE VALUE= 53.62 CRITERION= .4499E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.271
 HT FLOW CONVERGENCE VALUE= 2.697 CRITERION= .4467E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1231
 HT FLOW CONVERGENCE VALUE= .4105 CRITERION= .4463E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2044E-01
 HT FLOW CONVERGENCE VALUE= .6752E-01 CRITERION= .4470E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3527E-02
 HT FLOW CONVERGENCE VALUE= .1124E-01 CRITERION= .4470E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 515
 *** TIME = .121307E+11 TIME INC = .492299E+09
 *** RESPONSE EIGENVALUE = .1120E-09 OSCILLATION LIMIT = .5515E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49230E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 52.09 CRITERION= .4452E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.216
 HT FLOW CONVERGENCE VALUE= 2.410 CRITERION= .4445E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1004
 HT FLOW CONVERGENCE VALUE= .1486E-02 CRITERION= .4408E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 517
 *** TIME = .126230E+11 TIME INC = .492299E+09
 *** RESPONSE EIGENVALUE = .1109E-09 OSCILLATION LIMIT = .5459E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:02:03 JUL 30, 1995 CP= 76404.620
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 50.04 CRITERION= .4294E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.165
 HT FLOW CONVERGENCE VALUE= .4629 CRITERION= .4258E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3288E-01
 HT FLOW CONVERGENCE VALUE= .1693E-01 CRITERION= .4256E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 519
 *** TIME = .131153E+11 TIME INC = .492299E+09
 *** RESPONSE EIGENVALUE = .9213E-10 OSCILLATION LIMIT = .4536E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49230E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 48.07 CRITERION= .4261E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.130
 HT FLOW CONVERGENCE VALUE= 3.694 CRITERION= .4256E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1030
 HT FLOW CONVERGENCE VALUE= .3519 CRITERION= .4225E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1098E-01
 HT FLOW CONVERGENCE VALUE= .3792E-01 CRITERION= .4232E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 522
 *** TIME = .136076E+11 TIME INC = .492299E+09
 *** RESPONSE EIGENVALUE = .8705E-10 OSCILLATION LIMIT = .4286E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49230E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 46.41 CRITERION= .4118E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.099
 HT FLOW CONVERGENCE VALUE= 1.596 CRITERION= .4097E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6330E-01
 HT FLOW CONVERGENCE VALUE= .1472E-01 CRITERION= .4100E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 524
 *** TIME = .140999E+11 TIME INC = .492299E+09
 *** RESPONSE EIGENVALUE = .9400E-10 OSCILLATION LIMIT = .4628E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6026)

HT FLOW CONVERGENCE VALUE= 45.04 CRITERION= .4073E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.702
 HT FLOW CONVERGENCE VALUE= 4.814 CRITERION= .4069E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2852
 HT FLOW CONVERGENCE VALUE= .4095 CRITERION= .4047E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3588E-01
 HT FLOW CONVERGENCE VALUE= .9835E-01 CRITERION= .4052E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6956E-02
 HT FLOW CONVERGENCE VALUE= .1851E-01 CRITERION= .4051E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 528
 *** TIME = .148889E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .44496E+09 DECREASED (FACTOR = .5640)

HT FLOW CONVERGENCE VALUE= 43.09 CRITERION= .3944E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9006
 HT FLOW CONVERGENCE VALUE= 3.044 CRITERION= .3965E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1015
 HT FLOW CONVERGENCE VALUE= .2958 CRITERION= .3917E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1060E-01
 HT FLOW CONVERGENCE VALUE= .3064E-01 CRITERION= .3921E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 531
 *** TIME = .153338E+11 TIME INC = .444962E+09
 *** AUTO STEP TIME: NEXT TIME INC = .44496E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 41.52      CRITERION= .3932E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8653
HT FLOW CONVERGENCE VALUE= 3.150      CRITERION= .3942E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9890E-01
HT FLOW CONVERGENCE VALUE= .2379      CRITERION= .3913E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7801E-02
HT FLOW CONVERGENCE VALUE= .2099E-01 CRITERION= .3916E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 35 SUBSTEP 6 COMPLETED. CUM ITER = 534
*** TIME = .157788E+11 TIME INC = .444962E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303      VERSION=HP 9000/7XX 01:07:53 JUL 30, 1995 CP= 78873.970
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 40.19      CRITERION= .3815E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8262
HT FLOW CONVERGENCE VALUE= 2.147      CRITERION= .3814E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6358E-01
HT FLOW CONVERGENCE VALUE= .1785      CRITERION= .3809E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6767E-02
HT FLOW CONVERGENCE VALUE= .1739E-01 CRITERION= .3812E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 537
*** TIME = .162238E+11 TIME INC = .444962E+09
*** AUTO STEP TIME: NEXT TIME INC = .44496E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 39.29      CRITERION= .3828E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7954
HT FLOW CONVERGENCE VALUE= 1.260      CRITERION= .3838E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5561E-01
HT FLOW CONVERGENCE VALUE= .1060      CRITERION= .3822E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4539E-02
HT FLOW CONVERGENCE VALUE= .8560E-02 CRITERION= .3823E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 540
*** TIME = .166687E+11 TIME INC = .444962E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7730)

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HT FLOW CONVERGENCE VALUE= 38.37      CRITERION= .3692E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.343
HT FLOW CONVERGENCE VALUE= 5.043      CRITERION= .3790E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1824
HT FLOW CONVERGENCE VALUE= .4911      CRITERION= .3686E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2021E-01
HT FLOW CONVERGENCE VALUE= .6836E-01 CRITERION= .3695E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3659E-02
HT FLOW CONVERGENCE VALUE= .1014E-01 CRITERION= .3694E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 544
*** TIME = .174577E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 37.01      CRITERION= .3678E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.264
HT FLOW CONVERGENCE VALUE= 2.434      CRITERION= .3733E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9537E-01
HT FLOW CONVERGENCE VALUE= .9617      CRITERION= .3685E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4369E-01
HT FLOW CONVERGENCE VALUE= .4874      CRITERION= .3703E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2112E-01
HT FLOW CONVERGENCE VALUE= .2244      CRITERION= .3694E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9951E-02

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HT FLOW CONVERGENCE VALUE= .1082 CRITERION= .3699E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4746E-02
 HT FLOW CONVERGENCE VALUE= .5106E-01 CRITERION= .3697E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2251E-02
 HT FLOW CONVERGENCE VALUE= .2434E-01 CRITERION= .3697E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 7
 *** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 551
 *** TIME = .182466E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .68796E+09 DECREASED (FACTOR = .8720)

HT FLOW CONVERGENCE VALUE= 36.38 CRITERION= .3580E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.046
 HT FLOW CONVERGENCE VALUE= 10.73 CRITERION= .3889E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2120
 HT FLOW CONVERGENCE VALUE= 1.238 CRITERION= .3589E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2801E-01
 HT FLOW CONVERGENCE VALUE= .1900 CRITERION= .3614E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4221E-02
 HT FLOW CONVERGENCE VALUE= .2797E-01 CRITERION= .3610E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 555
 *** TIME = .189346E+11 TIME INC = .687956E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 02:24:11 JUL 30, 1995 CP= 81717.250
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 36.32 CRITERION= .3620E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9971
 HT FLOW CONVERGENCE VALUE= 2.272 CRITERION= .3721E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5490E-01
 HT FLOW CONVERGENCE VALUE= .7311E-01 CRITERION= .3672E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5899E-02
 HT FLOW CONVERGENCE VALUE= .7990E-02 CRITERION= .3672E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 558
 *** TIME = .196225E+11 TIME INC = .687956E+09
 *** AUTO STEP TIME: NEXT TIME INC = .68796E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 37.22 CRITERION= .3576E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9488
 HT FLOW CONVERGENCE VALUE= .2945 CRITERION= .3600E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2154E-01
 HT FLOW CONVERGENCE VALUE= .3107E-01 CRITERION= .3601E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 560
 *** TIME = .203105E+11 TIME INC = .687956E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1468)

HT FLOW CONVERGENCE VALUE= 36.99 CRITERION= .3603E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.031
 HT FLOW CONVERGENCE VALUE= 3.408 CRITERION= .3654E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1762
 HT FLOW CONVERGENCE VALUE= .3388 CRITERION= .3615E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1903E-01
 HT FLOW CONVERGENCE VALUE= .3935E-01 CRITERION= .3619E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2191E-02
 HT FLOW CONVERGENCE VALUE= .4443E-02 CRITERION= .3619E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 564
 *** TIME = .210994E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .49545E+09 DECREASED (FACTOR = .6280)

HT FLOW CONVERGENCE VALUE= 36.31 CRITERION= .3538E-01

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6231
 HT FLOW CONVERGENCE VALUE= .7401 CRITERION= .3551E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2579E-01
 HT FLOW CONVERGENCE VALUE= .3893E-03 CRITERION= .3547E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 566
 *** TIME = .215949E+11 TIME INC = .495454E+09
 *** AUTO STEP TIME: NEXT TIME INC = .49545E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 35.82 CRITERION= .3567E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6061
 HT FLOW CONVERGENCE VALUE= .9684E-01 CRITERION= .3573E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2401E-02
 HT FLOW CONVERGENCE VALUE= .3459E-03 CRITERION= .3574E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 568
 *** TIME = .220903E+11 TIME INC = .495454E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 03:15:29 JUL 30, 1995 CP= 83644.700
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 35.30 CRITERION= .3501E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5907
 HT FLOW CONVERGENCE VALUE= .9002E-01 CRITERION= .3506E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1975E-02
 HT FLOW CONVERGENCE VALUE= .2765E-03 CRITERION= .3506E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 570
 *** TIME = .225858E+11 TIME INC = .495454E+09
 *** AUTO STEP TIME: NEXT TIME INC = .49545E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 34.69 CRITERION= .3532E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5765
 HT FLOW CONVERGENCE VALUE= .8498E-01 CRITERION= .3535E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1955E-02
 HT FLOW CONVERGENCE VALUE= .2677E-03 CRITERION= .3536E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 572
 *** TIME = .230812E+11 TIME INC = .495454E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5924)

HT FLOW CONVERGENCE VALUE= 34.08 CRITERION= .3452E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8917
 HT FLOW CONVERGENCE VALUE= 3.556 CRITERION= .3514E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1494
 HT FLOW CONVERGENCE VALUE= .6285 CRITERION= .3442E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3156E-01
 HT FLOW CONVERGENCE VALUE= .1542 CRITERION= .3453E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7552E-02
 HT FLOW CONVERGENCE VALUE= .3551E-01 CRITERION= .3451E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1757E-02
 HT FLOW CONVERGENCE VALUE= .8331E-02 CRITERION= .3452E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 577
 *** TIME = .238702E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 32.79 CRITERION= .3463E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8781
 HT FLOW CONVERGENCE VALUE= 4.009 CRITERION= .3555E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1081
 HT FLOW CONVERGENCE VALUE= .4076 CRITERION= .3459E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1244E-01

HT FLOW CONVERGENCE VALUE= .4941E-01 CRITERION= .3467E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1538E-02
 HT FLOW CONVERGENCE VALUE= .5984E-02 CRITERION= .3466E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 581
 *** TIME = .246591E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .58697E+09 DECREASED (FACTOR = .7440)

HT FLOW CONVERGENCE VALUE= 31.68 CRITERION= .3393E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6841
 HT FLOW CONVERGENCE VALUE= 1.689 CRITERION= .3435E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3186E-01
 HT FLOW CONVERGENCE VALUE= .1140 CRITERION= .3400E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2245E-02
 HT FLOW CONVERGENCE VALUE= .8194E-02 CRITERION= .3402E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 584
 *** TIME = .252461E+11 TIME INC = .586971E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 04:17:16 JUL 30, 1995 CP= 85921.470
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 31.13 CRITERION= .3428E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6023
 HT FLOW CONVERGENCE VALUE= .3277 CRITERION= .3440E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1218E-01
 HT FLOW CONVERGENCE VALUE= .1023E-01 CRITERION= .3438E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 586
 *** TIME = .258331E+11 TIME INC = .586971E+09
 *** AUTO STEP TIME: NEXT TIME INC = .58697E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 30.70 CRITERION= .3373E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5969
 HT FLOW CONVERGENCE VALUE= .1514 CRITERION= .3381E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6259E-02
 HT FLOW CONVERGENCE VALUE= .1937E-03 CRITERION= .3382E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 588
 *** TIME = .264200E+11 TIME INC = .586971E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.3441)

HT FLOW CONVERGENCE VALUE= 30.22 CRITERION= .3400E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7894
 HT FLOW CONVERGENCE VALUE= .1130 CRITERION= .3410E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1987E-02
 HT FLOW CONVERGENCE VALUE= .2412E-03 CRITERION= .3411E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 590
 *** TIME = .272090E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 29.58 CRITERION= .3341E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8078
 HT FLOW CONVERGENCE VALUE= .1131 CRITERION= .3349E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1978E-02
 HT FLOW CONVERGENCE VALUE= .2450E-03 CRITERION= .3350E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 592
 *** TIME = .279979E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .40394E+09 DECREASED (FACTOR = .5120)

HT FLOW CONVERGENCE VALUE= 28.83 CRITERION= .3380E-01


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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4112
HT FLOW CONVERGENCE VALUE= .5900E-01 CRITERION= .3383E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1064E-02
HT FLOW CONVERGENCE VALUE= .2812E-03 CRITERION= .3384E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 594
*** TIME = .284018E+11 TIME INC = .403937E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 04:59:14 JUL 30, 1995 CP= 87504.040
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 28.45 CRITERION= .3331E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3787
HT FLOW CONVERGENCE VALUE= .1708 CRITERION= .3335E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7671E-02
HT FLOW CONVERGENCE VALUE= .1223E-01 CRITERION= .3334E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 596
*** TIME = .288058E+11 TIME INC = .403937E+09
*** AUTO STEP TIME: NEXT TIME INC = .40394E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 28.04 CRITERION= .3367E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3598
HT FLOW CONVERGENCE VALUE= .5197 CRITERION= .3375E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2293E-01
HT FLOW CONVERGENCE VALUE= .3235E-01 CRITERION= .3369E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 598
*** TIME = .292097E+11 TIME INC = .403937E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.9531)

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HT FLOW CONVERGENCE VALUE= 27.60 CRITERION= .3308E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6993
HT FLOW CONVERGENCE VALUE= 2.471 CRITERION= .3376E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4684E-01
HT FLOW CONVERGENCE VALUE= .1924 CRITERION= .3311E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3691E-02
HT FLOW CONVERGENCE VALUE= .1588E-01 CRITERION= .3315E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 601
*** TIME = .299987E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 26.89 CRITERION= .3338E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6790
HT FLOW CONVERGENCE VALUE= 1.662 CRITERION= .3390E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2687E-01
HT FLOW CONVERGENCE VALUE= .9578E-01 CRITERION= .3347E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1640E-02
HT FLOW CONVERGENCE VALUE= .6018E-02 CRITERION= .3350E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 604
*** TIME = .307876E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .77001E+09 DECREASED (FACTOR = .9760)

```

```

HT FLOW CONVERGENCE VALUE= 26.46 CRITERION= .3291E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6715
HT FLOW CONVERGENCE VALUE= 1.100 CRITERION= .3332E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1627E-01
HT FLOW CONVERGENCE VALUE= .4298E-03 CRITERION= .3305E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 606
*** TIME = .315576E+11 TIME INC = .770005E+09

```

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 89312.300

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21c5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 05:47:36 JUL 30, 1995 CP= 89324.340
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 69.28696

PARAMETER WPSID(JINC) = 69.29756

PARAMETER WPBOT(JINC) = 69.27387

PARAMETER DFTOP(JINC) = 26.13992

PARAMETER DFSID(JINC) = 26.13989

PARAMETER DFEDG(JINC) = 26.13961

PARAMETER DFBOT(JINC) = 26.16205

PARAMETER WPTOP(JINC,0) = 31.55760

PARAMETER WPSID(JINC,0) = 31.55760

PARAMETER WPBOT(JINC,0) = 31.55760

PARAMETER DFTOP(JINC,0) = 31.55760

PARAMETER DFSID(JINC,0) = 31.55760

PARAMETER DFEDG(JINC,0) = 31.55760

PARAMETER DFBOT(JINC,0) = 31.55760

PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 4 CUMULATIVE ITERATION= 127
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 136.1389

PARAMETER WPSID(JINC) = 137.0486

PARAMETER WPBOT(JINC) = 139.5054

PARAMETER DFTOP(JINC) = 102.1734

PARAMETER DFSID(JINC) = 102.1548

PARAMETER DFEDG(JINC) = 99.71912

PARAMETER DFBOT(JINC) = 89.90898

PARAMETER WPTOP(JINC,0) = .3155763E+08

PARAMETER WPSID(JINC,0) = .3155763E+08

PARAMETER WPBOT(JINC,0) = .3155763E+08

PARAMETER DFTOP(JINC,0) = .3155763E+08

PARAMETER DFSID(JINC,0) = .3155763E+08

PARAMETER DFEDG(JINC,0) = .3155763E+08

PARAMETER DFBOT(JINC,0) = .3155763E+08

PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 269
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 182.4425

PARAMETER WPSID(JINC) = 183.0741

PARAMETER WPBOT(JINC) = 184.8793

PARAMETER DFTOP(JINC) = 161.8797

PARAMETER DFSID(JINC) = 162.0177

PARAMETER DFEDG(JINC) = 160.0829

PARAMETER DFBOT(JINC) = 149.7526

PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09

PARAMETER WPBOT(JINC,0) = .3155760E+09

PARAMETER DFTOP(JINC,0) = .3155760E+09

PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 445
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 189.0913

PARAMETER WPSID(JINC) = 189.3158

PARAMETER WPBOT(JINC) = 189.9237

PARAMETER DFTOP(JINC) = 182.5217

PARAMETER DFSID(JINC) = 182.6434

PARAMETER DFEDG(JINC) = 181.9802

PARAMETER DFBOT(JINC) = 178.1832

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10

PARAMETER DFTOP(JINC,0) = .3155760E+10

PARAMETER DFSID(JINC,0) = .3155760E+10

PARAMETER DFEDG(JINC,0) = .3155760E+10

PARAMETER DFBOT(JINC,0) = .3155760E+10

PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 91285.630

*** NOTE *** CP= 91285.640 TIME= 06:21:33
Write parameters to file= c21c5a.parm.

*** NOTE *** CP= 91285.710 TIME= 06:21:33
Parameters written. Lines= 770.

*** WARNING *** CP= 91285.710 TIME= 06:21:33
Parameters with a "undefined" value of 7.888609052E-31 were

not written to file c21c5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 06:21:33 JUL 30, 1995 CP= 91285.780
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 50.00

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4482 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 35.00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4482 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT, FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=2 BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4482 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91313.840 TIME= 06:22:03
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 83
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91337.470 TIME= 06:22:29
The selected element set contains mixed materials.

This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 4 CUMULATIVE ITERATION= 127
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91361.010 TIME= 06:22:54
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 189
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91384.590 TIME= 06:23:20
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 269
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91408.190 TIME= 06:23:45
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 369
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91431.760 TIME= 06:24:11
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 445
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91455.350 TIME= 06:24:36
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 6 CUMULATIVE ITERATION= 534
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91478.990 TIME= 06:25:01
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 606
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91502.510 TIME= 06:25:27
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .000000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .000000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2241 ELEMENTS (OF 8965 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91526.310 TIME= 06:25:53
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 83
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91545.340 TIME= 06:26:14
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 4 CUMULATIVE ITERATION= 127
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91564.330 TIME= 06:26:34
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 189
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91583.270 TIME= 06:26:55
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 269
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91602.220 TIME= 06:27:16
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 369
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91621.190 TIME= 06:27:37
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 445
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91640.150 TIME= 06:27:58
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 6 CUMULATIVE ITERATION= 534
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91659.150 TIME= 06:28:19
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 606

TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 91678.110 TIME= 06:28:40
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 91683.820

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 06:28:45 JUL 30, 1995 CP= 91683.830
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside

VARIABLE 3 IS AT NODE 1830 ITEM= TEMP COMP= NAME= wwpeside

VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
 VARIABLE 5 IS AT NODE 1836 ITEM= TEMP COMP= NAME= wwpetop
 VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
 VARIABLE 7 IS AT NODE 1829 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	123 TEMP	wmidside	26.14	.1000E-05	198.4	.1262E+10
3 NSOL	1830 TEMP	wwpeside	26.14	.1000E-05	193.7	.1578E+10
4 NSOL	129 TEMP	wmidtop	26.13	.1000E-05	198.0	.1262E+10
5 NSOL	1836 TEMP	wwpetop	26.13	.1000E-05	193.6	.1578E+10
6 NSOL	122 TEMP	wmidbot	26.14	.1000E-05	199.4	.1262E+10
7 NSOL	1829 TEMP	wwpebot	26.14	.1000E-05	194.1	.1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 06:28:50 JUL 30, 1995 CP= 91685.880
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1830 TEMP wwpeside	129 TEMP wmidtop	1836 TEMP wwpetop	122 TEMP wmidbot	1829 TEMP wwpebot
.10000E-05	26.1392	26.1391	26.1331	26.1348	26.1443	26.1424
.20000E-05	69.2976	58.6798	69.2870	58.7247	69.2739	58.7326
31.558	69.2976	58.6798	69.2870	58.7247	69.2739	58.7326
.31558E+07	103.012	88.9931	101.995	88.6299	105.558	90.1028
.63116E+07	112.232	98.6181	111.240	98.2723	114.779	99.7327
.94673E+07	118.326	105.053	117.358	104.723	120.844	106.154
.12623E+08	122.779	109.868	121.828	109.548	125.322	110.971
.15779E+08	126.239	113.575	125.287	113.256	128.772	114.680
.18935E+08	129.156	116.684	128.216	116.367	131.683	117.792
.22090E+08	131.566	119.232	130.628	118.915	134.077	120.341
.25246E+08	133.602	121.376	132.675	121.063	136.098	122.483
.28402E+08	135.402	123.303	134.483	122.994	137.879	124.403
.31558E+08	137.049	125.032	136.139	124.725	139.505	126.125
.63115E+08	148.698	137.407	147.861	137.139	150.993	138.410
.94673E+08	156.600	145.901	155.807	145.652	158.802	146.850
.12623E+09	162.837	152.620	162.074	152.383	164.964	153.535
.15779E+09	167.801	157.974	167.061	157.742	169.868	158.862
.18935E+09	172.004	162.522	171.293	162.302	174.006	163.376
.22090E+09	175.717	166.540	175.026	166.328	177.671	167.374
.25246E+09	178.961	170.032	178.283	169.823	180.871	170.846
.28402E+09	181.156	172.548	180.512	172.354	182.998	173.329
.31558E+09	183.074	174.708	182.442	174.516	184.879	175.476
.63115E+09	192.021	185.237	191.503	185.081	193.504	185.861
.94673E+09	197.390	191.691	196.942	191.551	198.640	192.210
.12623E+10	198.360	193.491	197.974	193.369	199.429	193.932
.15779E+10	198.010	193.727	197.670	193.620	198.951	194.115
.18935E+10	196.615	192.765	196.307	192.667	197.461	193.113
.22090E+10	195.185	191.677	194.905	191.589	195.954	191.993
.25246E+10	192.863	189.662	192.605	189.579	193.563	189.950
.28402E+10	190.973	187.993	190.732	187.915	191.625	188.261
.31558E+10	189.316	186.523	189.091	186.451	189.924	186.772
.63115E+10	179.547	177.760	179.400	177.711	179.932	177.918
.94673E+10	173.446	172.004	173.327	171.964	173.757	172.133
.12623E+11	170.139	168.906	170.036	168.870	170.403	169.014
.15779E+11	167.880	166.797	167.787	166.764	168.113	166.893

.18935E+11	165.454	164.503	165.370	164.473	165.660	164.590
.22090E+11	162.848	161.993	162.773	161.966	163.031	162.069
.25246E+11	160.129	159.351	160.061	159.327	160.296	159.421
.28402E+11	157.534	156.815	157.472	156.793	157.686	156.878
.31558E+11	155.226	154.554	155.169	154.534	155.368	154.613

 * Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 91686.200 TIME= 06:28:50
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1018 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1168 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 983 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	198.8 .1262E+10
3	NSOL	1018 TEMP	swpeside	26.14	.1000E-05	194.1 .1578E+10
4	NSOL	38 TEMP	smidtop	26.13	.1000E-05	198.4 .1262E+10
5	NSOL	1168 TEMP	swpetop	26.13	.1000E-05	194.0 .1578E+10
6	NSOL	2 TEMP	smidbot	26.14	.1000E-05	199.8 .1262E+10
7	NSOL	983 TEMP	swpebot	26.14	.1000E-05	194.5 .1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 06:28:52 JUL 30, 1995 CP= 91687.910
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1018 TEMP swpeside	38 TEMP smidtop	1168 TEMP swpetop	2 TEMP smidbot	983 TEMP swpebot
.10000E-05	26.1392	26.1391	26.1332	26.1349	26.1442	26.1423
.20000E-05	70.1064	59.5083	70.0972	59.5462	70.0803	59.5655
31.558	70.1064	59.5083	70.0972	59.5462	70.0803	59.5655
.31558E+07	103.805	89.8703	102.791	89.4935	106.287	90.9536
.63116E+07	113.029	99.4906	112.039	99.1307	115.510	100.578
.94673E+07	119.124	105.920	118.158	105.575	121.576	106.994
.12623E+08	123.577	110.729	122.628	110.394	126.054	111.804
.15779E+08	127.037	114.431	126.086	114.097	129.503	115.508
.18935E+08	129.952	117.534	129.014	117.203	132.413	118.614
.22090E+08	132.361	120.079	131.425	119.747	134.806	121.160
.25246E+08	134.396	122.220	133.471	121.892	136.827	123.299
.28402E+08	136.195	124.144	135.277	123.820	138.607	125.215

.31558E+08	137.840	125.869	136.931	125.548	140.232	126.935
.63115E+08	149.474	138.218	148.639	137.937	151.708	139.196
.94673E+08	157.364	146.689	156.572	146.427	159.507	147.615
.12623E+09	163.588	153.389	162.827	153.138	165.657	154.280
.15779E+09	168.541	158.725	167.801	158.480	170.551	159.591
.18935E+09	172.732	163.256	172.022	163.024	174.679	164.090
.22090E+09	176.434	167.260	175.744	167.036	178.334	168.073
.25246E+09	179.669	170.740	178.993	170.519	181.527	171.534
.28402E+09	181.846	173.235	181.203	173.029	183.638	173.997
.31558E+09	183.751	175.380	183.120	175.177	185.506	176.129
.63115E+09	192.593	185.798	192.076	185.633	194.035	186.407
.94673E+09	197.883	192.171	197.437	192.023	199.098	192.678
.12623E+10	198.783	193.902	198.399	193.774	199.823	194.334
.15779E+10	198.382	194.089	198.044	193.976	199.297	194.468
.18935E+10	196.948	193.089	196.641	192.985	197.771	193.429
.22090E+10	195.486	191.970	195.207	191.878	196.233	192.279
.25246E+10	193.135	189.928	192.878	189.841	193.817	190.209
.28402E+10	191.224	188.239	190.985	188.158	191.858	188.501
.31558E+10	189.550	186.752	189.326	186.677	190.141	186.996
.63115E+10	179.690	177.902	179.543	177.852	180.065	178.057
.94673E+10	173.559	172.117	173.439	172.075	173.860	172.242
.12623E+11	170.234	169.001	170.131	168.964	170.491	169.107
.15779E+11	167.962	166.880	167.870	166.846	168.189	166.974
.18935E+11	165.525	164.576	165.442	164.545	165.725	164.660
.22090E+11	162.911	162.058	162.837	162.030	163.090	162.132
.25246E+11	160.186	159.409	160.118	159.384	160.348	159.477
.28402E+11	157.586	156.869	157.525	156.846	157.734	156.930
.31558E+11	155.274	154.603	155.217	154.583	155.412	154.661

 * Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 91688.230 TIME= 06:28:52
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 988 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1709 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2736 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2724 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	1 TEMP	wmidcent	26.14	.1000E-05	265.1 .3156E+09
3	NSOL	988 TEMP	shellcnt	26.14	.1000E-05	196.5 .1262E+10
4	NSOL	1709 TEMP	wwpecent	26.14	.1000E-05	196.1 .1262E+10
5	NSOL	147 TEMP	imidbot	26.16	.2000E-05	184.2 .1893E+10
6	NSOL	2736 TEMP	iwpebot	26.16	.2000E-05	182.9 .1893E+10
7	NSOL	2724 TEMP	idfebot	26.16	.2000E-05	181.1 .1893E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 06:28:54 JUL 30, 1995 CP= 91689.930

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	988 TEMP shellcent	1709 TEMP wvpecent	147 TEMP imidbot	2736 TEMP iwpebot	2724 TEMP idfebot
.10000E-05	26.1389	26.1389	26.1389	26.1708	26.1703	26.1697
.20000E-05	167.853	66.0433	65.3536	26.1620	26.1620	26.1620
31.558	167.853	66.0433	65.3536	26.1620	26.1620	26.1620
.31558E+07	200.320	95.3453	94.6184	58.9649	53.3483	45.1330
.63116E+07	209.787	104.909	104.180	70.3348	64.8058	56.5737
.94673E+07	215.858	111.314	110.581	77.7320	72.3997	64.4775
.12623E+08	220.273	116.104	115.374	83.2731	78.1334	70.5201
.15779E+08	223.582	119.801	119.068	87.5844	82.6137	75.2747
.18935E+08	226.348	122.883	122.154	91.1876	86.3419	79.2146
.22090E+08	228.593	125.412	124.681	94.1837	89.4589	82.5124
.25246E+08	230.477	127.528	126.798	96.5548	92.0821	85.2829
.28402E+08	232.091	129.435	128.706	98.6366	94.3639	87.7320
.31558E+08	233.566	131.139	130.410	100.638	96.2930	89.9090
.63115E+08	243.406	143.299	142.583	114.250	110.113	104.186
.94673E+08	249.599	151.639	150.932	123.790	119.815	114.049
.12623E+09	254.209	158.221	157.526	131.305	127.580	122.270
.15779E+09	257.651	163.457	162.770	137.403	133.890	128.892
.18935E+09	260.383	167.891	167.214	142.454	139.078	134.307
.22090E+09	262.705	171.803	171.137	147.011	143.779	139.221
.25246E+09	264.818	175.212	174.552	150.943	147.826	143.444
.28402E+09	264.781	177.581	176.937	153.989	150.999	146.802
.31558E+09	265.057	179.629	179.000	156.700	153.807	149.753
.63115E+09	261.271	189.350	188.815	170.333	168.038	164.853
.94673E+09	257.011	195.204	194.743	178.917	177.013	174.382
.12623E+10	249.566	196.506	196.108	182.546	180.930	178.703
.15779E+10	243.015	196.373	196.025	184.090	182.674	180.725
.18935E+10	236.853	195.137	194.823	184.154	182.883	181.134
.22090E+10	231.633	193.824	193.542	183.836	182.679	181.088
.25246E+10	225.803	191.610	191.353	182.564	181.508	180.056
.28402E+10	221.398	189.791	189.556	181.409	180.426	179.074
.31558E+10	217.632	188.202	187.982	180.373	179.451	178.183
.63115E+10	196.916	178.800	178.665	173.926	173.335	172.521
.94673E+10	187.102	172.823	172.719	168.954	168.476	167.816
.12623E+11	181.649	169.601	169.511	166.325	165.914	165.348
.15779E+11	177.890	167.402	167.325	164.557	164.196	163.697
.18935E+11	174.144	165.027	164.961	162.556	162.239	161.802
.22090E+11	170.568	162.463	162.403	160.255	159.969	159.574
.25246E+11	167.076	159.771	159.719	157.767	157.506	157.146
.28402E+11	163.876	157.203	157.154	155.357	155.115	154.782
.31558E+11	161.099	154.910	154.867	153.188	152.962	152.650

* Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 91690.250 TIME= 06:28:54
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2744 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2728 ITEM= TEMP COMP= NAME= idfecent
 VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge
 VARIABLE 6 IS AT NODE 2788 ITEM= TEMP COMP= NAME= iwpeedge
 VARIABLE 7 IS AT NODE 2778 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	194.4	.1578E+10
3	NSOL	2744 TEMP	iwpecent	26.14	.2000E-05	191.5	.1578E+10
4	NSOL	2728 TEMP	idfecent	26.14	.2000E-05	188.3	.1578E+10
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	191.5	.1578E+10
6	NSOL	2788 TEMP	iwpeedge	26.14	.2000E-05	189.4	.1578E+10
7	NSOL	2778 TEMP	idfeedge	26.14	.2000E-05	186.8	.1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 06:28:56 JUL 30, 1995 CP= 91691.950
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2744 TEMP iwpecent	2728 TEMP idfecent	157 TEMP imidedge	2788 TEMP iwpeedge	2778 TEMP idfeedge
.10000E-05	26.1493	26.1476	26.1459	26.1527	26.1533	26.1547
.20000E-05	26.1390	26.1390	26.1390	26.1390	26.1390	26.1390
31.558	26.1540	26.1471	26.1403	26.1435	26.1415	26.1396
.31558E+07	84.9951	73.6981	58.7450	73.4822	64.9850	53.9540
.63116E+07	95.8037	85.0675	71.0479	84.9246	76.7201	66.0821
.94673E+07	102.866	92.5469	79.2287	92.4064	84.4897	74.2897
.12623E+08	108.018	98.0767	85.3339	97.8265	90.2743	80.4756
.15779E+08	112.008	102.340	90.0362	101.964	94.7317	85.2770
.18935E+08	115.338	105.882	93.9213	105.518	98.3553	89.2503
.22090E+08	118.090	108.796	97.0955	108.425	101.363	92.5170
.25246E+08	120.383	111.235	99.7375	110.907	103.926	95.2212
.28402E+08	122.408	113.403	102.123	113.066	106.192	97.5674
.31558E+08	124.262	115.338	104.232	115.046	108.227	99.7191
.63115E+08	137.278	129.059	119.005	129.017	122.639	114.712
.94673E+08	146.106	138.413	129.085	138.397	132.434	125.074
.12623E+09	153.038	145.774	137.049	145.759	140.129	133.226
.15779E+09	158.555	151.630	143.372	151.622	146.258	139.726
.18935E+09	163.198	156.561	148.690	156.559	151.417	145.181
.22090E+09	167.301	160.917	153.383	160.921	155.976	150.003
.25246E+09	170.866	164.686	157.422	164.696	159.910	154.147
.28402E+09	173.398	167.467	160.519	167.474	162.879	157.360
.31558E+09	175.592	169.846	163.136	169.861	165.414	160.083
.63115E+09	186.127	181.549	176.279	181.573	178.037	173.846
.94673E+09	192.514	188.706	184.355	188.734	185.799	182.343
.12623E+10	194.212	190.975	187.294	191.001	188.512	185.590
.15779E+10	194.358	191.519	188.297	191.541	189.360	186.805
.18935E+10	193.327	190.777	187.886	190.798	188.843	186.555
.22090E+10	192.174	189.853	187.223	189.869	188.091	186.010
.25246E+10	190.104	187.985	185.583	188.000	186.379	184.483
.28402E+10	188.390	186.415	184.177	186.429	184.920	183.156
.31558E+10	186.885	185.035	182.937	185.046	183.633	181.980
.63115E+10	177.954	176.767	175.418	176.773	175.871	174.816
.94673E+10	172.137	171.175	170.080	171.179	170.451	169.598
.12623E+11	169.012	168.188	167.249	168.191	167.569	166.838
.15779E+11	166.886	166.161	165.334	166.165	165.619	164.977
.18935E+11	164.575	163.938	163.210	163.942	163.463	162.900

.22090E+11	162.054	161.481	160.824	161.484	161.053	160.546
.25246E+11	159.397	158.874	158.274	158.876	158.483	158.020
.28402E+11	156.854	156.370	155.815	156.371	156.008	155.579
.31558E+11	154.582	154.129	153.608	154.129	153.789	153.387

* Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddftop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 91692.280 TIME= 06:28:56

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2861 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2831 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3015 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 2993 ITEM= TEMP COMP= NAME= ddftop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	192.3	.1578E+10
3	NSOL	2861 TEMP	dwpeside	26.14	.2000E-05	190.2	.1578E+10
4	NSOL	2831 TEMP	ddfeside	26.14	.2000E-05	187.8	.1578E+10
5	NSOL	229 TEMP	dmidtop	26.12	.1000E-05	191.8	.1578E+10
6	NSOL	3015 TEMP	dwpetop	26.12	.1000E-05	189.9	.1578E+10
7	NSOL	2993 TEMP	ddftop	26.12	.1000E-05	187.7	.1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

38303 VERSION=HP 9000/7XX 06:28:58 JUL 30, 1995 CP= 91693.980
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2861 TEMP dwpeside	2831 TEMP ddfeside	229 TEMP dmidtop	3015 TEMP dwpetop	2993 TEMP ddftop
.10000E-05	26.1390	26.1398	26.1405	26.1245	26.1230	26.1200
.20000E-05	26.1390	26.1390	26.1390	26.1390	26.1390	26.1390
31.558	26.1451	26.1424	26.1399	26.1448	26.1423	26.1399
.31558E+07	76.1010	67.4056	56.6795	74.1860	66.4870	56.5900
.63116E+07	87.4653	79.1392	68.9182	85.6307	78.2751	68.8562
.94673E+07	94.8845	86.8768	77.1171	93.1232	86.0610	77.0779
.12623E+08	100.075	92.6142	83.2667	98.3823	91.8363	83.2414
.15779E+08	104.299	96.9296	88.0195	102.604	96.2156	88.0139
.18935E+08	107.745	100.509	91.9489	106.124	99.7637	91.9558
.22090E+08	110.662	103.527	95.1413	109.027	102.809	95.1636
.25246E+08	113.073	106.037	97.6391	111.483	105.335	97.6661
.28402E+08	115.238	108.287	100.061	113.650	107.592	100.093
.31558E+08	117.224	110.294	102.155	115.652	109.605	102.173

.63115E+08	131.073	124.693	117.207	129.640	124.045	117.169
.94673E+08	140.349	134.423	127.526	139.006	133.790	127.439
.12623E+09	147.625	142.043	135.594	146.334	141.425	135.480
.15779E+09	153.406	148.092	141.978	152.162	147.479	141.837
.18935E+09	158.290	153.209	147.395	157.097	152.617	147.239
.22090E+09	162.583	157.701	152.135	161.432	157.132	151.991
.25246E+09	166.310	161.589	156.222	165.181	161.020	156.058
.28402E+09	169.039	164.512	159.381	167.972	163.982	159.236
.31558E+09	171.359	166.976	162.018	170.321	166.461	161.880
.63115E+09	182.784	179.313	175.430	181.940	178.877	175.277
.94673E+09	189.765	186.897	183.713	189.028	186.479	183.503
.12623E+10	191.881	189.450	186.761	191.248	189.084	186.567
.15779E+10	192.317	190.187	187.836	191.759	189.864	187.662
.18935E+10	191.491	189.581	187.475	190.987	189.285	187.311
.22090E+10	190.505	188.766	186.850	190.047	188.500	186.704
.25246E+10	188.577	186.992	185.245	188.156	186.743	185.104
.28402E+10	186.967	185.490	183.863	186.573	185.258	183.732
.31558E+10	185.551	184.168	182.643	185.185	183.952	182.522
.63115E+10	177.094	176.209	175.233	176.854	176.064	175.147
.94673E+10	171.437	170.721	169.929	171.242	170.603	169.859
.12623E+11	168.411	167.798	167.119	168.243	167.695	167.058
.15779E+11	166.354	165.816	165.220	166.204	165.722	165.161
.18935E+11	164.106	163.633	163.109	163.969	163.547	163.053
.22090E+11	161.631	161.206	160.734	161.509	161.128	160.683
.25246E+11	159.011	158.623	158.192	158.900	158.553	158.147
.28402E+11	156.497	156.138	155.739	156.397	156.075	155.699
.31558E+11	154.248	153.912	153.537	154.154	153.853	153.501

 * 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 91694.300 TIME= 06:28:59

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2821 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 2983 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2819 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	167 TEMP	1midside	26.14	.2000E-05	181.6	.1893E+10
3	NSOL	2821 TEMP	1dfeside	26.14	.2000E-05	179.7	.2209E+10
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	180.8	.2209E+10
5	NSOL	2983 TEMP	1dfetop	26.10	.1000E-05	179.1	.2209E+10
6	NSOL	165 TEMP	1midbot	26.18	.2000E-05	177.0	.2209E+10
7	NSOL	2819 TEMP	1dfebot	26.18	.2000E-05	175.6	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 06:29:00 JUL 30, 1995 CP= 91696.050
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2821 TEMP 1dfeside	219 TEMP 1midtop	2983 TEMP 1dfetop	165 TEMP 1midbot	2819 TEMP 1dfebot
.10000E-05	26.1405	26.1411	26.0978	26.0960	26.1914	26.1911
.20000E-05	26.1404	26.1404	26.1090	26.1090	26.1840	26.1840
31.558	26.1404	26.1404	26.1090	26.1090	26.1840	26.1840
.31558E+07	50.7457	41.6450	49.9067	41.6343	42.7103	36.1495
.63116E+07	61.7085	52.3181	60.8769	52.3495	52.9797	45.7128
.94673E+07	69.0232	59.8976	68.2580	59.9792	60.0119	52.8598
.12623E+08	74.4808	65.7660	73.8247	65.8916	65.4438	58.5195
.15779E+08	78.7958	70.4332	78.1352	70.5959	69.7806	63.1043
.18935E+08	82.2736	74.3171	81.7302	74.5087	73.4249	66.9445
.22090E+08	85.2864	77.5662	84.6905	77.7755	76.5095	70.2165
.25246E+08	87.7819	80.2546	87.2467	80.4685	79.1178	73.0129
.28402E+08	90.0507	82.6887	89.4842	82.9122	81.3669	75.4669
.31558E+08	92.1248	84.7859	91.5951	84.9831	83.4201	77.6624
.63115E+08	106.270	99.2239	105.636	99.2788	97.0604	91.9986
.94673E+08	116.131	109.441	115.398	109.332	106.520	101.337
.12623E+09	123.991	117.742	123.136	117.517	114.272	109.264
.15779E+09	130.311	124.334	129.382	123.992	120.752	116.076
.18935E+09	135.680	130.050	134.750	129.627	126.061	121.564
.22090E+09	140.371	135.002	139.461	134.622	130.916	126.653
.25246E+09	144.501	139.281	143.482	138.804	135.097	131.036
.28402E+09	147.808	142.859	146.932	142.448	138.496	134.602
.31558E+09	150.547	145.761	149.688	145.366	141.614	137.851
.63115E+09	165.425	161.664	164.540	161.132	157.600	154.641
.94673E+09	175.063	171.966	173.929	171.107	167.883	165.436
.12623E+10	179.301	176.682	178.252	175.863	173.053	170.982
.15779E+10	181.277	178.985	180.334	178.243	175.727	173.913
.18935E+10	181.622	179.567	180.741	178.865	176.686	175.059
.22090E+10	181.562	179.693	180.777	179.071	177.047	175.567
.25246E+10	180.492	178.787	179.741	178.184	176.430	175.078
.28402E+10	179.492	177.905	178.794	177.344	175.736	174.478
.31558E+10	178.589	177.101	177.946	176.588	175.082	173.903
.63115E+10	172.804	171.852	172.366	171.495	170.666	169.910
.94673E+10	168.051	167.280	167.701	166.996	166.390	165.778
.12623E+11	165.549	164.888	165.245	164.640	164.162	163.637
.15779E+11	163.863	163.282	163.575	163.043	162.687	162.225
.18935E+11	161.941	161.431	161.672	161.205	160.941	160.535
.22090E+11	159.704	159.245	159.463	159.042	158.815	158.449
.25246E+11	157.274	156.855	157.063	156.679	156.465	156.132
.28402E+11	154.907	154.519	154.720	154.364	154.160	153.851
.31558E+11	152.773	152.410	152.605	152.272	152.076	151.787

* 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 91696.370 TIME= 06:29:01

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 3467 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

.25246E+11	155.202	155.087	154.652	154.548	154.482	154.387
.28402E+11	153.012	152.905	152.522	152.426	152.339	152.251
.31558E+11	151.018	150.918	150.577	150.486	150.384	150.302

 * Upper Rock Layer Interface Temperatures *

surfTCw = center ground surface
 TCwPTn = center TCw and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 797 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 91698.390 TIME= 06:29:03
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 776 ITEM= TEMP COMP= NAME= TCwPTn

VARIABLE 4 IS AT NODE 719 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 567 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 447 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 403 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	797 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	776 TEMP	TCwPTn	19.53	.1000E-05	30.58	.3156E+11
4	NSOL	719 TEMP	PTnTSw1	21.24	.1000E-05	55.74	.3156E+11
5	NSOL	567 TEMP	TSw1TSw2	24.25	.1000E-05	107.3	.3156E+11
6	NSOL	447 TEMP	upmodel	25.88	.1000E-05	151.2	.1578E+11
7	NSOL	403 TEMP	middrift	26.14	.1000E-05	160.8	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 06:29:04 JUL 30, 1995 CP= 91700.090
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	797 TEMP surfTCw	776 TEMP TCwPTn	719 TEMP PTnTSw1	567 TEMP TSw1TSw2	447 TEMP upmodel	403 TEMP middrift
.10000E-05	18.7000	19.5283	21.2402	24.2515	25.8762	26.1420
.20000E-05	18.7000	19.5287	21.2417	24.2548	25.8808	26.1426
31.558	18.7000	19.5287	21.2417	24.2548	25.8808	26.1426
.31558E+07	18.7000	19.5287	21.2417	24.2548	25.8810	26.1434
.63116E+07	18.7000	19.5287	21.2417	24.2548	25.8894	26.1686
.94673E+07	18.7000	19.5287	21.2417	24.2548	25.9358	26.2971
.12623E+08	18.7000	19.5287	21.2417	24.2548	26.0548	26.6033
.15779E+08	18.7000	19.5287	21.2417	24.2548	26.2658	27.1139
.18935E+08	18.7000	19.5287	21.2417	24.2548	26.5712	27.8181
.22090E+08	18.7000	19.5287	21.2417	24.2548	26.9631	28.6864
.25246E+08	18.7000	19.5287	21.2417	24.2548	27.4281	29.6848
.28402E+08	18.7000	19.5287	21.2417	24.2548	27.9519	30.7810
.31558E+08	18.7000	19.5287	21.2417	24.2548	28.5209	31.9467
.63115E+08	18.7000	19.5287	21.2417	24.2548	34.9977	44.2452

.94673E+08	18.7000	19.5287	21.2417	24.2548	41.3125	54.9128
.12623E+09	18.7000	19.5287	21.2417	24.2548	47.1784	63.7580
.15779E+09	18.7000	19.5287	21.2417	24.2548	52.6033	71.1828
.18935E+09	18.7000	19.5287	21.2417	24.2549	57.5718	77.4663
.22090E+09	18.7000	19.5287	21.2417	24.2550	62.1103	82.7824
.25246E+09	18.7000	19.5287	21.2417	24.2554	66.2315	87.2601
.28402E+09	18.7000	19.5287	21.2417	24.2564	69.9921	90.9702
.31558E+09	18.7000	19.5287	21.2417	24.2584	73.4057	93.7054
.63115E+09	18.7000	19.5287	21.2417	24.5173	94.1929	113.114
.94673E+09	18.7000	19.5287	21.2417	25.6880	107.256	133.439
.12623E+10	18.7000	19.5287	21.2419	27.8274	119.285	143.641
.15779E+10	18.7000	19.5288	21.2435	30.6087	127.645	150.028
.18935E+10	18.7000	19.5289	21.2502	33.7384	133.212	153.709
.22090E+10	18.7000	19.5294	21.2682	37.0090	137.690	156.296
.25246E+10	18.7000	19.5310	21.3060	40.2850	140.328	157.656
.28402E+10	18.7000	19.5348	21.3726	43.4842	142.337	158.415
.31558E+10	18.7000	19.5424	21.4759	46.5559	144.059	158.972
.63115E+10	18.7000	20.1748	24.9899	69.2009	151.059	160.765
.94673E+10	18.7000	21.9220	31.2093	81.6017	151.044	158.597
.12623E+11	18.7000	23.9831	37.4200	89.1245	151.155	157.560
.15779E+11	18.7000	25.8183	42.6201	94.2208	151.185	156.914
.18935E+11	18.7000	27.3001	46.7247	98.0513	150.782	155.913
.22090E+11	18.7000	28.4567	49.9068	101.376	149.767	154.342
.25246E+11	18.7000	29.3520	52.3589	103.931	148.367	152.449
.28402E+11	18.7000	30.0418	54.2507	105.865	146.813	150.498
.31558E+11	18.7000	30.5793	55.7352	107.346	145.315	148.689

* Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP

TSw2TSw3 = center TSw2 and TSw3 interface

TSw3CHnv = center TSw3 and CHn1v interface

CHnvCHnz = center CHn1v and CHn1z interface

CHnzCHn2 = center CHn1z and CHn2 interface

CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 91700.420 TIME= 06:29:05

NSOL command erases all previously stored or calculated data
unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 644 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 4 IS AT NODE 818 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 5 IS AT NODE 838 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 6 IS AT NODE 857 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 914 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.41	.2000E-05	151.8	.1578E+11
3	NSOL	644 TEMP	TSw2TSw3	27.68	.2209E+08	117.7	.3156E+11
4	NSOL	818 TEMP	TSw3CHnv	28.15	.2000E-05	107.5	.3156E+11
5	NSOL	838 TEMP	CHnvCHnz	28.32	.2000E-05	104.0	.3156E+11
6	NSOL	857 TEMP	CHnzCHn2	31.42	.2000E-05	66.01	.3156E+11
7	NSOL	914 TEMP	CHn2bot	31.86	.2000E-05	62.11	.3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

38303 VERSION=HP 9000/7XX 06:29:06 JUL 30, 1995 CP= 91702.120

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	644 TEMP Tsw2Tsw3	818 TEMP Tsw3CHnv	838 TEMP CHnvCHnz	857 TEMP CHnzCHn2	914 TEMP CHn2bot
.10000E-05	26.4084	27.6820	28.1534	28.3189	31.4220	31.8665
.20000E-05	26.4052	27.6792	28.1507	28.3162	31.4196	31.8642
.31558E+07	26.4052	27.6792	28.1507	28.3162	31.4196	31.8642
.31558E+07	26.4054	27.6792	28.1507	28.3162	31.4196	31.8642
.63116E+07	26.4119	27.6792	28.1507	28.3162	31.4196	31.8642
.94673E+07	26.4512	27.6792	28.1507	28.3162	31.4196	31.8642
.12623E+08	26.5566	27.6792	28.1507	28.3162	31.4196	31.8642
.15779E+08	26.7479	27.6792	28.1507	28.3162	31.4196	31.8642
.18935E+08	27.0289	27.6792	28.1507	28.3162	31.4196	31.8642
.22090E+08	27.3925	27.6792	28.1507	28.3162	31.4196	31.8642
.25246E+08	27.8265	27.6792	28.1507	28.3162	31.4196	31.8642
.28402E+08	28.3173	27.6792	28.1507	28.3162	31.4196	31.8642
.31558E+08	28.8523	27.6792	28.1507	28.3162	31.4196	31.8642
.63115E+08	35.0150	27.6792	28.1507	28.3162	31.4196	31.8642
.94673E+08	41.1061	27.6792	28.1507	28.3162	31.4196	31.8642
.12623E+09	46.8121	27.6793	28.1507	28.3162	31.4196	31.8642
.15779E+09	52.1227	27.6796	28.1507	28.3162	31.4196	31.8642
.18935E+09	56.9986	27.6808	28.1507	28.3162	31.4196	31.8642
.22090E+09	61.4908	27.6842	28.1508	28.3162	31.4196	31.8642
.25246E+09	65.5704	27.6920	28.1512	28.3163	31.4196	31.8642
.28402E+09	69.2867	27.7068	28.1520	28.3164	31.4196	31.8642
.31558E+09	72.6612	27.7319	28.1537	28.3168	31.4196	31.8642
.63115E+09	93.4047	29.0553	28.3981	28.4201	31.4196	31.8642
.94673E+09	106.409	32.4451	29.5136	29.0766	31.4196	31.8642
.12623E+10	118.448	36.9060	31.5613	30.5136	31.4197	31.8642
.15779E+10	126.814	41.7012	34.2356	32.5776	31.4204	31.8644
.18935E+10	132.865	46.4620	37.2543	35.0471	31.4231	31.8651
.22090E+10	136.964	50.9997	40.4157	37.7398	31.4310	31.8674
.25246E+10	140.045	55.2204	43.5855	40.5229	31.4484	31.8733
.28402E+10	142.043	59.1022	46.6789	43.3042	31.4806	31.8856
.31558E+10	143.660	62.6340	49.6468	46.0256	31.5328	31.9074
.63115E+10	151.164	84.7220	71.1095	66.8349	33.6996	33.1996
.94673E+10	151.267	94.9396	82.7550	78.7680	38.1906	36.5170
.12623E+11	151.486	102.437	90.7212	86.9246	43.3092	40.7432
.15779E+11	151.808	108.753	96.5632	92.9446	48.2927	45.1063
.18935E+11	151.569	113.134	100.411	96.4795	52.9014	49.3058
.22090E+11	150.471	115.374	102.852	98.8500	56.9458	53.1322
.25246E+11	148.899	116.606	104.898	101.086	60.4425	56.5261
.28402E+11	147.212	117.316	106.343	102.706	63.4341	59.5057
.31558E+11	145.611	117.740	107.457	104.009	66.0133	62.1101

***** ROUTINE COMPLETED ***** CP = 91702.130

PURGE ALL SOLUTION AND POST DATA
 SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21c5a.db
 FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 46
 NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

-----*

ANSYS RUN COMPLETED

-----*

REV. 5.0 A

HP 9000/7XX

CP TIME (sec) = 91710.670
ELAPSED TIME (sec) = 144560.000

TIME = 06:29:15
DATE = 07/30/95

```

*-----*
| WELCOME TO THE ANSYS PROGRAM |
*-----*

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***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = c21a5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

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***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED      = 16777216      64.000 MB  COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592      18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496  25.568 MB
WORK SPACE OBTAINED       = 16777214      64.000 MB
BYTES PER WORD            = 4

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RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON    TO START THE ANSYS MENU SYSTEM
ENTER HELP       FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 7/18/1995
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c21a5a.inp
7 /COM, *
8 /COM, * 21 PWR WP/MPC (10 cm overpack)
9 /COM, * Average SNF: 22 years old, 42.2 GWd/MTU burnup
10 /COM, * 5.0 m Diameter Drift with Concrete Invert
11 /COM, * 100 MTU/acre (24.7 kgU/m^2) AML (High Thermal Loading)
12 /COM, * Drift spacing = 45.0 m (22.5 m model half width)
13 /COM, * WP c/c spacing = 8.0825 m
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat
16 /COM, * SNF Heat Loads file: snf2242.dat
17 /COM, *
18 /COM, *****

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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,21 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.9008,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.682,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,8.0825,
42 *SET,WPNUM,21.0,
43 *SET,MODEL,22.5,
44 *SET,OFFST,0.137,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD-OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TM100+TM_START
90 TME1000=TM1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,
219 /COM,      Define areas in rock layers
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWLL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWLL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWLL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM, Define areas around drift
308 /COM, (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM, ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM, *****
334 /COM, Set element sizes near WP
335 /COM, Default element size
336 ESIZE,6.0,
337 /COM, 24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM, 6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM, 1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM, 4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM, 40 elements around drift
350 /COM, (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM, 2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM, 2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM, 3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM,
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 6,3.0,
378 /COM,
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM,
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM,
386 /COM,
387 LESIZE, 58,,, 4,2.9,
388 LESIZE, 59,,, 4,2.9,
389 /COM, *****
390 /COM,
391 /COM,
392 LESIZE, 24,,, 3,
393 /COM,
394 LESIZE, 27,,, 3,
395 /COM,
396 LESIZE, 30,,, 9,
397 /COM,
398 /COM,
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,, 9,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,, 9,
403 LSEL,ALL,
404 /COM,
405 LESIZE, 43,,, 3,
406 /COM,
407 LESIZE, 46,,, 2,
408 /COM,
409 LESIZE, 49,,, 7,
410 /COM,
411 /COM,
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM,
417 /COM,
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM,
426 /COM,
427 /COM,
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM,
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM,

```

Model is 6 elements wide
(3+7=10 divisions)

Extrude WP 5 elements

1 element thick steel

Extrude drift 4 elements with smallest
elements at WP mid-length

Set element sizes in rock layers

3 element thick ICw

3 element thick PTn

9 element thick TSw1

12 elements above and below near field
with smaller elements near drift

3 element thick TSw3

2 element thick CHn1v

7 element thick CHn1z

12 element thick CHN2 with smaller elements
near the top

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)

Waste package

Invert

Drift wall and TSw2 areas

```

439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM,          TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM,          PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM,          TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM,          TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM,          CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM,          CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM,          CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM,          *****
468 /COM,          Delete concatnated lines
469 /COM,          (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM,          *****
477 /COM,          Extrude 2-D waste package into 3-D
478 /COM,          (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM,          ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM,          (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM,          Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM,          *****
505 /COM,          Extrude 2-D rock into front half 3-D
506 /COM,          Invert
507 /COM,          (V's 33,34)
508 ESHAPE,2,

```

```

509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,          Rock around drift
513 /COM,          (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,58,
527 VMESH,41,
528 /COM,          Mid-drift rock
529 /COM,          (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,58,
535 /COM,          Concatenate to mesh volume 45
536 /COM,          (L's 311,312 used and freed up)
537 /COM,          (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,          Extrude rest of TSw2
546 /COM,          (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,          Extrude TSw1
549 /COM,          (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,          Extrude PTn
553 /COM,          (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,          Extrude TCw
557 /COM,          (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,          Extrude TSw3
561 /COM,          (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,          Extrude CHn1v
565 /COM,          (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,          Extrude CHn1z
569 /COM,          (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,          Extrude CHn2
573 /COM,          (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,          *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM, Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM, Define edge elements for radiation
659 /COM, Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM, Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM, Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM, Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TMI100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM, *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TMI0,
883      SET,NEAR,,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0)))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0)))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0)))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0)))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TMI1,
902      SET,NEAR,,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0)))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0)))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0)))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0)))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TMI10,
921      SET,NEAR,,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0)))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0)))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0)))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0)))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TM100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0)))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0)))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0)))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0)))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAV,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 50.0,
984 /VCON,1, 25.000,
985 /TYPE,1,HIDP,
986 /SHADE,,GOUR,
987 /GLINE,,0,
988 /TITLE,
989 VSEL,S,LOC,Z,0,100
990 ESLV,S
991 /SHOW,meshdrift,grph,0,8,
992 EPLOT
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1,+90,YS,1
995 /DIST,1, 35.0,
996 VSEL,S,LOC,X,-100,0
997 ESLV,S
998 /SHOW,meshside,grph,0,8,

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999  EPlot
1000 /COM, *****
1001 /COM,      Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM,      Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT, 1,
1009 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
1010 /VIEW,1, -.36934, .15899, -.91559,
1011 /FOC, 1, 2.7776, -.97308, 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088, ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM,      Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM,      Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0,100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05,100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1,100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5,100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10,100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50,100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100,100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500,100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k,100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM,      View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPlot
1065 /COM, *****
1066 /COM,      Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM,      Set view settings

```

```

1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT, 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC, 1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG, 1, -.52088,ZS,
1079 /VCON,1, 25.000,
1080 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM, Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM, Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM, View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLOT
1131 FINISH
1132 /COM, *****
1133 /COM, Print time/temperature output at specific locations
1134 /POST26,
1135 /COM,
1136 /COM, *****
1137 /COM, * Waste Package Surface Temperatures *
1138 /COM, *****

```

```

1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE( WPRAD,          0.0,          0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE( WPRAD,          0.0,          (WPLEN/2.0))),TEMP,,wwpside,
1147 NSOL,4,(NODE( 0.0,          WPRAD,          0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE( 0.0,          WPRAD,          (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE( 0.0, (0.0-WPRAD),          0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE( 0.0, (0.0-WPRAD),          (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWLL), 0.0,          0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWLL), 0.0,(WPLEN/2.0-WPWLL))),TEMP,,swpside,
1164 NSOL,4,(NODE(0.0,          (WPRAD-WPWLL),          0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0,          (WPRAD-WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0,(0.0-WPRAD+WPWLL),          0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0,(0.0-WPRAD+WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE( 0.0,          0.0,          0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE( 0.0,          0.0, (WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE( 0.0,          0.0,          (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE( 0.0,(DFCENT-DFRAD),          0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD),          (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD),          (WSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfecent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE( 0.0,          YYY,          0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE( 0.0,          YYY,          (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE( 0.0,          YYY,          (WSPC/2.0))),TEMP,,idfecent,
1199 NSOL,5,(NODE( XXX,          YYY,          0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE( XXX,          YYY,          (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE( XXX,          YYY,          (WSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpside = end of WP drift wall side surface

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1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddfetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmidside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WSPC/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,, dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,, dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WSPC/2.0))),TEMP,, ddfetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *      1 meter Rock Temperatures      *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dfetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WSPC/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,, 1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WSPC/2.0))),TEMP,, 1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,, 1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WSPC/2.0))),TEMP,, 1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *      3 meter Rock Temperatures      *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WSPC/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,, 3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WSPC/2.0))),TEMP,, 3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,, 3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WSPC/2.0))),TEMP,, 3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *      Upper Rock Layer Interface Temperatures      *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *      Lower Rock Layer Interface Temperatures      *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHrvCHnz = center CHn1v and CHn1z interface

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1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL),          0.0)),TEMP,,dwnmodel,
1282 NSOL,3,(NODE( 0.0,(GSURF-393.5),          0.0)),TEMP,,TSw2TSw3,
1283 NSOL,4,(NODE( 0.0,(GSURF-409.3),          0.0)),TEMP,,TSw3CHnv,
1284 NSOL,5,(NODE( 0.0,(GSURF-414.5),          0.0)),TEMP,,CHnvCHnz,
1285 NSOL,6,(NODE( 0.0,(GSURF-518.5),          0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2),          0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM,          *****
1291 /COM,          End of batch input file
1292 /COM,          *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,,1,

```

ABBREVIATION= RAS /show,,,0,
 ABBREVIATION= ON /menu,on,
 ABBREVIATION= OFF /menu,off,
 ABBREVIATION= NVP /config,nvpag,512,
 ABBREVIATION= QUIT /exit,nosav,
 XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

 END start.ans

To start ANSYS menu:

type: x3d for console
 x11 for X-term

type: on

 ANSYS REVISION 5.0A 7/18/1995
 3-D Model of Waste Package Drift Emplacement R.Bahney III

 * *
 * File name: c21a5a.inp *
 * *
 * 21 PWR WP/MPC (10 cm overpack) *
 * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
 * 5.0 m Diameter Drift with Concrete Invert *
 * 100 MTU/acre (24.7 kgU/m²) AML (High Thermal Loading) *
 * Drift spacing = 45.0 m (22.5 m model half width) *
 * WP c/c spacing = 8.0825 m *
 * *
 * Material Properties file: Proprep.dat *
 * SNF Heat Loads file: snf2242.dat *
 * *

Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

TITLE=

21 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
 MASS = KILOGRAMS(KG)
 TIME = SECONDS(SEC)
 TEMPERATURE = CENTIGRADE
 CURRENT = AMPS

Define emplacement parameters

WPRAD = radius of waste package (m)
 DFRAD = radius of drift (m)
 INVRT = height of invert backfill floor (m)
 WPLEN = length of waste package (m)
 WPLL = thickness of outer barrier (m)
 WSPC = waste package c/c spacing (m)
 WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .9008000
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.682000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 8.082500
 PARAMETER WPNUM = 21.00000
 PARAMETER MODEL = 22.50000
 PARAMETER OFFST = .1370000

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1

SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1

PARAMETER GSURF = 308.6370

PARAMETER DFCENT = .1370000

PARAMETER XXX = 1.734935

PARAMETER YYY = -1.663000
 PARAMETER WPVOL = 11.04426
 PARAMETER TM_START = 31.55760
 PARAMETER TMIO = 3155760.
 PARAMETER TMI1 = .3155760E+08
 PARAMETER TMI10 = .3155760E+09
 PARAMETER TMI100 = .3155760E+10
 PARAMETER TMI1000 = .3155760E+11
 PARAMETER TME0 = .2840187E+08
 PARAMETER TME1 = .3155763E+08
 PARAMETER TME9 = .2840184E+09
 PARAMETER TME10 = .3155760E+09
 PARAMETER TME90 = .2840184E+10
 PARAMETER TME100 = .3155760E+10
 PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 11:18:34 JUL 24, 1995 CP= .750
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
 KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCw	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smeared Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **

** Emissivity EMIS **

** Conductivity: KXX (W/m/K) **

** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***

SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Mats 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C	MAT= 4	NUM. POINTS= 8	
SLOC= 5	.1046900E+08	.1019840E+08	2006500. 2111400.
PROPERTY TABLE C	MAT= 4	NUM. POINTS= 11	
SLOC= 9	2191200.	2269200.	2341000.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 4	
SLOC= 1	1844300.	2031500.	2283100. 4559000.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 8	
SLOC= 5	4518800.	4480000.	2295300. 2448900.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 11	
SLOC= 9	2574000.	2679200.	2770200.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 4	
SLOC= 1	2443600.	2555700.	2696000. .3660130E+08
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 8	
SLOC= 5	.3532630E+08	.3417640E+08	1501300. 1601800.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 11	
SLOC= 9	1683600.	1752500.	1812000.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 4	
SLOC= 1	2603200.	2664700.	2744700. .3660690E+08
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 8	
SLOC= 5	.3534400E+08	.3420530E+08	2791400. 2741900.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 11	
SLOC= 9	2670700.	1581400.	1632000.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 4	
SLOC= 1	2430900.	2538500.	2680250. .2798690E+08
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 8	
SLOC= 5	.2705530E+08	.2621460E+08	2564400. 2593500.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 11	
SLOC= 9	2598500.	1981950.	2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***

SLOC= 1	21.11000	37.78000	65.56000
	93.33000	121.1100	148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***

SLOC= 7	176.6700	204.4400	232.2200
	260.0000	287.7800	315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***

SLOC= 13	343.3300	371.1100	398.8900
	426.6700	454.4400	482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***

SLOC= 19	510.0000	537.7800	565.5600
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593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***

SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

** Waste Package Heat Generation Rates **

** File name: snf2242.dat **

** Age 22.0 years 0.428 MTU/Assy **

** 42200 MWD/MTU burnup, type P **

** 12-8-1994 **

** Initial enrichment average for burnup **

** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
 477.0000 467.8000

PARAMETER ASSY(13,1) =	459.2000 429.3000	451.1000 423.7000	443.5000	436.2000
PARAMETER ASSY(19,1) =	412.6000 252.6000	404.5000 222.0000	341.6000	294.1000
PARAMETER ASSY(25,1) =	198.5000 139.7000	179.8000 85.70000	162.5000	150.1000
PARAMETER ASSY(31,1) =	67.40000 38.10000	56.80000 34.30000	49.40000	42.90000
PARAMETER ASSY(37,1) =	31.30000 11.10000	29.00000 10.00000	15.50000	12.80000
PARAMETER ASSY(43,1) =	9.200000 7.200000	8.600000	8.000000	7.600000
PARAMETER ASSY(1,0) =	.1000000E-05 .4000000	.1000000 .5000000	.2000000	.3000000
PARAMETER ASSY(7,0) =	.6000000 1.000000	.7000000 2.000000	.8000000	.9000000
PARAMETER ASSY(13,0) =	3.000000 7.000000	4.000000 8.000000	5.000000	6.000000
PARAMETER ASSY(19,0) =	9.000000 40.00000	10.00000 50.00000	20.00000	30.00000
PARAMETER ASSY(25,0) =	60.00000 100.0000	70.00000 200.0000	80.00000	90.00000
PARAMETER ASSY(31,0) =	300.0000 700.0000	400.0000 800.0000	500.0000	600.0000
PARAMETER ASSY(37,0) =	900.0000 4000.000	1000.000 5000.000	2000.000	3000.000
PARAMETER ASSY(43,0) =	6000.000 10000.00	7000.000	8000.000	9000.000

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)

INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.9014
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN

WPHOT(1) = COPY ASSY(1)
SCALE FACTORS RESULT= 1.9014 INPUT= 1.0000
VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000

PARAMETER WPTOP(0,1) = 1.000000

PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-22.5000	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	22.5000	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	-22.5000	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	22.5000	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	-22.5000	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	9	X,Y,Z=	22.5000	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	-22.5000	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	22.5000	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	-22.5000	22.6370	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.000000E+00	22.6370	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	22.5000	22.6370	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	-22.5000	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	22.5000	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	-22.5000	-22.3630	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.000000E+00	-22.3630	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	22.5000	-22.3630	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	-22.5000	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	23	X,Y,Z=	22.5000	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	24	X,Y,Z=	-22.5000	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	26	X,Y,Z=	22.5000	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	27	X,Y,Z=	-22.5000	-105.863	.000000E+00	IN CSYS= 0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.863	.000000E+00	IN CSYS= 0

KEYPOINT	29	X,Y,Z=	22.5000	-105.863	.000000E+00	IN CSYS= 0
KEYPOINT	30	X,Y,Z=	-22.5000	-209.863	.000000E+00	IN CSYS= 0
KEYPOINT	31	X,Y,Z=	.000000E+00	-209.863	.000000E+00	IN CSYS= 0
KEYPOINT	32	X,Y,Z=	22.5000	-209.863	.000000E+00	IN CSYS= 0
KEYPOINT	33	X,Y,Z=	-22.5000	-991.363	.000000E+00	IN CSYS= 0
KEYPOINT	34	X,Y,Z=	.000000E+00	-991.363	.000000E+00	IN CSYS= 0
KEYPOINT	35	X,Y,Z=	22.5000	-991.363	.000000E+00	IN CSYS= 0

Define lines connecting rock layers

(L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)

(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

(36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)

(52,53)

LINE CONNECTS KEYPOINTS	1	2			
LINE NO.= 1 KP1=	1	TAN1=	-1.0000	.0000	.0000
KP2=	2	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	2	3			
LINE NO.= 2 KP1=	2	TAN1=	-1.0000	.0000	.0000
KP2=	3	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	4	5			
LINE NO.= 3 KP1=	4	TAN1=	-1.0000	.0000	.0000
KP2=	5	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	5	6			
LINE NO.= 4 KP1=	5	TAN1=	-1.0000	.0000	.0000
KP2=	6	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	7	8			
LINE NO.= 5 KP1=	7	TAN1=	-1.0000	.0000	.0000
KP2=	8	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	8	9			
LINE NO.= 6 KP1=	8	TAN1=	-1.0000	.0000	.0000
KP2=	9	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	10	11			
LINE NO.= 7 KP1=	10	TAN1=	-1.0000	.0000	.0000
KP2=	11	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	11	12			
LINE NO.= 8 KP1=	11	TAN1=	-1.0000	.0000	.0000
KP2=	12	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	13	14			
LINE NO.= 9 KP1=	13	TAN1=	-1.0000	.0000	.0000
KP2=	14	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	14	15			
LINE NO.= 10 KP1=	14	TAN1=	-1.0000	.0000	.0000
KP2=	15	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	18	19			
LINE NO.= 11 KP1=	18	TAN1=	-1.0000	.0000	.0000
KP2=	19	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	19	20			
LINE NO.= 12 KP1=	19	TAN1=	-1.0000	.0000	.0000
KP2=	20	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	21	22			
LINE NO.= 13 KP1=	21	TAN1=	-1.0000	.0000	.0000
KP2=	22	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.= 31	KP1= 9	TAN1= .0000	1.0000	.0000
	KP2= 12	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13				
LINE NO.= 32	KP1= 10	TAN1= .0000	1.0000	.0000
	KP2= 13	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14				
LINE NO.= 33	KP1= 11	TAN1= .0000	1.0000	.0000
	KP2= 14	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15				
LINE NO.= 34	KP1= 12	TAN1= .0000	1.0000	.0000
	KP2= 15	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16				
LINE NO.= 35	KP1= 13	TAN1= .0000	1.0000	.0000
	KP2= 16	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17				
LINE NO.= 36	KP1= 15	TAN1= .0000	1.0000	.0000
	KP2= 17	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18				
LINE NO.= 37	KP1= 16	TAN1= .0000	1.0000	.0000
	KP2= 18	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20				
LINE NO.= 38	KP1= 17	TAN1= .0000	1.0000	.0000
	KP2= 20	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21				
LINE NO.= 39	KP1= 18	TAN1= .0000	1.0000	.0000
	KP2= 21	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22				
LINE NO.= 40	KP1= 19	TAN1= .0000	1.0000	.0000
	KP2= 22	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23				
LINE NO.= 41	KP1= 20	TAN1= .0000	1.0000	.0000
	KP2= 23	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24				
LINE NO.= 42	KP1= 21	TAN1= .0000	1.0000	.0000
	KP2= 24	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25				
LINE NO.= 43	KP1= 22	TAN1= .0000	1.0000	.0000
	KP2= 25	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26				
LINE NO.= 44	KP1= 23	TAN1= .0000	1.0000	.0000
	KP2= 26	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27				
LINE NO.= 45	KP1= 24	TAN1= .0000	1.0000	.0000
	KP2= 27	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28				
LINE NO.= 46	KP1= 25	TAN1= .0000	1.0000	.0000
	KP2= 28	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29				
LINE NO.= 47	KP1= 26	TAN1= .0000	1.0000	.0000
	KP2= 29	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30				
LINE NO.= 48	KP1= 27	TAN1= .0000	1.0000	.0000
	KP2= 30	TAN2= .0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES
 LINE LIST = 39 13 40 11
 (TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES
 LINE LIST = 40 14 41 12
 (TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES
 LINE LIST = 42 15 43 13
 (TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES
 LINE LIST = 43 16 44 14
 (TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES
 LINE LIST = 45 17 46 15
 (TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES
 LINE LIST = 46 18 47 16
 (TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES
 LINE LIST = 48 19 49 17
 (TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES
 LINE LIST = 49 20 50 18
 (TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES
 LINE LIST = 51 21 52 19
 (TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES
 LINE LIST = 52 22 53 20
 (TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
 (K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS=	0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.74100	IN CSYS=	0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.84100	IN CSYS=	0

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.74100 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.84100 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .137000 4.04125 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .137000 -4.04125 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .8008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .9008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.36300 .000000E+00 IN CSYS= 0
 KEYPOINT 53 X,Y,Z= 1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .137000 .000000E+00 IN CSYS= 0

KEYPOINT 55 X,Y,Z= .000000E+00 2.63700 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.66300 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS		36	45			
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		36	46			
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000
		KP2=	46	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		36	47			
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		44	48			
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000
		KP2=	48	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		45	49			
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		46	50			
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000
		KP2=	50	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		47	51			
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		50	55			
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000
		KP2=	55	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		48	58			
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000
		KP2=	58	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		58	52			
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000
		KP2=	52	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		57	58			
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		58	53			
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		52	59			
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000
		KP2=	59	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		54	60			
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		55	61			
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000
		KP2=	61	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		56	62			
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		59	63			
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000
		KP2=	63	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		60	64			
LINE NO.=	100	KP1=	60	TAN1=	-1.0000	.0000

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      KP2=      64 TAN2=      1.0000      .0000      .0000
LINE CONNECTS KEYPOINTS      61      65
LINE NO.= 101 KP1=      61 TAN1=      .0000 -1.0000      .0000
      KP2=      65 TAN2=      .0000      1.0000      .0000

LINE CONNECTS KEYPOINTS      62      66
LINE NO.= 102 KP1=      62 TAN1=      1.0000      .0000      .0000
      KP2=      66 TAN2=     -1.0000      .0000      .0000

LINE CONNECTS KEYPOINTS      63      19
LINE NO.= 103 KP1=      63 TAN1=      .0000      1.0000      .0000
      KP2=      19 TAN2=      .0000 -1.0000      .0000

LINE CONNECTS KEYPOINTS      64      17
LINE NO.= 104 KP1=      64 TAN1=     -1.0000      .0000      .0000
      KP2=      17 TAN2=      1.0000      .0000      .0000

LINE CONNECTS KEYPOINTS      65      14
LINE NO.= 105 KP1=      65 TAN1=      .0000 -1.0000      .0000
      KP2=      14 TAN2=      .0000      1.0000      .0000

LINE CONNECTS KEYPOINTS      66      16
LINE NO.= 106 KP1=      66 TAN1=      1.0000      .0000      .0000
      KP2=      16 TAN2=     -1.0000      .0000      .0000

```

Define areas around drift
(A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
(35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
LINE LIST = 82 60 83
(TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
LINE LIST = 83 61 84
(TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
LINE LIST = 85 84 62
(TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
LINE LIST = 63 82 85
(TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
LINE LIST = 86 64 87 60
(TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
LINE LIST = 61 87 65 88
(TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
LINE LIST = 89 62 88 66
(TRAVERSED IN SAME DIRECTION AS LINE 89)

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES
LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1

1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1

10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide
(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 3.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 4 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 4, SPACING RATIO = 2.900

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 4, SPACING RATIO = 2.900

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 9, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 9, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick Tsw3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHN1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHN1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES
LINES = 36 10

COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14

CONCATENATE LINES

LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES

LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas

(first WP, then invert, DF wall and rock layers)

Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132
Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS
IN AREAS 27 TO 28 IN STEPS OF 1
** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144
Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS
IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 275
 MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
 IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 395
 MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
 IN AREAS 37 TO 40 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 635
 MAXIMUM ELEMENT NUMBER = 584

GENERATE NODES AND ELEMENTS
 IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 761
 MAXIMUM ELEMENT NUMBER = 692

TSw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
 IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 824
 MAXIMUM ELEMENT NUMBER = 746

PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
 IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 845
 MAXIMUM ELEMENT NUMBER = 764

TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
 IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 866
 MAXIMUM ELEMENT NUMBER = 782

TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
 IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 887
 MAXIMUM ELEMENT NUMBER = 800

CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
 IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 901
 MAXIMUM ELEMENT NUMBER = 812
 CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
 IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 950
 MAXIMUM ELEMENT NUMBER = 854
 CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
 IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 7.900 TIME= 11:18:41
 Meshing of area 17 produced 3 poorly shaped elements.

*** NOTE *** CP= 7.900 TIME= 11:18:41
 Worst aspect ratio is 21.4173987 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
 866 878 890

*** WARNING *** CP= 7.970 TIME= 11:18:41
 Meshing of area 18 produced 3 poorly shaped elements.

*** NOTE *** CP= 7.970 TIME= 11:18:41
 Worst aspect ratio is 21.4173987 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
 902 914 926

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 1034
 MAXIMUM ELEMENT NUMBER = 926

Delete concatenated lines
 (L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
(V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
54,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
54,

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
56,
(plot area numbers before next drag commands)

DRAG AREAS
44, 47, 50, 52,
ALONG LINES
55,

DRAG AREAS
57, 61, 65, 68,
ALONG LINES
55,

DRAG AREAS
72, 75, 78, 80,
ALONG LINES
57,

DRAG AREAS
85, 89, 93, 96,
ALONG LINES
57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54	USED FOR LINE(S)	108
LINE	55	USED FOR LINE(S)	174
LINE	56	USED FOR LINE(S)	141
LINE	57	USED FOR LINE(S)	207
LINE	109	USED FOR LINE(S)	121
LINE	110	USED FOR LINE(S)	127
LINE	111	USED FOR LINE(S)	126
LINE	113	USED FOR LINE(S)	128
LINE	114	USED FOR LINE(S)	129
LINE	117	USED FOR LINE(S)	134
LINE	118	USED FOR LINE(S)	137
LINE	119	USED FOR LINE(S)	139
LINE	142	USED FOR LINE(S)	154
LINE	143	USED FOR LINE(S)	160
LINE	144	USED FOR LINE(S)	159
LINE	146	USED FOR LINE(S)	161
LINE	147	USED FOR LINE(S)	162
LINE	150	USED FOR LINE(S)	167
LINE	151	USED FOR LINE(S)	170
LINE	152	USED FOR LINE(S)	172
LINE	175	USED FOR LINE(S)	187
LINE	176	USED FOR LINE(S)	193
LINE	177	USED FOR LINE(S)	192
LINE	179	USED FOR LINE(S)	194
LINE	180	USED FOR LINE(S)	195
LINE	183	USED FOR LINE(S)	200
LINE	184	USED FOR LINE(S)	203
LINE	185	USED FOR LINE(S)	205
LINE	208	USED FOR LINE(S)	220
LINE	209	USED FOR LINE(S)	226
LINE	210	USED FOR LINE(S)	225
LINE	212	USED FOR LINE(S)	227
LINE	213	USED FOR LINE(S)	228
LINE	216	USED FOR LINE(S)	233
LINE	217	USED FOR LINE(S)	236
LINE	218	USED FOR LINE(S)	238
AREA	42	USED FOR AREA(S)	56
AREA	45	USED FOR AREA(S)	58
AREA	49	USED FOR AREA(S)	64
AREA	51	USED FOR AREA(S)	67
AREA	70	USED FOR AREA(S)	84
AREA	73	USED FOR AREA(S)	86
AREA	77	USED FOR AREA(S)	92
AREA	79	USED FOR AREA(S)	95
AREA	98	USED FOR AREA(S)	112
AREA	101	USED FOR AREA(S)	114
AREA	105	USED FOR AREA(S)	120
AREA	107	USED FOR AREA(S)	123
AREA	126	USED FOR AREA(S)	140
AREA	129	USED FOR AREA(S)	142
AREA	133	USED FOR AREA(S)	148
AREA	135	USED FOR AREA(S)	151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1639
MAXIMUM ELEMENT NUMBER = 1466

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1759
MAXIMUM ELEMENT NUMBER = 1586

GENERATE NODES AND ELEMENTS
IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 1904
MAXIMUM ELEMENT NUMBER = 1718

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2509
MAXIMUM ELEMENT NUMBER = 2258

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2629
MAXIMUM ELEMENT NUMBER = 2378

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2774
MAXIMUM ELEMENT NUMBER = 2510

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2850
MAXIMUM ELEMENT NUMBER = 2558
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3102

MAXIMUM ELEMENT NUMBER = 2718

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3234
MAXIMUM ELEMENT NUMBER = 2798

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3366
MAXIMUM ELEMENT NUMBER = 2878

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3702
MAXIMUM ELEMENT NUMBER = 3118

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3878
MAXIMUM ELEMENT NUMBER = 3238

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4054
MAXIMUM ELEMENT NUMBER = 3358
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 26.390 TIME= 11:19:02
Meshing of volume 43 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3419 3420 3421 3422 3423 3424 3425 3426

3427 3428 3429 3430

*** WARNING *** CP= 26.890 TIME= 11:19:02
Meshing of volume 44 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
3779 3780 3781 3782 3783 3784 3785 3786
3787 3788 3789 3790

MAXIMUM NODE NUMBER = 4642
MAXIMUM ELEMENT NUMBER = 3838

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 27.410 TIME= 11:19:03
Meshing of volume 46 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
3867 3868 3869 3870 3907 3908 3909 3910
3947 3948 3949 3950

MAXIMUM NODE NUMBER = 4950
MAXIMUM ELEMENT NUMBER = 4078
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 28.330 TIME= 11:19:04
Meshing of volume 45 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
4250 4251 4252 4256 4257 4258 4262 4263
4264 4268 4269 4270

NUMBER OF VOLUMES MESHED = 1

MAXIMUM NODE NUMBER = 5258
MAXIMUM ELEMENT NUMBER = 4318

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 5818
MAXIMUM ELEMENT NUMBER = 4750
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6098
MAXIMUM ELEMENT NUMBER = 4966
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6210
MAXIMUM ELEMENT NUMBER = 5038
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6322
MAXIMUM ELEMENT NUMBER = 5110
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6434
 MAXIMUM ELEMENT NUMBER = 5182
 Extrude CHn1v
 (V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
 13, 14,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 6518
 MAXIMUM ELEMENT NUMBER = 5230
 Extrude CHn1z
 (V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
 15, 16,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 6742
 MAXIMUM ELEMENT NUMBER = 5398
 Extrude CHn2
 (V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
 17, 18,
 ALONG LINES
 58,

*** WARNING *** CP= 31.560 TIME= 11:19:09
 Meshing of volume 63 produced 42 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

5427	5431	5432	5435	5436	5437	5439	5440
5441	5442	5443	5444	5445	5446	5475	5479
5480	5483	5484	5485	5487	5488	5489	5490
5491	5492	5493	5494	5523	5527	5528	5531
5532	5533	5535	5536	5537	5538	5539	5540
5541	5542						

*** WARNING *** CP= 31.940 TIME= 11:19:09
 Meshing of volume 64 produced 42 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

5571	5575	5576	5579	5580	5581	5583	5584
5585	5586	5587	5588	5589	5590	5619	5623
5624	5627	5628	5629	5631	5632	5633	5634
5635	5636	5637	5638	5667	5671	5672	5675
5676	5677	5679	5680	5681	5682	5683	5684
5685	5686						

MAXIMUM NODE NUMBER = 7106
 MAXIMUM ELEMENT NUMBER = 5686

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03
 NODE 5540 USED FOR NODES 6323
 NODE 6324 USED FOR NODES 6435
 NODE 6520 USED FOR NODES 6743
 NODE 4723 USED FOR NODES 5579

NODE	5819	USED FOR NODES	6100
NODE	5585	USED FOR NODES	6339
NODE	5586	USED FOR NODES	6340
NODE	5587	USED FOR NODES	6341
NODE	6345	USED FOR NODES	6447
NODE	6346	USED FOR NODES	6448
NODE	6347	USED FOR NODES	6449
NODE	5859	USED FOR NODES	6121
NODE	5860	USED FOR NODES	6122
NODE	5861	USED FOR NODES	6123
NODE	4979	USED FOR NODES	5260
NODE	4720	USED FOR NODES	4952
NODE	6115	USED FOR NODES	6233
NODE	4721	USED FOR NODES	4953
NODE	4722	USED FOR NODES	4954
NODE	5259	USED FOR NODES	5820
NODE	4724	USED FOR NODES	5580
NODE	4725	USED FOR NODES	5581
NODE	4980	USED FOR NODES	5305
NODE	4981	USED FOR NODES	5306
NODE	4982	USED FOR NODES	5307
NODE	4644	USED FOR NODES	5539
NODE	6557	USED FOR NODES	6795
NODE	6558	USED FOR NODES	6796
NODE	6559	USED FOR NODES	6797
NODE	5299	USED FOR NODES	5865
NODE	5300	USED FOR NODES	5866
NODE	5301	USED FOR NODES	5867
NODE	6436	USED FOR NODES	6519
NODE	6116	USED FOR NODES	6234
NODE	6099	USED FOR NODES	6212
NODE	6453	USED FOR NODES	6551
NODE	6454	USED FOR NODES	6552
NODE	6455	USED FOR NODES	6553
NODE	4643	USED FOR NODES	4951
NODE	6117	USED FOR NODES	6235
NODE	4814	USED FOR NODES	4977
NODE	4813	USED FOR NODES	4976
NODE	4674	USED FOR NODES	4960
NODE	4815	USED FOR NODES	4978
NODE	5015	USED FOR NODES	5319
NODE	6328	USED FOR NODES	6443
NODE	5550	USED FOR NODES	6333
NODE	5597	USED FOR NODES	6351
NODE	5598	USED FOR NODES	6352
NODE	5599	USED FOR NODES	6353
NODE	6357	USED FOR NODES	6459
NODE	5871	USED FOR NODES	6133
NODE	6358	USED FOR NODES	6460
NODE	5841	USED FOR NODES	6104
NODE	5872	USED FOR NODES	6134
NODE	6359	USED FOR NODES	6461
NODE	6528	USED FOR NODES	6771
NODE	5281	USED FOR NODES	5830
NODE	5873	USED FOR NODES	6135
NODE	4735	USED FOR NODES	5591
NODE	4736	USED FOR NODES	5592
NODE	4737	USED FOR NODES	5593
NODE	5011	USED FOR NODES	5270
NODE	6569	USED FOR NODES	6807
NODE	6570	USED FOR NODES	6808
NODE	6571	USED FOR NODES	6809
NODE	6109	USED FOR NODES	6216
NODE	5311	USED FOR NODES	5877
NODE	5312	USED FOR NODES	5878
NODE	5313	USED FOR NODES	5879
NODE	6439	USED FOR NODES	6537
NODE	6127	USED FOR NODES	6245
NODE	6128	USED FOR NODES	6246
NODE	6129	USED FOR NODES	6247

NODE 6465	USED FOR NODES	6563		
NODE 6466	USED FOR NODES	6564		
NODE 6467	USED FOR NODES	6565		
NODE 4652	USED FOR NODES	5561		
NODE 5013	USED FOR NODES	5317		
NODE 5014	USED FOR NODES	5318		
NODE 4810	USED FOR NODES	4973		
NODE 4673	USED FOR NODES	4959		
NODE 4812	USED FOR NODES	4975		
NODE 4811	USED FOR NODES	4974		
NODE 4672	USED FOR NODES	4958		
NODE 4808	USED FOR NODES	4971		
NODE 4807	USED FOR NODES	4970		
NODE 4809	USED FOR NODES	4972		
NODE 4806	USED FOR NODES	4969		
NODE 4805	USED FOR NODES	4968		
NODE 4671	USED FOR NODES	4957		
NODE 4804	USED FOR NODES	4967		
NODE 5016	USED FOR NODES	5320		
NODE 6130	USED FOR NODES	6248		
NODE 6329	USED FOR NODES	6444		
NODE 5551	USED FOR NODES	6334		
NODE 5600	USED FOR NODES	6354		
NODE 5601	USED FOR NODES	6355		
NODE 5602	USED FOR NODES	6356		
NODE 6131	USED FOR NODES	6249		
NODE 6132	USED FOR NODES	6250		
NODE 5842	USED FOR NODES	6105		
NODE 5017	USED FOR NODES	5321		
NODE 5018	USED FOR NODES	5322		
NODE 6360	USED FOR NODES	6462		
NODE 6361	USED FOR NODES	6463		
NODE 6362	USED FOR NODES	6464		
NODE 6529	USED FOR NODES	6772		
NODE 5282	USED FOR NODES	5831		
NODE 4738	USED FOR NODES	5594		
NODE 4739	USED FOR NODES	5595		
NODE 4740	USED FOR NODES	5596		
NODE 6572	USED FOR NODES	6810		
NODE 6573	USED FOR NODES	6811		
NODE 6574	USED FOR NODES	6812		
NODE 5012	USED FOR NODES	5271		
NODE 5874	USED FOR NODES	6136		
NODE 5875	USED FOR NODES	6137		
NODE 5876	USED FOR NODES	6138		
NODE 6110	USED FOR NODES	6217		
NODE 5314	USED FOR NODES	5880		
NODE 5315	USED FOR NODES	5881		
NODE 5316	USED FOR NODES	5882		
NODE 6440	USED FOR NODES	6538		
NODE 6468	USED FOR NODES	6566		
NODE 6469	USED FOR NODES	6567		
NODE 6470	USED FOR NODES	6568		
NODE 4653	USED FOR NODES	5562		
NODE 4803	USED FOR NODES	4966		
NODE 4802	USED FOR NODES	4965		
NODE 4801	USED FOR NODES	4964		
NODE 4670	USED FOR NODES	4956		
NODE 3756	USED FOR NODES	3880	4732	4961
NODE 3757	USED FOR NODES	3881	4733	4962
NODE 3758	USED FOR NODES	3882	4734	4963
NODE 3703	USED FOR NODES	3879	4660	4955
NODE 3908	USED FOR NODES	5076		
NODE 3909	USED FOR NODES	5077		
NODE 3910	USED FOR NODES	5078		
NODE 3899	USED FOR NODES	5051		
NODE 3786	USED FOR NODES	4759		
NODE 3787	USED FOR NODES	4760		
NODE 3788	USED FOR NODES	4761		
NODE 3705	USED FOR NODES	4661		

NODE 3789	USED FOR NODES	4762		
NODE 3790	USED FOR NODES	4763		
NODE 3791	USED FOR NODES	4764		
NODE 3911	USED FOR NODES	5073		
NODE 3912	USED FOR NODES	5074		
NODE 3913	USED FOR NODES	5075		
NODE 3706	USED FOR NODES	4662		
NODE 3900	USED FOR NODES	5050		
NODE 3914	USED FOR NODES	5070		
NODE 3915	USED FOR NODES	5071		
NODE 3916	USED FOR NODES	5072		
NODE 3901	USED FOR NODES	5049		
NODE 3793	USED FOR NODES	4766		
NODE 3792	USED FOR NODES	4765		
NODE 3707	USED FOR NODES	4663		
NODE 3794	USED FOR NODES	4767		
NODE 3822	USED FOR NODES	3892		
NODE 3728	USED FOR NODES	3885		
NODE 3824	USED FOR NODES	3894		
NODE 3823	USED FOR NODES	3893		
NODE 3917	USED FOR NODES	5067		
NODE 3918	USED FOR NODES	5068		
NODE 3919	USED FOR NODES	5069		
NODE 3902	USED FOR NODES	5048		
NODE 3796	USED FOR NODES	4769		
NODE 3708	USED FOR NODES	4664		
NODE 3797	USED FOR NODES	4770		
NODE 3795	USED FOR NODES	4768		
NODE 3821	USED FOR NODES	3891		
NODE 3819	USED FOR NODES	3889		
NODE 3820	USED FOR NODES	3890		
NODE 3727	USED FOR NODES	3884		
NODE 3920	USED FOR NODES	5064		
NODE 3921	USED FOR NODES	5065		
NODE 3922	USED FOR NODES	5066		
NODE 3903	USED FOR NODES	5047		
NODE 3800	USED FOR NODES	4773		
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NODE 3799	USED FOR NODES	4772		
NODE 3709	USED FOR NODES	4665		
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NODE 3925	USED FOR NODES	5063		
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NODE 3801	USED FOR NODES	4774		
NODE 3710	USED FOR NODES	4666		
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NODE 3267	USED FOR NODES	3975		

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NODE 4136	USED FOR NODES	4727	5583
NODE 4137	USED FOR NODES	4728	5584
NODE 4056	USED FOR NODES	4651	5552
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NODE 4434	USED FOR NODES	5009	5309
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NODE 3069	USED FOR NODES	3612
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NODE 2929	USED FOR NODES	3429
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NODE	3379	USED FOR NODES	4085
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NODE	5457	USED FOR NODES	6023
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NODE	4149	USED FOR NODES	5737

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NODE	6416	USED	FOR	NODES	6503
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NODE	6404	USED	FOR	NODES	6494
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NODE	4138	USED	FOR	NODES	5729
NODE	4139	USED	FOR	NODES	5730
NODE	5982	USED	FOR	NODES	6163

NODE 6483 USED FOR NODES 6650
 NODE 5449 USED FOR NODES 6012
 NODE 5450 USED FOR NODES 6013
 NODE 5451 USED FOR NODES 6014
 NODE 4436 USED FOR NODES 5452
 NODE 4140 USED FOR NODES 5731
 NODE 6674 USED FOR NODES 6990
 NODE 4437 USED FOR NODES 5453
 NODE 4438 USED FOR NODES 5454
 NODE 6675 USED FOR NODES 6991
 NODE 5422 USED FOR NODES 5979
 NODE 6676 USED FOR NODES 6992

*** WARNING ***

CP= 43.710 TIME= 11:19:23

Same node numbers associated with more than one solid model entity.

Future mesh clearing operations could produce unexpected results.

NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	67 USED FOR KEYPOINT(S)	115		
KEYPOINT	72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT	76 USED FOR KEYPOINT(S)	89		
KEYPOINT	80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85 USED FOR KEYPOINT(S)	122		
KEYPOINT	91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93 USED FOR KEYPOINT(S)	104		
KEYPOINT	98 USED FOR KEYPOINT(S)	117		
KEYPOINT	101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121 USED FOR KEYPOINT(S)	137		
KEYPOINT	123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT	134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT	135 USED FOR KEYPOINT(S)	162		
KEYPOINT	138 USED FOR KEYPOINT(S)	155		
KEYPOINT	139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT	142 USED FOR KEYPOINT(S)	146		
KEYPOINT	143 USED FOR KEYPOINT(S)	152		
KEYPOINT	147 USED FOR KEYPOINT(S)	157		
KEYPOINT	151 USED FOR KEYPOINT(S)	164		
KEYPOINT	154 USED FOR KEYPOINT(S)	165		
KEYPOINT	156 USED FOR KEYPOINT(S)	167		
KEYPOINT	158 USED FOR KEYPOINT(S)	181		
KEYPOINT	159 USED FOR KEYPOINT(S)	184		
KEYPOINT	161 USED FOR KEYPOINT(S)	186		
KEYPOINT	163 USED FOR KEYPOINT(S)	170		
KEYPOINT	166 USED FOR KEYPOINT(S)	171		
KEYPOINT	168 USED FOR KEYPOINT(S)	173		
KEYPOINT	169 USED FOR KEYPOINT(S)	176		
KEYPOINT	172 USED FOR KEYPOINT(S)	177		
KEYPOINT	174 USED FOR KEYPOINT(S)	179		
KEYPOINT	182 USED FOR KEYPOINT(S)	187		
KEYPOINT	183 USED FOR KEYPOINT(S)	190		
KEYPOINT	185 USED FOR KEYPOINT(S)	192		
KEYPOINT	188 USED FOR KEYPOINT(S)	193		
KEYPOINT	189 USED FOR KEYPOINT(S)	196		
KEYPOINT	191 USED FOR KEYPOINT(S)	198		
KEYPOINT	194 USED FOR KEYPOINT(S)	199		
KEYPOINT	195 USED FOR KEYPOINT(S)	202		
KEYPOINT	197 USED FOR KEYPOINT(S)	204		
LINE	108 USED FOR LINE(S)	240		
LINE	121 USED FOR LINE(S)	241		
LINE	126 USED FOR LINE(S)	154	239	
LINE	134 USED FOR LINE(S)	174		
LINE	137 USED FOR LINE(S)	172		
LINE	141 USED FOR LINE(S)	238		
LINE	159 USED FOR LINE(S)	236	246	270
LINE	160 USED FOR LINE(S)	252		
LINE	161 USED FOR LINE(S)	251		
LINE	187 USED FOR LINE(S)	257		

LINE	192	USED FOR LINE(S)	220	256	264
LINE	193	USED FOR LINE(S)	225		
LINE	194	USED FOR LINE(S)	226		
LINE	200	USED FOR LINE(S)	244		
LINE	203	USED FOR LINE(S)	243		
LINE	205	USED FOR LINE(S)	233	259	272
LINE	207	USED FOR LINE(S)	265		
LINE	228	USED FOR LINE(S)	271		
LINE	245	USED FOR LINE(S)	269		
LINE	247	USED FOR LINE(S)	268	275	307
LINE	248	USED FOR LINE(S)	283		
LINE	249	USED FOR LINE(S)	282		
LINE	253	USED FOR LINE(S)	290		
LINE	254	USED FOR LINE(S)	262	289	299
LINE	255	USED FOR LINE(S)	263		
LINE	258	USED FOR LINE(S)	273		
LINE	260	USED FOR LINE(S)	267	292	309
LINE	261	USED FOR LINE(S)	300		
LINE	266	USED FOR LINE(S)	308		
LINE	274	USED FOR LINE(S)	306		
LINE	276	USED FOR LINE(S)	305	330	
LINE	277	USED FOR LINE(S)	336		
LINE	278	USED FOR LINE(S)	335		
LINE	285	USED FOR LINE(S)	320		
LINE	286	USED FOR LINE(S)	319		
LINE	287	USED FOR LINE(S)	297	315	
LINE	288	USED FOR LINE(S)	298		
LINE	291	USED FOR LINE(S)	310		
LINE	293	USED FOR LINE(S)	302		
LINE	295	USED FOR LINE(S)	313		
LINE	296	USED FOR LINE(S)	314		
LINE	303	USED FOR LINE(S)	325		
LINE	304	USED FOR LINE(S)	331		
LINE	312	USED FOR LINE(S)	339		
LINE	317	USED FOR LINE(S)	341		
LINE	318	USED FOR LINE(S)	340		
LINE	322	USED FOR LINE(S)	346		
LINE	323	USED FOR LINE(S)	345		
LINE	326	USED FOR LINE(S)	377		
LINE	327	USED FOR LINE(S)	383		
LINE	328	USED FOR LINE(S)	382		
LINE	332	USED FOR LINE(S)	388		
LINE	333	USED FOR LINE(S)	387		
LINE	338	USED FOR LINE(S)	352		
LINE	343	USED FOR LINE(S)	354		
LINE	344	USED FOR LINE(S)	353		
LINE	348	USED FOR LINE(S)	359		
LINE	349	USED FOR LINE(S)	358		
LINE	351	USED FOR LINE(S)	365		
LINE	356	USED FOR LINE(S)	367		
LINE	357	USED FOR LINE(S)	366		
LINE	361	USED FOR LINE(S)	372		
LINE	362	USED FOR LINE(S)	371		
LINE	378	USED FOR LINE(S)	390		
LINE	379	USED FOR LINE(S)	396		
LINE	380	USED FOR LINE(S)	395		
LINE	384	USED FOR LINE(S)	401		
LINE	385	USED FOR LINE(S)	400		
LINE	391	USED FOR LINE(S)	403		
LINE	392	USED FOR LINE(S)	409		
LINE	393	USED FOR LINE(S)	408		
LINE	397	USED FOR LINE(S)	414		
LINE	398	USED FOR LINE(S)	413		
LINE	404	USED FOR LINE(S)	416		
LINE	405	USED FOR LINE(S)	422		
LINE	406	USED FOR LINE(S)	421		
LINE	410	USED FOR LINE(S)	427		
LINE	411	USED FOR LINE(S)	426		
AREA	56	USED FOR AREA(S)	161		
AREA	84	USED FOR AREA(S)	123		

AREA 95 USED FOR AREA(S) 160
 AREA 112 USED FOR AREA(S) 168
 AREA 142 USED FOR AREA(S) 172
 AREA 148 USED FOR AREA(S) 156
 AREA 154 USED FOR AREA(S) 163
 AREA 155 USED FOR AREA(S) 177
 AREA 159 USED FOR AREA(S) 181
 AREA 165 USED FOR AREA(S) 180
 AREA 166 USED FOR AREA(S) 188
 AREA 170 USED FOR AREA(S) 193
 AREA 171 USED FOR AREA(S) 176
 AREA 174 USED FOR AREA(S) 182
 AREA 175 USED FOR AREA(S) 199
 AREA 179 USED FOR AREA(S) 204
 AREA 184 USED FOR AREA(S) 203
 AREA 185 USED FOR AREA(S) 223
 AREA 191 USED FOR AREA(S) 212
 AREA 192 USED FOR AREA(S) 198
 AREA 195 USED FOR AREA(S) 205
 AREA 197 USED FOR AREA(S) 208
 AREA 202 USED FOR AREA(S) 219
 AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
 27, 28,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 7182
 MAXIMUM ELEMENT NUMBER = 5734
 Rock around drift
 (V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
 29, 30,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 7434
 MAXIMUM ELEMENT NUMBER = 5894

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7566
MAXIMUM ELEMENT NUMBER = 5974

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 7698
MAXIMUM ELEMENT NUMBER = 6054

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8034
MAXIMUM ELEMENT NUMBER = 6294

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8210
MAXIMUM ELEMENT NUMBER = 6414

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 8386
MAXIMUM ELEMENT NUMBER = 6534

Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 51.420 TIME= 11:19:33
Meshing of volume 75 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
6595 6596 6597 6598 6599 6600 6601 6602
6603 6604 6605 6606

*** WARNING *** CP= 52.070 TIME= 11:19:34
Meshing of volume 76 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
6955 6956 6957 6958 6959 6960 6961 6962
6963 6964 6965 6966

MAXIMUM NODE NUMBER = 8974
MAXIMUM ELEMENT NUMBER = 7014

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
59,

*** WARNING *** CP= 52.880 TIME= 11:19:35
Meshing of volume 78 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
7043 7044 7045 7046 7083 7084 7085 7086
7123 7124 7125 7126

MAXIMUM NODE NUMBER = 9282
MAXIMUM ELEMENT NUMBER = 7254
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 53.870 TIME= 11:19:36
Meshing of volume 77 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
7435 7436 7437 7438 7439 7440 7441 7442
7443 7444 7445 7446

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 9590
MAXIMUM ELEMENT NUMBER = 7494

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS

Extrude rest of TSw2
(V's 79,80,81,82)

DRAG AREAS

7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10150

MAXIMUM ELEMENT NUMBER = 7926

Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS

5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10430

MAXIMUM ELEMENT NUMBER = 8142

Extrude PTn
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS

3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10542

MAXIMUM ELEMENT NUMBER = 8214

Extrude TCw
(V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS

1, 2,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10654

MAXIMUM ELEMENT NUMBER = 8286

Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS

11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10766

MAXIMUM ELEMENT NUMBER = 8358

Extrude CHn1v

(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10850
MAXIMUM ELEMENT NUMBER = 8406
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11074
MAXIMUM ELEMENT NUMBER = 8574
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 58.270 TIME= 11:19:40
Meshing of volume 95 produced 42 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

8603	8607	8608	8611	8612	8613	8615	8616
8617	8618	8619	8620	8621	8622	8651	8655
8656	8659	8660	8661	8663	8664	8665	8666
8667	8668	8669	8670	8699	8703	8704	8707
8708	8709	8711	8712	8713	8714	8715	8716
8717	8718						

*** WARNING *** CP= 58.670 TIME= 11:19:41
Meshing of volume 96 produced 42 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

8747	8751	8752	8755	8756	8757	8759	8760
8761	8762	8763	8764	8765	8766	8795	8799
8800	8803	8804	8805	8807	8808	8809	8810
8811	8812	8813	8814	8843	8847	8848	8851
8852	8853	8855	8856	8857	8858	8859	8860
8861	8862						

MAXIMUM NODE NUMBER = 11438
MAXIMUM ELEMENT NUMBER = 8862

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 10656	USED FOR NODES	10767
NODE 9918	USED FOR NODES	10672
NODE 10768	USED FOR NODES	10851
NODE 10677	USED FOR NODES	10779
NODE 10678	USED FOR NODES	10780
NODE 10679	USED FOR NODES	10781
NODE 10785	USED FOR NODES	10883

NODE 10786	USED FOR NODES	10884
NODE 10787	USED FOR NODES	10885
NODE 10852	USED FOR NODES	11075
NODE 10889	USED FOR NODES	11127
NODE 10890	USED FOR NODES	11128
NODE 10891	USED FOR NODES	11129
NODE 10151	USED FOR NODES	10432
NODE 9591	USED FOR NODES	10152
NODE 10191	USED FOR NODES	10453
NODE 10192	USED FOR NODES	10454
NODE 10193	USED FOR NODES	10455
NODE 9631	USED FOR NODES	10197
NODE 9632	USED FOR NODES	10198
NODE 9633	USED FOR NODES	10199
NODE 9919	USED FOR NODES	10673
NODE 8976	USED FOR NODES	9871
NODE 8975	USED FOR NODES	9283
NODE 9052	USED FOR NODES	9284
NODE 9053	USED FOR NODES	9285
NODE 9054	USED FOR NODES	9286
NODE 9311	USED FOR NODES	9592
NODE 9312	USED FOR NODES	9637
NODE 9313	USED FOR NODES	9638
NODE 9314	USED FOR NODES	9639
NODE 9872	USED FOR NODES	10655
NODE 9055	USED FOR NODES	9911
NODE 9056	USED FOR NODES	9912
NODE 9057	USED FOR NODES	9913
NODE 10431	USED FOR NODES	10544
NODE 10447	USED FOR NODES	10565
NODE 10448	USED FOR NODES	10566
NODE 10449	USED FOR NODES	10567
NODE 9917	USED FOR NODES	10671
NODE 9146	USED FOR NODES	9309
NODE 9145	USED FOR NODES	9308
NODE 9006	USED FOR NODES	9292
NODE 9147	USED FOR NODES	9310
NODE 10771	USED FOR NODES	10869
NODE 10660	USED FOR NODES	10775
NODE 10689	USED FOR NODES	10791
NODE 10690	USED FOR NODES	10792
NODE 10691	USED FOR NODES	10793
NODE 10797	USED FOR NODES	10895
NODE 10798	USED FOR NODES	10896
NODE 10799	USED FOR NODES	10897
NODE 8984	USED FOR NODES	9893
NODE 10860	USED FOR NODES	11103
NODE 9345	USED FOR NODES	9649
NODE 10901	USED FOR NODES	11139
NODE 10902	USED FOR NODES	11140
NODE 10903	USED FOR NODES	11141
NODE 9613	USED FOR NODES	10162
NODE 10173	USED FOR NODES	10436
NODE 9346	USED FOR NODES	9650
NODE 9347	USED FOR NODES	9651
NODE 10203	USED FOR NODES	10465
NODE 10204	USED FOR NODES	10466
NODE 10205	USED FOR NODES	10467
NODE 9929	USED FOR NODES	10683
NODE 9643	USED FOR NODES	10209
NODE 9644	USED FOR NODES	10210
NODE 9645	USED FOR NODES	10211
NODE 9930	USED FOR NODES	10684
NODE 9931	USED FOR NODES	10685
NODE 9882	USED FOR NODES	10665
NODE 9343	USED FOR NODES	9602
NODE 9067	USED FOR NODES	9923
NODE 9068	USED FOR NODES	9924
NODE 9069	USED FOR NODES	9925
NODE 10441	USED FOR NODES	10548

NODE 10459	USED FOR NODES	10577		
NODE 10460	USED FOR NODES	10578		
NODE 10461	USED FOR NODES	10579		
NODE 9142	USED FOR NODES	9305		
NODE 9143	USED FOR NODES	9306		
NODE 9144	USED FOR NODES	9307		
NODE 9005	USED FOR NODES	9291		
NODE 9139	USED FOR NODES	9302		
NODE 9140	USED FOR NODES	9303		
NODE 9141	USED FOR NODES	9304		
NODE 9004	USED FOR NODES	9290		
NODE 9138	USED FOR NODES	9301		
NODE 9137	USED FOR NODES	9300		
NODE 9003	USED FOR NODES	9289		
NODE 9136	USED FOR NODES	9299		
NODE 10772	USED FOR NODES	10870		
NODE 10661	USED FOR NODES	10776		
NODE 10692	USED FOR NODES	10794		
NODE 10693	USED FOR NODES	10795		
NODE 10694	USED FOR NODES	10796		
NODE 10800	USED FOR NODES	10898		
NODE 10801	USED FOR NODES	10899		
NODE 9648	USED FOR NODES	10214		
NODE 10802	USED FOR NODES	10900		
NODE 10861	USED FOR NODES	11104		
NODE 8985	USED FOR NODES	9894		
NODE 10904	USED FOR NODES	11142		
NODE 10905	USED FOR NODES	11143		
NODE 10906	USED FOR NODES	11144		
NODE 9614	USED FOR NODES	10163		
NODE 10174	USED FOR NODES	10437		
NODE 10206	USED FOR NODES	10468		
NODE 10207	USED FOR NODES	10469		
NODE 10208	USED FOR NODES	10470		
NODE 9646	USED FOR NODES	10212		
NODE 9647	USED FOR NODES	10213		
NODE 9932	USED FOR NODES	10686		
NODE 9933	USED FOR NODES	10687		
NODE 9348	USED FOR NODES	9652		
NODE 9349	USED FOR NODES	9653		
NODE 9934	USED FOR NODES	10688		
NODE 9344	USED FOR NODES	9603		
NODE 9350	USED FOR NODES	9654		
NODE 9883	USED FOR NODES	10666		
NODE 9070	USED FOR NODES	9926		
NODE 10442	USED FOR NODES	10549		
NODE 10462	USED FOR NODES	10580		
NODE 10463	USED FOR NODES	10581		
NODE 10464	USED FOR NODES	10582		
NODE 9071	USED FOR NODES	9927		
NODE 9072	USED FOR NODES	9928		
NODE 9135	USED FOR NODES	9298		
NODE 9134	USED FOR NODES	9297		
NODE 9133	USED FOR NODES	9296		
NODE 9002	USED FOR NODES	9288		
NODE 8088	USED FOR NODES	8212	9064	9293
NODE 8089	USED FOR NODES	8213	9065	9294
NODE 8090	USED FOR NODES	8214	9066	9295
NODE 8035	USED FOR NODES	8211	8992	9287
NODE 8240	USED FOR NODES	9408		
NODE 8241	USED FOR NODES	9409		
NODE 8242	USED FOR NODES	9410		
NODE 8231	USED FOR NODES	9383		
NODE 8119	USED FOR NODES	9092		
NODE 8118	USED FOR NODES	9091		
NODE 8120	USED FOR NODES	9093		
NODE 8037	USED FOR NODES	8993		
NODE 8121	USED FOR NODES	9094		
NODE 8122	USED FOR NODES	9095		
NODE 8123	USED FOR NODES	9096		

NODE 8038	USED FOR NODES	8994		
NODE 8243	USED FOR NODES	9405		
NODE 8244	USED FOR NODES	9406		
NODE 8245	USED FOR NODES	9407		
NODE 8232	USED FOR NODES	9382		
NODE 8246	USED FOR NODES	9402		
NODE 8247	USED FOR NODES	9403		
NODE 8248	USED FOR NODES	9404		
NODE 8233	USED FOR NODES	9381		
NODE 8124	USED FOR NODES	9097		
NODE 8125	USED FOR NODES	9098		
NODE 8039	USED FOR NODES	8995		
NODE 8126	USED FOR NODES	9099		
NODE 8154	USED FOR NODES	8224		
NODE 8156	USED FOR NODES	8226		
NODE 8060	USED FOR NODES	8217		
NODE 8155	USED FOR NODES	8225		
NODE 8249	USED FOR NODES	9399		
NODE 8250	USED FOR NODES	9400		
NODE 8251	USED FOR NODES	9401		
NODE 8234	USED FOR NODES	9380		
NODE 8129	USED FOR NODES	9102		
NODE 8128	USED FOR NODES	9101		
NODE 8040	USED FOR NODES	8996		
NODE 8127	USED FOR NODES	9100		
NODE 8153	USED FOR NODES	8223		
NODE 8151	USED FOR NODES	8221		
NODE 8152	USED FOR NODES	8222		
NODE 8059	USED FOR NODES	8216		
NODE 8252	USED FOR NODES	9396		
NODE 8253	USED FOR NODES	9397		
NODE 8254	USED FOR NODES	9398		
NODE 8235	USED FOR NODES	9379		
NODE 8132	USED FOR NODES	9105		
NODE 8131	USED FOR NODES	9104		
NODE 8041	USED FOR NODES	8997		
NODE 8130	USED FOR NODES	9103		
NODE 7480	USED FOR NODES	7568	8082	8218
NODE 7481	USED FOR NODES	7569	8083	8219
NODE 7482	USED FOR NODES	7570	8084	8220
NODE 7435	USED FOR NODES	7567	8049	8215
NODE 7592	USED FOR NODES	8312		
NODE 7593	USED FOR NODES	8313		
NODE 7594	USED FOR NODES	8314		
NODE 7583	USED FOR NODES	8287		
NODE 7437	USED FOR NODES	8050		
NODE 7507	USED FOR NODES	8091		
NODE 7508	USED FOR NODES	8092		
NODE 7509	USED FOR NODES	8093		
NODE 7595	USED FOR NODES	8309		
NODE 7596	USED FOR NODES	8310		
NODE 7597	USED FOR NODES	8311		
NODE 7584	USED FOR NODES	8286		
NODE 7511	USED FOR NODES	8095		
NODE 7512	USED FOR NODES	8096		
NODE 7510	USED FOR NODES	8094		
NODE 7438	USED FOR NODES	8051		
NODE 8255	USED FOR NODES	9393		
NODE 8256	USED FOR NODES	9394		
NODE 8257	USED FOR NODES	9395		
NODE 8236	USED FOR NODES	9378		
NODE 8135	USED FOR NODES	9108		
NODE 8134	USED FOR NODES	9107		
NODE 8133	USED FOR NODES	9106		
NODE 8042	USED FOR NODES	8998		
NODE 7598	USED FOR NODES	8306		
NODE 7599	USED FOR NODES	8307		
NODE 7600	USED FOR NODES	8308		
NODE 7585	USED FOR NODES	8285		
NODE 7513	USED FOR NODES	8097		

NODE	7514	USED FOR NODES	8098
NODE	7439	USED FOR NODES	8052
NODE	7515	USED FOR NODES	8099
NODE	7539	USED FOR NODES	7578
NODE	7458	USED FOR NODES	7572
NODE	7537	USED FOR NODES	7576
NODE	7538	USED FOR NODES	7577
NODE	7601	USED FOR NODES	8303
NODE	7602	USED FOR NODES	8304
NODE	7603	USED FOR NODES	8305
NODE	7586	USED FOR NODES	8284
NODE	7517	USED FOR NODES	8101
NODE	7516	USED FOR NODES	8100
NODE	7518	USED FOR NODES	8102
NODE	7440	USED FOR NODES	8053
NODE	7452	USED FOR NODES	7571
NODE	7471	USED FOR NODES	7573
NODE	7473	USED FOR NODES	7575
NODE	7472	USED FOR NODES	7574
NODE	8258	USED FOR NODES	9390
NODE	8259	USED FOR NODES	9391
NODE	8260	USED FOR NODES	9392
NODE	8237	USED FOR NODES	9377
NODE	8137	USED FOR NODES	9110
NODE	8136	USED FOR NODES	9109
NODE	8043	USED FOR NODES	8999
NODE	8138	USED FOR NODES	9111
NODE	7604	USED FOR NODES	8300
NODE	7605	USED FOR NODES	8301
NODE	7606	USED FOR NODES	8302
NODE	7587	USED FOR NODES	8283
NODE	7441	USED FOR NODES	8054
NODE	7519	USED FOR NODES	8103
NODE	7521	USED FOR NODES	8105
NODE	7520	USED FOR NODES	8104
NODE	7607	USED FOR NODES	8297
NODE	7608	USED FOR NODES	8298
NODE	7609	USED FOR NODES	8299
NODE	7588	USED FOR NODES	8282
NODE	7524	USED FOR NODES	8108
NODE	7523	USED FOR NODES	8107
NODE	7522	USED FOR NODES	8106
NODE	7442	USED FOR NODES	8055
NODE	7121	USED FOR NODES	7474
NODE	7122	USED FOR NODES	7475
NODE	7123	USED FOR NODES	7476
NODE	7107	USED FOR NODES	7448
NODE	8261	USED FOR NODES	9387
NODE	8262	USED FOR NODES	9388
NODE	8263	USED FOR NODES	9389
NODE	8238	USED FOR NODES	9376
NODE	8139	USED FOR NODES	9112
NODE	8140	USED FOR NODES	9113
NODE	8141	USED FOR NODES	9114
NODE	8044	USED FOR NODES	9000
NODE	7610	USED FOR NODES	8294
NODE	7611	USED FOR NODES	8295
NODE	7612	USED FOR NODES	8296
NODE	7589	USED FOR NODES	8281
NODE	7525	USED FOR NODES	8109
NODE	7526	USED FOR NODES	8110
NODE	7443	USED FOR NODES	8056
NODE	7527	USED FOR NODES	8111
NODE	7127	USED FOR NODES	7498
NODE	7128	USED FOR NODES	7499
NODE	7129	USED FOR NODES	7500
NODE	7109	USED FOR NODES	7449
NODE	7613	USED FOR NODES	8291
NODE	7614	USED FOR NODES	8292
NODE	7615	USED FOR NODES	8293

NODE 7590	USED FOR NODES	8280	
NODE 7529	USED FOR NODES	8113	
NODE 7530	USED FOR NODES	8114	
NODE 7444	USED FOR NODES	8057	
NODE 7528	USED FOR NODES	8112	
NODE 7130	USED FOR NODES	7501	
NODE 7131	USED FOR NODES	7502	
NODE 7132	USED FOR NODES	7503	
NODE 7110	USED FOR NODES	7450	
NODE 8264	USED FOR NODES	9384	
NODE 8265	USED FOR NODES	9385	
NODE 8266	USED FOR NODES	9386	
NODE 8239	USED FOR NODES	9375	
NODE 8045	USED FOR NODES	9001	
NODE 8143	USED FOR NODES	9116	
NODE 8142	USED FOR NODES	9115	
NODE 8144	USED FOR NODES	9117	
NODE 7616	USED FOR NODES	8288	
NODE 7617	USED FOR NODES	8289	
NODE 7618	USED FOR NODES	8290	
NODE 7591	USED FOR NODES	8279	
NODE 7445	USED FOR NODES	8058	
NODE 7533	USED FOR NODES	8117	
NODE 7532	USED FOR NODES	8116	
NODE 7531	USED FOR NODES	8115	
NODE 7111	USED FOR NODES	7451	
NODE 7133	USED FOR NODES	7504	
NODE 7134	USED FOR NODES	7505	
NODE 7135	USED FOR NODES	7506	
NODE 10438	USED FOR NODES	10547	
NODE 10450	USED FOR NODES	10568	
NODE 10451	USED FOR NODES	10569	
NODE 10452	USED FOR NODES	10570	
NODE 10194	USED FOR NODES	10456	
NODE 10195	USED FOR NODES	10457	
NODE 10196	USED FOR NODES	10458	
NODE 10164	USED FOR NODES	10435	
NODE 10893	USED FOR NODES	11131	
NODE 10892	USED FOR NODES	11130	
NODE 10894	USED FOR NODES	11132	
NODE 10859	USED FOR NODES	11091	
NODE 10788	USED FOR NODES	10886	
NODE 10790	USED FOR NODES	10888	
NODE 10770	USED FOR NODES	10862	
NODE 10789	USED FOR NODES	10887	
NODE 9636	USED FOR NODES	10202	
NODE 9604	USED FOR NODES	10161	
NODE 9635	USED FOR NODES	10201	
NODE 9634	USED FOR NODES	10200	
NODE 10680	USED FOR NODES	10782	
NODE 10681	USED FOR NODES	10783	
NODE 10682	USED FOR NODES	10784	
NODE 10659	USED FOR NODES	10773	
NODE 9921	USED FOR NODES	10675	
NODE 9920	USED FOR NODES	10674	
NODE 9881	USED FOR NODES	10662	
NODE 9922	USED FOR NODES	10676	
NODE 8388	USED FOR NODES	8983	9884
NODE 8702	USED FOR NODES	9339	9601
NODE 8765	USED FOR NODES	9340	9640
NODE 8766	USED FOR NODES	9341	9641
NODE 8767	USED FOR NODES	9342	9642
NODE 8467	USED FOR NODES	9058	9914
NODE 8468	USED FOR NODES	9059	9915
NODE 8469	USED FOR NODES	9060	9916
NODE 8837	USED FOR NODES	9360	
NODE 8838	USED FOR NODES	9361	
NODE 8710	USED FOR NODES	9355	
NODE 8839	USED FOR NODES	9362	
NODE 8836	USED FOR NODES	9365	

NODE 8709	USED FOR NODES	9356		
NODE 8835	USED FOR NODES	9364		
NODE 8834	USED FOR NODES	9363		
NODE 8831	USED FOR NODES	9366		
NODE 8832	USED FOR NODES	9367		
NODE 8708	USED FOR NODES	9357		
NODE 8833	USED FOR NODES	9368		
NODE 8828	USED FOR NODES	9369		
NODE 8707	USED FOR NODES	9358		
NODE 8830	USED FOR NODES	9371		
NODE 8829	USED FOR NODES	9370		
NODE 8826	USED FOR NODES	9373		
NODE 8825	USED FOR NODES	9372		
NODE 8706	USED FOR NODES	9359		
NODE 8827	USED FOR NODES	9374		
NODE 7750	USED FOR NODES	8086	8474	9062
NODE 7700	USED FOR NODES	8036	8387	8986
NODE 7751	USED FOR NODES	8087	8475	9063
NODE 7918	USED FOR NODES	8228	8771	9352
NODE 7875	USED FOR NODES	8227	8705	9351
NODE 7919	USED FOR NODES	8229	8772	9353
NODE 7920	USED FOR NODES	8230	8773	9354
NODE 7749	USED FOR NODES	8085	8473	9061
NODE 7980	USED FOR NODES	8275		
NODE 7887	USED FOR NODES	8271		
NODE 7979	USED FOR NODES	8274		
NODE 7978	USED FOR NODES	8273		
NODE 7886	USED FOR NODES	8272		
NODE 7977	USED FOR NODES	8278		
NODE 7975	USED FOR NODES	8276		
NODE 7976	USED FOR NODES	8277		
NODE 7184	USED FOR NODES	7436	7699	8046
NODE 7315	USED FOR NODES	7579	7885	8267
NODE 7348	USED FOR NODES	7580	7915	8268
NODE 7226	USED FOR NODES	7478	7744	8080
NODE 7349	USED FOR NODES	7581	7916	8269
NODE 7227	USED FOR NODES	7479	7745	8081
NODE 7350	USED FOR NODES	7582	7917	8270
NODE 7225	USED FOR NODES	7477	7743	8079
NODE 7407	USED FOR NODES	7626		
NODE 7326	USED FOR NODES	7623		
NODE 7406	USED FOR NODES	7625		
NODE 7405	USED FOR NODES	7624		
NODE 7119	USED FOR NODES	7217	7469	
NODE 7346	USED FOR NODES	7621		
NODE 7345	USED FOR NODES	7620		
NODE 7120	USED FOR NODES	7218	7470	
NODE 7108	USED FOR NODES	7183	7446	
NODE 7325	USED FOR NODES	7619		
NODE 7347	USED FOR NODES	7622		
NODE 7118	USED FOR NODES	7216	7468	
NODE 8392	USED FOR NODES	8990		
NODE 8391	USED FOR NODES	8989		
NODE 7812	USED FOR NODES	8148		
NODE 8389	USED FOR NODES	8987		
NODE 7814	USED FOR NODES	8150		
NODE 7283	USED FOR NODES	7535		
NODE 7284	USED FOR NODES	7536		
NODE 8542	USED FOR NODES	9130		
NODE 8534	USED FOR NODES	9122		
NODE 7810	USED FOR NODES	8146		
NODE 7811	USED FOR NODES	8147		
NODE 8538	USED FOR NODES	9126		
NODE 7809	USED FOR NODES	8145		
NODE 7282	USED FOR NODES	7534		
NODE 8393	USED FOR NODES	8991		
NODE 7813	USED FOR NODES	8149		
NODE 8536	USED FOR NODES	9124		
NODE 8537	USED FOR NODES	9125		
NODE 8530	USED FOR NODES	9118		

NODE	8531	USED FOR NODES	9119
NODE	8532	USED FOR NODES	9120
NODE	8543	USED FOR NODES	9131
NODE	8533	USED FOR NODES	9121
NODE	8535	USED FOR NODES	9123
NODE	8390	USED FOR NODES	8988
NODE	7185	USED FOR NODES	7447
NODE	7701	USED FOR NODES	8047
NODE	7702	USED FOR NODES	8048
NODE	8539	USED FOR NODES	9127
NODE	8540	USED FOR NODES	9128
NODE	8541	USED FOR NODES	9129
NODE	8544	USED FOR NODES	9132
NODE	7162	USED FOR NODES	7231
NODE	7163	USED FOR NODES	7232
NODE	7164	USED FOR NODES	7233
NODE	7152	USED FOR NODES	7204
NODE	7403	USED FOR NODES	7946
NODE	7404	USED FOR NODES	7947
NODE	7402	USED FOR NODES	7945
NODE	7324	USED FOR NODES	7896
NODE	7255	USED FOR NODES	7755
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NODE	7257	USED FOR NODES	7757
NODE	7187	USED FOR NODES	7716
NODE	7974	USED FOR NODES	8824
NODE	7884	USED FOR NODES	8719
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NODE	7704	USED FOR NODES	8410
NODE	7783	USED FOR NODES	8504
NODE	7165	USED FOR NODES	7234
NODE	7166	USED FOR NODES	7235
NODE	7167	USED FOR NODES	7236
NODE	7153	USED FOR NODES	7205
NODE	7323	USED FOR NODES	7895
NODE	7401	USED FOR NODES	7944
NODE	7400	USED FOR NODES	7943
NODE	7399	USED FOR NODES	7942
NODE	7259	USED FOR NODES	7759
NODE	7260	USED FOR NODES	7760
NODE	7258	USED FOR NODES	7758
NODE	7188	USED FOR NODES	7717
NODE	7154	USED FOR NODES	7206
NODE	7168	USED FOR NODES	7237
NODE	7169	USED FOR NODES	7238
NODE	7170	USED FOR NODES	7239
NODE	7322	USED FOR NODES	7894
NODE	7398	USED FOR NODES	7941
NODE	7396	USED FOR NODES	7939
NODE	7397	USED FOR NODES	7940
NODE	7261	USED FOR NODES	7761
NODE	7262	USED FOR NODES	7762
NODE	7189	USED FOR NODES	7718
NODE	7263	USED FOR NODES	7763
NODE	7969	USED FOR NODES	8819
NODE	7883	USED FOR NODES	8718
NODE	7971	USED FOR NODES	8821
NODE	7970	USED FOR NODES	8820
NODE	7785	USED FOR NODES	8506
NODE	7786	USED FOR NODES	8507
NODE	7705	USED FOR NODES	8411
NODE	7787	USED FOR NODES	8508
NODE	7151	USED FOR NODES	7198
NODE	7159	USED FOR NODES	7219
NODE	7161	USED FOR NODES	7221
NODE	7160	USED FOR NODES	7220
NODE	7321	USED FOR NODES	7893

NODE 7394	USED FOR NODES	7937
NODE 7395	USED FOR NODES	7938
NODE 7393	USED FOR NODES	7936
NODE 7266	USED FOR NODES	7766
NODE 7264	USED FOR NODES	7764
NODE 7265	USED FOR NODES	7765
NODE 7190	USED FOR NODES	7719
NODE 7320	USED FOR NODES	7892
NODE 7390	USED FOR NODES	7933
NODE 7391	USED FOR NODES	7934
NODE 7392	USED FOR NODES	7935
NODE 7267	USED FOR NODES	7767
NODE 7269	USED FOR NODES	7769
NODE 7268	USED FOR NODES	7768
NODE 7191	USED FOR NODES	7720
NODE 7968	USED FOR NODES	8818
NODE 7882	USED FOR NODES	8717
NODE 7966	USED FOR NODES	8816
NODE 7967	USED FOR NODES	8817
NODE 7706	USED FOR NODES	8412
NODE 7788	USED FOR NODES	8509
NODE 7790	USED FOR NODES	8511
NODE 7789	USED FOR NODES	8510
NODE 7319	USED FOR NODES	7891
NODE 7388	USED FOR NODES	7931
NODE 7387	USED FOR NODES	7930
NODE 7389	USED FOR NODES	7932
NODE 7271	USED FOR NODES	7771
NODE 7270	USED FOR NODES	7770
NODE 7272	USED FOR NODES	7772
NODE 7192	USED FOR NODES	7721
NODE 7384	USED FOR NODES	7927
NODE 7385	USED FOR NODES	7928
NODE 7386	USED FOR NODES	7929
NODE 7318	USED FOR NODES	7890
NODE 7193	USED FOR NODES	7722
NODE 7274	USED FOR NODES	7774
NODE 7275	USED FOR NODES	7775
NODE 7273	USED FOR NODES	7773
NODE 7964	USED FOR NODES	8814
NODE 7881	USED FOR NODES	8716
NODE 7963	USED FOR NODES	8813
NODE 7965	USED FOR NODES	8815
NODE 7793	USED FOR NODES	8514
NODE 7792	USED FOR NODES	8513
NODE 7791	USED FOR NODES	8512
NODE 7707	USED FOR NODES	8413
NODE 7381	USED FOR NODES	7924
NODE 7382	USED FOR NODES	7925
NODE 7383	USED FOR NODES	7926
NODE 7317	USED FOR NODES	7889
NODE 7194	USED FOR NODES	7723
NODE 7276	USED FOR NODES	7776
NODE 7277	USED FOR NODES	7777
NODE 7278	USED FOR NODES	7778
NODE 7378	USED FOR NODES	7921
NODE 7379	USED FOR NODES	7922
NODE 7316	USED FOR NODES	7888
NODE 7380	USED FOR NODES	7923
NODE 7195	USED FOR NODES	7724
NODE 7279	USED FOR NODES	7779
NODE 7281	USED FOR NODES	7781
NODE 7280	USED FOR NODES	7780
NODE 7228	USED FOR NODES	7746
NODE 7229	USED FOR NODES	7747
NODE 7230	USED FOR NODES	7748
NODE 7186	USED FOR NODES	7713
NODE 7960	USED FOR NODES	8810
NODE 7962	USED FOR NODES	8812
NODE 7961	USED FOR NODES	8811

NODE 7880	USED FOR NODES	8715
NODE 7795	USED FOR NODES	8516
NODE 7708	USED FOR NODES	8414
NODE 7796	USED FOR NODES	8517
NODE 7794	USED FOR NODES	8515
NODE 7959	USED FOR NODES	8809
NODE 7879	USED FOR NODES	8714
NODE 7957	USED FOR NODES	8807
NODE 7958	USED FOR NODES	8808
NODE 7799	USED FOR NODES	8520
NODE 7798	USED FOR NODES	8519
NODE 7797	USED FOR NODES	8518
NODE 7709	USED FOR NODES	8415
NODE 7956	USED FOR NODES	8806
NODE 7878	USED FOR NODES	8713
NODE 7954	USED FOR NODES	8804
NODE 7955	USED FOR NODES	8805
NODE 7710	USED FOR NODES	8416
NODE 7802	USED FOR NODES	8523
NODE 7801	USED FOR NODES	8522
NODE 7800	USED FOR NODES	8521
NODE 7951	USED FOR NODES	8801
NODE 7803	USED FOR NODES	8524
NODE 7804	USED FOR NODES	8525
NODE 7805	USED FOR NODES	8526
NODE 7952	USED FOR NODES	8802
NODE 7953	USED FOR NODES	8803
NODE 7877	USED FOR NODES	8712
NODE 7711	USED FOR NODES	8417
NODE 7876	USED FOR NODES	8711
NODE 7948	USED FOR NODES	8798
NODE 7949	USED FOR NODES	8799
NODE 7950	USED FOR NODES	8800
NODE 7807	USED FOR NODES	8528
NODE 7808	USED FOR NODES	8529
NODE 7806	USED FOR NODES	8527
NODE 7712	USED FOR NODES	8418
NODE 7752	USED FOR NODES	8476
NODE 7753	USED FOR NODES	8477
NODE 7754	USED FOR NODES	8478
NODE 7703	USED FOR NODES	8404
NODE 8479	USED FOR NODES	10067
NODE 8480	USED FOR NODES	10068
NODE 8481	USED FOR NODES	10069
NODE 10073	USED FOR NODES	10737
NODE 10074	USED FOR NODES	10738
NODE 10075	USED FOR NODES	10739
NODE 10816	USED FOR NODES	10989
NODE 10720	USED FOR NODES	10820
NODE 10743	USED FOR NODES	10830
NODE 10744	USED FOR NODES	10831
NODE 10745	USED FOR NODES	10832
NODE 10836	USED FOR NODES	11009
NODE 10837	USED FOR NODES	11010
NODE 10838	USED FOR NODES	11011
NODE 8774	USED FOR NODES	9793
NODE 8775	USED FOR NODES	9794
NODE 8776	USED FOR NODES	9795
NODE 10032	USED FOR NODES	10725
NODE 10980	USED FOR NODES	11298
NODE 11015	USED FOR NODES	11328
NODE 11016	USED FOR NODES	11329
NODE 9787	USED FOR NODES	10353
NODE 11017	USED FOR NODES	11330
NODE 8395	USED FOR NODES	10043
NODE 9763	USED FOR NODES	10312
NODE 10323	USED FOR NODES	10496
NODE 9788	USED FOR NODES	10354
NODE 10347	USED FOR NODES	10519
NODE 10348	USED FOR NODES	10520

NODE 9754 USED FOR NODES 10311
 NODE 10314 USED FOR NODES 10495
 NODE 10341 USED FOR NODES 10510
 NODE 10342 USED FOR NODES 10511
 NODE 10343 USED FOR NODES 10512
 NODE 9781 USED FOR NODES 10344
 NODE 8695 USED FOR NODES 9751
 NODE 9782 USED FOR NODES 10345
 NODE 10498 USED FOR NODES 10607

*** WARNING *** CP= 92.370 TIME= 11:20:14
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78	USED FOR KEYPOINT(S)	132		
KEYPOINT	89	USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104	USED FOR KEYPOINT(S)	117		
KEYPOINT	111	USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114	USED FOR KEYPOINT(S)	144		
KEYPOINT	119	USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122	USED FOR KEYPOINT(S)	128		
KEYPOINT	124	USED FOR KEYPOINT(S)	133		
KEYPOINT	125	USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140	USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141	USED FOR KEYPOINT(S)	170		
KEYPOINT	145	USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149	USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164	USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165	USED FOR KEYPOINT(S)	212		
KEYPOINT	171	USED FOR KEYPOINT(S)	205		
KEYPOINT	173	USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179	USED FOR KEYPOINT(S)	187		
KEYPOINT	181	USED FOR KEYPOINT(S)	199		
KEYPOINT	190	USED FOR KEYPOINT(S)	207		
KEYPOINT	198	USED FOR KEYPOINT(S)	214		
KEYPOINT	204	USED FOR KEYPOINT(S)	215		
KEYPOINT	206	USED FOR KEYPOINT(S)	217		
KEYPOINT	208	USED FOR KEYPOINT(S)	231		
KEYPOINT	209	USED FOR KEYPOINT(S)	234		
KEYPOINT	211	USED FOR KEYPOINT(S)	236		
KEYPOINT	213	USED FOR KEYPOINT(S)	220		
KEYPOINT	216	USED FOR KEYPOINT(S)	221		
KEYPOINT	218	USED FOR KEYPOINT(S)	223		
KEYPOINT	219	USED FOR KEYPOINT(S)	226		
KEYPOINT	222	USED FOR KEYPOINT(S)	227		
KEYPOINT	224	USED FOR KEYPOINT(S)	229		
KEYPOINT	232	USED FOR KEYPOINT(S)	237		
KEYPOINT	233	USED FOR KEYPOINT(S)	240		
KEYPOINT	235	USED FOR KEYPOINT(S)	242		
KEYPOINT	238	USED FOR KEYPOINT(S)	243		
KEYPOINT	239	USED FOR KEYPOINT(S)	246		
KEYPOINT	241	USED FOR KEYPOINT(S)	248		
KEYPOINT	244	USED FOR KEYPOINT(S)	249		
KEYPOINT	245	USED FOR KEYPOINT(S)	252		
KEYPOINT	247	USED FOR KEYPOINT(S)	254		
LINE	154	USED FOR LINE(S)	297		
LINE	172	USED FOR LINE(S)	298		
LINE	174	USED FOR LINE(S)	240	292	
LINE	233	USED FOR LINE(S)	257		
LINE	236	USED FOR LINE(S)	256		
LINE	239	USED FOR LINE(S)	290		
LINE	241	USED FOR LINE(S)	289	306	359
LINE	243	USED FOR LINE(S)	314		
LINE	244	USED FOR LINE(S)	313		
LINE	259	USED FOR LINE(S)	330		
LINE	262	USED FOR LINE(S)	271	325	345
LINE	263	USED FOR LINE(S)	272		
LINE	264	USED FOR LINE(S)	273		

NODE 10349	USED FOR NODES	10521
NODE 9789	USED FOR NODES	10355
NODE 10513	USED FOR NODES	10631
NODE 8703	USED FOR NODES	9752
NODE 10514	USED FOR NODES	10632
NODE 10515	USED FOR NODES	10633
NODE 10501	USED FOR NODES	10608
NODE 8482	USED FOR NODES	10070
NODE 8483	USED FOR NODES	10071
NODE 8484	USED FOR NODES	10072
NODE 10076	USED FOR NODES	10740
NODE 10077	USED FOR NODES	10741
NODE 10078	USED FOR NODES	10742
NODE 10817	USED FOR NODES	10990
NODE 10721	USED FOR NODES	10821
NODE 10746	USED FOR NODES	10833
NODE 10747	USED FOR NODES	10834
NODE 10748	USED FOR NODES	10835
NODE 10839	USED FOR NODES	11012
NODE 10840	USED FOR NODES	11013
NODE 10841	USED FOR NODES	11014
NODE 8777	USED FOR NODES	9796
NODE 8778	USED FOR NODES	9797
NODE 10033	USED FOR NODES	10726
NODE 8779	USED FOR NODES	9798
NODE 10981	USED FOR NODES	11299
NODE 11018	USED FOR NODES	11331
NODE 11019	USED FOR NODES	11332
NODE 11020	USED FOR NODES	11333
NODE 8396	USED FOR NODES	10044
NODE 9764	USED FOR NODES	10313
NODE 10324	USED FOR NODES	10497
NODE 10350	USED FOR NODES	10522
NODE 10351	USED FOR NODES	10523
NODE 10352	USED FOR NODES	10524
NODE 9790	USED FOR NODES	10356
NODE 9791	USED FOR NODES	10357
NODE 9792	USED FOR NODES	10358
NODE 8704	USED FOR NODES	9753
NODE 10516	USED FOR NODES	10634
NODE 10502	USED FOR NODES	10609
NODE 10517	USED FOR NODES	10635
NODE 10518	USED FOR NODES	10636
NODE 8470	USED FOR NODES	10061
NODE 8471	USED FOR NODES	10062
NODE 8472	USED FOR NODES	10063
NODE 10064	USED FOR NODES	10731
NODE 10065	USED FOR NODES	10732
NODE 10066	USED FOR NODES	10733
NODE 9783	USED FOR NODES	10346
NODE 10815	USED FOR NODES	10982
NODE 10719	USED FOR NODES	10818
NODE 10734	USED FOR NODES	10824
NODE 10735	USED FOR NODES	10825
NODE 10736	USED FOR NODES	10826
NODE 10827	USED FOR NODES	11003
NODE 10828	USED FOR NODES	11004
NODE 10829	USED FOR NODES	11005
NODE 8768	USED FOR NODES	9784
NODE 10507	USED FOR NODES	10622
NODE 8769	USED FOR NODES	9785
NODE 10031	USED FOR NODES	10722
NODE 10979	USED FOR NODES	11286
NODE 10508	USED FOR NODES	10623
NODE 10509	USED FOR NODES	10624
NODE 11006	USED FOR NODES	11322
NODE 11007	USED FOR NODES	11323
NODE 11008	USED FOR NODES	11324
NODE 8770	USED FOR NODES	9786
NODE 8394	USED FOR NODES	10034

LINE	267	USED FOR LINE(S)	302		
LINE	268	USED FOR LINE(S)	300		
LINE	269	USED FOR LINE(S)	283	335	366
LINE	270	USED FOR LINE(S)	346		
LINE	282	USED FOR LINE(S)	365		
LINE	305	USED FOR LINE(S)	358		
LINE	307	USED FOR LINE(S)	354	372	439
LINE	308	USED FOR LINE(S)	396		
LINE	309	USED FOR LINE(S)	395		
LINE	315	USED FOR LINE(S)	414		
LINE	319	USED FOR LINE(S)	340	413	431
LINE	320	USED FOR LINE(S)	341		
LINE	331	USED FOR LINE(S)	367		
LINE	336	USED FOR LINE(S)	353	421	441
LINE	339	USED FOR LINE(S)	432		
LINE	352	USED FOR LINE(S)	440		
LINE	371	USED FOR LINE(S)	438		
LINE	377	USED FOR LINE(S)	437	462	
LINE	382	USED FOR LINE(S)	468		
LINE	383	USED FOR LINE(S)	467		
LINE	401	USED FOR LINE(S)	452		
LINE	403	USED FOR LINE(S)	451		
LINE	408	USED FOR LINE(S)	429	447	
LINE	409	USED FOR LINE(S)	430		
LINE	416	USED FOR LINE(S)	442		
LINE	422	USED FOR LINE(S)	434		
LINE	427	USED FOR LINE(S)	445		
LINE	428	USED FOR LINE(S)	446		
LINE	435	USED FOR LINE(S)	457		
LINE	436	USED FOR LINE(S)	463		
LINE	444	USED FOR LINE(S)	471		
LINE	449	USED FOR LINE(S)	473		
LINE	450	USED FOR LINE(S)	472		
LINE	454	USED FOR LINE(S)	478		
LINE	455	USED FOR LINE(S)	477		
LINE	458	USED FOR LINE(S)	509		
LINE	459	USED FOR LINE(S)	515		
LINE	460	USED FOR LINE(S)	514		
LINE	464	USED FOR LINE(S)	520		
LINE	465	USED FOR LINE(S)	519		
LINE	470	USED FOR LINE(S)	484		
LINE	475	USED FOR LINE(S)	486		
LINE	476	USED FOR LINE(S)	485		
LINE	480	USED FOR LINE(S)	491		
LINE	481	USED FOR LINE(S)	490		
LINE	483	USED FOR LINE(S)	497		
LINE	488	USED FOR LINE(S)	499		
LINE	489	USED FOR LINE(S)	498		
LINE	493	USED FOR LINE(S)	504		
LINE	494	USED FOR LINE(S)	503		
LINE	510	USED FOR LINE(S)	522		
LINE	511	USED FOR LINE(S)	528		
LINE	512	USED FOR LINE(S)	527		
LINE	516	USED FOR LINE(S)	533		
LINE	517	USED FOR LINE(S)	532		
LINE	523	USED FOR LINE(S)	535		
LINE	524	USED FOR LINE(S)	541		
LINE	525	USED FOR LINE(S)	540		
LINE	529	USED FOR LINE(S)	546		
LINE	530	USED FOR LINE(S)	545		
LINE	536	USED FOR LINE(S)	548		
LINE	537	USED FOR LINE(S)	554		
LINE	538	USED FOR LINE(S)	553		
LINE	542	USED FOR LINE(S)	559		
LINE	543	USED FOR LINE(S)	558		
AREA	123	USED FOR AREA(S)	230		
AREA	163	USED FOR AREA(S)	182		
AREA	176	USED FOR AREA(S)	226		
AREA	177	USED FOR AREA(S)	264		
AREA	193	USED FOR AREA(S)	282		

```

AREA 198 USED FOR AREA(S) 208
AREA 204 USED FOR AREA(S) 239
AREA 205 USED FOR AREA(S) 291
AREA 223 USED FOR AREA(S) 295
AREA 248 USED FOR AREA(S) 294
AREA 255 USED FOR AREA(S) 302
AREA 273 USED FOR AREA(S) 307
AREA 277 USED FOR AREA(S) 290
AREA 288 USED FOR AREA(S) 296
AREA 289 USED FOR AREA(S) 313
AREA 293 USED FOR AREA(S) 318
AREA 298 USED FOR AREA(S) 317
AREA 299 USED FOR AREA(S) 337
AREA 305 USED FOR AREA(S) 326
AREA 306 USED FOR AREA(S) 312
AREA 309 USED FOR AREA(S) 319
AREA 311 USED FOR AREA(S) 322
AREA 316 USED FOR AREA(S) 333
AREA 324 USED FOR AREA(S) 340
AREA 328 USED FOR AREA(S) 344
AREA 331 USED FOR AREA(S) 369
AREA 335 USED FOR AREA(S) 373
AREA 342 USED FOR AREA(S) 349
AREA 346 USED FOR AREA(S) 353
AREA 351 USED FOR AREA(S) 358
AREA 355 USED FOR AREA(S) 362
AREA 367 USED FOR AREA(S) 378
AREA 371 USED FOR AREA(S) 382
AREA 376 USED FOR AREA(S) 387
AREA 380 USED FOR AREA(S) 391
AREA 385 USED FOR AREA(S) 396
AREA 389 USED FOR AREA(S) 400

```

Clear 2-D mesh

```

SELECT      FOR ITEM=TYPE COMPONENT=
IN RANGE    1 TO      1 STEP      1

```

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

```

*** NOTE ***                      CP=    95.710   TIME= 11:20:18
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP=    95.720   TIME= 11:20:18
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP=    95.720   TIME= 11:20:18
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP=    95.730   TIME= 11:20:18
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP=    95.730   TIME= 11:20:18
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP=    95.750   TIME= 11:20:18
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP=    95.760   TIME= 11:20:18
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only
elements are deleted.

```

*** NOTE *** CP= 95.770 TIME= 11:20:18
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.790 TIME= 11:20:18
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.800 TIME= 11:20:18
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.810 TIME= 11:20:18
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.820 TIME= 11:20:18
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.820 TIME= 11:20:18
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.830 TIME= 11:20:18
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.830 TIME= 11:20:18
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.840 TIME= 11:20:18
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.850 TIME= 11:20:18
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.870 TIME= 11:20:18
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.890 TIME= 11:20:18
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.900 TIME= 11:20:18
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.910 TIME= 11:20:18
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.920 TIME= 11:20:18
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.940 TIME= 11:20:18
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.940 TIME= 11:20:18
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 95.950 TIME= 11:20:18
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only

elements are deleted.

*** NOTE *** CP= 95.950 TIME= 11:20:18
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only elements are deleted.

*** NOTE *** CP= 95.960 TIME= 11:20:18
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only elements are deleted.

*** NOTE *** CP= 95.960 TIME= 11:20:18
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only elements are deleted.

*** NOTE *** CP= 95.970 TIME= 11:20:18
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only elements are deleted.

*** NOTE *** CP= 95.980 TIME= 11:20:18
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only elements are deleted.

*** NOTE *** CP= 95.990 TIME= 11:20:18
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.000 TIME= 11:20:18
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.010 TIME= 11:20:18
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.020 TIME= 11:20:18
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.030 TIME= 11:20:18
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.050 TIME= 11:20:18
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.060 TIME= 11:20:18
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.090 TIME= 11:20:18
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.110 TIME= 11:20:18
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only elements are deleted.

*** NOTE *** CP= 96.140 TIME= 11:20:18
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation

Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 9886 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 9886 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

81 NODES (OF 9886 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 64
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

297 NODES (OF 9886 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 256

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11438 STEP 1

9886 NODES (OF 9886 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE *** CP= 135.120 TIME= 11:20:57
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 135.650

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 11:20:58 JUL 24, 1995 CP= 135.650
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

872 ELEMENTS (OF 8808 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

914 NODES (OF 9886 DEFINED) SELECTED FROM
872 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c21a5a.sub

*** WARNING *** CP= 136.090 TIME= 11:20:58
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 872 NUMBER OF NODES= 914
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 9734 STEP 1

8808 ELEMENTS (OF 8808 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11438 STEP 1

9886 NODES (OF 9886 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1603.160

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 11:45:27 JUL 24, 1995 CP= 1603.160
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 9735 c21a5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 9735

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 9735
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

872 ELEMENTS (OF 8809 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 9735 STEP 1

7937 ELEMENTS (OF 7937 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1604.030

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 1604.040 TIME= 11:45:28
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.64 AND 308.64
KABS= 0. TOLERANCE= 1.54319

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

63 NODES (OF 9886 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 11438 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.36 AND -991.36
KABS= 0. TOLERANCE= 4.95682

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

63 NODES (OF 9886 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 11438 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11438 STEP 1

9886 NODES (OF 9886 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 1606.290 TIME= 11:45:30

All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 11:45:30 JUL 24, 1995 CP= 1606.290
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO273.15

NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 1608.100 TIME= 11:45:32
This load step will be a static (steady-state) step.

*** NOTE *** CP= 1608.110 TIME= 11:45:32
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER. 1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .58049E+06

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.49730E-09	IXX = .1214E+12	IXX = .7651E+11
YC = -.278.15	IYY = .8052E+08	IYY = .8052E+08
ZC = .82354E-16	IZZ = .1215E+12	IZZ = .7658E+11
	IXY = -.2167	IXY = -.1364
	IYZ = .8626E-07	IYZ = .7297E-07
	IZX = -.4165E-09	IZX = -.4165E-09

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
2 580485.

Range of element maximum matrix coefficients in global coordinates
Maximum= 338.21559 at element 8619.
Minimum= 3.081521616E-08 at element 9735.

*** WARNING *** CP= 1652.670 TIME= 11:46:20
Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	7936	SOLID70	32.030	.004
18	1	MATRIX50	.980	.980

Time at end of element matrix formulation CP= 1652.67.
HT FLOW CONVERGENCE VALUE= 130.1 CRITERION= .1301

Estimated number of active DOF= 9760.
Maximum wavefront= 1147.

Time at end of matrix triangularization CP= 1982.38.
 Equation solver maximum pivot= 1263.43966 at node 1033 TEMP.
 Equation solver minimum pivot= 0.919017749 at node 2046 TEMP.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
 HT FLOW CONVERGENCE VALUE= .8780E-01 CRITERION= .2675E-02
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3793E-02
 HT FLOW CONVERGENCE VALUE= .3755E-05 CRITERION= .2675E-02 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	7936	SOLID70	21.150	.003
18	1	MATRIX50	1.320	1.320

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	7936	SOLID70	1.740	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
 *** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
 ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 9760
 R.M.S. WAVEFRONT SIZE = 443.0

*** ANSYS BINARY FILE STATISTICS
 BUFFER SIZE USED= 4096
 13.000 MB WRITTEN ON ELEMENT MATRIX FILE: c21a5a.emat
 7.156 MB WRITTEN ON ELEMENT SAVED DATA FILE: c21a5a.esav
 26.594 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c21a5a.tri
 .016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c21a5a.dsub
 6.234 MB WRITTEN ON RESULTS FILE: c21a5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 2434.300

1 Store drift side temperature

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 12:01:11 JUL 24, 1995 CP= 2434.360
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
 TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.14055

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 2444.610

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1
7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1
8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1
9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1
10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1
11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1
12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT

KEYPOINTS) RELATED TO SELECTED AREA SET.

360 NODES (OF 9886 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 11438 BY 1
REAL= 26.1405506 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11438 STEP 1

9886 NODES (OF 9886 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 9735 STEP 1

7937 ELEMENTS (OF 7937 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 12:01:22 JUL 24, 1995 CP= 2445.330
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPE.TRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO.273.15
NEWTON-RAPHSON OPTION.PROGRAM CHOSEN

*** WARNING *** CP= 2447.140 TIME= 12:01:23
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2447.780 TIME= 12:01:24
The step data was checked and warning messages were found.
Please review output or errors file (c21a5a.err) for these warning messages.

*** NOTE *** CP= 2447.780 TIME= 12:01:24
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 12:01:24 JUL 24, 1995 CP= 2448.140
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
TIME AT END OF THE LOAD STEP.20000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 293.1 CRITERION= .2931
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 153.4
HT FLOW CONVERGENCE VALUE= 165.9 CRITERION= .2931
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -10.16
HT FLOW CONVERGENCE VALUE= 9.286 CRITERION= .2931
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4512
HT FLOW CONVERGENCE VALUE= .1199 CRITERION= .2931 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .20000E-05 TIME INC = .10000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

360 NODES (OF 9886 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 11438 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 360

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11438 STEP 1

9886 NODES (OF 9886 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS

FOR AUTOMATIC TIME STEPPING:

USE 80 SUBSTEPS AS A MAXIMUM
 USE 4 SUBSTEPS AS A MINIMUM
 USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
 AS THE STARTING TIME STEP SIZE.
 Begin Transient
 Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 9735 STEP 1

7937 ELEMENTS (OF 7937 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2771.050 TIME= 12:09:56
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 12:09:56 JUL 24, 1995 CP= 2771.050
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
 TIME AT END OF THE LOAD STEP. 31.558
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN

FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 567.7 CRITERION= .2931
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9735E-04
 HT FLOW CONVERGENCE VALUE= .1164E-03 CRITERION= .6388 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
 *** TIME = .394472 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9859E-05 OSCILLATION LIMIT = .3889E-05
 *** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6389
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1947E-03
 HT FLOW CONVERGENCE VALUE= .2329E-03 CRITERION= .6388 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
 *** TIME = .788942 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9858E-05 OSCILLATION LIMIT = .3889E-05
 *** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6389
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5841E-03
 HT FLOW CONVERGENCE VALUE= .6986E-03 CRITERION= .6388 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
 *** TIME = 1.97235 TIME INC = 1.18341
 *** RESPONSE EIGENVALUE = .9857E-05 OSCILLATION LIMIT = .1167E-04
 *** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6389
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1752E-02
 HT FLOW CONVERGENCE VALUE= .2096E-02 CRITERION= .6388 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
 *** TIME = 5.52258 TIME INC = 3.55023
 *** RESPONSE EIGENVALUE = .9855E-05 OSCILLATION LIMIT = .3499E-04
 *** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6389
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3893E-02
 HT FLOW CONVERGENCE VALUE= .4656E-02 CRITERION= .6387 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
 *** TIME = 13.4120 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9849E-05 OSCILLATION LIMIT = .7770E-04
 *** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6388
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3893E-02
 HT FLOW CONVERGENCE VALUE= .4655E-02 CRITERION= .6387 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
 *** TIME = 21.3014 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9842E-05 OSCILLATION LIMIT = .7764E-04
 *** AUTO TIME STEP: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6388
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2530E-02
 HT FLOW CONVERGENCE VALUE= .3025E-02 CRITERION= .6387 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
 *** TIME = 26.4295 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9836E-05 OSCILLATION LIMIT = .5044E-04
 *** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6387
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2529E-02
 HT FLOW CONVERGENCE VALUE= .3024E-02 CRITERION= .6386 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
 *** TIME = 31.5576 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9832E-05 OSCILLATION LIMIT = .5042E-04

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 12:44:06 JUL 24, 1995 CP= 4082.820
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 1135. CRITERION= .6387
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 13.56
 HT FLOW CONVERGENCE VALUE= 15.58 CRITERION= .4752
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3106
 HT FLOW CONVERGENCE VALUE= .4746 CRITERION= .4743
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6202E-02
 HT FLOW CONVERGENCE VALUE= .6738E-02 CRITERION= .4740 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 17
 *** TIME = 39478.6 TIME INC = 39447.0
 *** RESPONSE EIGENVALUE = .8028E-05 OSCILLATION LIMIT = .3167
 *** AUTO STEP TIME: NEXT TIME INC = 39447. UNCHANGED

HT FLOW CONVERGENCE VALUE= 770.6 CRITERION= .4940
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.873
 HT FLOW CONVERGENCE VALUE= 9.255 CRITERION= .4212
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1457
 HT FLOW CONVERGENCE VALUE= .2626 CRITERION= .4229 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 19
 *** TIME = 78925.6 TIME INC = 39447.0
 *** RESPONSE EIGENVALUE = .4823E-05 OSCILLATION LIMIT = .1902
 *** AUTO TIME STEP: NEXT TIME INC = .10367E+06 INCREASED (FACTOR = 2.6281)

HT FLOW CONVERGENCE VALUE= 656.1 CRITERION= .4564
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.636
 HT FLOW CONVERGENCE VALUE= 16.48 CRITERION= .3843
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3578
 HT FLOW CONVERGENCE VALUE= .7098 CRITERION= .3872
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1348E-01
 HT FLOW CONVERGENCE VALUE= .1998E-01 CRITERION= .3869 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 22
 *** TIME = 182598. TIME INC = 103672.
 *** RESPONSE EIGENVALUE = .2503E-05 OSCILLATION LIMIT = .2595
 *** AUTO STEP TIME: NEXT TIME INC = .10367E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 566.8 CRITERION= .4275
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.761
 HT FLOW CONVERGENCE VALUE= 11.77 CRITERION= .3736
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2141
 HT FLOW CONVERGENCE VALUE= .4576 CRITERION= .3759
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8446E-02
 HT FLOW CONVERGENCE VALUE= .1401E-01 CRITERION= .3757 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 25
 *** TIME = 286270. TIME INC = 103672.
 *** RESPONSE EIGENVALUE = .1208E-05 OSCILLATION LIMIT = .1253
 *** AUTO TIME STEP: NEXT TIME INC = .31102E+06 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 532.8 CRITERION= .4154
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 9.784
 HT FLOW CONVERGENCE VALUE= 26.66 CRITERION= .3641
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6600

HT FLOW CONVERGENCE VALUE= 1.483 CRITERION= .3669
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4637E-01
 HT FLOW CONVERGENCE VALUE= .9803E-01 CRITERION= .3665 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 28
 *** TIME = 597286. TIME INC = 311016.
 *** RESPONSE EIGENVALUE = .7123E-06 OSCILLATION LIMIT = .2215
 *** AUTO TIME STEP: NEXT TIME INC = .70193E+06 INCREASED (FACTOR = 2.2569)

HT FLOW CONVERGENCE VALUE= 487.7 CRITERION= .3953
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 14.56
 HT FLOW CONVERGENCE VALUE= 39.78 CRITERION= .3569
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.086
 HT FLOW CONVERGENCE VALUE= 2.437 CRITERION= .3587
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.1081
 HT FLOW CONVERGENCE VALUE= .2737 CRITERION= .3583 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 31
 *** TIME = .129921E+07 TIME INC = 701927.
 *** RESPONSE EIGENVALUE = .3805E-06 OSCILLATION LIMIT = .2671
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.1240)

HT FLOW CONVERGENCE VALUE= 441.4 CRITERION= .3749
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 9.435
 HT FLOW CONVERGENCE VALUE= 28.68 CRITERION= .3545
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7879
 HT FLOW CONVERGENCE VALUE= 1.732 CRITERION= .3552
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7537E-01
 HT FLOW CONVERGENCE VALUE= .1926 CRITERION= .3550 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 34
 *** TIME = .208815E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2190E-06 OSCILLATION LIMIT = .1728
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 421.0 CRITERION= .3660
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.156
 HT FLOW CONVERGENCE VALUE= 21.35 CRITERION= .3534
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5648
 HT FLOW CONVERGENCE VALUE= 1.229 CRITERION= .3539
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5251E-01
 HT FLOW CONVERGENCE VALUE= .1338 CRITERION= .3538 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 37
 *** TIME = .287709E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1489E-06 OSCILLATION LIMIT = .1175
 *** AUTO TIME STEP: NEXT TIME INC = .27870E+06 DECREASED (FACTOR = .3533)

HT FLOW CONVERGENCE VALUE= 415.5 CRITERION= .3638
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.174
 HT FLOW CONVERGENCE VALUE= 6.383 CRITERION= .3541
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1329
 HT FLOW CONVERGENCE VALUE= .2850 CRITERION= .3545 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 39
 *** TIME = .315579E+07 TIME INC = 278698.
 *** RESPONSE EIGENVALUE = .1217E-06 OSCILLATION LIMIT = .3391E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 14:05:55 JUL 24, 1995 CP= 7169.650
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 414.6 CRITERION= .3625
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.040

HT FLOW CONVERGENCE VALUE= 5.955 CRITERION= .3535
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1223
 HT FLOW CONVERGENCE VALUE= .2613 CRITERION= .3538 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 41
 *** TIME = .343449E+07 TIME INC = 278698.
 *** RESPONSE EIGENVALUE = .1120E-06 OSCILLATION LIMIT = .3121E-01
 *** AUTO STEP TIME: NEXT TIME INC = .27870E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 414.1 CRITERION= .3628
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.919
 HT FLOW CONVERGENCE VALUE= 5.577 CRITERION= .3544
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1140
 HT FLOW CONVERGENCE VALUE= .2429 CRITERION= .3547 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 43
 *** TIME = .371319E+07 TIME INC = 278698.
 *** RESPONSE EIGENVALUE = .1038E-06 OSCILLATION LIMIT = .2894E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.8308)

HT FLOW CONVERGENCE VALUE= 413.7 CRITERION= .3616
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.925
 HT FLOW CONVERGENCE VALUE= 14.37 CRITERION= .3542
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3587
 HT FLOW CONVERGENCE VALUE= .7657 CRITERION= .3544
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3190E-01
 HT FLOW CONVERGENCE VALUE= .8070E-01 CRITERION= .3543 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 46
 *** TIME = .450213E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .9142E-07 OSCILLATION LIMIT = .7212E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 413.7 CRITERION= .3616
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.299
 HT FLOW CONVERGENCE VALUE= 28.83 CRITERION= .3577
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8098
 HT FLOW CONVERGENCE VALUE= 4.235 CRITERION= .3554
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1345
 HT FLOW CONVERGENCE VALUE= .8149 CRITERION= .3555
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2768E-01
 HT FLOW CONVERGENCE VALUE= .1648 CRITERION= .3555 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 50
 *** TIME = .529107E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7474E-07 OSCILLATION LIMIT = .5897E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51024E+06 DECREASED (FACTOR = .6467)

HT FLOW CONVERGENCE VALUE= 412.8 CRITERION= .3598
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.323
 HT FLOW CONVERGENCE VALUE= 13.18 CRITERION= .3557
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3555
 HT FLOW CONVERGENCE VALUE= .9798 CRITERION= .3550
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2531E-01
 HT FLOW CONVERGENCE VALUE= .1235 CRITERION= .3550 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 53
 *** TIME = .580131E+07 TIME INC = 510242.
 *** RESPONSE EIGENVALUE = .6814E-07 OSCILLATION LIMIT = .3477E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51024E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 412.5 CRITERION= .3599
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.095
 HT FLOW CONVERGENCE VALUE= 21.08 CRITERION= .3569
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3724
 HT FLOW CONVERGENCE VALUE= 2.058 CRITERION= .3554
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4411E-01
 HT FLOW CONVERGENCE VALUE= .2852 CRITERION= .3555 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 6 COMPLETED. CUM ITER = 56

*** TIME = .631155E+07 TIME INC = 510242.
 *** RESPONSE EIGENVALUE = .6008E-07 OSCILLATION LIMIT = .3066E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 15:01:33 JUL 24, 1995 CP= 9270.630
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 411.5 CRITERION= .3587
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.898
 HT FLOW CONVERGENCE VALUE= 16.19 CRITERION= .3558
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3701
 HT FLOW CONVERGENCE VALUE= 1.565 CRITERION= .3547
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7309E-01
 HT FLOW CONVERGENCE VALUE= .2887 CRITERION= .3547 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 59
 *** TIME = .682179E+07 TIME INC = 510242.
 *** RESPONSE EIGENVALUE = .5517E-07 OSCILLATION LIMIT = .2815E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51024E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 410.8 CRITERION= .3590
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.742
 HT FLOW CONVERGENCE VALUE= 6.785 CRITERION= .3551
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2687
 HT FLOW CONVERGENCE VALUE= .4110 CRITERION= .3550
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2717E-01
 HT FLOW CONVERGENCE VALUE= .3601E-01 CRITERION= .3550 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 62
 *** TIME = .733203E+07 TIME INC = 510242.
 *** RESPONSE EIGENVALUE = .4938E-07 OSCILLATION LIMIT = .2520E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5462)

HT FLOW CONVERGENCE VALUE= 409.5 CRITERION= .3577
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.478
 HT FLOW CONVERGENCE VALUE= 17.18 CRITERION= .3547
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4237
 HT FLOW CONVERGENCE VALUE= 2.300 CRITERION= .3535
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9829E-01
 HT FLOW CONVERGENCE VALUE= .5281 CRITERION= .3536
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2860E-01
 HT FLOW CONVERGENCE VALUE= .1357 CRITERION= .3536 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 66
 *** TIME = .812097E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4367E-07 OSCILLATION LIMIT = .3445E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 407.4 CRITERION= .3576
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.359
 HT FLOW CONVERGENCE VALUE= 17.14 CRITERION= .3551
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3741
 HT FLOW CONVERGENCE VALUE= 1.175 CRITERION= .3537
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2944E-01
 HT FLOW CONVERGENCE VALUE= .1262 CRITERION= .3538 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 69
 *** TIME = .890991E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4063E-07 OSCILLATION LIMIT = .3205E-01
 *** AUTO TIME STEP: NEXT TIME INC = .55740E+06 DECREASED (FACTOR = .7065)

HT FLOW CONVERGENCE VALUE= 405.4 CRITERION= .3561
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.550
 HT FLOW CONVERGENCE VALUE= 17.48 CRITERION= .3541

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2545
 HT FLOW CONVERGENCE VALUE= 1.353 CRITERION= .3527
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4334E-01
 HT FLOW CONVERGENCE VALUE= .2233 CRITERION= .3528 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 72
 *** TIME = .946731E+07 TIME INC = 557397.
 *** RESPONSE EIGENVALUE = .3797E-07 OSCILLATION LIMIT = .2116E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 15:52:42 JUL 24, 1995 CP= 11199.380
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 404.3 CRITERION= .3564
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.475
 HT FLOW CONVERGENCE VALUE= 13.75 CRITERION= .3542
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2894
 HT FLOW CONVERGENCE VALUE= .8697 CRITERION= .3533
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3887E-01
 HT FLOW CONVERGENCE VALUE= .1049 CRITERION= .3533 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 75
 *** TIME = .100247E+08 TIME INC = 557397.
 *** RESPONSE EIGENVALUE = .3586E-07 OSCILLATION LIMIT = .1999E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55740E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 403.6 CRITERION= .3553
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.346
 HT FLOW CONVERGENCE VALUE= 8.718 CRITERION= .3527
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2012
 HT FLOW CONVERGENCE VALUE= .7899 CRITERION= .3522
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2082E-01
 HT FLOW CONVERGENCE VALUE= .1027 CRITERION= .3523 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 78
 *** TIME = .105821E+08 TIME INC = 557397.
 *** RESPONSE EIGENVALUE = .3279E-07 OSCILLATION LIMIT = .1828E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4154)

HT FLOW CONVERGENCE VALUE= 402.6 CRITERION= .3555
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.784
 HT FLOW CONVERGENCE VALUE= 16.26 CRITERION= .3541
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2557
 HT FLOW CONVERGENCE VALUE= 1.116 CRITERION= .3525
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5531E-01
 HT FLOW CONVERGENCE VALUE= .1312 CRITERION= .3526 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 81
 *** TIME = .113710E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2950E-07 OSCILLATION LIMIT = .2327E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 401.2 CRITERION= .3542
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.664
 HT FLOW CONVERGENCE VALUE= 17.12 CRITERION= .3532
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2580
 HT FLOW CONVERGENCE VALUE= 1.394 CRITERION= .3516
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3469E-01
 HT FLOW CONVERGENCE VALUE= .1736 CRITERION= .3517 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 84
 *** TIME = .121600E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2841E-07 OSCILLATION LIMIT = .2241E-01
 *** AUTO TIME STEP: NEXT TIME INC = .46309E+06 DECREASED (FACTOR = .5870)

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HT FLOW CONVERGENCE VALUE= 400.9    CRITERION= .3547
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9497
HT FLOW CONVERGENCE VALUE= 11.72    CRITERION= .3533
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1962
HT FLOW CONVERGENCE VALUE= .8487    CRITERION= .3524
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3474E-01
HT FLOW CONVERGENCE VALUE= .1017    CRITERION= .3524    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 87
*** TIME = .126231E+08 TIME INC = 463086.
*** RESPONSE EIGENVALUE = .2798E-07 OSCILLATION LIMIT = .1296E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303      VERSION=HP 9000/7XX 16:41:18 JUL 24, 1995 CP= 13035.530
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 401.2    CRITERION= .3540
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9727
HT FLOW CONVERGENCE VALUE= 8.426    CRITERION= .3520
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1408
HT FLOW CONVERGENCE VALUE= .4403    CRITERION= .3518
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1127E-01
HT FLOW CONVERGENCE VALUE= .3338E-01 CRITERION= .3518    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 90
*** TIME = .130862E+08 TIME INC = 463086.
*** RESPONSE EIGENVALUE = .2719E-07 OSCILLATION LIMIT = .1259E-01
*** AUTO STEP TIME: NEXT TIME INC = .46309E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 401.6    CRITERION= .3548
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9255
HT FLOW CONVERGENCE VALUE= 6.027    CRITERION= .3524
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1300
HT FLOW CONVERGENCE VALUE= .3121    CRITERION= .3524    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 92
*** TIME = .135492E+08 TIME INC = 463086.
*** RESPONSE EIGENVALUE = .2516E-07 OSCILLATION LIMIT = .1165E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.7037)

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HT FLOW CONVERGENCE VALUE= 401.5    CRITERION= .3539
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.527
HT FLOW CONVERGENCE VALUE= 8.504    CRITERION= .3513
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1990
HT FLOW CONVERGENCE VALUE= .3160    CRITERION= .3513    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 94
*** TIME = .143382E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2307E-07 OSCILLATION LIMIT = .1820E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 400.4    CRITERION= .3541
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.485
HT FLOW CONVERGENCE VALUE= 15.02    CRITERION= .3518
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2391
HT FLOW CONVERGENCE VALUE= 1.354    CRITERION= .3514
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3176E-01
HT FLOW CONVERGENCE VALUE= .1871    CRITERION= .3515    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 97
*** TIME = .151271E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2314E-07 OSCILLATION LIMIT = .1826E-01
*** AUTO STEP TIME: NEXT TIME INC = .65171E+06 DECREASED (FACTOR = .8261)

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HT FLOW CONVERGENCE VALUE= 399.1    CRITERION= .3530
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.276
HT FLOW CONVERGENCE VALUE= 13.44    CRITERION= .3509
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3063
HT FLOW CONVERGENCE VALUE= 1.150    CRITERION= .3504
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5003E-01
HT FLOW CONVERGENCE VALUE= .1823    CRITERION= .3505    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 100
*** TIME = .157788E+08 TIME INC = 651707.
*** RESPONSE EIGENVALUE = .2543E-07 OSCILLATION LIMIT = .1657E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 17:24:36 JUL 24, 1995 CP= 14677.570
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 398.3    CRITERION= .3534
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.321
HT FLOW CONVERGENCE VALUE= 15.14    CRITERION= .3520
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2170
HT FLOW CONVERGENCE VALUE= 1.076    CRITERION= .3507
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2556E-01
HT FLOW CONVERGENCE VALUE= .1494    CRITERION= .3507    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 103
*** TIME = .164305E+08 TIME INC = 651707.
*** RESPONSE EIGENVALUE = .2349E-07 OSCILLATION LIMIT = .1531E-01
*** AUTO STEP TIME: NEXT TIME INC = .65171E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 396.9    CRITERION= .3520
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.183
HT FLOW CONVERGENCE VALUE= 9.770    CRITERION= .3502
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1961
HT FLOW CONVERGENCE VALUE= .3982    CRITERION= .3495
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1583E-01
HT FLOW CONVERGENCE VALUE= .3125E-01 CRITERION= .3496    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 106
*** TIME = .170822E+08 TIME INC = 651707.
*** RESPONSE EIGENVALUE = .2129E-07 OSCILLATION LIMIT = .1388E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.2106)

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HT FLOW CONVERGENCE VALUE= 395.2    CRITERION= .3521
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.299
HT FLOW CONVERGENCE VALUE= 7.157    CRITERION= .3499
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1928
HT FLOW CONVERGENCE VALUE= .3491    CRITERION= .3497    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 108
*** TIME = .178712E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1876E-07 OSCILLATION LIMIT = .1480E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 393.7    CRITERION= .3508
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.311
HT FLOW CONVERGENCE VALUE= 9.734    CRITERION= .3486
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1639
HT FLOW CONVERGENCE VALUE= .8523    CRITERION= .3485
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2426E-01
HT FLOW CONVERGENCE VALUE= .1280    CRITERION= .3486    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 111
*** TIME = .186601E+08 TIME INC = 788940.

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*** RESPONSE EIGENVALUE = .1851E-07 OSCILLATION LIMIT = .1460E-01
 *** AUTO TIME STEP: NEXT TIME INC = .27447E+06 DECREASED (FACTOR = .3479)

HT FLOW CONVERGENCE VALUE= 392.4 CRITERION= .3511
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4989
 HT FLOW CONVERGENCE VALUE= 6.350 CRITERION= .3493
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3870E-01
 HT FLOW CONVERGENCE VALUE= .3336 CRITERION= .3491 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 113
 *** TIME = .189346E+08 TIME INC = 274465.
 *** RESPONSE EIGENVALUE = .2090E-07 OSCILLATION LIMIT = .5736E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:07:56 JUL 24, 1995 CP= 16318.940
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 391.9 CRITERION= .3502
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4873
 HT FLOW CONVERGENCE VALUE= 6.180 CRITERION= .3486
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3269E-01
 HT FLOW CONVERGENCE VALUE= .2856 CRITERION= .3483 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 115
 *** TIME = .192091E+08 TIME INC = 274465.
 *** RESPONSE EIGENVALUE = .2175E-07 OSCILLATION LIMIT = .5969E-02
 *** AUTO STEP TIME: NEXT TIME INC = .27447E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 391.7 CRITERION= .3508
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4603
 HT FLOW CONVERGENCE VALUE= 5.495 CRITERION= .3493
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2951E-01
 HT FLOW CONVERGENCE VALUE= .2275 CRITERION= .3489 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 117
 *** TIME = .194835E+08 TIME INC = 274465.
 *** RESPONSE EIGENVALUE = .2142E-07 OSCILLATION LIMIT = .5879E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.8745)

HT FLOW CONVERGENCE VALUE= 391.5 CRITERION= .3499
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.233
 HT FLOW CONVERGENCE VALUE= 18.79 CRITERION= .3499
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1613
 HT FLOW CONVERGENCE VALUE= 1.388 CRITERION= .3479
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2064E-01
 HT FLOW CONVERGENCE VALUE= .1811 CRITERION= .3481 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 120
 *** TIME = .202725E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1893E-07 OSCILLATION LIMIT = .1493E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 391.3 CRITERION= .3503
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.155
 HT FLOW CONVERGENCE VALUE= 12.17 CRITERION= .3491
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1472
 HT FLOW CONVERGENCE VALUE= .5225 CRITERION= .3486
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1348E-01
 HT FLOW CONVERGENCE VALUE= .3861E-01 CRITERION= .3486 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 123
 *** TIME = .210614E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1882E-07 OSCILLATION LIMIT = .1485E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51447E+06 DECREASED (FACTOR = .6521)

HT FLOW CONVERGENCE VALUE= 391.1 CRITERION= .3495
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7537
 HT FLOW CONVERGENCE VALUE= 5.530 CRITERION= .3477
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8717E-01
 HT FLOW CONVERGENCE VALUE= .3216 CRITERION= .3478 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 125
 *** TIME = .215759E+08 TIME INC = 514475.
 *** RESPONSE EIGENVALUE = .1758E-07 OSCILLATION LIMIT = .9044E-02
 *** AUTO STEP TIME: NEXT TIME INC = .51447E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 391.0 CRITERION= .3500
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7676
 HT FLOW CONVERGENCE VALUE= 4.512 CRITERION= .3483
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7977E-01
 HT FLOW CONVERGENCE VALUE= .1633 CRITERION= .3483 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 6 COMPLETED. CUM ITER = 127
 *** TIME = .220904E+08 TIME INC = 514475.
 *** RESPONSE EIGENVALUE = .1600E-07 OSCILLATION LIMIT = .8233E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:55:37 JUL 24, 1995 CP= 18130.170
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 390.6 CRITERION= .3492
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7636
 HT FLOW CONVERGENCE VALUE= 3.773 CRITERION= .3475
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5368E-01
 HT FLOW CONVERGENCE VALUE= .1324 CRITERION= .3475 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 129
 *** TIME = .226048E+08 TIME INC = 514475.
 *** RESPONSE EIGENVALUE = .1500E-07 OSCILLATION LIMIT = .7716E-02
 *** AUTO STEP TIME: NEXT TIME INC = .51447E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 390.2 CRITERION= .3496
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7106
 HT FLOW CONVERGENCE VALUE= 4.252 CRITERION= .3479
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1296
 HT FLOW CONVERGENCE VALUE= .4411 CRITERION= .3479
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2476E-01
 HT FLOW CONVERGENCE VALUE= .6757E-01 CRITERION= .3479 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 132
 *** TIME = .231193E+08 TIME INC = 514475.
 *** RESPONSE EIGENVALUE = .1501E-07 OSCILLATION LIMIT = .7724E-02
 *** AUTO STEP TIME: NEXT TIME INC = .51447E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 389.7 CRITERION= .3488
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7750
 HT FLOW CONVERGENCE VALUE= 5.084 CRITERION= .3470
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1383
 HT FLOW CONVERGENCE VALUE= .4777 CRITERION= .3471
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2485E-01
 HT FLOW CONVERGENCE VALUE= .6622E-01 CRITERION= .3471 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 135
 *** TIME = .236338E+08 TIME INC = 514475.
 *** RESPONSE EIGENVALUE = .1623E-07 OSCILLATION LIMIT = .8350E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5335)

HT FLOW CONVERGENCE VALUE= 389.4 CRITERION= .3493

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.167
 HT FLOW CONVERGENCE VALUE= 7.426 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1961
 HT FLOW CONVERGENCE VALUE= .5213 CRITERION= .3476
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2126E-01
 HT FLOW CONVERGENCE VALUE= .5013E-01 CRITERION= .3476 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 138
 *** TIME = .244227E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1626E-07 OSCILLATION LIMIT = .1283E-01
 *** AUTO TIME STEP: NEXT TIME INC = .41170E+06 DECREASED (FACTOR = .5218)

HT FLOW CONVERGENCE VALUE= 389.4 CRITERION= .3485
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6443
 HT FLOW CONVERGENCE VALUE= 3.708 CRITERION= .3468
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5982E-01
 HT FLOW CONVERGENCE VALUE= .1926 CRITERION= .3469 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 140
 *** TIME = .248344E+08 TIME INC = 411698.
 *** RESPONSE EIGENVALUE = .1613E-07 OSCILLATION LIMIT = .6642E-02
 *** AUTO STEP TIME: NEXT TIME INC = .41170E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 389.2 CRITERION= .3491
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6060
 HT FLOW CONVERGENCE VALUE= 6.455 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7640E-01
 HT FLOW CONVERGENCE VALUE= .5317 CRITERION= .3474
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6616E-02
 HT FLOW CONVERGENCE VALUE= .5085E-01 CRITERION= .3474 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 11 SUBSTEP 6 COMPLETED. CUM ITER = 143
 *** TIME = .252461E+08 TIME INC = 411698.
 *** RESPONSE EIGENVALUE = .1626E-07 OSCILLATION LIMIT = .6694E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:48:39 JUL 24, 1995 CP= 20138.220
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 388.9 CRITERION= .3483
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6443
 HT FLOW CONVERGENCE VALUE= 8.011 CRITERION= .3467
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8183E-01
 HT FLOW CONVERGENCE VALUE= .5875 CRITERION= .3465
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7563E-02
 HT FLOW CONVERGENCE VALUE= .4964E-01 CRITERION= .3466 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 146
 *** TIME = .256578E+08 TIME INC = 411698.
 *** RESPONSE EIGENVALUE = .1976E-07 OSCILLATION LIMIT = .8134E-02
 *** AUTO STEP TIME: NEXT TIME INC = .41170E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 388.7 CRITERION= .3488
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6578
 HT FLOW CONVERGENCE VALUE= 8.309 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1105
 HT FLOW CONVERGENCE VALUE= .6819 CRITERION= .3470
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1959E-01
 HT FLOW CONVERGENCE VALUE= .8399E-01 CRITERION= .3471 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 149
 *** TIME = .260695E+08 TIME INC = 411698.
 *** RESPONSE EIGENVALUE = .2112E-07 OSCILLATION LIMIT = .8696E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.9163)

HT FLOW CONVERGENCE VALUE= 388.4 CRITERION= .3480
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.232
 HT FLOW CONVERGENCE VALUE= 16.60 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2072
 HT FLOW CONVERGENCE VALUE= 1.173 CRITERION= .3460
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2140E-01
 HT FLOW CONVERGENCE VALUE= .1297 CRITERION= .3461 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 152
 *** TIME = .268584E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1946E-07 OSCILLATION LIMIT = .1535E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 387.6 CRITERION= .3482
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.139
 HT FLOW CONVERGENCE VALUE= 8.202 CRITERION= .3469
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1499
 HT FLOW CONVERGENCE VALUE= .4171 CRITERION= .3465
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1341E-01
 HT FLOW CONVERGENCE VALUE= .3755E-01 CRITERION= .3465 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 155
 *** TIME = .276474E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1647E-07 OSCILLATION LIMIT = .1300E-01
 *** AUTO TIME STEP: NEXT TIME INC = .75448E+06 DECREASED (FACTOR = .9563)

HT FLOW CONVERGENCE VALUE= 386.7 CRITERION= .3471
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9804
 HT FLOW CONVERGENCE VALUE= 6.630 CRITERION= .3457
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1164
 HT FLOW CONVERGENCE VALUE= .3716 CRITERION= .3455
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9491E-02
 HT FLOW CONVERGENCE VALUE= .2833E-01 CRITERION= .3455 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 158
 *** TIME = .284019E+08 TIME INC = 754484.
 *** RESPONSE EIGENVALUE = .1352E-07 OSCILLATION LIMIT = .1020E-01
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
 TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 906.986869 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 9735 STEP 1

7937 ELEMENTS (OF 7937 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 21975.440 TIME= 20:37:20

Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:37:20 JUL 24, 1995 CP= 21975.440
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
 TIME AT END OF THE LOAD STEP.31558E+08
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 385.9 CRITERION= .3474
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9407
 HT FLOW CONVERGENCE VALUE= 5.831 CRITERION= .3461
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1097
 HT FLOW CONVERGENCE VALUE= .3465 CRITERION= .3459
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8787E-02
 HT FLOW CONVERGENCE VALUE= .2991E-01 CRITERION= .3459 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 161
 *** TIME = .291564E+08 TIME INC = 754484.
 *** RESPONSE EIGENVALUE = .1251E-07 OSCILLATION LIMIT = .9439E-02
 *** AUTO STEP TIME: NEXT TIME INC = .75448E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 385.3 CRITERION= .3465
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8913
 HT FLOW CONVERGENCE VALUE= 4.694 CRITERION= .3451
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1626
 HT FLOW CONVERGENCE VALUE= .1955 CRITERION= .3450 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 163
 *** TIME = .299108E+08 TIME INC = 754484.
 *** RESPONSE EIGENVALUE = .1189E-07 OSCILLATION LIMIT = .8971E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0457)

HT FLOW CONVERGENCE VALUE= 384.7 CRITERION= .3468
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9271
 HT FLOW CONVERGENCE VALUE= 6.414 CRITERION= .3453
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8714E-01
 HT FLOW CONVERGENCE VALUE= .4397 CRITERION= .3453
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1019E-01
 HT FLOW CONVERGENCE VALUE= .4564E-01 CRITERION= .3454 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 166
 *** TIME = .306998E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1181E-07 OSCILLATION LIMIT = .9316E-02

*** AUTO TIME STEP: NEXT TIME INC = .42893E+06 DECREASED (FACTOR = .5437)

HT FLOW CONVERGENCE VALUE= 384.1 CRITERION= .3459
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5144
 HT FLOW CONVERGENCE VALUE= 6.272 CRITERION= .3448
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3345E-01
 HT FLOW CONVERGENCE VALUE= .3145 CRITERION= .3445 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 168
 *** TIME = .311287E+08 TIME INC = 428926.
 *** RESPONSE EIGENVALUE = .1318E-07 OSCILLATION LIMIT = .5652E-02
 *** AUTO STEP TIME: NEXT TIME INC = .42893E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 383.7 CRITERION= .3464
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5045
 HT FLOW CONVERGENCE VALUE= 7.372 CRITERION= .3456
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3265E-01
 HT FLOW CONVERGENCE VALUE= .3726 CRITERION= .3451
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1849E-02
 HT FLOW CONVERGENCE VALUE= .2252E-01 CRITERION= .3451 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 171
 *** TIME = .315576E+08 TIME INC = 428926.
 *** RESPONSE EIGENVALUE = .1406E-07 OSCILLATION LIMIT = .6032E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:20:40 JUL 24, 1995 CP= 23621.270
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 383.6 CRITERION= .3457
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4899
 HT FLOW CONVERGENCE VALUE= 7.536 CRITERION= .3449
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3380E-01
 HT FLOW CONVERGENCE VALUE= .3578 CRITERION= .3443
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2078E-02
 HT FLOW CONVERGENCE VALUE= .1994E-01 CRITERION= .3444 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 174
 *** TIME = .319866E+08 TIME INC = 428926.
 *** RESPONSE EIGENVALUE = .1429E-07 OSCILLATION LIMIT = .6128E-02
 *** AUTO STEP TIME: NEXT TIME INC = .42893E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 383.5 CRITERION= .3462
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4739
 HT FLOW CONVERGENCE VALUE= 6.582 CRITERION= .3453
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3129E-01
 HT FLOW CONVERGENCE VALUE= .2517 CRITERION= .3450 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 176
 *** TIME = .324155E+08 TIME INC = 428926.
 *** RESPONSE EIGENVALUE = .1437E-07 OSCILLATION LIMIT = .6164E-02
 *** AUTO TIME STEP: NEXT TIME INC = .12868E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 383.5 CRITERION= .3454
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.325
 HT FLOW CONVERGENCE VALUE= 11.01 CRITERION= .3444
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1500
 HT FLOW CONVERGENCE VALUE= .4972 CRITERION= .3442
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1186E-01
 HT FLOW CONVERGENCE VALUE= .4581E-01 CRITERION= .3442 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 179

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*** TIME = .337023E+08    TIME INC = .128678E+07
*** RESPONSE EIGENVALUE = .1268E-07    OSCILLATION LIMIT = .1632E-01
*** AUTO STEP TIME: NEXT TIME INC = .12868E+07    UNCHANGED

  HT FLOW CONVERGENCE VALUE= 383.7    CRITERION= .3459
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.360
  HT FLOW CONVERGENCE VALUE= 8.208    CRITERION= .3448
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1430
  HT FLOW CONVERGENCE VALUE= .4765    CRITERION= .3446
  EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1816E-01
  HT FLOW CONVERGENCE VALUE= .5311E-01    CRITERION= .3446    <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 182
*** TIME = .349890E+08    TIME INC = .128678E+07
*** RESPONSE EIGENVALUE = .1080E-07    OSCILLATION LIMIT = .1390E-01
*** AUTO TIME STEP: NEXT TIME INC = .38603E+07    INCREASED (FACTOR = 3.0000)

  HT FLOW CONVERGENCE VALUE= 383.5    CRITERION= .3446
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.675
  HT FLOW CONVERGENCE VALUE= 19.96    CRITERION= .3432
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5206
  HT FLOW CONVERGENCE VALUE= 2.958    CRITERION= .3431
  EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1192
  HT FLOW CONVERGENCE VALUE= .8331    CRITERION= .3433
  EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3902E-01
  HT FLOW CONVERGENCE VALUE= .2662    CRITERION= .3433    <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 186
*** TIME = .388494E+08    TIME INC = .386033E+07
*** RESPONSE EIGENVALUE = .1047E-07    OSCILLATION LIMIT = .4043E-01
*** AUTO STEP TIME: NEXT TIME INC = .38603E+07    UNCHANGED

  HT FLOW CONVERGENCE VALUE= 383.1    CRITERION= .3446
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.563
  HT FLOW CONVERGENCE VALUE= 26.33    CRITERION= .3454
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4096
  HT FLOW CONVERGENCE VALUE= 1.026    CRITERION= .3432
  EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5500E-01
  HT FLOW CONVERGENCE VALUE= .1640    CRITERION= .3432    <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 189
*** TIME = .427097E+08    TIME INC = .386033E+07
*** RESPONSE EIGENVALUE = .9748E-08    OSCILLATION LIMIT = .3763E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07    INCREASED (FACTOR = 2.0437)

  HT FLOW CONVERGENCE VALUE= 382.1    CRITERION= .3425
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.088
  HT FLOW CONVERGENCE VALUE= 34.68    CRITERION= .3438
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5913
  HT FLOW CONVERGENCE VALUE= 2.410    CRITERION= .3414
  EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1038
  HT FLOW CONVERGENCE VALUE= .5212    CRITERION= .3415
  EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3392E-01
  HT FLOW CONVERGENCE VALUE= .1331    CRITERION= .3415    <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 193
*** TIME = .505991E+08    TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .7833E-08    OSCILLATION LIMIT = .6179E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07    UNCHANGED

  HT FLOW CONVERGENCE VALUE= 382.0    CRITERION= .3418
  EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.130
  HT FLOW CONVERGENCE VALUE= 28.81    CRITERION= .3433
  EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4686
  HT FLOW CONVERGENCE VALUE= 1.281    CRITERION= .3411
  EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4126E-01
  HT FLOW CONVERGENCE VALUE= .2380    CRITERION= .3411    <<< CONVERGED
  >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 196
*** TIME = .584885E+08    TIME INC = .788940E+07

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*** RESPONSE EIGENVALUE = .6431E-08 OSCILLATION LIMIT = .5074E-01
 *** AUTO TIME STEP: NEXT TIME INC = .46267E+07 DECREASED (FACTOR = .5864)

HT FLOW CONVERGENCE VALUE= 382.5 CRITERION= .3406
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.800
 HT FLOW CONVERGENCE VALUE= 13.45 CRITERION= .3402
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3631
 HT FLOW CONVERGENCE VALUE= .6477 CRITERION= .3404
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2773E-01
 HT FLOW CONVERGENCE VALUE= .8131E-01 CRITERION= .3404 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 9 COMPLETED. CUM ITER = 199
 *** TIME = .631152E+08 TIME INC = .462673E+07
 *** RESPONSE EIGENVALUE = .5689E-08 OSCILLATION LIMIT = .2632E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 22:50:43 JUL 24, 1995 CP= 27019.540
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 384.5 CRITERION= .3411
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.687
 HT FLOW CONVERGENCE VALUE= 39.84 CRITERION= .3469
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4647
 HT FLOW CONVERGENCE VALUE= 6.899 CRITERION= .3403
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1475
 HT FLOW CONVERGENCE VALUE= 2.422 CRITERION= .3412
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6119E-01
 HT FLOW CONVERGENCE VALUE= .8278 CRITERION= .3409
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2329E-01
 HT FLOW CONVERGENCE VALUE= .2987 CRITERION= .3410 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 204
 *** TIME = .677420E+08 TIME INC = .462673E+07
 *** RESPONSE EIGENVALUE = .5135E-08 OSCILLATION LIMIT = .2376E-01
 *** AUTO STEP TIME: NEXT TIME INC = .46267E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 386.4 CRITERION= .3404
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.468
 HT FLOW CONVERGENCE VALUE= 25.12 CRITERION= .3435
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3557
 HT FLOW CONVERGENCE VALUE= 1.885 CRITERION= .3409
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5415E-01
 HT FLOW CONVERGENCE VALUE= .3339 CRITERION= .3410 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 207
 *** TIME = .723687E+08 TIME INC = .462673E+07
 *** RESPONSE EIGENVALUE = .4968E-08 OSCILLATION LIMIT = .2298E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.7052)

HT FLOW CONVERGENCE VALUE= 390.7 CRITERION= .3411
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.643
 HT FLOW CONVERGENCE VALUE= 29.70 CRITERION= .3438
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5575
 HT FLOW CONVERGENCE VALUE= 6.266 CRITERION= .3416
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2110
 HT FLOW CONVERGENCE VALUE= 2.616 CRITERION= .3421
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9165E-01
 HT FLOW CONVERGENCE VALUE= .9973 CRITERION= .3419
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3753E-01
 HT FLOW CONVERGENCE VALUE= .4011 CRITERION= .3420
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1539E-01
 HT FLOW CONVERGENCE VALUE= .1586 CRITERION= .3419 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 213

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*** TIME = .802581E+08    TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .3696E-08    OSCILLATION LIMIT = .2916E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07    UNCHANGED

HT FLOW CONVERGENCE VALUE= 395.2    CRITERION= .3407
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.225
HT FLOW CONVERGENCE VALUE= 14.54    CRITERION= .3407
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3476
HT FLOW CONVERGENCE VALUE= .6111    CRITERION= .3414
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3281E-01
HT FLOW CONVERGENCE VALUE= .8157E-01    CRITERION= .3414    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 216
*** TIME = .881475E+08    TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .3432E-08    OSCILLATION LIMIT = .2708E-01
*** AUTO TIME STEP: NEXT TIME INC = .65253E+07    DECREASED (FACTOR = .8271)

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HT FLOW CONVERGENCE VALUE= 399.2    CRITERION= .3416
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.677
HT FLOW CONVERGENCE VALUE= 21.61    CRITERION= .3429
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4111
HT FLOW CONVERGENCE VALUE= 3.337    CRITERION= .3410
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7820E-01
HT FLOW CONVERGENCE VALUE= .7994    CRITERION= .3414
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1941E-01
HT FLOW CONVERGENCE VALUE= .1936    CRITERION= .3413    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 220
*** TIME = .946728E+08    TIME INC = .652535E+07
*** RESPONSE EIGENVALUE = .3050E-08    OSCILLATION LIMIT = .1990E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303      VERSION=HP 9000/7XX 23:55:19 JUL 24, 1995 CP= 29442.160
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 399.6    CRITERION= .3403
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.437
HT FLOW CONVERGENCE VALUE= 20.62    CRITERION= .3416
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3264
HT FLOW CONVERGENCE VALUE= 1.574    CRITERION= .3398
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4136E-01
HT FLOW CONVERGENCE VALUE= .2145    CRITERION= .3399    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 223
*** TIME = .101198E+09    TIME INC = .652535E+07
*** RESPONSE EIGENVALUE = .2967E-08    OSCILLATION LIMIT = .1936E-01
*** AUTO STEP TIME: NEXT TIME INC = .65253E+07    UNCHANGED

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HT FLOW CONVERGENCE VALUE= 399.7    CRITERION= .3401
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.287
HT FLOW CONVERGENCE VALUE= 18.16    CRITERION= .3404
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2687
HT FLOW CONVERGENCE VALUE= 1.172    CRITERION= .3398
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3037E-01
HT FLOW CONVERGENCE VALUE= .2012    CRITERION= .3399    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 226
*** TIME = .107724E+09    TIME INC = .652535E+07
*** RESPONSE EIGENVALUE = .2868E-08    OSCILLATION LIMIT = .1872E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07    INCREASED (FACTOR = 1.2090)

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HT FLOW CONVERGENCE VALUE= 400.2    CRITERION= .3386
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.706
HT FLOW CONVERGENCE VALUE= 19.31    CRITERION= .3400

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3407
 HT FLOW CONVERGENCE VALUE= 1.098 CRITERION= .3382
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2817E-01
 HT FLOW CONVERGENCE VALUE= .1119 CRITERION= .3382 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 229
 *** TIME = .115613E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2464E-08 OSCILLATION LIMIT = .1944E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 400.1 CRITERION= .3382
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.403
 HT FLOW CONVERGENCE VALUE= 29.41 CRITERION= .3411
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4284
 HT FLOW CONVERGENCE VALUE= 3.308 CRITERION= .3381
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1239
 HT FLOW CONVERGENCE VALUE= 1.094 CRITERION= .3384
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4948E-01
 HT FLOW CONVERGENCE VALUE= .3693 CRITERION= .3384
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1486E-01
 HT FLOW CONVERGENCE VALUE= .1351 CRITERION= .3385 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 234
 *** TIME = .123502E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2689E-08 OSCILLATION LIMIT = .2122E-01
 *** AUTO TIME STEP: NEXT TIME INC = .27281E+07 DECREASED (FACTOR = .3458)

HT FLOW CONVERGENCE VALUE= 402.0 CRITERION= .3378
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9226
 HT FLOW CONVERGENCE VALUE= 13.26 CRITERION= .3382
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2370
 HT FLOW CONVERGENCE VALUE= 1.873 CRITERION= .3379
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4526E-01
 HT FLOW CONVERGENCE VALUE= .4219 CRITERION= .3380
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1207E-01
 HT FLOW CONVERGENCE VALUE= .1036 CRITERION= .3380 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 238
 *** TIME = .126230E+09 TIME INC = .272811E+07
 *** RESPONSE EIGENVALUE = .4231E-08 OSCILLATION LIMIT = .1154E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:52:00 JUL 25, 1995 CP= 31577.020
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 403.9 CRITERION= .3387
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.064
 HT FLOW CONVERGENCE VALUE= 11.42 CRITERION= .3388
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3241
 HT FLOW CONVERGENCE VALUE= .9810 CRITERION= .3388
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5905E-01
 HT FLOW CONVERGENCE VALUE= .6754E-01 CRITERION= .3389 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 241
 *** TIME = .128959E+09 TIME INC = .272811E+07
 *** RESPONSE EIGENVALUE = .4625E-08 OSCILLATION LIMIT = .1262E-01
 *** AUTO STEP TIME: NEXT TIME INC = .27281E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 405.6 CRITERION= .3383
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.154
 HT FLOW CONVERGENCE VALUE= 9.245 CRITERION= .3392
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1370
 HT FLOW CONVERGENCE VALUE= .4037 CRITERION= .3384
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1034E-01

HT FLOW CONVERGENCE VALUE= .2616E-01 CRITERION= .3384 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 244
 *** TIME = .131687E+09 TIME INC = .272811E+07
 *** RESPONSE EIGENVALUE = .3157E-08 OSCILLATION LIMIT = .8612E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.8919)

HT FLOW CONVERGENCE VALUE= 407.3 CRITERION= .3385
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.251
 HT FLOW CONVERGENCE VALUE= 21.94 CRITERION= .3414
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3291
 HT FLOW CONVERGENCE VALUE= 1.409 CRITERION= .3389
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4592E-01
 HT FLOW CONVERGENCE VALUE= .1578 CRITERION= .3390 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 247
 *** TIME = .139576E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1976E-08 OSCILLATION LIMIT = .1559E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 410.1 CRITERION= .3378
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.120
 HT FLOW CONVERGENCE VALUE= 16.91 CRITERION= .3389
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4201
 HT FLOW CONVERGENCE VALUE= 3.825 CRITERION= .3378
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1894
 HT FLOW CONVERGENCE VALUE= .7294 CRITERION= .3381
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6022E-01
 HT FLOW CONVERGENCE VALUE= .6917E-01 CRITERION= .3381 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 251
 *** TIME = .147465E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2276E-08 OSCILLATION LIMIT = .1796E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51613E+07 DECREASED (FACTOR = .6542)

HT FLOW CONVERGENCE VALUE= 412.1 CRITERION= .3384
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.528
 HT FLOW CONVERGENCE VALUE= 10.62 CRITERION= .3397
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1159
 HT FLOW CONVERGENCE VALUE= .5001 CRITERION= .3384
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5571E-02
 HT FLOW CONVERGENCE VALUE= .3060E-01 CRITERION= .3385 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 254
 *** TIME = .152627E+09 TIME INC = .516129E+07
 *** RESPONSE EIGENVALUE = .1855E-08 OSCILLATION LIMIT = .9573E-02
 *** AUTO STEP TIME: NEXT TIME INC = .51613E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 413.2 CRITERION= .3375
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.225
 HT FLOW CONVERGENCE VALUE= 10.25 CRITERION= .3382
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1752
 HT FLOW CONVERGENCE VALUE= 1.173 CRITERION= .3371
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2493E-01
 HT FLOW CONVERGENCE VALUE= .1865 CRITERION= .3372 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 6 COMPLETED. CUM ITER = 257
 *** TIME = .157788E+09 TIME INC = .516129E+07
 *** RESPONSE EIGENVALUE = .1512E-08 OSCILLATION LIMIT = .7805E-02

***** ANSYS SOLVE. COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 01:53:04 JUL 25, 1995 CP= 33882.780
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 412.9 CRITERION= .3375
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.163
 HT FLOW CONVERGENCE VALUE= 14.87 CRITERION= .3387
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1847
 HT FLOW CONVERGENCE VALUE= 1.017 CRITERION= .3370
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1495E-01
 HT FLOW CONVERGENCE VALUE= .9295E-01 CRITERION= .3370 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 260
 *** TIME = .162949E+09 TIME INC = .516129E+07
 *** RESPONSE EIGENVALUE = .1602E-08 OSCILLATION LIMIT = .8271E-02
 *** AUTO STEP TIME: NEXT TIME INC = .51613E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 412.2 CRITERION= .3361
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.106
 HT FLOW CONVERGENCE VALUE= 9.198 CRITERION= .3364
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1155
 HT FLOW CONVERGENCE VALUE= .3028 CRITERION= .3356 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 262
 *** TIME = .168111E+09 TIME INC = .516129E+07
 *** RESPONSE EIGENVALUE = .1619E-08 OSCILLATION LIMIT = .8358E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.5286)

HT FLOW CONVERGENCE VALUE= 411.4 CRITERION= .3355
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.601
 HT FLOW CONVERGENCE VALUE= 14.57 CRITERION= .3348
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1890
 HT FLOW CONVERGENCE VALUE= .9540 CRITERION= .3348
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1832E-01
 HT FLOW CONVERGENCE VALUE= .1307 CRITERION= .3349 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 265
 *** TIME = .176000E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1543E-08 OSCILLATION LIMIT = .1217E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 409.8 CRITERION= .3336
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.736
 HT FLOW CONVERGENCE VALUE= 13.20 CRITERION= .3333
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1923
 HT FLOW CONVERGENCE VALUE= .7813 CRITERION= .3327
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1400E-01
 HT FLOW CONVERGENCE VALUE= .6405E-01 CRITERION= .3328 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 268
 *** TIME = .183889E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1492E-08 OSCILLATION LIMIT = .1177E-01
 *** AUTO TIME STEP: NEXT TIME INC = .54562E+07 DECREASED (FACTOR = .6916)

HT FLOW CONVERGENCE VALUE= 408.0 CRITERION= .3330
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.161
 HT FLOW CONVERGENCE VALUE= 8.863 CRITERION= .3328
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8434E-01
 HT FLOW CONVERGENCE VALUE= .3681 CRITERION= .3324
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5145E-02
 HT FLOW CONVERGENCE VALUE= .2046E-01 CRITERION= .3325 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 271
 *** TIME = .189346E+09 TIME INC = .545621E+07
 *** RESPONSE EIGENVALUE = .1441E-08 OSCILLATION LIMIT = .7861E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 02:39:23 JUL 25, 1995 CP= 35629.600
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 406.8 CRITERION= .3315
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.141
 HT FLOW CONVERGENCE VALUE= 15.12 CRITERION= .3323
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1760
 HT FLOW CONVERGENCE VALUE= 1.279 CRITERION= .3309
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1563E-01
 HT FLOW CONVERGENCE VALUE= .1548 CRITERION= .3310 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 274
 *** TIME = .194802E+09 TIME INC = .545621E+07
 *** RESPONSE EIGENVALUE = .1401E-08 OSCILLATION LIMIT = .7644E-02
 *** AUTO STEP TIME: NEXT TIME INC = .54562E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 405.9 CRITERION= .3313
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.088
 HT FLOW CONVERGENCE VALUE= 13.28 CRITERION= .3319
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1049
 HT FLOW CONVERGENCE VALUE= .8884 CRITERION= .3308
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1052E-01
 HT FLOW CONVERGENCE VALUE= .8579E-01 CRITERION= .3309 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 277
 *** TIME = .200258E+09 TIME INC = .545621E+07
 *** RESPONSE EIGENVALUE = .1481E-08 OSCILLATION LIMIT = .8082E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.4459)

HT FLOW CONVERGENCE VALUE= 405.4 CRITERION= .3296
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.581
 HT FLOW CONVERGENCE VALUE= 15.13 CRITERION= .3308
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1393
 HT FLOW CONVERGENCE VALUE= .7920 CRITERION= .3292
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1007E-01
 HT FLOW CONVERGENCE VALUE= .5707E-01 CRITERION= .3293 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 280
 *** TIME = .208147E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1440E-08 OSCILLATION LIMIT = .1136E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 404.8 CRITERION= .3293
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.432
 HT FLOW CONVERGENCE VALUE= 16.45 CRITERION= .3300
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3251
 HT FLOW CONVERGENCE VALUE= 1.679 CRITERION= .3290
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4010E-01
 HT FLOW CONVERGENCE VALUE= .2782 CRITERION= .3291 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 283
 *** TIME = .216037E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1542E-08 OSCILLATION LIMIT = .1216E-01
 *** AUTO TIME STEP: NEXT TIME INC = .48664E+07 DECREASED (FACTOR = .6168)

HT FLOW CONVERGENCE VALUE= 404.9 CRITERION= .3282
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9650
 HT FLOW CONVERGENCE VALUE= 11.78 CRITERION= .3289
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1112
 HT FLOW CONVERGENCE VALUE= .8387 CRITERION= .3281
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1225E-01
 HT FLOW CONVERGENCE VALUE= .8423E-01 CRITERION= .3282 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 286
 *** TIME = .220903E+09 TIME INC = .486637E+07
 *** RESPONSE EIGENVALUE = .1652E-08 OSCILLATION LIMIT = .8039E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

38303 VERSION=HP 9000/7XX 03:28:07 JUL 25, 1995 CP= 37472.890
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 405.4 CRITERION= .3285
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9061
HT FLOW CONVERGENCE VALUE= 8.845 CRITERION= .3289
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9854E-01
HT FLOW CONVERGENCE VALUE= .4078 CRITERION= .3285
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8306E-02
HT FLOW CONVERGENCE VALUE= .2908E-01 CRITERION= .3285 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 289
*** TIME = .225770E+09 TIME INC = .486637E+07
*** RESPONSE EIGENVALUE = .1534E-08 OSCILLATION LIMIT = .7463E-02
*** AUTO STEP TIME: NEXT TIME INC = .48664E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 405.9 CRITERION= .3276
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8756
HT FLOW CONVERGENCE VALUE= 8.307 CRITERION= .3282
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8093E-01
HT FLOW CONVERGENCE VALUE= .5638 CRITERION= .3275
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8286E-02
HT FLOW CONVERGENCE VALUE= .5274E-01 CRITERION= .3275 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 292
*** TIME = .230636E+09 TIME INC = .486637E+07
*** RESPONSE EIGENVALUE = .1231E-08 OSCILLATION LIMIT = .5990E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6212)

HT FLOW CONVERGENCE VALUE= 406.0 CRITERION= .3276
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.363
HT FLOW CONVERGENCE VALUE= 11.42 CRITERION= .3286
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1131
HT FLOW CONVERGENCE VALUE= .2991 CRITERION= .3275 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 294
*** TIME = .238525E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1133E-08 OSCILLATION LIMIT = .8938E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 406.1 CRITERION= .3264
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.300
HT FLOW CONVERGENCE VALUE= 15.87 CRITERION= .3271
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2616
HT FLOW CONVERGENCE VALUE= 1.477 CRITERION= .3261
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2523E-01
HT FLOW CONVERGENCE VALUE= .1959 CRITERION= .3263 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 297
*** TIME = .246415E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1171E-08 OSCILLATION LIMIT = .9242E-02
*** AUTO TIME STEP: NEXT TIME INC = .60461E+07 DECREASED (FACTOR = .7664)

HT FLOW CONVERGENCE VALUE= 406.1 CRITERION= .3265
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.004
HT FLOW CONVERGENCE VALUE= 11.68 CRITERION= .3276
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1303
HT FLOW CONVERGENCE VALUE= .5908 CRITERION= .3263
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1254E-01
HT FLOW CONVERGENCE VALUE= .4765E-01 CRITERION= .3264 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 300
*** TIME = .252461E+09 TIME INC = .604606E+07
*** RESPONSE EIGENVALUE = .1291E-08 OSCILLATION LIMIT = .7807E-02

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 04:14:12 JUL 25, 1995 CP= 39220.190
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 406.2 CRITERION= .3249
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9786
 HT FLOW CONVERGENCE VALUE= 8.248 CRITERION= .3253
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8566E-01
 HT FLOW CONVERGENCE VALUE= .4866 CRITERION= .3247
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7686E-02
 HT FLOW CONVERGENCE VALUE= .3899E-01 CRITERION= .3247 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 303
 *** TIME = .258507E+09 TIME INC = .604606E+07
 *** RESPONSE EIGENVALUE = .1446E-08 OSCILLATION LIMIT = .8742E-02
 *** AUTO STEP TIME: NEXT TIME INC = .60461E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 405.9 CRITERION= .3244
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9362
 HT FLOW CONVERGENCE VALUE= 9.317 CRITERION= .3248
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1145
 HT FLOW CONVERGENCE VALUE= .7840 CRITERION= .3240
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1306E-01
 HT FLOW CONVERGENCE VALUE= .9717E-01 CRITERION= .3241 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 306
 *** TIME = .264553E+09 TIME INC = .604606E+07
 *** RESPONSE EIGENVALUE = .1589E-08 OSCILLATION LIMIT = .9608E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3049)

HT FLOW CONVERGENCE VALUE= 405.2 CRITERION= .3223
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.196
 HT FLOW CONVERGENCE VALUE= 10.96 CRITERION= .3231
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1081
 HT FLOW CONVERGENCE VALUE= .5810 CRITERION= .3218
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8732E-02
 HT FLOW CONVERGENCE VALUE= .4413E-01 CRITERION= .3219 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 309
 *** TIME = .272442E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1556E-08 OSCILLATION LIMIT = .1228E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 404.1 CRITERION= .3212
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.160
 HT FLOW CONVERGENCE VALUE= 12.12 CRITERION= .3214
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1228
 HT FLOW CONVERGENCE VALUE= .8730 CRITERION= .3205
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1440E-01
 HT FLOW CONVERGENCE VALUE= .1039 CRITERION= .3206 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 312
 *** TIME = .280332E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1555E-08 OSCILLATION LIMIT = .1226E-01
 *** AUTO TIME STEP: NEXT TIME INC = .36867E+07 DECREASED (FACTOR = .4673)

HT FLOW CONVERGENCE VALUE= 402.2 CRITERION= .3194
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5821
 HT FLOW CONVERGENCE VALUE= 7.908 CRITERION= .3197
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5556E-01
 HT FLOW CONVERGENCE VALUE= .4295 CRITERION= .3190
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3401E-02
 HT FLOW CONVERGENCE VALUE= .2997E-01 CRITERION= .3190 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 315
 *** TIME = .284018E+09 TIME INC = .368669E+07

*** RESPONSE EIGENVALUE = .1656E-08 OSCILLATION LIMIT = .6104E-02
Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
769.132473 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 9735 STEP 1

7937 ELEMENTS (OF 7937 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 41063.680 TIME= 05:03:05
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 05:03:05 JUL 25, 1995 CP= 41063.680
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
TIME AT END OF THE LOAD STEP.31558E+09
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 401.1 CRITERION= .3192
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5611

HT FLOW CONVERGENCE VALUE= 9.282 CRITERION= .3197
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6157E-01
 HT FLOW CONVERGENCE VALUE= .5641 CRITERION= .3188
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6014E-02
 HT FLOW CONVERGENCE VALUE= .4722E-01 CRITERION= .3189 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 318
 *** TIME = .287705E+09 TIME INC = .368669E+07
 *** RESPONSE EIGENVALUE = .1641E-08 OSCILLATION LIMIT = .6051E-02
 *** AUTO STEP TIME: NEXT TIME INC = .36867E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 400.1 CRITERION= .3179
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5436
 HT FLOW CONVERGENCE VALUE= 8.418 CRITERION= .3185
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4718E-01
 HT FLOW CONVERGENCE VALUE= .3302 CRITERION= .3175
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1918E-02
 HT FLOW CONVERGENCE VALUE= .1565E-01 CRITERION= .3176 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 321
 *** TIME = .291392E+09 TIME INC = .368669E+07
 *** RESPONSE EIGENVALUE = .1635E-08 OSCILLATION LIMIT = .6029E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.1400)

HT FLOW CONVERGENCE VALUE= 399.3 CRITERION= .3173
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.091
 HT FLOW CONVERGENCE VALUE= 10.80 CRITERION= .3178
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8606E-01
 HT FLOW CONVERGENCE VALUE= .6272 CRITERION= .3167
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8300E-02
 HT FLOW CONVERGENCE VALUE= .5087E-01 CRITERION= .3167 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 324
 *** TIME = .299281E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1387E-08 OSCILLATION LIMIT = .1094E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 397.8 CRITERION= .3153
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.060
 HT FLOW CONVERGENCE VALUE= 9.812 CRITERION= .3155
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7584E-01
 HT FLOW CONVERGENCE VALUE= .4074 CRITERION= .3146
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3393E-02
 HT FLOW CONVERGENCE VALUE= .1938E-01 CRITERION= .3147 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 327
 *** TIME = .307171E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1227E-08 OSCILLATION LIMIT = .9677E-02
 *** AUTO TIME STEP: NEXT TIME INC = .42027E+07 DECREASED (FACTOR = .5327)

HT FLOW CONVERGENCE VALUE= 396.2 CRITERION= .3148
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5520
 HT FLOW CONVERGENCE VALUE= 4.657 CRITERION= .3148
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3589E-01
 HT FLOW CONVERGENCE VALUE= .1473 CRITERION= .3145 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 329
 *** TIME = .311373E+09 TIME INC = .420271E+07
 *** RESPONSE EIGENVALUE = .1212E-08 OSCILLATION LIMIT = .5094E-02
 *** AUTO STEP TIME: NEXT TIME INC = .42027E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 395.2 CRITERION= .3134
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5437
 HT FLOW CONVERGENCE VALUE= 4.027 CRITERION= .3134
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2832E-01
 HT FLOW CONVERGENCE VALUE= .1207 CRITERION= .3131 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 6 COMPLETED. CUM ITER = 331
 *** TIME = .315576E+09 TIME INC = .420271E+07
 *** RESPONSE EIGENVALUE = .1184E-08 OSCILLATION LIMIT = .4977E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 05:56:19 JUL 25, 1995 CP= 43081.660
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 394.3 CRITERION= .3133
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5360
 HT FLOW CONVERGENCE VALUE= 4.474 CRITERION= .3133
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2875E-01
 HT FLOW CONVERGENCE VALUE= .2156 CRITERION= .3129 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 333
 *** TIME = .319779E+09 TIME INC = .420271E+07
 *** RESPONSE EIGENVALUE = .1042E-08 OSCILLATION LIMIT = .4378E-02
 *** AUTO STEP TIME: NEXT TIME INC = .42027E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 393.3 CRITERION= .3120
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5287
 HT FLOW CONVERGENCE VALUE= 6.844 CRITERION= .3122
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4693E-01
 HT FLOW CONVERGENCE VALUE= .3019 CRITERION= .3116 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 335
 *** TIME = .323981E+09 TIME INC = .420271E+07
 *** RESPONSE EIGENVALUE = .1003E-08 OSCILLATION LIMIT = .4216E-02
 *** AUTO TIME STEP: NEXT TIME INC = .12608E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 392.3 CRITERION= .3111
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.548
 HT FLOW CONVERGENCE VALUE= 14.59 CRITERION= .3116
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1934
 HT FLOW CONVERGENCE VALUE= 1.446 CRITERION= .3102
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4903E-01
 HT FLOW CONVERGENCE VALUE= .3371 CRITERION= .3103
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1325E-01
 HT FLOW CONVERGENCE VALUE= .6757E-01 CRITERION= .3103 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 339
 *** TIME = .336590E+09 TIME INC = .126081E+08
 *** RESPONSE EIGENVALUE = .1032E-08 OSCILLATION LIMIT = .1301E-01
 *** AUTO STEP TIME: NEXT TIME INC = .12608E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 389.9 CRITERION= .3086
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.494
 HT FLOW CONVERGENCE VALUE= 23.06 CRITERION= .3109
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2670
 HT FLOW CONVERGENCE VALUE= 1.425 CRITERION= .3077
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2185E-01
 HT FLOW CONVERGENCE VALUE= .1431 CRITERION= .3079 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 342
 *** TIME = .349198E+09 TIME INC = .126081E+08
 *** RESPONSE EIGENVALUE = .1122E-08 OSCILLATION LIMIT = .1415E-01
 *** AUTO TIME STEP: NEXT TIME INC = .37824E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 387.9 CRITERION= .3051
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.114
 HT FLOW CONVERGENCE VALUE= 38.21 CRITERION= .3100
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5672
 HT FLOW CONVERGENCE VALUE= 8.007 CRITERION= .3026
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2383
 HT FLOW CONVERGENCE VALUE= 2.982 CRITERION= .3039

EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9383E-01
 HT FLOW CONVERGENCE VALUE= 1.104 CRITERION= .3035
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3460E-01
 HT FLOW CONVERGENCE VALUE= .4081 CRITERION= .3037
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1286E-01
 HT FLOW CONVERGENCE VALUE= .1610 CRITERION= .3036 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 348
 *** TIME = .387022E+09 TIME INC = .378244E+08
 *** RESPONSE EIGENVALUE = .1011E-08 OSCILLATION LIMIT = .3823E-01
 *** AUTO STEP TIME: NEXT TIME INC = .37824E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 383.5 CRITERION= .2996
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.616
 HT FLOW CONVERGENCE VALUE= 35.25 CRITERION= .3042
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4783
 HT FLOW CONVERGENCE VALUE= 2.677 CRITERION= .2976
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5810E-01
 HT FLOW CONVERGENCE VALUE= .3782 CRITERION= .2981
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9460E-02
 HT FLOW CONVERGENCE VALUE= .5958E-01 CRITERION= .2980 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 352
 *** TIME = .424847E+09 TIME INC = .378244E+08
 *** RESPONSE EIGENVALUE = .9390E-09 OSCILLATION LIMIT = .3552E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.0858)

HT FLOW CONVERGENCE VALUE= 378.9 CRITERION= .2914
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.573
 HT FLOW CONVERGENCE VALUE= 86.21 CRITERION= .3086
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.054
 HT FLOW CONVERGENCE VALUE= 15.42 CRITERION= .2838
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7387
 HT FLOW CONVERGENCE VALUE= 7.825 CRITERION= .2875
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3585
 HT FLOW CONVERGENCE VALUE= 3.468 CRITERION= .2861
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1992
 HT FLOW CONVERGENCE VALUE= 1.853 CRITERION= .2868
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1000
 HT FLOW CONVERGENCE VALUE= .9388 CRITERION= .2865
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5672E-01
 HT FLOW CONVERGENCE VALUE= .4845 CRITERION= .2866
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2807E-01
 HT FLOW CONVERGENCE VALUE= .2611 CRITERION= .2865 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 8
 *** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 360
 *** TIME = .503741E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9647E-09 OSCILLATION LIMIT = .7611E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 363.9 CRITERION= .2787
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.414
 HT FLOW CONVERGENCE VALUE= 57.44 CRITERION= .2887
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.108
 HT FLOW CONVERGENCE VALUE= 6.214 CRITERION= .2731
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1479
 HT FLOW CONVERGENCE VALUE= 1.132 CRITERION= .2743
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2676E-01
 HT FLOW CONVERGENCE VALUE= .1894 CRITERION= .2742 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 364
 *** TIME = .582635E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1191E-08 OSCILLATION LIMIT = .9397E-01
 *** AUTO TIME STEP: NEXT TIME INC = .48517E+08 DECREASED (FACTOR = .6150)

HT FLOW CONVERGENCE VALUE= 349.7 CRITERION= .2703
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.800
 HT FLOW CONVERGENCE VALUE= 27.45 CRITERION= .2704
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3818
 HT FLOW CONVERGENCE VALUE= 3.062 CRITERION= .2666

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EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6852E-01
HT FLOW CONVERGENCE VALUE= .5448 CRITERION= .2673
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1628E-01
HT FLOW CONVERGENCE VALUE= .1095 CRITERION= .2672 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 9 COMPLETED. CUM ITER = 368
*** TIME = .631152E+09 TIME INC = .485175E+08
*** RESPONSE EIGENVALUE = .1311E-08 OSCILLATION LIMIT = .6361E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 07:51:05 JUL 25, 1995 CP= 47382.590
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 340.1 CRITERION= .2632
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.634
HT FLOW CONVERGENCE VALUE= 28.56 CRITERION= .2654
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3952
HT FLOW CONVERGENCE VALUE= 2.571 CRITERION= .2597
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3725E-01
HT FLOW CONVERGENCE VALUE= .3768 CRITERION= .2602
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6611E-02
HT FLOW CONVERGENCE VALUE= .5641E-01 CRITERION= .2601 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 372
*** TIME = .679670E+09 TIME INC = .485175E+08
*** RESPONSE EIGENVALUE = .1008E-08 OSCILLATION LIMIT = .4891E-01
*** AUTO STEP TIME: NEXT TIME INC = .48517E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 330.3 CRITERION= .2573
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.303
HT FLOW CONVERGENCE VALUE= 18.02 CRITERION= .2563
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3828
HT FLOW CONVERGENCE VALUE= 1.726 CRITERION= .2545
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4932E-01
HT FLOW CONVERGENCE VALUE= .2111 CRITERION= .2548 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 375
*** TIME = .728187E+09 TIME INC = .485175E+08
*** RESPONSE EIGENVALUE = .9507E-09 OSCILLATION LIMIT = .4613E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6261)

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HT FLOW CONVERGENCE VALUE= 322.4 CRITERION= .2487
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.641
HT FLOW CONVERGENCE VALUE= 36.17 CRITERION= .2520
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4096
HT FLOW CONVERGENCE VALUE= 3.282 CRITERION= .2447
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9316E-01
HT FLOW CONVERGENCE VALUE= .4744 CRITERION= .2453
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1879E-01
HT FLOW CONVERGENCE VALUE= .7145E-01 CRITERION= .2453 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 379
*** TIME = .807081E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .9915E-09 OSCILLATION LIMIT = .7822E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 311.7 CRITERION= .2404
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.509
HT FLOW CONVERGENCE VALUE= 29.20 CRITERION= .2408
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5672
HT FLOW CONVERGENCE VALUE= 3.077 CRITERION= .2367
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8395E-01
HT FLOW CONVERGENCE VALUE= .5808 CRITERION= .2374
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1803E-01

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HT FLOW CONVERGENCE VALUE= .1365 CRITERION= .2373 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 383
 *** TIME = .885975E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1116E-08 OSCILLATION LIMIT = .8804E-01
 *** AUTO TIME STEP: NEXT TIME INC = .60753E+08 DECREASED (FACTOR = .7701)

HT FLOW CONVERGENCE VALUE= 302.2 CRITERION= .2325
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.949
 HT FLOW CONVERGENCE VALUE= 21.78 CRITERION= .2299
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6507
 HT FLOW CONVERGENCE VALUE= 7.962 CRITERION= .2291
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6506
 HT FLOW CONVERGENCE VALUE= 2.886 CRITERION= .2297
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1499
 HT FLOW CONVERGENCE VALUE= 1.216 CRITERION= .2299
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6265E-01
 HT FLOW CONVERGENCE VALUE= .5012 CRITERION= .2300
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2581E-01
 HT FLOW CONVERGENCE VALUE= .2108 CRITERION= .2300 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 389
 *** TIME = .946728E+09 TIME INC = .607530E+08
 *** RESPONSE EIGENVALUE = .1512E-08 OSCILLATION LIMIT = .9185E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 08:56:16 JUL 25, 1995 CP= 49825.500
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 294.4 CRITERION= .2269
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.679
 HT FLOW CONVERGENCE VALUE= 32.24 CRITERION= .2281
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9546
 HT FLOW CONVERGENCE VALUE= 3.276 CRITERION= .2246
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9047E-01
 HT FLOW CONVERGENCE VALUE= .4862 CRITERION= .2252
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1303E-01
 HT FLOW CONVERGENCE VALUE= .9505E-01 CRITERION= .2252 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 393
 *** TIME = .100748E+10 TIME INC = .607530E+08
 *** RESPONSE EIGENVALUE = .1582E-08 OSCILLATION LIMIT = .9612E-01
 *** AUTO STEP TIME: NEXT TIME INC = .60753E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 289.2 CRITERION= .2210
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.410
 HT FLOW CONVERGENCE VALUE= 18.03 CRITERION= .2203
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5403
 HT FLOW CONVERGENCE VALUE= 2.063 CRITERION= .2199
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9986E-01
 HT FLOW CONVERGENCE VALUE= .4802 CRITERION= .2202
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2641E-01
 HT FLOW CONVERGENCE VALUE= .1213 CRITERION= .2202 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 397
 *** TIME = .106823E+10 TIME INC = .607530E+08
 *** RESPONSE EIGENVALUE = .1495E-08 OSCILLATION LIMIT = .9082E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2986)

HT FLOW CONVERGENCE VALUE= 286.8 CRITERION= .2161
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.775
 HT FLOW CONVERGENCE VALUE= 29.19 CRITERION= .2169
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8697
 HT FLOW CONVERGENCE VALUE= 3.599 CRITERION= .2142

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EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9344E-01
HT FLOW CONVERGENCE VALUE= .8545 CRITERION= .2150
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2579E-01
HT FLOW CONVERGENCE VALUE= .2113 CRITERION= .2149 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 401
*** TIME = .114713E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1407E-08 OSCILLATION LIMIT = .1110
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 283.4 CRITERION= .2097
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.377
HT FLOW CONVERGENCE VALUE= 45.21 CRITERION= .2212
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4308
HT FLOW CONVERGENCE VALUE= 3.676 CRITERION= .2089
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5748E-01
HT FLOW CONVERGENCE VALUE= .6946 CRITERION= .2100
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9905E-02
HT FLOW CONVERGENCE VALUE= .8126E-01 CRITERION= .2099 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 405
*** TIME = .122602E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1403E-08 OSCILLATION LIMIT = .1107
*** AUTO TIME STEP: NEXT TIME INC = .36282E+08 DECREASED (FACTOR = .4599)

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HT FLOW CONVERGENCE VALUE= 283.9 CRITERION= .2083
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.624
HT FLOW CONVERGENCE VALUE= 14.22 CRITERION= .2108
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1885
HT FLOW CONVERGENCE VALUE= 1.002 CRITERION= .2089
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4231E-01
HT FLOW CONVERGENCE VALUE= .1681 CRITERION= .2091 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 408
*** TIME = .126230E+10 TIME INC = .362820E+08
*** RESPONSE EIGENVALUE = .1542E-08 OSCILLATION LIMIT = .5594E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 09:55:58 JUL 25, 1995 CP= 52071.340
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 286.1 CRITERION= .2070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.454
HT FLOW CONVERGENCE VALUE= 24.75 CRITERION= .2132
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2089
HT FLOW CONVERGENCE VALUE= 1.951 CRITERION= .2075
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1455E-01
HT FLOW CONVERGENCE VALUE= .2473 CRITERION= .2080
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2049E-02
HT FLOW CONVERGENCE VALUE= .3204E-01 CRITERION= .2080 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 412
*** TIME = .129859E+10 TIME INC = .362820E+08
*** RESPONSE EIGENVALUE = .1180E-08 OSCILLATION LIMIT = .4281E-01
*** AUTO STEP TIME: NEXT TIME INC = .36282E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 288.8 CRITERION= .2070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.357
HT FLOW CONVERGENCE VALUE= 17.11 CRITERION= .2120
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1437
HT FLOW CONVERGENCE VALUE= 1.258 CRITERION= .2078
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1698E-01
HT FLOW CONVERGENCE VALUE= .1387 CRITERION= .2080 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

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*** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 415
 *** TIME = .133487E+10 TIME INC = .362820E+08
 *** RESPONSE EIGENVALUE = .1025E-08 OSCILLATION LIMIT = .3720E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.1745)

HT FLOW CONVERGENCE VALUE= 291.7 CRITERION= .2042
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.477
 HT FLOW CONVERGENCE VALUE= 12.21 CRITERION= .2033
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2360
 HT FLOW CONVERGENCE VALUE= 1.077 CRITERION= .2047
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3145E-01
 HT FLOW CONVERGENCE VALUE= .1681 CRITERION= .2049 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 418
 *** TIME = .141376E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9798E-09 OSCILLATION LIMIT = .7730E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 293.6 CRITERION= .2022
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.645
 HT FLOW CONVERGENCE VALUE= 23.61 CRITERION= .1998
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3969
 HT FLOW CONVERGENCE VALUE= 3.910 CRITERION= .2006
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7836E-01
 HT FLOW CONVERGENCE VALUE= 1.126 CRITERION= .2017
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2387E-01
 HT FLOW CONVERGENCE VALUE= .3102 CRITERION= .2016
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6904E-02
 HT FLOW CONVERGENCE VALUE= .9110E-01 CRITERION= .2016 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 423
 *** TIME = .149266E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1028E-08 OSCILLATION LIMIT = .8109E-01
 *** AUTO TIME STEP: NEXT TIME INC = .42612E+08 DECREASED (FACTOR = .5401)

HT FLOW CONVERGENCE VALUE= 291.9 CRITERION= .1994
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.488
 HT FLOW CONVERGENCE VALUE= 15.67 CRITERION= .2007
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1626
 HT FLOW CONVERGENCE VALUE= 1.549 CRITERION= .1984
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2558E-01
 HT FLOW CONVERGENCE VALUE= .2402 CRITERION= .1986
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3932E-02
 HT FLOW CONVERGENCE VALUE= .3654E-01 CRITERION= .1986 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 427
 *** TIME = .153527E+10 TIME INC = .426120E+08
 *** RESPONSE EIGENVALUE = .1104E-08 OSCILLATION LIMIT = .4703E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42612E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 289.6 CRITERION= .1974
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.506
 HT FLOW CONVERGENCE VALUE= 15.04 CRITERION= .1967
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2246
 HT FLOW CONVERGENCE VALUE= .8922 CRITERION= .1954
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2142E-01
 HT FLOW CONVERGENCE VALUE= .9199E-01 CRITERION= .1955 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 26 SUBSTEP 6 COMPLETED. CUM ITER = 430
 *** TIME = .157788E+10 TIME INC = .426120E+08
 *** RESPONSE EIGENVALUE = .1100E-08 OSCILLATION LIMIT = .4688E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 11:05:23 JUL 25, 1995 CP= 54687.560
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 284.5 CRITERION= .1937
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.167
 HT FLOW CONVERGENCE VALUE= 24.82 CRITERION= .1953
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2555
 HT FLOW CONVERGENCE VALUE= 2.743 CRITERION= .1916
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3126E-01
 HT FLOW CONVERGENCE VALUE= .4331 CRITERION= .1922
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4980E-02
 HT FLOW CONVERGENCE VALUE= .6664E-01 CRITERION= .1921 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 434
 *** TIME = .162049E+10 TIME INC = .426120E+08
 *** RESPONSE EIGENVALUE = .9632E-09 OSCILLATION LIMIT = .4104E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42612E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 280.2 CRITERION= .1913
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.155
 HT FLOW CONVERGENCE VALUE= 21.05 CRITERION= .1935
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1963
 HT FLOW CONVERGENCE VALUE= 2.457 CRITERION= .1896
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3904E-01
 HT FLOW CONVERGENCE VALUE= .4595 CRITERION= .1902
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9881E-02
 HT FLOW CONVERGENCE VALUE= .9049E-01 CRITERION= .1901 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 438
 *** TIME = .166310E+10 TIME INC = .426120E+08
 *** RESPONSE EIGENVALUE = .9330E-09 OSCILLATION LIMIT = .3976E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8514)

HT FLOW CONVERGENCE VALUE= 276.8 CRITERION= .1871
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.079
 HT FLOW CONVERGENCE VALUE= 17.02 CRITERION= .1881
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2772
 HT FLOW CONVERGENCE VALUE= 2.109 CRITERION= .1840
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3338E-01
 HT FLOW CONVERGENCE VALUE= .4371 CRITERION= .1845
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6568E-02
 HT FLOW CONVERGENCE VALUE= .8928E-01 CRITERION= .1844 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 442
 *** TIME = .174200E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8887E-09 OSCILLATION LIMIT = .7011E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 269.5 CRITERION= .1826
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.162
 HT FLOW CONVERGENCE VALUE= 25.33 CRITERION= .1827
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2544
 HT FLOW CONVERGENCE VALUE= .8939 CRITERION= .1789
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1360E-01
 HT FLOW CONVERGENCE VALUE= .6307E-01 CRITERION= .1791 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 445
 *** TIME = .182089E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8740E-09 OSCILLATION LIMIT = .6895E-01
 *** AUTO TIME STEP: NEXT TIME INC = .72564E+08 DECREASED (FACTOR = .9198)

HT FLOW CONVERGENCE VALUE= 260.0 CRITERION= .1763
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.128
 HT FLOW CONVERGENCE VALUE= 5.812 CRITERION= .1718
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6017E-01
 HT FLOW CONVERGENCE VALUE= .2967 CRITERION= .1736
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3196E-02
 HT FLOW CONVERGENCE VALUE= .1624E-01 CRITERION= .1737 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 448
 *** TIME = .189346E+10 TIME INC = .725639E+08

*** RESPONSE EIGENVALUE = .9481E-09 OSCILLATION LIMIT = .6880E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 12:03:02 JUL 25, 1995 CP= 56840.550
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 252.7 CRITERION= .1725
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.706
 HT FLOW CONVERGENCE VALUE= 11.23 CRITERION= .1680
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1266
 HT FLOW CONVERGENCE VALUE= 1.196 CRITERION= .1693
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1730E-01
 HT FLOW CONVERGENCE VALUE= .2168 CRITERION= .1697
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2865E-02
 HT FLOW CONVERGENCE VALUE= .4502E-01 CRITERION= .1697 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 452
 *** TIME = .196602E+10 TIME INC = .725639E+08
 *** RESPONSE EIGENVALUE = .7498E-09 OSCILLATION LIMIT = .5441E-01
 *** AUTO STEP TIME: NEXT TIME INC = .72564E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 245.0 CRITERION= .1673
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.664
 HT FLOW CONVERGENCE VALUE= 30.10 CRITERION= .1766
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2229
 HT FLOW CONVERGENCE VALUE= 2.167 CRITERION= .1649
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3155E-01
 HT FLOW CONVERGENCE VALUE= .2973 CRITERION= .1654
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4351E-02
 HT FLOW CONVERGENCE VALUE= .4030E-01 CRITERION= .1654 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 456
 *** TIME = .203858E+10 TIME INC = .725639E+08
 *** RESPONSE EIGENVALUE = .7248E-09 OSCILLATION LIMIT = .5259E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0872)

HT FLOW CONVERGENCE VALUE= 239.6 CRITERION= .1639
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.882
 HT FLOW CONVERGENCE VALUE= 24.56 CRITERION= .1659
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3788
 HT FLOW CONVERGENCE VALUE= 2.891 CRITERION= .1615
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5295E-01
 HT FLOW CONVERGENCE VALUE= .6208 CRITERION= .1622
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1128E-01
 HT FLOW CONVERGENCE VALUE= .1271 CRITERION= .1621 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 460
 *** TIME = .211748E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8221E-09 OSCILLATION LIMIT = .6486E-01
 *** AUTO TIME STEP: NEXT TIME INC = .45777E+08 DECREASED (FACTOR = .5802)

HT FLOW CONVERGENCE VALUE= 234.5 CRITERION= .1604
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.116
 HT FLOW CONVERGENCE VALUE= 11.47 CRITERION= .1584
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2018
 HT FLOW CONVERGENCE VALUE= 1.310 CRITERION= .1593
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1937E-01
 HT FLOW CONVERGENCE VALUE= .2361 CRITERION= .1595
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3569E-02
 HT FLOW CONVERGENCE VALUE= .4361E-01 CRITERION= .1595 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 464
 *** TIME = .216325E+10 TIME INC = .457771E+08
 *** RESPONSE EIGENVALUE = .9978E-09 OSCILLATION LIMIT = .4568E-01

*** AUTO STEP TIME: NEXT TIME INC = .45777E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 231.8 CRITERION= .1589
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.126
 HT FLOW CONVERGENCE VALUE= 10.25 CRITERION= .1565
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1750
 HT FLOW CONVERGENCE VALUE= 1.461 CRITERION= .1579
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2562E-01
 HT FLOW CONVERGENCE VALUE= .2835 CRITERION= .1581
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5605E-02
 HT FLOW CONVERGENCE VALUE= .6210E-01 CRITERION= .1582 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 468
 *** TIME = .220903E+10 TIME INC = .457771E+08
 *** RESPONSE EIGENVALUE = .1016E-08 OSCILLATION LIMIT = .4650E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 13:05:19 JUL 25, 1995 CP= 59188.000
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 229.8 CRITERION= .1566
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.052
 HT FLOW CONVERGENCE VALUE= 8.658 CRITERION= .1543
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1618
 HT FLOW CONVERGENCE VALUE= 1.614 CRITERION= .1557
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4143E-01
 HT FLOW CONVERGENCE VALUE= .3516 CRITERION= .1558
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1013E-01
 HT FLOW CONVERGENCE VALUE= .8005E-01 CRITERION= .1559 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 472
 *** TIME = .225481E+10 TIME INC = .457771E+08
 *** RESPONSE EIGENVALUE = .9306E-09 OSCILLATION LIMIT = .4260E-01
 *** AUTO STEP TIME: NEXT TIME INC = .45777E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 227.8 CRITERION= .1554
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.032
 HT FLOW CONVERGENCE VALUE= 8.088 CRITERION= .1535
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1709
 HT FLOW CONVERGENCE VALUE= 1.072 CRITERION= .1545
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3247E-01
 HT FLOW CONVERGENCE VALUE= .2279 CRITERION= .1546
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7002E-02
 HT FLOW CONVERGENCE VALUE= .4975E-01 CRITERION= .1546 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 476
 *** TIME = .230059E+10 TIME INC = .457771E+08
 *** RESPONSE EIGENVALUE = .9012E-09 OSCILLATION LIMIT = .4126E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7234)

HT FLOW CONVERGENCE VALUE= 225.8 CRITERION= .1523
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.818
 HT FLOW CONVERGENCE VALUE= 11.93 CRITERION= .1535
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1885
 HT FLOW CONVERGENCE VALUE= 1.723 CRITERION= .1506
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1959E-01
 HT FLOW CONVERGENCE VALUE= .2885 CRITERION= .1511
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3249E-02
 HT FLOW CONVERGENCE VALUE= .4836E-01 CRITERION= .1510 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 480
 *** TIME = .237948E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8170E-09 OSCILLATION LIMIT = .6446E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 222.0    CRITERION= .1497
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.866
HT FLOW CONVERGENCE VALUE= 10.88    CRITERION= .1511
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.200
HT FLOW CONVERGENCE VALUE= .9318    CRITERION= .1477
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2559E-01
HT FLOW CONVERGENCE VALUE= .3059    CRITERION= .1478
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8094E-02
HT FLOW CONVERGENCE VALUE= .9787E-01 CRITERION= .1478    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 484
*** TIME = .245837E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7934E-09 OSCILLATION LIMIT = .6259E-01
*** AUTO TIME STEP: NEXT TIME INC = .66234E+08 DECREASED (FACTOR = .8395)

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HT FLOW CONVERGENCE VALUE= 216.7    CRITERION= .1458
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.641
HT FLOW CONVERGENCE VALUE= 24.22    CRITERION= .1497
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2400
HT FLOW CONVERGENCE VALUE= 2.172    CRITERION= .1431
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2926E-01
HT FLOW CONVERGENCE VALUE= .2798    CRITERION= .1436
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3862E-02
HT FLOW CONVERGENCE VALUE= .3551E-01 CRITERION= .1435    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 488
*** TIME = .252461E+10 TIME INC = .662338E+08
*** RESPONSE EIGENVALUE = .8585E-09 OSCILLATION LIMIT = .5686E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303      VERSION=HP 9000/7XX 14:07:49 JUL 25, 1995 CP= 61543.300
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 210.6    CRITERION= .1430
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.236
HT FLOW CONVERGENCE VALUE= 3.277    CRITERION= .1415
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4655E-01
HT FLOW CONVERGENCE VALUE= .5622E-02 CRITERION= .1409    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 490
*** TIME = .259084E+10 TIME INC = .662338E+08
*** RESPONSE EIGENVALUE = .6937E-09 OSCILLATION LIMIT = .4595E-01
*** AUTO STEP TIME: NEXT TIME INC = .66234E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 204.8    CRITERION= .1392
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.163
HT FLOW CONVERGENCE VALUE= .9568    CRITERION= .1373
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1371E-01
HT FLOW CONVERGENCE VALUE= .5950E-01 CRITERION= .1375    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 492
*** TIME = .265708E+10 TIME INC = .662338E+08
*** RESPONSE EIGENVALUE = .5826E-09 OSCILLATION LIMIT = .3859E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1911)

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HT FLOW CONVERGENCE VALUE= 199.9    CRITERION= .1367
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.442
HT FLOW CONVERGENCE VALUE= 8.418    CRITERION= .1334
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1564
HT FLOW CONVERGENCE VALUE= 1.096    CRITERION= .1344
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1763E-01
HT FLOW CONVERGENCE VALUE= .1938    CRITERION= .1346
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3031E-02

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HT FLOW CONVERGENCE VALUE= .3926E-01 CRITERION= .1346 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 496
 *** TIME = .273597E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6075E-09 OSCILLATION LIMIT = .4793E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52107E+08 DECREASED (FACTOR = .6605)

HT FLOW CONVERGENCE VALUE= 194.1 CRITERION= .1332
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9655
 HT FLOW CONVERGENCE VALUE= 12.19 CRITERION= .1323
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1152
 HT FLOW CONVERGENCE VALUE= 1.169 CRITERION= .1313
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1149E-01
 HT FLOW CONVERGENCE VALUE= .1279 CRITERION= .1316 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 499
 *** TIME = .278808E+10 TIME INC = .521072E+08
 *** RESPONSE EIGENVALUE = .6690E-09 OSCILLATION LIMIT = .3486E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52107E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 189.5 CRITERION= .1313
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9890
 HT FLOW CONVERGENCE VALUE= 6.286 CRITERION= .1301
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8440E-01
 HT FLOW CONVERGENCE VALUE= .4129E-02 CRITERION= .1297 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 501
 *** TIME = .284018E+10 TIME INC = .521072E+08
 *** RESPONSE EIGENVALUE = .7468E-09 OSCILLATION LIMIT = .3892E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10
 TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 265.631169 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 9735 STEP 1

7937 ELEMENTS (OF 7937 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 63209.340 TIME= 14:52:47
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 14:52:47 JUL 25, 1995 CP= 63209.340
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 31
TIME AT END OF THE LOAD STEP. . . . . .31558E+10
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 10
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
  MINIMUM NUMBER OF SUBSTEPS . . . . . 4
  START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
  THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS
  THETA. . . . . .50000
  OSCILLATION LIMIT CRITERION. . . . . .50000
  TOLERANCE. . . . . .20000
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 185.1 CRITERION= .1284
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8527
HT FLOW CONVERGENCE VALUE= .4207 CRITERION= .1271
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6515E-02
HT FLOW CONVERGENCE VALUE= .2757E-02 CRITERION= .1272 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 503
*** TIME = .289229E+10 TIME INC = .521072E+08
*** RESPONSE EIGENVALUE = .6223E-09 OSCILLATION LIMIT = .3243E-01
*** AUTO STEP TIME: NEXT TIME INC = .52107E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 181.7 CRITERION= .1270
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8215
HT FLOW CONVERGENCE VALUE= 8.000 CRITERION= .1282
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5557E-01
HT FLOW CONVERGENCE VALUE= .7172 CRITERION= .1257
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4828E-02
HT FLOW CONVERGENCE VALUE= .6762E-01 CRITERION= .1260 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 506
*** TIME = .294440E+10 TIME INC = .521072E+08
*** RESPONSE EIGENVALUE = .5443E-09 OSCILLATION LIMIT = .2836E-01
*** AUTO STEP TIME: NEXT TIME INC = .52107E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 178.7 CRITERION= .1247
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8304
HT FLOW CONVERGENCE VALUE= 9.393 CRITERION= .1256
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4819E-01
HT FLOW CONVERGENCE VALUE= .6170 CRITERION= .1235
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3243E-02
HT FLOW CONVERGENCE VALUE= .4559E-01 CRITERION= .1237 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 509
*** TIME = .299651E+10 TIME INC = .521072E+08
*** RESPONSE EIGENVALUE = .5639E-09 OSCILLATION LIMIT = .2938E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5141)

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HT FLOW CONVERGENCE VALUE= 175.9 CRITERION= .1231
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.265
HT FLOW CONVERGENCE VALUE= 9.879 CRITERION= .1209
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1138
HT FLOW CONVERGENCE VALUE= .9548 CRITERION= .1213
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9314E-02
HT FLOW CONVERGENCE VALUE= .1193 CRITERION= .1216 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 512
*** TIME = .307540E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6085E-09 OSCILLATION LIMIT = .4800E-01
*** AUTO TIME STEP: NEXT TIME INC = .40180E+08 DECREASED (FACTOR = .5093)
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HT FLOW CONVERGENCE VALUE= 171.6 CRITERION= .1205
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6552
HT FLOW CONVERGENCE VALUE= 7.187 CRITERION= .1201
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3854E-01
HT FLOW CONVERGENCE VALUE= .4656 CRITERION= .1196
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2974E-02
HT FLOW CONVERGENCE VALUE= .2854E-01 CRITERION= .1198 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 515
*** TIME = .311558E+10 TIME INC = .401802E+08
*** RESPONSE EIGENVALUE = .6520E-09 OSCILLATION LIMIT = .2620E-01
*** AUTO STEP TIME: NEXT TIME INC = .40180E+08 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 169.5 CRITERION= .1197
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6571
HT FLOW CONVERGENCE VALUE= 5.510 CRITERION= .1196
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4035E-01
HT FLOW CONVERGENCE VALUE= .2867 CRITERION= .1191
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3257E-02
HT FLOW CONVERGENCE VALUE= .2067E-01 CRITERION= .1191 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 6 COMPLETED. CUM ITER = 518
*** TIME = .315576E+10 TIME INC = .401802E+08
*** RESPONSE EIGENVALUE = .6662E-09 OSCILLATION LIMIT = .2677E-01
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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 15:48:53 JUL 25, 1995 CP= 65337.620
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 167.8 CRITERION= .1183
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4853
HT FLOW CONVERGENCE VALUE= 3.964 CRITERION= .1175
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6128E-01
HT FLOW CONVERGENCE VALUE= .5170 CRITERION= .1178
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9789E-02
HT FLOW CONVERGENCE VALUE= .7566E-01 CRITERION= .1178 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 521
*** TIME = .319594E+10 TIME INC = .401802E+08
*** RESPONSE EIGENVALUE = .4919E-09 OSCILLATION LIMIT = .1976E-01
*** AUTO STEP TIME: NEXT TIME INC = .40180E+08 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 166.5 CRITERION= .1181
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4575
HT FLOW CONVERGENCE VALUE= 4.343 CRITERION= .1172
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6712E-01
HT FLOW CONVERGENCE VALUE= .4634 CRITERION= .1178
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7857E-02
HT FLOW CONVERGENCE VALUE= .5974E-01 CRITERION= .1178 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 524
*** TIME = .323612E+10 TIME INC = .401802E+08
*** RESPONSE EIGENVALUE = .4325E-09 OSCILLATION LIMIT = .1738E-01
*** AUTO TIME STEP: NEXT TIME INC = .12054E+09 INCREASED (FACTOR = 3.0000)
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HT FLOW CONVERGENCE VALUE= 165.8 CRITERION= .1164
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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.240
 HT FLOW CONVERGENCE VALUE= 2.632 CRITERION= .1152
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1446
 HT FLOW CONVERGENCE VALUE= .3721E-02 CRITERION= .1156 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 526
 *** TIME = .335666E+10 TIME INC = .120541E+09
 *** RESPONSE EIGENVALUE = .3219E-09 OSCILLATION LIMIT = .3881E-01
 *** AUTO TIME STEP: NEXT TIME INC = .36162E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 163.4 CRITERION= .1135
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.539
 HT FLOW CONVERGENCE VALUE= 21.12 CRITERION= .1141
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5439
 HT FLOW CONVERGENCE VALUE= .3113 CRITERION= .1085
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1347E-01
 HT FLOW CONVERGENCE VALUE= .6788E-01 CRITERION= .1085 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 529
 *** TIME = .371828E+10 TIME INC = .361622E+09
 *** RESPONSE EIGENVALUE = .2424E-09 OSCILLATION LIMIT = .8764E-01
 *** AUTO STEP TIME: NEXT TIME INC = .36162E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 149.4 CRITERION= .1053
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.126
 HT FLOW CONVERGENCE VALUE= 17.14 CRITERION= .1017
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5321
 HT FLOW CONVERGENCE VALUE= .4102E-01 CRITERION= .1024 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 531
 *** TIME = .407991E+10 TIME INC = .361622E+09
 *** RESPONSE EIGENVALUE = .2885E-09 OSCILLATION LIMIT = .1043
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.1817)

HT FLOW CONVERGENCE VALUE= 141.3 CRITERION= .9723E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.164
 HT FLOW CONVERGENCE VALUE= 29.97 CRITERION= .9824E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9580
 HT FLOW CONVERGENCE VALUE= 9.623 CRITERION= .8902E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6257
 HT FLOW CONVERGENCE VALUE= 7.279 CRITERION= .9237E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3951
 HT FLOW CONVERGENCE VALUE= 3.673 CRITERION= .9044E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2442
 HT FLOW CONVERGENCE VALUE= 2.567 CRITERION= .9157E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1544
 HT FLOW CONVERGENCE VALUE= 1.486 CRITERION= .9089E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9677E-01
 HT FLOW CONVERGENCE VALUE= .9791 CRITERION= .9131E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6121E-01
 HT FLOW CONVERGENCE VALUE= .5990 CRITERION= .9105E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3852E-01
 HT FLOW CONVERGENCE VALUE= .3846 CRITERION= .9121E-01
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2434E-01
 HT FLOW CONVERGENCE VALUE= .2400 CRITERION= .9111E-01
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1534E-01
 HT FLOW CONVERGENCE VALUE= .1524 CRITERION= .9117E-01
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9686E-02
 HT FLOW CONVERGENCE VALUE= .9578E-01 CRITERION= .9113E-01
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6108E-02
 HT FLOW CONVERGENCE VALUE= .6057E-01 CRITERION= .9116E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 13
 *** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 544
 *** TIME = .486885E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .2996E-09 OSCILLATION LIMIT = .2364
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 124.1 CRITERION= .8484E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -7.278
 HT FLOW CONVERGENCE VALUE= 21.33 CRITERION= .8452E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7366
 HT FLOW CONVERGENCE VALUE= .5034 CRITERION= .7950E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2864E-01
 HT FLOW CONVERGENCE VALUE= .4386E-01 CRITERION= .7955E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 547
 *** TIME = .565779E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .3829E-09 OSCILLATION LIMIT = .3021
 *** AUTO TIME STEP: NEXT TIME INC = .65373E+09 DECREASED (FACTOR = .8286)

HT FLOW CONVERGENCE VALUE= 108.9 CRITERION= .7531E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -7.246
 HT FLOW CONVERGENCE VALUE= 9.442 CRITERION= .7250E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3021
 HT FLOW CONVERGENCE VALUE= 1.071 CRITERION= .7171E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6424E-01
 HT FLOW CONVERGENCE VALUE= .2019 CRITERION= .7196E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1272E-01
 HT FLOW CONVERGENCE VALUE= .9267E-01 CRITERION= .7191E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5854E-02
 HT FLOW CONVERGENCE VALUE= .4286E-01 CRITERION= .7193E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 552
 *** TIME = .631152E+10 TIME INC = .653734E+09
 *** RESPONSE EIGENVALUE = .5217E-09 OSCILLATION LIMIT = .3410

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 17:34:14 JUL 25, 1995 CP= 69291.450
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 99.16 CRITERION= .6975E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.286
 HT FLOW CONVERGENCE VALUE= 15.36 CRITERION= .6964E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5197
 HT FLOW CONVERGENCE VALUE= 2.511 CRITERION= .6516E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8965E-01
 HT FLOW CONVERGENCE VALUE= .3661 CRITERION= .6577E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1711E-01
 HT FLOW CONVERGENCE VALUE= .6869E-01 CRITERION= .6571E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3221E-02
 HT FLOW CONVERGENCE VALUE= .1297E-01 CRITERION= .6572E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 557
 *** TIME = .696525E+10 TIME INC = .653734E+09
 *** RESPONSE EIGENVALUE = .2249E-09 OSCILLATION LIMIT = .1470
 *** AUTO STEP TIME: NEXT TIME INC = .65373E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 87.32 CRITERION= .6460E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.949
 HT FLOW CONVERGENCE VALUE= 9.640 CRITERION= .6329E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2311
 HT FLOW CONVERGENCE VALUE= .7758 CRITERION= .6223E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4745E-01
 HT FLOW CONVERGENCE VALUE= .1816 CRITERION= .6234E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1098E-01
 HT FLOW CONVERGENCE VALUE= .4156E-01 CRITERION= .6232E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 561
 *** TIME = .761899E+10 TIME INC = .653734E+09
 *** RESPONSE EIGENVALUE = .1651E-09 OSCILLATION LIMIT = .1079
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2068)

HT FLOW CONVERGENCE VALUE= 80.30 CRITERION= .5967E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.176

HT FLOW CONVERGENCE VALUE= 10.27 CRITERION= .5978E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3617
 HT FLOW CONVERGENCE VALUE= .3582E-01 CRITERION= .5788E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 563
 *** TIME = .840793E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1743E-09 OSCILLATION LIMIT = .1375
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 74.54 CRITERION= .5639E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.832
 HT FLOW CONVERGENCE VALUE= 6.749 CRITERION= .5570E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2384
 HT FLOW CONVERGENCE VALUE= .8386 CRITERION= .5465E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3655E-01
 HT FLOW CONVERGENCE VALUE= .1735 CRITERION= .5487E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7713E-02
 HT FLOW CONVERGENCE VALUE= .3562E-01 CRITERION= .5482E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 567
 *** TIME = .919687E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1692E-09 OSCILLATION LIMIT = .1335
 *** AUTO TIME STEP: NEXT TIME INC = .27041E+09 DECREASED (FACTOR = .3428)

HT FLOW CONVERGENCE VALUE= 69.32 CRITERION= .5352E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.095
 HT FLOW CONVERGENCE VALUE= 2.378 CRITERION= .5327E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4688E-01
 HT FLOW CONVERGENCE VALUE= .1439 CRITERION= .5307E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4074E-02
 HT FLOW CONVERGENCE VALUE= .1266E-01 CRITERION= .5309E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 570
 *** TIME = .946728E+10 TIME INC = .270411E+09
 *** RESPONSE EIGENVALUE = .2079E-09 OSCILLATION LIMIT = .5621E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:31:39 JUL 25, 1995 CP= 71455.040
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 67.78 CRITERION= .5325E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8752
 HT FLOW CONVERGENCE VALUE= 1.173 CRITERION= .5275E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3424E-01
 HT FLOW CONVERGENCE VALUE= .8236E-02 CRITERION= .5283E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 572
 *** TIME = .973769E+10 TIME INC = .270411E+09
 *** RESPONSE EIGENVALUE = .1296E-09 OSCILLATION LIMIT = .3506E-01
 *** AUTO STEP TIME: NEXT TIME INC = .27041E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 66.26 CRITERION= .5182E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8511
 HT FLOW CONVERGENCE VALUE= .3231 CRITERION= .5145E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8418E-02
 HT FLOW CONVERGENCE VALUE= .6356E-03 CRITERION= .5142E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 574
 *** TIME = .100081E+11 TIME INC = .270411E+09
 *** RESPONSE EIGENVALUE = .1199E-09 OSCILLATION LIMIT = .3243E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.9176)

HT FLOW CONVERGENCE VALUE= 64.80 CRITERION= .5080E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.371

HT FLOW CONVERGENCE VALUE= 5.261 CRITERION= .4996E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2385
 HT FLOW CONVERGENCE VALUE= .1179 CRITERION= .4962E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5612E-02
 HT FLOW CONVERGENCE VALUE= .1810E-01 CRITERION= .4964E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 577
 *** TIME = .107970E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1130E-09 OSCILLATION LIMIT = .8915E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 60.47 CRITERION= .4783E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.187
 HT FLOW CONVERGENCE VALUE= 4.573 CRITERION= .4757E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1749
 HT FLOW CONVERGENCE VALUE= .2193 CRITERION= .4696E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9908E-02
 HT FLOW CONVERGENCE VALUE= .3119E-01 CRITERION= .4700E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 580
 *** TIME = .115860E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1179E-09 OSCILLATION LIMIT = .9304E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51853E+09 DECREASED (FACTOR = .6572)

HT FLOW CONVERGENCE VALUE= 56.95 CRITERION= .4679E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.343
 HT FLOW CONVERGENCE VALUE= 1.972 CRITERION= .4615E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8756E-01
 HT FLOW CONVERGENCE VALUE= .2392 CRITERION= .4631E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1088E-01
 HT FLOW CONVERGENCE VALUE= .3029E-01 CRITERION= .4633E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 583
 *** TIME = .121045E+11 TIME INC = .518529E+09
 *** RESPONSE EIGENVALUE = .1183E-09 OSCILLATION LIMIT = .6133E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51853E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 54.89 CRITERION= .4495E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.279
 HT FLOW CONVERGENCE VALUE= 2.007 CRITERION= .4456E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6915E-01
 HT FLOW CONVERGENCE VALUE= .2474 CRITERION= .4451E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9457E-02
 HT FLOW CONVERGENCE VALUE= .3581E-01 CRITERION= .4455E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 6 COMPLETED. CUM ITER = 586
 *** TIME = .126230E+11 TIME INC = .518529E+09
 *** RESPONSE EIGENVALUE = .1274E-09 OSCILLATION LIMIT = .6607E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:25:09 JUL 25, 1995 CP= 73491.580
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 52.88 CRITERION= .4458E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.227
 HT FLOW CONVERGENCE VALUE= 3.325 CRITERION= .4430E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1160
 HT FLOW CONVERGENCE VALUE= .2991 CRITERION= .4421E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1777E-01
 HT FLOW CONVERGENCE VALUE= .4715E-01 CRITERION= .4424E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2811E-02
 HT FLOW CONVERGENCE VALUE= .7488E-02 CRITERION= .4425E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 590

*** TIME = .131416E+11 TIME INC = .518529E+09
 *** RESPONSE EIGENVALUE = .1074E-09 OSCILLATION LIMIT = .5567E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51853E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 51.08 CRITERION= .4311E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.188
 HT FLOW CONVERGENCE VALUE= .7733 CRITERION= .4292E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2957E-01
 HT FLOW CONVERGENCE VALUE= .8247E-01 CRITERION= .4280E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3349E-02
 HT FLOW CONVERGENCE VALUE= .9395E-02 CRITERION= .4281E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 593
 *** TIME = .136601E+11 TIME INC = .518529E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5215)

HT FLOW CONVERGENCE VALUE= 49.29 CRITERION= .4255E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.747
 HT FLOW CONVERGENCE VALUE= 3.441 CRITERION= .4243E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1299
 HT FLOW CONVERGENCE VALUE= .5209 CRITERION= .4206E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4161E-01
 HT FLOW CONVERGENCE VALUE= .1610 CRITERION= .4212E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1335E-01
 HT FLOW CONVERGENCE VALUE= .4919E-01 CRITERION= .4211E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4310E-02
 HT FLOW CONVERGENCE VALUE= .1594E-01 CRITERION= .4211E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 598
 *** TIME = .144490E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 46.55 CRITERION= .4070E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.660
 HT FLOW CONVERGENCE VALUE= 5.190 CRITERION= .4083E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3081
 HT FLOW CONVERGENCE VALUE= .8272 CRITERION= .4030E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5348E-01
 HT FLOW CONVERGENCE VALUE= .1477 CRITERION= .4041E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9296E-02
 HT FLOW CONVERGENCE VALUE= .2473E-01 CRITERION= .4040E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 602
 *** TIME = .152380E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .54082E+09 DECREASED (FACTOR = .6855)

HT FLOW CONVERGENCE VALUE= 44.11 CRITERION= .4040E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.062
 HT FLOW CONVERGENCE VALUE= 4.181 CRITERION= .4071E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1318
 HT FLOW CONVERGENCE VALUE= .2956 CRITERION= .4020E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1160E-01
 HT FLOW CONVERGENCE VALUE= .2723E-01 CRITERION= .4023E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 605
 *** TIME = .157788E+11 TIME INC = .540823E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:24:49 JUL 25, 1995 CP= 75748.420
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 42.51 CRITERION= .3916E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.004
 HT FLOW CONVERGENCE VALUE= 2.098 CRITERION= .3938E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6876E-01
 HT FLOW CONVERGENCE VALUE= .1486 CRITERION= .3912E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7611E-02
 HT FLOW CONVERGENCE VALUE= .1528E-01 CRITERION= .3915E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 608
 *** TIME = .163196E+11 TIME INC = .540823E+09
 *** AUTO STEP TIME: NEXT TIME INC = .54082E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 41.41 CRITERION= .3921E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9586
 HT FLOW CONVERGENCE VALUE= 2.410 CRITERION= .3932E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7708E-01
 HT FLOW CONVERGENCE VALUE= .2222 CRITERION= .3910E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6756E-02
 HT FLOW CONVERGENCE VALUE= .2549E-01 CRITERION= .3914E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 611
 *** TIME = .168604E+11 TIME INC = .540823E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4588)

HT FLOW CONVERGENCE VALUE= 40.13 CRITERION= .3788E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.326
 HT FLOW CONVERGENCE VALUE= 4.752 CRITERION= .3875E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1605
 HT FLOW CONVERGENCE VALUE= .8504E-01 CRITERION= .3802E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5509E-02
 HT FLOW CONVERGENCE VALUE= .8545E-02 CRITERION= .3802E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 614
 *** TIME = .176494E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 39.11 CRITERION= .3787E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.250
 HT FLOW CONVERGENCE VALUE= 6.032 CRITERION= .3922E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1787
 HT FLOW CONVERGENCE VALUE= 1.519 CRITERION= .3795E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5343E-01
 HT FLOW CONVERGENCE VALUE= .5336 CRITERION= .3823E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1785E-01
 HT FLOW CONVERGENCE VALUE= .1693 CRITERION= .3813E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5757E-02
 HT FLOW CONVERGENCE VALUE= .5553E-01 CRITERION= .3816E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1878E-02
 HT FLOW CONVERGENCE VALUE= .1802E-01 CRITERION= .3815E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 620
 *** TIME = .184383E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .49623E+09 DECREASED (FACTOR = .6290)

HT FLOW CONVERGENCE VALUE= 38.68 CRITERION= .3719E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7856
 HT FLOW CONVERGENCE VALUE= 6.410 CRITERION= .3912E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9749E-01
 HT FLOW CONVERGENCE VALUE= .6980 CRITERION= .3737E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1136E-01
 HT FLOW CONVERGENCE VALUE= .8820E-01 CRITERION= .3753E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1424E-02
 HT FLOW CONVERGENCE VALUE= .1094E-01 CRITERION= .3751E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 624
 *** TIME = .189346E+11 TIME INC = .496234E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:24:36 JUL 25, 1995 CP= 78004.870
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 38.90 CRITERION= .3772E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7238
 HT FLOW CONVERGENCE VALUE= 2.777 CRITERION= .3881E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3635E-01
 HT FLOW CONVERGENCE VALUE= .2347E-01 CRITERION= .3812E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 626
 *** TIME = .194308E+11 TIME INC = .496234E+09
 *** AUTO STEP TIME: NEXT TIME INC = .49623E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 39.52 CRITERION= .3730E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6981
 HT FLOW CONVERGENCE VALUE= .4131 CRITERION= .3756E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2510E-01
 HT FLOW CONVERGENCE VALUE= .2599E-01 CRITERION= .3759E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 628
 *** TIME = .199270E+11 TIME INC = .496234E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5899)

HT FLOW CONVERGENCE VALUE= 39.65 CRITERION= .3761E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.058
 HT FLOW CONVERGENCE VALUE= 2.079 CRITERION= .3796E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1137
 HT FLOW CONVERGENCE VALUE= .2939 CRITERION= .3781E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1865E-01
 HT FLOW CONVERGENCE VALUE= .5029E-01 CRITERION= .3785E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3212E-02
 HT FLOW CONVERGENCE VALUE= .8499E-02 CRITERION= .3784E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 632
 *** TIME = .207160E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 39.13 CRITERION= .3689E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.069
 HT FLOW CONVERGENCE VALUE= 2.334 CRITERION= .3733E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1097
 HT FLOW CONVERGENCE VALUE= .1222E-02 CRITERION= .3706E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 634
 *** TIME = .215049E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .58541E+09 DECREASED (FACTOR = .7420)

HT FLOW CONVERGENCE VALUE= 38.32 CRITERION= .3720E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8108
 HT FLOW CONVERGENCE VALUE= .1423 CRITERION= .3729E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2934E-02
 HT FLOW CONVERGENCE VALUE= .4659E-03 CRITERION= .3730E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 636
 *** TIME = .220903E+11 TIME INC = .585412E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 22:05:39 JUL 25, 1995 CP= 79571.960
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 37.68 CRITERION= .3657E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7356
 HT FLOW CONVERGENCE VALUE= .2403 CRITERION= .3662E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1009E-01
 HT FLOW CONVERGENCE VALUE= .1036E-01 CRITERION= .3664E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 638
 *** TIME = .226757E+11 TIME INC = .585412E+09
 *** AUTO STEP TIME: NEXT TIME INC = .58541E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 36.94 CRITERION= .3685E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7038
 HT FLOW CONVERGENCE VALUE= .4238 CRITERION= .3688E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2281E-01
 HT FLOW CONVERGENCE VALUE= .2332E-01 CRITERION= .3692E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 640
 *** TIME = .232611E+11 TIME INC = .585412E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.3477)

HT FLOW CONVERGENCE VALUE= 36.22 CRITERION= .3612E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9904
 HT FLOW CONVERGENCE VALUE= 5.004 CRITERION= .3708E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1707
 HT FLOW CONVERGENCE VALUE= .6850 CRITERION= .3604E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2792E-01
 HT FLOW CONVERGENCE VALUE= .1300 CRITERION= .3616E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5224E-02
 HT FLOW CONVERGENCE VALUE= .2356E-01 CRITERION= .3614E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 644
 *** TIME = .240501E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 34.92 CRITERION= .3625E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9855
 HT FLOW CONVERGENCE VALUE= 3.755 CRITERION= .3720E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8805E-01
 HT FLOW CONVERGENCE VALUE= .3593 CRITERION= .3624E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9527E-02
 HT FLOW CONVERGENCE VALUE= .4024E-01 CRITERION= .3632E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1091E-02
 HT FLOW CONVERGENCE VALUE= .4522E-02 CRITERION= .3631E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 648
 *** TIME = .248390E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .40706E+09 DECREASED (FACTOR = .5160)

HT FLOW CONVERGENCE VALUE= 33.86 CRITERION= .3570E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5354
 HT FLOW CONVERGENCE VALUE= 1.119 CRITERION= .3600E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1464E-01
 HT FLOW CONVERGENCE VALUE= .5670E-01 CRITERION= .3576E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7537E-03
 HT FLOW CONVERGENCE VALUE= .2956E-02 CRITERION= .3578E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 651
 *** TIME = .252461E+11 TIME INC = .407057E+09

***** ANSYS SOLVE COMMAND *****

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 ***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 22:54:44 JUL 25, 1995 CP= 81434.860
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 33.48 CRITERION= .3608E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4563
 HT FLOW CONVERGENCE VALUE= .2959 CRITERION= .3621E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3658E-02

HT FLOW CONVERGENCE VALUE= .1661E-03 CRITERION= .3616E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 653
 *** TIME = .256531E+11 TIME INC = .407057E+09
 *** AUTO STEP TIME: NEXT TIME INC = .40706E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 33.15 CRITERION= .3559E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4636
 HT FLOW CONVERGENCE VALUE= .7411E-01 CRITERION= .3566E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1056E-02
 HT FLOW CONVERGENCE VALUE= .1513E-03 CRITERION= .3567E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 655
 *** TIME = .260602E+11 TIME INC = .407057E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.9382)

HT FLOW CONVERGENCE VALUE= 32.79 CRITERION= .3584E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8713
 HT FLOW CONVERGENCE VALUE= .1365 CRITERION= .3596E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2280E-02
 HT FLOW CONVERGENCE VALUE= .2723E-03 CRITERION= .3596E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 657
 *** TIME = .268491E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 32.11 CRITERION= .3530E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8956
 HT FLOW CONVERGENCE VALUE= .2444 CRITERION= .3539E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9799E-02
 HT FLOW CONVERGENCE VALUE= .6956E-02 CRITERION= .3541E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 659
 *** TIME = .276381E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .76377E+09 DECREASED (FACTOR = .9681)

HT FLOW CONVERGENCE VALUE= 31.33 CRITERION= .3558E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8621
 HT FLOW CONVERGENCE VALUE= .2373 CRITERION= .3566E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1004E-01
 HT FLOW CONVERGENCE VALUE= .6671E-02 CRITERION= .3567E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 661
 *** TIME = .284018E+11 TIME INC = .763767E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 23:30:27 JUL 25, 1995 CP= 82805.190
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 30.61 CRITERION= .3509E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7739
 HT FLOW CONVERGENCE VALUE= .5685 CRITERION= .3519E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3587E-01
 HT FLOW CONVERGENCE VALUE= .5506E-01 CRITERION= .3515E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3802E-02
 HT FLOW CONVERGENCE VALUE= .5941E-02 CRITERION= .3516E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 664
 *** TIME = .291656E+11 TIME INC = .763767E+09
 *** AUTO STEP TIME: NEXT TIME INC = .76377E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 29.76 CRITERION= .3538E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7236
 HT FLOW CONVERGENCE VALUE= 2.559 CRITERION= .3609E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4741E-01
 HT FLOW CONVERGENCE VALUE= .2028 CRITERION= .3541E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3578E-02
 HT FLOW CONVERGENCE VALUE= .1701E-01 CRITERION= .3546E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 667
 *** TIME = .299294E+11 TIME INC = .763767E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.0330)

HT FLOW CONVERGENCE VALUE= 29.02 CRITERION= .3489E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7628
 HT FLOW CONVERGENCE VALUE= 1.903 CRITERION= .3550E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3322E-01
 HT FLOW CONVERGENCE VALUE= .1185 CRITERION= .3498E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2002E-02
 HT FLOW CONVERGENCE VALUE= .7644E-02 CRITERION= .3501E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 670
 *** TIME = .307183E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .41964E+09 DECREASED (FACTOR = .5319)

HT FLOW CONVERGENCE VALUE= 28.48 CRITERION= .3530E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3879
 HT FLOW CONVERGENCE VALUE= .7173 CRITERION= .3556E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5895E-02
 HT FLOW CONVERGENCE VALUE= .2246E-01 CRITERION= .3537E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 672
 *** TIME = .311380E+11 TIME INC = .419643E+09
 *** AUTO STEP TIME: NEXT TIME INC = .41964E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 28.28 CRITERION= .3490E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4092
 HT FLOW CONVERGENCE VALUE= .6470 CRITERION= .3515E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4982E-02
 HT FLOW CONVERGENCE VALUE= .1827E-01 CRITERION= .3499E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 674
 *** TIME = .315576E+11 TIME INC = .419643E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 84467.900

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21a5a.db
 FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
 and drift wall end in array tables for use as boundary
 conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:14:20 JUL 26, 1995 CP= 84478.960
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 70.51068
PARAMETER WPSID(JINC) = 70.38666
PARAMETER WPBOT(JINC) = 70.13574
PARAMETER DFTOP(JINC) = 26.14320
PARAMETER DFSID(JINC) = 26.14327
PARAMETER DFEDG(JINC) = 26.14249
PARAMETER DFBOT(JINC) = 26.16381
PARAMETER WPTOP(JINC,0) = 31.55760
PARAMETER WPSID(JINC,0) = 31.55760
PARAMETER WPBOT(JINC,0) = 31.55760
PARAMETER DFTOP(JINC,0) = 31.55760
PARAMETER DFSID(JINC,0) = 31.55760
PARAMETER DFEDG(JINC,0) = 31.55760
PARAMETER DFBOT(JINC,0) = 31.55760
PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 171
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 163.2808
PARAMETER WPSID(JINC) = 163.9383
PARAMETER WPBOT(JINC) = 166.0999
PARAMETER DFTOP(JINC) = 139.1751
PARAMETER DFSID(JINC) = 139.8309
PARAMETER DFEDG(JINC) = 136.1977
PARAMETER DFBOT(JINC) = 118.7392
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08

PARAMETER DFSID(JINC,0) = .3155763E+08

PARAMETER DFEDG(JINC,0) = .3155763E+08

PARAMETER DFBOT(JINC,0) = .3155763E+08

PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 331
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 226.9450

PARAMETER WPSID(JINC) = 227.3541

PARAMETER WPBOT(JINC) = 228.9037

PARAMETER DFTOP(JINC) = 213.6705

PARAMETER DFSID(JINC) = 214.0712

PARAMETER DFEDG(JINC) = 211.6878

PARAMETER DFBOT(JINC) = 195.1585

PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09

PARAMETER WPBOT(JINC,0) = .3155760E+09

PARAMETER DFTOP(JINC,0) = .3155760E+09

PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 518
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 205.0281

PARAMETER WPSID(JINC) = 205.1962

PARAMETER WPBOT(JINC) = 205.7637

PARAMETER DFTOP(JINC) = 199.8990

PARAMETER DFSID(JINC) = 200.0988
PARAMETER DFEDG(JINC) = 199.2015
PARAMETER DFBOT(JINC) = 193.5141
PARAMETER WPTOP(JINC,0) = .3155760E+10
PARAMETER WPSID(JINC,0) = .3155760E+10
PARAMETER WPBOT(JINC,0) = .3155760E+10
PARAMETER DFTOP(JINC,0) = .3155760E+10
PARAMETER DFSID(JINC,0) = .3155760E+10
PARAMETER DFEDG(JINC,0) = .3155760E+10
PARAMETER DFBOT(JINC,0) = .3155760E+10
PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 86074.880

*** NOTE *** CP= 86074.880 TIME= 00:42:06
Write parameters to file= c21a5a.parm.

*** NOTE *** CP= 86074.950 TIME= 00:42:06
Parameters written. Lines= 770.

*** WARNING *** CP= 86074.960 TIME= 00:42:06
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c21a5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 00:42:06 JUL 26, 1995 CP= 86075.020
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 50.00

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE
TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

3968 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 35.00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

```
48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT      ELEMENTS CREATED FROM SELECTED VOLUMES.

3968 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph  - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph  - RASTER MODE.
DISPLAY TITLE=

*****
      Create color temp. contour plots for WP end view

      Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1  -.36934      .15899      -.91559

FOCUS POINT FOR WINDOW 1  2.7776      -.97308      7.5978

DISTANCE FOR WINDOW 1  18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION  -.36934      .15899      -.91559
INTENSITY  1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
      40.000      50.000      60.000      70.000
      80.000      90.000      100.00      300.00
      Select end view of WP

SELECT      FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT      ELEMENTS CREATED FROM SELECTED VOLUMES.

3968 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
      Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558
```

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86100.070 TIME= 00:42:33
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 100
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86119.540 TIME= 00:42:54
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 171
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86138.920 TIME= 00:43:15
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 6 CUMULATIVE ITERATION= 257
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86158.310 TIME= 00:43:36
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 331
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86177.660 TIME= 00:43:58
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 430
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86197.130 TIME= 00:44:19
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 518
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86216.510 TIME= 00:44:40
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 605
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86235.830 TIME= 00:45:02
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 674
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86255.220 TIME= 00:45:23
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1984 ELEMENTS (OF 7937 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86275.330 TIME= 00:45:45
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 100
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86291.400 TIME= 00:46:02
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 171
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86307.470 TIME= 00:46:20
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 6 CUMULATIVE ITERATION= 257
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86323.540 TIME= 00:46:38
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 331
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86339.620 TIME= 00:46:56
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 430
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86355.730 TIME= 00:47:14
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 518
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86371.810 TIME= 00:47:32
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 605
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86387.900 TIME= 00:47:49
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 674
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 86403.960 TIME= 00:48:07
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 86408.740

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 00:48:12 JUL 26, 1995 CP= 86408.740
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
VARIABLE 3 IS AT NODE 1882 ITEM= TEMP COMP= NAME= wwpeside
VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
VARIABLE 5 IS AT NODE 1888 ITEM= TEMP COMP= NAME= wwpetop
VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
VARIABLE 7 IS AT NODE 1881 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	234.4	.6312E+09
3	NSOL	1882 TEMP	wwpeside	26.14	.1000E-05	231.9	.6312E+09
4	NSOL	129 TEMP	wmidtop	26.13	.1000E-05	234.1	.6312E+09
5	NSOL	1888 TEMP	wwpetop	26.14	.1000E-05	231.9	.6312E+09
6	NSOL	122 TEMP	wmidbot	26.15	.1000E-05	235.7	.6312E+09
7	NSOL	1881 TEMP	wwpebot	26.14	.1000E-05	232.3	.6312E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 00:48:16 JUL 26, 1995 CP= 86410.580
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1882 TEMP wwpeside	129 TEMP wmidtop	1888 TEMP wwpetop	122 TEMP wmidbot	1881 TEMP wwpebot
.10000E-05	26.1406	26.1408	26.1338	26.1359	26.1463	26.1448
.20000E-05	70.3867	66.3281	70.5107	66.7532	70.1357	65.6003
.31558E+07	70.3867	66.3281	70.5107	66.7532	70.1357	65.6003
.63116E+07	114.720	108.949	113.875	108.855	117.103	109.593
.94673E+07	127.898	122.626	127.023	122.505	130.440	123.386
.12623E+08	135.441	130.208	134.572	130.064	137.992	131.042
.15779E+08	141.120	135.912	140.254	135.765	143.585	136.746
.18935E+08	146.166	141.049	145.387	140.951	148.530	141.798
.22090E+08	150.453	145.438	149.701	145.351	152.757	146.158
.25246E+08	154.210	149.283	153.486	149.215	156.473	149.974
.28402E+08	157.736	152.848	157.053	152.800	159.936	153.513
.31558E+08	161.084	156.307	160.414	156.271	163.270	156.955
.363115E+08	163.938	159.216	163.281	159.180	166.100	159.865
.4094673E+08	184.817	180.558	184.262	180.562	186.819	181.171
.45779E+08	196.403	192.407	195.875	192.407	198.317	193.003
.512623E+09	204.827	201.026	204.326	201.027	206.666	201.605
.57779E+09	211.466	207.823	210.984	207.823	213.252	208.393
.63158E+09	216.019	212.495	215.555	212.498	217.747	213.045
.69090E+09	219.973	216.555	219.527	216.562	221.652	217.090
.75246E+09	223.671	220.344	223.239	220.352	225.307	220.864
.81402E+09	225.683	222.467	225.266	222.474	227.271	222.974
.87158E+09	227.354	224.221	226.945	224.226	228.904	224.717
.93115E+09	234.432	231.854	234.097	231.860	235.710	232.262
.994673E+09	231.376	229.132	231.080	229.133	232.487	229.485
.10623E+10	226.996	225.037	226.731	225.033	227.957	225.337
.11779E+10	222.864	221.116	222.623	221.109	223.719	221.382
.128935E+10	219.018	217.433	218.797	217.425	219.792	217.674
.14090E+10	215.322	213.866	215.118	213.857	216.030	214.085
.15246E+10	211.430	210.095	211.242	210.086	212.077	210.295
.16402E+10	208.156	206.908	207.980	206.899	208.759	207.092
.17158E+10	205.196	204.021	205.028	204.011	205.764	204.195
.183115E+10	189.631	188.865	189.518	188.856	189.996	188.975
.194673E+10	181.349	180.727	181.256	180.718	181.646	180.818
.20623E+11	176.708	176.174	176.626	176.165	176.962	176.252
.21779E+11	173.610	173.139	173.535	173.129	173.834	173.208
.228935E+11	170.432	170.019	170.364	170.008	170.631	170.082
.24090E+11	167.262	166.890	167.201	166.880	167.440	166.945
.25246E+11	164.095	163.756	164.039	163.747	164.256	163.806
.26402E+11	161.157	160.843	161.106	160.836	161.304	160.888
.31558E+11	158.577	158.284	158.530	158.278	158.715	158.326

 * Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 86410.870 TIME= 00:48:17
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1070 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1220 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 1035 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	235.0	.6312E+09
3	NSOL	1070 TEMP	swpeside	26.14	.1000E-05	232.3	.6312E+09
4	NSOL	38 TEMP	smidtop	26.13	.1000E-05	234.7	.6312E+09
5	NSOL	1220 TEMP	swpetop	26.14	.1000E-05	232.3	.6312E+09
6	NSOL	2 TEMP	smidbot	26.15	.1000E-05	236.3	.6312E+09
7	NSOL	1035 TEMP	swpebot	26.14	.1000E-05	232.8	.6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:18 JUL 26, 1995 CP= 86412.390
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1070 TEMP swpeside	38 TEMP smidtop	1220 TEMP swpetop	2 TEMP smidbot	1035 TEMP swpebot
.10000E-05	26.1406	26.1408	26.1338	26.1360	26.1462	26.1447
.20000E-05	71.1985	67.0156	71.3239	67.4180	70.9505	66.3637
31.558	71.1985	67.0156	71.3239	67.4180	70.9505	66.3637
.31558E+07	115.515	109.648	114.671	109.528	117.835	110.321
.63116E+07	128.701	123.326	127.827	123.179	131.177	124.110
.94673E+07	136.245	130.909	135.377	130.739	138.729	131.761
.12623E+08	141.922	136.612	141.058	136.439	144.323	137.464
.15779E+08	146.967	141.746	146.189	141.622	149.268	142.515
.18935E+08	151.253	146.132	150.502	146.020	153.495	146.873
.22090E+08	155.010	149.975	154.286	149.881	157.212	150.687
.25246E+08	158.534	153.539	157.852	153.465	160.675	154.225
.28402E+08	161.882	156.994	161.212	156.933	164.008	157.664
.31558E+08	164.735	159.902	164.078	159.841	166.838	160.573
.63115E+08	185.602	181.227	185.047	181.206	187.548	181.859
.94673E+08	197.176	193.061	196.648	193.037	199.036	193.675
.12623E+09	205.587	201.667	205.085	201.645	207.373	202.262
.15779E+09	212.216	208.452	211.734	208.430	213.950	209.038
.18935E+09	216.758	213.114	216.293	213.095	218.437	213.679
.22090E+09	220.701	217.163	220.255	217.149	222.332	217.713
.25246E+09	224.391	220.944	223.959	220.931	225.980	221.479
.28402E+09	226.385	223.051	225.967	223.039	227.927	223.572
.31558E+09	228.043	224.793	227.634	224.779	229.548	225.303
.63115E+09	235.015	232.337	234.680	232.327	236.257	232.757
.94673E+09	231.877	229.548	231.581	229.536	232.956	229.911
.12623E+10	227.426	225.395	227.162	225.379	228.360	225.705
.15779E+10	223.241	221.430	223.001	221.413	224.072	221.705
.18935E+10	219.355	217.714	219.134	217.697	220.106	217.962
.22090E+10	215.626	214.121	215.423	214.104	216.315	214.347
.25246E+10	211.704	210.325	211.517	210.309	212.333	210.531
.28402E+10	208.409	207.121	208.234	207.105	208.996	207.311
.31558E+10	205.432	204.220	205.264	204.203	205.984	204.399
.63115E+10	189.775	188.987	189.662	188.974	190.131	189.102
.94673E+10	181.462	180.824	181.369	180.812	181.750	180.917
.12623E+11	176.803	176.255	176.721	176.244	177.050	176.336
.15779E+11	173.693	173.210	173.618	173.198	173.912	173.282
.18935E+11	170.504	170.081	170.436	170.068	170.697	170.145
.22090E+11	167.326	166.945	167.265	166.933	167.500	167.002
.25246E+11	164.152	163.805	164.097	163.795	164.308	163.857
.28402E+11	161.209	160.889	161.159	160.880	161.353	160.935
.31558E+11	158.625	158.326	158.579	158.318	158.759	158.369

 * Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 86412.680 TIME= 00:48:19
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1040 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1761 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2788 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2776 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	1 TEMP	wmidcent	26.14	.1000E-05	309.7	.2525E+09
3	NSOL	1040 TEMP	shellcnt	26.14	.1000E-05	238.6	.6312E+09
4	NSOL	1761 TEMP	wwpecent	26.14	.1000E-05	238.1	.6312E+09
5	NSOL	147 TEMP	imidbot	26.16	.2000E-05	209.8	.9467E+09
6	NSOL	2788 TEMP	iwpebot	26.16	.2000E-05	208.8	.9467E+09
7	NSOL	2776 TEMP	idfebot	26.16	.2000E-05	208.2	.9467E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:20 JUL 26, 1995 CP= 86414.190
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	1040 TEMP shellcnt	1761 TEMP wwpecent	147 TEMP imidbot	2788 TEMP iwpebot	2776 TEMP idfebot
.10000E-05	26.1403	26.1406	26.1406	26.1734	26.1737	26.1738
.20000E-05	169.082	76.5402	76.0001	26.1638	26.1638	26.1638
31.558	169.082	76.5403	76.0001	26.1638	26.1638	26.1638
.31558E+07	211.724	118.780	118.233	66.5734	62.8134	60.5358
.63116E+07	225.592	132.520	131.967	82.8533	79.4813	77.4357
.94673E+07	233.130	140.067	139.516	92.3793	89.2130	87.2989
.12623E+08	238.701	145.743	145.188	98.4449	96.0417	94.3284
.15779E+08	243.573	150.813	150.260	103.732	100.893	99.1953
.18935E+08	247.725	155.176	154.619	108.206	105.423	103.784
.22090E+08	251.327	158.987	158.430	112.168	109.389	107.768
.25246E+08	254.665	162.516	161.959	115.929	113.155	111.522
.28402E+08	257.856	165.942	165.387	119.860	116.898	115.122
.31558E+08	260.544	168.827	168.270	123.013	120.321	118.739
.63115E+08	279.670	189.907	189.355	146.898	144.640	143.309
.94673E+08	289.558	201.539	200.991	160.296	158.216	157.008
.12623E+09	296.352	209.959	209.419	170.046	168.112	166.988
.15779E+09	301.472	216.590	216.055	177.849	176.024	174.965
.18935E+09	304.554	221.108	220.578	183.210	181.463	180.451
.22090E+09	307.109	225.017	224.495	187.900	186.220	185.248
.25246E+09	309.673	228.687	228.168	192.212	190.590	189.652

.28402E+09	309.457	230.585	230.081	195.178	193.617	192.716
.31558E+09	309.479	232.174	231.679	197.547	196.032	195.158
.63115E+09	303.795	238.554	238.131	209.563	208.342	207.639
.94673E+09	291.094	234.904	234.543	209.834	208.770	208.158
.12623E+10	278.286	230.004	229.693	208.284	207.352	206.816
.15779E+10	267.940	225.486	225.214	206.294	205.459	204.979
.18935E+10	259.317	221.342	221.102	204.095	203.335	202.897
.22090E+10	251.827	217.414	217.195	201.714	201.013	200.609
.25246E+10	244.419	213.303	213.108	199.031	198.385	198.012
.28402E+10	238.629	209.876	209.695	196.629	196.023	195.673
.31558E+10	233.557	206.787	206.618	194.418	193.845	193.514
.63115E+10	207.030	190.575	190.472	182.805	182.426	182.205
.94673E+10	195.027	182.075	181.996	175.894	175.582	175.401
.12623E+11	188.234	177.312	177.246	172.069	171.800	171.644
.15779E+11	183.638	174.133	174.074	169.561	169.323	169.184
.18935E+11	179.137	170.880	170.831	166.901	166.691	166.569
.22090E+11	174.997	167.659	167.613	164.101	163.911	163.800
.25246E+11	171.053	164.446	164.407	161.220	161.047	160.945
.28402E+11	167.511	161.477	161.440	158.508	158.347	158.253
.31558E+11	164.460	158.869	158.836	156.103	155.952	155.863

 * Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 86414.480 TIME= 00:48:20

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2794 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2780 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2829 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2819 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
 VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	229.8	.6312E+09
3	NSOL	2794 TEMP	iwpecent	26.14	.2000E-05	227.3	.6312E+09
4	NSOL	2780 TEMP	idfecent	26.14	.2000E-05	225.6	.6312E+09
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	225.4	.6312E+09
6	NSOL	2829 TEMP	iwpeedge	26.14	.2000E-05	222.9	.6312E+09
7	NSOL	2819 TEMP	idfeedge	26.14	.2000E-05	221.8	.6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:22 JUL 26, 1995 CP= 86416.000
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2794 TEMP iwpecent	2780 TEMP idfecent	157 TEMP imidedge	2829 TEMP iwpeedge	2819 TEMP idfedge
.10000E-05	26.1515	26.1517	26.1513	26.1550	26.1574	26.1580
.20000E-05	26.1406	26.1406	26.1406	26.1406	26.1406	26.1406
.31558E+07	26.1560	26.1495	26.1463	26.1453	26.1433	26.1425
.63116E+07	97.8599	90.0603	84.5547	85.5498	78.5504	75.1392
.94673E+07	113.236	106.311	101.447	101.379	95.5330	92.5161
.12623E+08	121.871	115.273	110.673	110.560	104.572	101.650
.15779E+08	128.155	121.834	117.449	117.290	111.396	108.602
.18935E+08	133.664	127.470	123.213	123.306	117.259	114.478
.22090E+08	138.358	132.337	128.217	128.270	122.605	119.907
.25246E+08	142.466	136.584	132.574	132.686	127.080	124.452
.28402E+08	146.304	140.526	136.607	136.721	131.215	128.642
.31558E+08	149.992	144.349	140.521	140.604	135.212	132.694
.63115E+08	153.111	147.599	143.874	143.910	138.648	136.198
.94673E+08	175.804	171.083	167.940	167.774	163.197	161.103
.12623E+09	188.311	183.990	181.135	180.935	176.732	174.824
.15779E+09	197.355	193.318	190.665	190.449	186.509	184.729
.18935E+09	204.476	200.660	198.162	197.944	194.213	192.534
.22090E+09	209.359	205.703	203.318	203.093	199.513	197.906
.25246E+09	213.593	210.076	207.787	207.560	204.110	202.565
.28402E+09	217.532	214.134	211.927	211.699	208.361	206.870
.31558E+09	219.790	216.520	214.400	214.174	210.962	209.529
.63115E+09	221.646	218.472	216.416	216.195	213.077	211.688
.94673E+09	229.846	227.283	225.632	225.438	222.920	221.804
.12623E+10	227.352	225.117	223.678	223.514	221.327	220.358
.15779E+10	223.438	221.479	220.218	220.079	218.170	217.324
.18935E+10	219.653	217.898	216.766	216.647	214.943	214.187
.22090E+10	216.073	214.474	213.442	213.338	211.790	211.104
.25246E+10	212.590	211.116	210.163	210.070	208.647	208.015
.28402E+10	208.893	207.535	206.656	206.573	205.265	204.684
.31558E+10	205.763	204.487	203.661	203.585	202.360	201.815
.63115E+10	202.925	201.720	200.939	200.870	199.716	199.202
.94673E+10	188.081	187.281	186.760	186.722	185.964	185.625
.12623E+11	180.057	179.400	178.971	178.943	178.326	178.049
.15779E+11	175.583	175.016	174.644	174.623	174.092	173.853
.18935E+11	172.613	172.112	171.782	171.766	171.298	171.087
.22090E+11	169.547	169.104	168.813	168.800	168.389	168.203
.25246E+11	166.459	166.058	165.795	165.784	165.413	165.246
.28402E+11	163.351	162.985	162.744	162.734	162.395	162.242
.31558E+11	160.464	160.124	159.900	159.891	159.577	159.435
	157.920	157.601	157.391	157.382	157.088	156.955

```

*****
*      Drift Wall Surface Temperatures      *
*****
dmidside = midlength drift wall side surface
dwpside = end of WP drift wall side surface
ddfeside = end of drift side surface
dmidtop = midlength drift wall top surface
dwpetop = end of WP drift wall top surface
ddfetop = end of drift top surface

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VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 86416.290 TIME= 00:48:22
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2892 ITEM= TEMP COMP= NAME= dwpside

VARIABLE 4 IS AT NODE 2864 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3015 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 2993 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	227.0 .6312E+09
3	NSOL	2892 TEMP	dwpside	26.14	.2000E-05	224.7 .6312E+09
4	NSOL	2864 TEMP	ddfeside	26.14	.2000E-05	223.8 .6312E+09
5	NSOL	229 TEMP	dmidtop	26.12	.1000E-05	226.3 .6312E+09
6	NSOL	3015 TEMP	dwpetop	26.12	.1000E-05	224.2 .6312E+09
7	NSOL	2993 TEMP	ddfetop	26.12	.1000E-05	223.4 .6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:24 JUL 26, 1995 CP= 86417.810
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2892 TEMP dwpside	2864 TEMP ddfeside	229 TEMP dmidtop	3015 TEMP dwpetop	2993 TEMP ddfetop
.10000E-05	26.1406	26.1412	26.1415	26.1244	26.1209	26.1201
.20000E-05	26.1406	26.1406	26.1406	26.1406	26.1406	26.1406
31.558	26.1470	26.1443	26.1433	26.1467	26.1441	26.1432
.31558E+07	89.1451	82.2425	79.1712	87.2083	80.9420	78.2375
.63116E+07	104.676	98.7045	96.3998	102.763	97.7068	95.5938
.94673E+07	113.675	107.811	105.269	111.852	106.662	104.455
.12623E+08	120.591	114.551	112.070	118.681	113.416	111.281
.15779E+08	126.407	120.791	118.296	124.755	119.653	117.327
.18935E+08	131.444	125.903	123.554	129.819	124.838	122.796
.22090E+08	135.742	130.436	128.141	134.197	129.402	127.389
.25246E+08	139.863	134.582	132.317	138.373	133.578	131.605
.28402E+08	143.649	138.609	136.451	142.198	137.657	135.778
.31558E+08	146.928	141.949	139.831	145.503	141.016	139.175
.63115E+08	170.487	166.231	164.440	169.294	165.483	163.934
.94673E+08	183.439	179.552	177.927	182.318	178.833	177.429
.12623E+09	192.805	189.178	187.668	191.748	188.493	187.188
.15779E+09	200.156	196.726	195.303	199.157	196.085	194.858
.18935E+09	205.234	201.955	200.598	204.269	201.327	200.155
.22090E+09	209.632	206.480	205.178	208.704	205.876	204.752
.25246E+09	213.713	210.670	209.416	212.812	210.080	208.997
.28402E+09	216.111	213.184	211.979	215.244	212.617	211.577
.31558E+09	218.076	215.238	214.071	217.229	214.679	213.670
.63115E+09	226.972	224.689	223.755	226.282	224.227	223.419
.94673E+09	224.853	222.869	222.058	224.243	222.453	221.750
.12623E+10	221.262	219.533	218.824	220.713	219.144	218.527
.15779E+10	217.706	216.160	215.526	217.207	215.800	215.247
.18935E+10	214.301	212.895	212.319	213.844	212.564	212.060
.22090E+10	210.956	209.661	209.129	210.534	209.354	208.889
.25246E+10	207.389	206.197	205.707	207.001	205.914	205.486
.28402E+10	204.350	203.232	202.772	203.986	202.966	202.564
.31558E+10	201.589	200.533	200.099	201.242	200.279	199.899
.63115E+10	187.192	186.494	186.206	186.960	186.323	186.070
.94673E+10	179.325	178.752	178.515	179.133	178.610	178.402
.12623E+11	174.949	174.455	174.250	174.782	174.331	174.151
.15779E+11	172.049	171.613	171.432	171.899	171.499	171.339
.18935E+11	169.047	168.663	168.503	168.911	168.558	168.417
.22090E+11	166.006	165.659	165.514	165.884	165.564	165.437
.25246E+11	162.938	162.620	162.488	162.827	162.535	162.419
.28402E+11	160.081	159.786	159.663	159.979	159.709	159.600
.31558E+11	157.561	157.284	157.169	157.466	157.213	157.111

 * 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 86418.100 TIME= 00:48:24
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2854 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 2983 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2852 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	167 TEMP	1midside	26.14	.1000E-05	204.0	.9467E+09
3	NSOL	2854 TEMP	1dfeside	26.14	.2000E-05	202.9	.9467E+09
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	203.7	.9467E+09
5	NSOL	2983 TEMP	1dfetop	26.10	.1000E-05	202.8	.9467E+09
6	NSOL	165 TEMP	1midbot	26.19	.2000E-05	195.5	.1262E+10
7	NSOL	2852 TEMP	1dfebot	26.19	.2000E-05	194.9	.1262E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:26 JUL 26, 1995 CP= 86419.620
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2854 TEMP 1dfeside	219 TEMP 1midtop	2983 TEMP 1dfetop	165 TEMP 1midbot	2852 TEMP 1dfebot
.10000E-05	26.1419	26.1422	26.0975	26.0960	26.1941	26.1944
.20000E-05	26.1420	26.1420	26.1102	26.1102	26.1859	26.1859
31.558	26.1420	26.1420	26.1102	26.1102	26.1859	26.1859
.31558E+07	57.1818	53.3061	56.3525	52.8610	46.6652	44.2420
.63116E+07	72.6154	69.3379	71.8382	68.9597	61.2412	58.9528
.94673E+07	81.5979	78.7069	80.9372	78.3919	70.6962	68.5803
.12623E+08	88.1049	85.2099	87.4396	84.9394	77.3676	75.5714
.15779E+08	93.3403	90.5685	92.8021	90.2787	82.5327	80.7696
.18935E+08	97.9576	95.0748	97.4772	94.8512	86.8222	85.1009
.22090E+08	101.906	98.9467	101.387	98.7393	90.5991	88.8384
.25246E+08	106.004	102.816	105.503	102.648	93.8184	92.2978
.28402E+08	109.491	106.654	109.067	106.533	97.0318	95.3001
.31558E+08	112.964	109.918	112.540	109.832	99.8254	98.0720
.63115E+08	137.008	134.609	137.000	134.843	123.355	121.843
.94673E+08	150.627	148.435	150.493	148.556	137.248	135.865
.12623E+09	160.622	158.594	160.473	158.673	147.480	146.187
.15779E+09	168.447	166.538	168.376	166.691	155.734	154.521
.18935E+09	174.134	172.306	173.991	172.375	161.425	160.267
.22090E+09	179.062	177.308	178.928	177.379	166.453	165.338
.25246E+09	183.593	181.900	183.430	181.933	171.033	169.958
.28402E+09	186.742	185.115	186.598	185.160	174.541	173.506

.31558E+09	189.320	187.743	189.125	187.730	177.321	176.318
.63115E+09	202.750	201.483	202.526	201.404	192.447	191.639
.94673E+09	204.031	202.930	203.728	202.752	195.047	194.343
.12623E+10	203.451	202.490	203.000	202.144	195.485	194.869
.15779E+10	202.067	201.207	201.587	200.820	195.018	194.466
.18935E+10	200.321	199.540	199.857	199.159	193.993	193.491
.22090E+10	198.285	197.565	197.848	197.204	192.550	192.088
.25246E+10	195.932	195.270	195.529	194.937	190.727	190.300
.28402E+10	193.764	193.142	193.382	192.826	188.947	188.547
.31558E+10	191.731	191.143	191.353	190.827	187.270	186.892
.63115E+10	181.125	180.737	180.860	180.511	178.394	178.143
.94673E+10	174.546	174.227	174.325	174.039	172.429	172.223
.12623E+11	170.916	170.642	170.718	170.471	169.150	168.972
.15779E+11	168.537	168.294	168.342	168.122	167.029	166.872
.18935E+11	165.998	165.784	165.810	165.617	164.711	164.573
.22090E+11	163.293	163.099	163.122	162.947	162.151	162.026
.25246E+11	160.496	160.319	160.349	160.189	159.460	159.345
.28402E+11	157.847	157.683	157.717	157.569	156.894	156.788
.31558E+11	155.492	155.338	155.377	155.238	154.605	154.505

 * 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 86419.910 TIME= 00:48:26
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 3371 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 3543 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3368 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	182.6	.1893E+10
3	NSOL	3371 TEMP	3dfeside	26.14	.1000E-05	182.4	.1893E+10
4	NSOL	309 TEMP	3midtop	26.05	.1000E-05	181.2	.1893E+10
5	NSOL	3543 TEMP	3dfetop	26.05	.1000E-05	181.1	.1893E+10
6	NSOL	276 TEMP	3midbot	26.23	.2000E-05	178.1	.2209E+10
7	NSOL	3368 TEMP	3dfebot	26.23	.2000E-05	178.0	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:27 JUL 26, 1995 CP= 86421.420
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP	3371 TEMP	309 TEMP	3543 TEMP	276 TEMP	3368 TEMP
------	----------	-----------	----------	-----------	----------	-----------

	3midside	3dfeside	3midtop	3dfetop	3midbot	3dfebot
.10000E-05	26.1429	26.1429	26.0544	26.0542	26.2342	26.2343
.20000E-05	26.1433	26.1433	26.0632	26.0632	26.2283	26.2283
31.558	26.1433	26.1433	26.0632	26.0632	26.2283	26.2283
.31558E+07	31.9396	31.4578	31.5312	31.1093	29.7291	29.4464
.63116E+07	41.3625	40.8166	40.8594	40.3781	37.4902	37.1141
.94673E+07	48.9187	48.4267	48.4909	48.0602	44.4970	44.1456
.12623E+08	54.8228	54.3694	54.4788	54.0828	50.2685	49.9524
.15779E+08	59.7023	59.2350	59.4158	59.0051	55.0191	54.7249
.18935E+08	63.8741	63.4333	63.6453	63.2608	59.0672	58.7852
.22090E+08	67.5377	67.1097	67.3570	66.9847	62.6206	62.3420
.25246E+08	70.8926	70.4292	70.7506	70.3430	65.7976	65.5263
.28402E+08	73.8707	73.4768	73.7807	73.4370	68.6868	68.4048
.31558E+08	76.6562	76.2433	76.6042	76.2417	71.3643	71.0825
.63115E+08	96.7098	96.2682	97.0518	96.6453	90.8251	90.5742
.94673E+08	109.612	109.269	109.659	109.366	102.977	102.742
.12623E+09	120.272	119.914	120.317	119.988	113.202	112.964
.15779E+09	128.273	127.977	128.367	128.111	121.858	121.659
.18935E+09	134.713	134.431	134.554	134.308	127.954	127.763
.22090E+09	140.284	140.012	140.043	139.807	133.424	133.241
.25246E+09	145.315	145.055	145.000	144.774	138.332	138.154
.28402E+09	149.274	149.023	148.972	148.754	142.550	142.380
.31558E+09	152.631	152.388	152.197	151.986	145.898	145.733
.63115E+09	171.715	171.520	171.097	170.927	165.639	165.506
.94673E+09	177.383	177.214	176.523	176.375	171.819	171.703
.12623E+10	180.751	180.603	179.425	179.296	175.302	175.201
.15779E+10	182.169	182.036	180.770	180.654	177.222	177.131
.18935E+10	182.554	182.433	181.206	181.100	178.045	177.963
.22090E+10	182.194	182.083	180.933	180.836	178.093	178.017
.25246E+10	181.389	181.287	180.228	180.138	177.621	177.551
.28402E+10	180.339	180.243	179.242	179.158	176.831	176.766
.31558E+10	179.236	179.145	178.164	178.084	176.007	175.945
.63115E+10	173.454	173.394	172.721	172.668	171.457	171.416
.94673E+10	168.520	168.471	167.926	167.883	167.005	166.971
.12623E+11	165.835	165.792	165.311	165.274	164.590	164.561
.15779E+11	164.112	164.074	163.606	163.573	163.084	163.058
.18935E+11	162.159	162.126	161.679	161.649	161.303	161.280
.22090E+11	159.879	159.849	159.445	159.419	159.121	159.100
.25246E+11	157.424	157.397	157.050	157.026	156.723	156.704
.28402E+11	155.040	155.015	154.710	154.687	154.386	154.369
.31558E+11	152.894	152.870	152.600	152.579	152.277	152.260

```

*****
*      Upper Rock Layer Interface Temperatures      *
*****
surfTCw = center ground surface
TCwPTn  = center TCw and PTn interface
PTnTSw1 = center PTn and TSw1 interface
TSw1TSw2 = center TSw1 and TSw2 interface
upmodel = center TSw2 1/2 drift spacing above WP
midrift = drift to drift midplane at rep. height

```

VARIABLE 2 IS AT NODE 849 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 86421.710 TIME= 00:48:28
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 828 ITEM= TEMP COMP= NAME= TCwPTn
 VARIABLE 4 IS AT NODE 771 ITEM= TEMP COMP= NAME= PTnTSw1
 VARIABLE 5 IS AT NODE 645 ITEM= TEMP COMP= NAME= TSw1TSw2
 VARIABLE 6 IS AT NODE 469 ITEM= TEMP COMP= NAME= upmodel
 VARIABLE 7 IS AT NODE 405 ITEM= TEMP COMP= NAME= midrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	849 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	828 TEMP	TCwPTn	19.53	.1000E-05	30.57	.3156E+11
4	NSOL	771 TEMP	PTnTSw1	21.24	.1000E-05	55.71	.3156E+11
5	NSOL	645 TEMP	TSw1TSw2	24.25	.1000E-05	107.3	.3156E+11
6	NSOL	469 TEMP	upmodel	25.74	.1000E-05	146.2	.1893E+11
7	NSOL	405 TEMP	midrdrft	26.14	.1000E-05	156.9	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:29 JUL 26, 1995 CP= 86423.230
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	849 TEMP surfTCw	828 TEMP TCwPTn	771 TEMP PTnTSw1	645 TEMP TSw1TSw2	469 TEMP upmodel	405 TEMP midrdrft
.10000E-05	18.7000	19.5281	21.2398	24.2508	25.7386	26.1435
.20000E-05	18.7000	19.5286	21.2411	24.2535	25.7424	26.1443
31.558	18.7000	19.5286	21.2411	24.2535	25.7424	26.1443
.31558E+07	18.7000	19.5286	21.2411	24.2535	25.7424	26.1443
.63116E+07	18.7000	19.5286	21.2411	24.2535	25.7424	26.1444
.94673E+07	18.7000	19.5286	21.2411	24.2535	25.7428	26.1460
.12623E+08	18.7000	19.5286	21.2411	24.2535	25.7451	26.1537
.15779E+08	18.7000	19.5286	21.2411	24.2535	25.7520	26.1758
.18935E+08	18.7000	19.5286	21.2411	24.2535	25.7673	26.2225
.22090E+08	18.7000	19.5286	21.2411	24.2535	25.7950	26.3031
.25246E+08	18.7000	19.5286	21.2411	24.2535	25.8387	26.4252
.28402E+08	18.7000	19.5286	21.2411	24.2535	25.9014	26.5937
.31558E+08	18.7000	19.5286	21.2411	24.2535	25.9850	26.8110
.63115E+08	18.7000	19.5286	21.2411	24.2535	27.9634	31.2785
.94673E+08	18.7000	19.5286	21.2411	24.2535	31.2639	37.9564
.12623E+09	18.7000	19.5286	21.2411	24.2535	34.9782	45.0298
.15779E+09	18.7000	19.5286	21.2411	24.2535	38.7395	51.8314
.18935E+09	18.7000	19.5286	21.2411	24.2536	42.4396	58.1762
.22090E+09	18.7000	19.5286	21.2411	24.2537	46.0152	63.9748
.25246E+09	18.7000	19.5286	21.2411	24.2541	49.4502	69.2508
.28402E+09	18.7000	19.5286	21.2411	24.2551	52.7538	74.0225
.31558E+09	18.7000	19.5286	21.2411	24.2570	55.8982	78.3117
.63115E+09	18.7000	19.5286	21.2411	24.5055	79.2546	99.2851
.94673E+09	18.7000	19.5286	21.2411	25.6617	92.0084	115.159
.12623E+10	18.7000	19.5286	21.2413	27.8246	100.402	130.865
.15779E+10	18.7000	19.5286	21.2429	30.6390	108.089	138.854
.18935E+10	18.7000	19.5287	21.2495	33.7814	114.900	144.000
.22090E+10	18.7000	19.5292	21.2674	37.0490	120.625	147.342
.25246E+10	18.7000	19.5308	21.3052	40.3101	124.829	149.914
.28402E+10	18.7000	19.5346	21.3719	43.4989	127.674	151.349
.31558E+10	18.7000	19.5421	21.4755	46.5589	129.970	152.282
.63115E+10	18.7000	20.1748	24.9887	69.1608	142.252	156.948
.94673E+10	18.7000	21.9203	31.2036	81.5485	144.181	155.610
.12623E+11	18.7000	23.9810	37.4117	89.0894	145.235	154.950
.15779E+11	18.7000	25.8148	42.6076	94.1872	145.978	154.649
.18935E+11	18.7000	27.2952	46.7087	98.0113	146.167	153.941
.22090E+11	18.7000	28.4511	49.8884	101.318	145.616	152.584
.25246E+11	18.7000	29.3455	52.3378	103.889	144.644	150.858
.28402E+11	18.7000	30.0348	54.2293	105.808	143.426	149.048
.31558E+11	18.7000	30.5723	55.7138	107.291	142.197	147.343

 * Lower Rock Layer Interface Temperatures *

 dwnmodel = center TSw2 1/2 drift spacing below WP

TSW2TSW3 = center TSW2 and TSW3 interface
 TSW3CHnv = center TSW3 and CHn1v interface
 CHnvCHnz = center CHn1v and CHn1z interface
 CHnzCHn2 = center CHn1z and CHn2 interface
 CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 86423.520 TIME= 00:48:29
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 708 ITEM= TEMP COMP= NAME= TSW2TSW3

VARIABLE 4 IS AT NODE 870 ITEM= TEMP COMP= NAME= TSW3CHnv

VARIABLE 5 IS AT NODE 890 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 6 IS AT NODE 909 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 966 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	396 TEMP	dwnmodel	26.55	.2000E-05	147.5 .1893E+11
3	NSOL	708 TEMP	TSW2TSW3	27.68	.6312E+07	117.7 .3156E+11
4	NSOL	870 TEMP	TSW3CHnv	28.16	.2000E-05	107.4 .3156E+11
5	NSOL	890 TEMP	CHnvCHnz	28.32	.2000E-05	104.0 .3156E+11
6	NSOL	909 TEMP	CHnzCHn2	31.42	.2000E-05	66.00 .3156E+11
7	NSOL	966 TEMP	CHn2bot	31.87	.2000E-05	62.10 .3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:48:31 JUL 26, 1995 CP= 86425.040
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	708 TEMP TSW2TSW3	870 TEMP TSW3CHnv	890 TEMP CHnvCHnz	909 TEMP CHnzCHn2	966 TEMP CHn2bot
.10000E-05	26.5486	27.6854	28.1568	28.3223	31.4249	31.8694
.20000E-05	26.5465	27.6836	28.1550	28.3205	31.4234	31.8679
31.558	26.5465	27.6836	28.1550	28.3205	31.4234	31.8679
.31558E+07	26.5465	27.6836	28.1550	28.3205	31.4234	31.8679
.63116E+07	26.5465	27.6836	28.1550	28.3205	31.4234	31.8679
.94673E+07	26.5469	27.6836	28.1550	28.3205	31.4234	31.8679
.12623E+08	26.5489	27.6836	28.1550	28.3205	31.4234	31.8679
.15779E+08	26.5552	27.6836	28.1550	28.3205	31.4234	31.8679
.18935E+08	26.5696	27.6836	28.1550	28.3205	31.4234	31.8679
.22090E+08	26.5961	27.6836	28.1550	28.3205	31.4234	31.8679
.25246E+08	26.6384	27.6836	28.1550	28.3205	31.4234	31.8679
.28402E+08	26.6995	27.6836	28.1550	28.3205	31.4234	31.8679
.31558E+08	26.7814	27.6836	28.1550	28.3205	31.4234	31.8679
.63115E+08	28.7178	27.6836	28.1550	28.3205	31.4234	31.8679
.94673E+08	31.9137	27.6836	28.1550	28.3205	31.4234	31.8679
.12623E+09	35.5074	27.6837	28.1550	28.3205	31.4234	31.8679
.15779E+09	39.1586	27.6839	28.1550	28.3205	31.4234	31.8679
.18935E+09	42.7599	27.6851	28.1550	28.3205	31.4234	31.8679
.22090E+09	46.2575	27.6883	28.1551	28.3205	31.4234	31.8679
.25246E+09	49.6214	27.6955	28.1554	28.3206	31.4234	31.8679
.28402E+09	52.8498	27.7093	28.1562	28.3207	31.4234	31.8679
.31558E+09	55.9494	27.7327	28.1578	28.3210	31.4234	31.8679

.63115E+09	79.0349	29.0054	28.3905	28.4191	31.4234	31.8679
.94673E+09	91.7859	32.4078	29.4899	29.0610	31.4234	31.8679
.12623E+10	100.012	36.9577	31.5589	30.5048	31.4235	31.8679
.15779E+10	107.896	41.7853	34.2643	32.5930	31.4241	31.8680
.18935E+10	114.669	46.5260	37.2943	35.0774	31.4268	31.8687
.22090E+10	120.415	51.0254	40.4483	37.7698	31.4346	31.8710
.25246E+10	124.463	55.2135	43.6034	40.5436	31.4519	31.8769
.28402E+10	127.536	59.0676	46.6794	43.3119	31.4841	31.8891
.31558E+10	130.046	62.5830	49.6335	46.0209	31.5364	31.9109
.63115E+10	142.580	84.6644	71.0528	66.7841	33.7018	33.2026
.94673E+10	144.726	94.7876	82.6672	78.7024	38.1876	36.5157
.12623E+11	145.960	102.374	90.6682	86.8733	43.3018	40.7389
.15779E+11	147.109	108.762	96.5596	92.9455	48.2799	45.0968
.18935E+11	147.497	113.121	100.380	96.4320	52.8900	49.2960
.22090E+11	146.831	115.336	102.813	98.8105	56.9337	53.1221
.25246E+11	145.567	116.568	104.866	101.056	60.4291	56.5146
.28402E+11	144.148	117.285	106.315	102.680	63.4222	59.4950
.31558E+11	142.754	117.711	107.431	103.985	66.0016	62.0995

***** ROUTINE COMPLETED ***** CP = 86425.050

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21a5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 46
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```

*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|               REV. 5.0 A               |               HP 9000/7XX               |
| CP TIME      (sec) =      86432.870      | TIME = 00:48:39      |
| ELAPSED TIME (sec) =     135007.000      | DATE  = 07/26/95      |
|-----|
*-----*
    
```


WELCOME TO THE ANSYS PROGRAM

***** ANSYS COMMAND LINE ARGUMENTS *****
 JOB NAME = c21b5a
 MEMORY REQUESTED (MB) = 64.0
 BATCH MODE REQUESTED
 start.ans FILE

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
 WORK SPACE REQUESTED = 16777216 64.000 MB COMMAND LINE
 MINIMUM WORK SPACE REQUIRED = 4718592 18.000 MB
 MINIMUM WORK SPACE RECOMMENDED = 6702496 25.568 MB
 WORK SPACE OBTAINED = 16777214 64.000 MB
 BYTES PER WORD = 4

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 RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
 ENTER /MENU,ON TO START THE ANSYS MENU SYSTEM
 ENTER HELP FOR GENERAL ANSYS HELP INFORMATION
 1 /COM, *****
 2 /COM, ANSYS REVISION 5.0A 12/15/1994
 3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
 4 /COM, *****
 5 /COM, *
 6 /COM, * File name: c21b5a.inp *
 7 /COM, * *
 8 /COM, * 21 PWR WP/MPC (10 cm overpack) *
 9 /COM, * Average SNF: 22 years old, 42.2 GWD/MTU burnup *
 10 /COM, * 5.0 m Diameter Drift with Concrete Invert *
 11 /COM, * 83 MTU/acre (20.5 kgU/m^2) AML (High Thermal Loading) *
 12 /COM, * Drift spacing = 22.5 m (11.25 m model half width) *
 13 /COM, * WP c/c spacing = 19.477 m *
 14 /COM, * *
 15 /COM, * Material Properties file: Proprep.dat *
 16 /COM, * SNF Heat Loads file: snf2242.dat *
 17 /COM, * *
 18 /COM, *****

```

19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,21 PWR MPC, 5 m Tunnel
24 /UNITS,S1,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.9008,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.682,
40 *SET,WPWLL,0.10,
41 *SET,WSPC,19.477,
42 *SET,WPNUM,21.0,
43 *SET,MODEL,11.25,
44 *SET,OFFST,0.137,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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```

89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,
219 /COM,      Define areas in rock layers
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM,
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 3,
378 /COM,
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM,
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM,
386 /COM,
387 LESIZE, 58,,, 6,6.0,
388 LESIZE, 59,,, 6,6.0,
389 /COM,
390 /COM,
391 /COM,
392 LESIZE, 24,,, 3,
393 /COM,
394 LESIZE, 27,,, 3,
395 /COM,
396 LESIZE, 30,,, 9,
397 /COM,
398 /COM,
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,,12,0.3,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,,12,3,
403 LSEL,ALL,
404 /COM,
405 LESIZE, 43,,, 3,
406 /COM,
407 LESIZE, 46,,, 2,
408 /COM,
409 LESIZE, 49,,, 7,
410 /COM,
411 /COM,
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM,
416 /COM,
417 /COM,
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM,
425 /COM,
426 /COM,
427 /COM,
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM,
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM,

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Model is 6 elements wide
(3+7=10 divisions)

Extrude WP 5 elements

1 element thick steel

Extrude drift 5 elements with smallest
elements at WP mid-length

Set element sizes in rock layers

3 element thick TCw

3 element thick PTn

9 element thick TSw1

12 elements above and below near field
with smaller elements near drift

3 element thick TSw3

2 element thick CHn1v

7 element thick CHn1z

12 element thick CHN2 with smaller elements
near the top

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)

Waste package

Invert

Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatenated lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,          Rock around drift
513 /COM,          (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,,58,
527 VMESH,41,
528 /COM,          Mid-drift rock
529 /COM,          (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,,58,
535 /COM,          Concatenate to mesh volume 45
536 /COM,          (L's 311,312 used and freed up)
537 /COM,          (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,          Extrude rest of TSw2
546 /COM,          (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,58,
548 /COM,          Extrude TSw1
549 /COM,          (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,          Extrude PTn
553 /COM,          (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,          Extrude TCw
557 /COM,          (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,          Extrude TSw3
561 /COM,          (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,          Extrude CHn1v
565 /COM,          (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,          Extrude CHn1z
569 /COM,          (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,          Extrude CHn2
573 /COM,          (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,          *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TMI100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM,          *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TMI0,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TMI1,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TMI10,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TM1100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),      0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAV,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 21.233,
984 /DIST,1,1.25,1
985 /VCON,1, 25.000,
986 /TYPE,1,HIDP,
987 /SHADE,,GOUR,
988 /GLINE,,0,
989 /TITLE,
990 VSEL,S,LOC,Z,0,100
991 ESLV,S
992 /SHOW,meshdrift,grph,0,8,
993 EPLOT
994 /COM,          View model meshing for side cut-away
995 /ANGLE, 1,+90,YS,1
996 /DIST,1,0.8,1
997 VSEL,S,LOC,X,-100,0
998 ESLV,S

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999 /SHOW,meshside,grph,0,8,
1000 EPLOT
1001 /COM, *****
1002 /COM, Create color temp. contour plots for WP end view
1003 /COM,
1004 /COM, Set view settings
1005 /RESET
1006 /DEVICE,VECT,OFF
1007 /NUM, 1,
1008 /TRIAD,OFF,
1009 /PNUM,MAT, 1,
1010 /WIND,1, -1.0000 , 1.00000 , -1.0000 , 1.0000,
1011 /VIEW,1, -.36934 , .15899 , -.91559,
1012 /FOC, 1, 2.7776 , -.97308 , 7.5978,
1013 /DIST,1, 12.182,
1014 /DIST,1,1.5,1
1015 /ANG, 1, 5.1088 ,ZS,
1016 /VCON,1, 25.000,
1017 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1018 /TYPE,,HIDP,
1019 /GLIN,1,-1,
1020 /CVAL,,40,50,60,70,80,90,100,300,
1021 /COM, Select end view of WP
1022 VSEL,S,LOC,Z,0,100,
1023 ESLV,S,
1024 /COM, Select load steps and plot temperatures
1025 SET,3,
1026 /TITLE,
1027 /SHOW,near0 ,100.grph,0,8,
1028 PLNSOL,TEMP,
1029 SET,8,
1030 /TITLE,
1031 /SHOW,near05 ,100.grph,0,8,
1032 PLNSOL,TEMP,
1033 SET,13,
1034 /TITLE,
1035 /SHOW,near1 ,100.grph,0,8,
1036 PLNSOL,TEMP,
1037 SET,17,
1038 /TITLE,
1039 /SHOW,near5 ,100.grph,0,8,
1040 PLNSOL,TEMP,
1041 SET,22,
1042 /TITLE,
1043 /SHOW,near10 ,100.grph,0,8,
1044 PLNSOL,TEMP,
1045 SET,26,
1046 /TITLE,
1047 /SHOW,near50 ,100.grph,0,8,
1048 PLNSOL,TEMP,
1049 SET,31,
1050 /TITLE,
1051 /SHOW,near100 ,100.grph,0,8,
1052 PLNSOL,TEMP,
1053 SET,35,
1054 /TITLE,
1055 /SHOW,near500 ,100.grph,0,8,
1056 PLNSOL,TEMP,
1057 SET,40,
1058 /TITLE,
1059 /SHOW,near1k ,100.grph,0,8,
1060 PLNSOL,TEMP,
1061 /COM, View mesh for closeup end of model
1062 /GLINE,,0,
1063 /TYPE,,HIDP,
1064 /SHADE,,GOUR,
1065 /SHOW,meshnear,grph,0,8,
1066 EPLOT
1067 /COM, *****
1068 /COM, Create color temp. contour plots for WP corner view

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1069 /COM,
1070 /COM,          Set view settings
1071 /RESET
1072 /DEVICE,VECT,OFF,
1073 /NUM, 1,
1074 /TRIAD,OFF,
1075 /PNUM,MAT, 1,
1076 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1077 /VIEW,1, .64865, .48519E-01, -.75954,
1078 /FOC, 1, -.21216E-01, .39180, 2.3739,
1079 /DIST,1, 7.6223,
1080 /DIST,1,1.5,1
1081 /ANG, 1, -.52088,ZS,
1082 /VCON,1, 25.000,
1083 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1084 /TYPE,1,HIDP,
1085 /GLIN,1,-1,
1086 /CVAL,,40,50,60,70,80,90,100,300,
1087 /COM,          Select corner view of WP
1088 VSEL,S,LOC,X,-100,0,
1089 VSEL,R,LOC,Z,0,100,
1090 ESLV,S,
1091 /COM,          Select load steps and plot temperatures
1092 SET,3,
1093 /TITLE,
1094 /SHOW,corn0 ,100.grph,0,8,
1095 PLNSOL,TEMP,
1096 SET,8,
1097 /TITLE,
1098 /SHOW,corn05 ,100.grph,0,8,
1099 PLNSOL,TEMP,
1100 SET,13,
1101 /TITLE,
1102 /SHOW,corn1 ,100.grph,0,8,
1103 PLNSOL,TEMP,
1104 SET,17,
1105 /TITLE,
1106 /SHOW,corn5 ,100.grph,0,8,
1107 PLNSOL,TEMP,
1108 SET,22,
1109 /TITLE,
1110 /SHOW,corn10 ,100.grph,0,8,
1111 PLNSOL,TEMP,
1112 SET,26,
1113 /TITLE,
1114 /SHOW,corn50 ,100.grph,0,8,
1115 PLNSOL,TEMP,
1116 SET,31,
1117 /TITLE,
1118 /SHOW,corn100 ,100.grph,0,8,
1119 PLNSOL,TEMP,
1120 SET,35,
1121 /TITLE,
1122 /SHOW,corn500 ,100.grph,0,8,
1123 PLNSOL,TEMP,
1124 SET,40,
1125 /TITLE,
1126 /SHOW,corn1k ,100.grph,0,8,
1127 PLNSOL,TEMP,
1128 /COM,          View mesh for corner of model
1129 /GLINE,,0,
1130 /TYPE,,HIDP,
1131 /SHADE,,GOUR,
1132 /SHOW,meshcorn,grph,0,8,
1133 EPLT
1134 FINISH
1135 /COM, *****
1136 /COM,          Print time/temperature output at specific locations
1137 /POST26,
1138 /COM,

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1139 /COM, *****
1140 /COM, *      Waste Package Surface Temperatures      *
1141 /COM, *****
1142 /COM,      wmidside = midlength side surface
1143 /COM,      wwpside = end of WP side surface
1144 /COM,      wmidtop = midlength top surface
1145 /COM,      wwpetop = end of WP top surface
1146 /COM,      wmidbot = midlength bottom surface
1147 /COM,      wwpebot = end of WP bottom surface
1148 NSOL,2,(NODE( WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1149 NSOL,3,(NODE( WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpside,
1150 NSOL,4,(NODE(      0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1151 NSOL,5,(NODE(      0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1152 NSOL,6,(NODE(      0.0, (0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1153 NSOL,7,(NODE(      0.0, (0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1154 PRVAR,2,3,4,5,6,7,
1155 /COM,
1156 /COM, *****
1157 /COM, *      Waste Package Inside Shell Temperatures      *
1158 /COM, *****
1159 /COM,      smidside = midlength side inside shell
1160 /COM,      swpside = end of WP side inside shell
1161 /COM,      smidtop = midlength top inside shell
1162 /COM,      swpetop = end of WP top inside shell
1163 /COM,      smidbot = midlength bottom inside shell
1164 /COM,      swpebot = end of WP bottom inside shell
1165 NSOL,2,(NODE((WPRAD-WPWLL),      0.0,      0.0)),TEMP,,smidside,
1166 NSOL,3,(NODE((WPRAD-WPWLL),      0.0, (WPLEN/2.0-WPWLL))),TEMP,,swpside,
1167 NSOL,4,(NODE(0.0,      (WPRAD-WPWLL),      0.0)),TEMP,,smidtop,
1168 NSOL,5,(NODE(0.0,      (WPRAD-WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1169 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWLL),      0.0)),TEMP,,smidbot,
1170 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1171 PRVAR,2,3,4,5,6,7,
1172 /COM,
1173 /COM, *****
1174 /COM, *      Waste Package Center and Bottom of Invert      *
1175 /COM, *****
1176 /COM,      wmidcent = midlength center of WP
1177 /COM,      shellcnt = end of WP center inside shell
1178 /COM,      wwpecent = end of WP center surface
1179 /COM,      imidbot = midlength bottom of invert
1180 /COM,      iwpebot = end of WP bottom of invert
1181 /COM,      idfebot = end of drift bottom of invert
1182 NSOL,2,(NODE(      0.0,      0.0,      0.0)),TEMP,,wmidcent,
1183 NSOL,3,(NODE(      0.0,      0.0, (WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1184 NSOL,4,(NODE(      0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1185 NSOL,5,(NODE(      0.0, (DFCENT-DFRAD),      0.0)),TEMP,,imidbot,
1186 NSOL,6,(NODE(      0.0, (DFCENT-DFRAD),      (WPLEN/2.0))),TEMP,,iwpebot,
1187 NSOL,7,(NODE(      0.0, (DFCENT-DFRAD),      (WSPC/2.0))),TEMP,,idfebot,
1188 PRVAR,2,3,4,5,6,7,
1189 /COM,
1190 /COM, *****
1191 /COM, *      Surface Temperature of Invert      *
1192 /COM, *****
1193 /COM,      imidcent = midlength center of invert surface
1194 /COM,      iwpecent = end of WP center of invert surface
1195 /COM,      idfecent = end of drift center of invert surface
1196 /COM,      imidedge = midlength corner of invert surface
1197 /COM,      iwpeedge = end of WP corner of invert surface
1198 /COM,      idfeedge = end of drift corner of invert surface
1199 NSOL,2,(NODE(      0.0,      YYY,      0.0)),TEMP,,imidcent,
1200 NSOL,3,(NODE(      0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1201 NSOL,4,(NODE(      0.0,      YYY,      (WSPC/2.0))),TEMP,,idfecent,
1202 NSOL,5,(NODE(      XXX,      YYY,      0.0)),TEMP,,imidedge,
1203 NSOL,6,(NODE(      XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1204 NSOL,7,(NODE(      XXX,      YYY,      (WSPC/2.0))),TEMP,,idfeedge,
1205 PRVAR,2,3,4,5,6,7,
1206 /COM,
1207 /COM, *****
1208 /COM, *      Drift Wall Surface Temperatures      *

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1209 /COM, *****
1210 /COM,      dmidside = midlength drift wall side surface
1211 /COM,      dwpeside = end of WP drift wall side surface
1212 /COM,      ddfeside = end of drift side surface
1213 /COM,      dmidtop = midlength drift wall top surface
1214 /COM,      dwpetop = end of WP drift wall top surface
1215 /COM,      ddfetop = end of drift top surface
1216 NSOL,2,(NODE( DFRAD,      DFCENT,      0.0)),TEMP,,dmidside,
1217 NSOL,3,(NODE( DFRAD,      DFCENT,      (WPLEN/2.0))),TEMP,,dwpeside,
1218 NSOL,4,(NODE( DFRAD,      DFCENT,      (WSPC/2.0))),TEMP,,ddfeside,
1219 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),      0.0)),TEMP,,dmidtop,
1220 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),      (WPLEN/2.0))),TEMP,,dwpetop,
1221 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),      (WSPC/2.0))),TEMP,,ddfetop,
1222 PRVAR,2,3,4,5,6,7,
1223 /COM,
1224 /COM, *****
1225 /COM, *      1 meter Rock Temperatures      *
1226 /COM, *****
1227 /COM,      1midside = midlength 1 meter from drift side
1228 /COM,      1dfeside = end of drift 1 meter from drift side
1229 /COM,      1midtop = midlength 1 meter above drift top
1230 /COM,      1dfetop = end of drift 1 meter above drift top
1231 /COM,      1midbot = midlength 1 meter below drift cut
1232 /COM,      1dfebot = end of drift 1 meter below drift cut
1233 NSOL,2,(NODE((DFRAD+1),      DFCENT,      0.0)),TEMP,,1midside,
1234 NSOL,3,(NODE((DFRAD+1),      DFCENT,      (WSPC/2.0))),TEMP,,1dfeside,
1235 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),      0.0)),TEMP,,1midtop,
1236 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),      (WSPC/2.0))),TEMP,,1dfetop,
1237 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),      0.0)),TEMP,,1midbot,
1238 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),      (WSPC/2.0))),TEMP,,1dfebot,
1239 PRVAR,2,3,4,5,6,7,
1240 /COM,
1241 /COM, *****
1242 /COM, *      3 meter Rock Temperatures      *
1243 /COM, *****
1244 /COM,      3midside = midlength 3 meter from drift side
1245 /COM,      3dfeside = end of drift 3 meter from drift side
1246 /COM,      3midtop = midlength 3 meter above drift top
1247 /COM,      3dfetop = end of drift 3 meter above drift top
1248 /COM,      3midbot = midlength 3 meter below drift cut
1249 /COM,      3dfebot = end of drift 3 meter below drift cut
1250 NSOL,2,(NODE((DFRAD+3),      DFCENT,      0.0)),TEMP,,3midside,
1251 NSOL,3,(NODE((DFRAD+3),      DFCENT,      (WSPC/2.0))),TEMP,,3dfeside,
1252 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),      0.0)),TEMP,,3midtop,
1253 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),      (WSPC/2.0))),TEMP,,3dfetop,
1254 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),      0.0)),TEMP,,3midbot,
1255 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),      (WSPC/2.0))),TEMP,,3dfebot,
1256 PRVAR,2,3,4,5,6,7,
1257 /COM,
1258 /COM, *****
1259 /COM, *      Upper Rock Layer Interface Temperatures      *
1260 /COM, *****
1261 /COM,      surfTCw = center ground surface
1262 /COM,      TCwPTn = center TCw and PTn interface
1263 /COM,      PTnTSw1 = center PTn and TSw1 interface
1264 /COM,      TSw1TSw2 = center TSw1 and TSw2 interface
1265 /COM,      upmodel = center TSw2 1/2 drift spacing above WP
1266 /COM,      middrift = drift to drift midplane at rep. height
1267 NSOL,2,(NODE( 0.0,      Gsurf,      0.0)),TEMP,,surfTCw,
1268 NSOL,3,(NODE( 0.0, (Gsurf-36.00),      0.0)),TEMP,,TCwPTn,
1269 NSOL,4,(NODE( 0.0, (Gsurf-74.10),      0.0)),TEMP,,PTnTSw1,
1270 NSOL,5,(NODE( 0.0, (Gsurf-204.2),      0.0)),TEMP,,TSw1TSw2,
1271 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),      0.0)),TEMP,,upmodel,
1272 NSOL,7,(NODE( MODEL,      DFCENT,      0.0)),TEMP,,middrift,
1273 PRVAR,2,3,4,5,6,7,
1274 /COM,
1275 /COM, *****
1276 /COM, *      Lower Rock Layer Interface Temperatures      *
1277 /COM, *****
1278 /COM,      dwnmodel = center TSw2 1/2 drift spacing below WP

```

```

1279 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1280 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1281 /COM,          CHnvCHnz = center CHn1v and CHn1z interface
1282 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1283 /COM,          CHn2bot = center actual lower contact of CHn2
1284 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1285 NSOL,5,(NODE( 0.0,(GSURF-393.5), 0.0)),TEMP,,TSw2TSw3,
1286 NSOL,6,(NODE( 0.0,(GSURF-409.3), 0.0)),TEMP,,TSw3CHnv,
1287 NSOL,7,(NODE( 0.0,(GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1288 NSOL,7,(NODE( 0.0,(GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1289 NSOL,7,(NODE( 0.0,(GSURF-535.2), 0.0)),TEMP,,CHn2bot,
1290 PRVAR,2,3,4,5,6,7,
1291 FINISH
1292 /EXIT,
1293 /COM,          *****
1294 /COM,          End of batch input file
1295 /COM,          *****
1296 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,

```

```

ABBREVIATION= X11      /show,x11,
ABBREVIATION= VEC      /show,,,1,
ABBREVIATION= RAS      /show,,,0,
ABBREVIATION= ON       /menu,on,
ABBREVIATION= OFF      /menu,off,
ABBREVIATION= NVP      /config,nvpag,512,
ABBREVIATION= QUIT     /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

```

VIEW CONE ANGLE FOR WINDOW 1 25.00

```

*****
END start.ans
*****

```

To start ANSYS menu:

```

type:  x3d  for console
      x11  for X-term

```

type: on

```

*****
*****
ANSYS REVISION 5.0A                      12/15/1994
3-D Model of Waste Package Drift Emplacement  R.Bahney III
*****
*
* File name: c21b5a.inp
*
* 21 PWR WP/MPC (10 cm overpack)
* Average SNF: 22 years old, 42.2 GWd/MTU burnup
* 5.0 m Diameter Drift with Concrete Invert
* 83 MTU/acre (20.5 kgU/m^2) AML (High Thermal Loading)
* Drift spacing = 22.5 m (11.25 m model half width)
* WP c/c spacing = 19.477 m
*
* Material Properties file: Proprep.dat
* SNF Heat Loads file: snf2242.dat
*
*****
Increase the number of database pages from 16 (256) to 32 Mb

```

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

```

*****

```

TITLE=

21 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

```

LENGTH    = METERS(M)
MASS       = KILOGRAMS(KG)
TIME       = SECONDS(SEC)
TEMPERATURE = CENTIGRADE
CURRENT    = AMPS

```

```

*****

```

Define emplacement parameters

```

WPRAD = radius of waste package (m)
DFRAD = radius of drift (m)
INVRT = height of invert backfill floor (m)
WPLEN = length of waste package (m)
WPWLL = thickness of outer barrier (m)
WPSPC = waste package c/c spacing (m)

```

WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .9008000
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.682000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 19.47700
 PARAMETER WPNUM = 21.00000
 PARAMETER MODEL = 11.25000
 PARAMETER OFFST = .1370000

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1
 PARAMETER GSURF = 308.6370

```

PARAMETER DFCENT = .1370000
PARAMETER XXX = 1.734935
PARAMETER YYY = -1.663000
PARAMETER WPVOL = 11.04426
PARAMETER TM_START = 31.55760
PARAMETER TM10 = 3155760.
PARAMETER TM11 = .3155760E+08
PARAMETER TM110 = .3155760E+09
PARAMETER TM1100 = .3155760E+10
PARAMETER TM11000 = .3155760E+11
PARAMETER TME0 = .2840187E+08
PARAMETER TME1 = .3155763E+08
PARAMETER TME9 = .2840184E+09
PARAMETER TME10 = .3155760E+09
PARAMETER TME90 = .2840184E+10
PARAMETER TME100 = .3155760E+10
PARAMETER TME1000 = .3155760E+11

```

Define different element types

1

```

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:56:29 JAN 02, 1995 CP= .830
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

```

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

```

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
TWO-DIMENSIONAL MODEL

```

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **
** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCw	Top Rock Layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smeared Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **
** Emissivity EMIS **
** Conductivity: KXX (W/m/K) **
** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***
SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C MAT= 4 NUM. POINTS= 8
SLOC= 5 .1046900E+08 .1019840E+08 2006500. 2111400.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 11
SLOC= 9 2191200. 2269200. 2341000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 4
SLOC= 1 1844300. 2031500. 2283100. 4559000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 8
SLOC= 5 4518800. 4480000. 2295300. 2448900.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 11
SLOC= 9 2574000. 2679200. 2770200.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 4
SLOC= 1 2443600. 2555700. 2696000. .3660130E+08

PROPERTY TABLE C MAT= 6 NUM. POINTS= 8
SLOC= 5 .3532630E+08 .3417640E+08 1501300. 1601800.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 11
SLOC= 9 1683600. 1752500. 1812000.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 4
SLOC= 1 2603200. 2664700. 2744700. .3660690E+08

PROPERTY TABLE C MAT= 7 NUM. POINTS= 8
SLOC= 5 .3534400E+08 .3420530E+08 2791400. 2741900.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 11
SLOC= 9 2670700. 1581400. 1632000.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 4
SLOC= 1 2430900. 2538500. 2680250. .2798690E+08

PROPERTY TABLE C MAT= 8 NUM. POINTS= 8
SLOC= 5 .2705530E+08 .2621460E+08 2564400. 2593500.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 11
SLOC= 9 2598500. 1981950. 2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
SLOC= 1 21.11000 37.78000 65.56000
93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
SLOC= 7 176.6700 204.4400 232.2200
260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
SLOC= 13 343.3300 371.1100 398.8900
426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
 SLOC= 19 510.0000 537.7800 565.5600
 593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) =	480.8000 477.0000	479.8000 467.8000	478.9000	477.9000
PARAMETER ASSY(13,1) =	459.2000 429.3000	451.1000 423.7000	443.5000	436.2000
PARAMETER ASSY(19,1) =	412.6000 252.6000	404.5000 222.0000	341.6000	294.1000
PARAMETER ASSY(25,1) =	198.5000 139.7000	179.8000 85.70000	162.5000	150.1000
PARAMETER ASSY(31,1) =	67.40000 38.10000	56.80000 34.30000	49.40000	42.90000
PARAMETER ASSY(37,1) =	31.30000 11.10000	29.00000 10.00000	15.50000	12.80000
PARAMETER ASSY(43,1) =	9.200000 7.200000	8.600000	8.000000	7.600000
PARAMETER ASSY(1,0) =	.1000000E-05 .4000000	.1000000 .5000000	.2000000	.3000000
PARAMETER ASSY(7,0) =	.6000000 1.000000	.7000000 2.000000	.8000000	.9000000
PARAMETER ASSY(13,0) =	3.000000 7.000000	4.000000 8.000000	5.000000	6.000000
PARAMETER ASSY(19,0) =	9.000000 40.00000	10.00000 50.00000	20.00000	30.00000
PARAMETER ASSY(25,0) =	60.00000 100.0000	70.00000 200.0000	80.00000	90.00000
PARAMETER ASSY(31,0) =	300.0000 700.0000	400.0000 800.0000	500.0000	600.0000
PARAMETER ASSY(37,0) =	900.0000 4000.000	1000.000 5000.000	2000.000	3000.000
PARAMETER ASSY(43,0) =	6000.000 10000.00	7000.000	8000.000	9000.000

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
 INPUT MATRIX= ASSY(1,0)
 INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
 RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.9014
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
 WPHOT(1) = COPY ASSY(1)
 SCALE FACTORS RESULT= 1.9014 INPUT= 1.0000
 VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000

PARAMETER WPTOP(0,1) = 1.000000

PARAMETER WPSID(0,1) = 1.000000
 PARAMETER WPBOT(0,1) = 1.000000
 PARAMETER DFTOP(0,1) = 1.000000
 PARAMETER DFSID(0,1) = 1.000000
 PARAMETER DFEDG(0,1) = 1.000000
 PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
 (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-11.2500	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	11.2500	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	-11.2500	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	11.2500	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	-11.2500	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	9	X,Y,Z=	11.2500	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	-11.2500	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	11.2500	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	-11.2500	11.3870	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.000000E+00	11.3870	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	11.2500	11.3870	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	-11.2500	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	11.2500	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	-11.2500	-11.1130	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.000000E+00	-11.1130	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	11.2500	-11.1130	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	-11.2500	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	23	X,Y,Z=	11.2500	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	24	X,Y,Z=	-11.2500	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	26	X,Y,Z=	11.2500	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	27	X,Y,Z=	-11.2500	-105.863	.000000E+00	IN CSYS= 0

KEYPOINT	28	X,Y,Z=	.000000E+00	-105.863	.000000E+00	IN CSYS=	0
KEYPOINT	29	X,Y,Z=	11.2500	-105.863	.000000E+00	IN CSYS=	0
KEYPOINT	30	X,Y,Z=	-11.2500	-209.863	.000000E+00	IN CSYS=	0
KEYPOINT	31	X,Y,Z=	.000000E+00	-209.863	.000000E+00	IN CSYS=	0
KEYPOINT	32	X,Y,Z=	11.2500	-209.863	.000000E+00	IN CSYS=	0
KEYPOINT	33	X,Y,Z=	-11.2500	-991.363	.000000E+00	IN CSYS=	0
KEYPOINT	34	X,Y,Z=	.000000E+00	-991.363	.000000E+00	IN CSYS=	0
KEYPOINT	35	X,Y,Z=	11.2500	-991.363	.000000E+00	IN CSYS=	0

Define lines connecting rock layers

(L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS		1	2			
LINE NO.=	1	KP1=	1	TAN1=	-1.0000	.0000 .0000
		KP2=	2	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		2	3			
LINE NO.=	2	KP1=	2	TAN1=	-1.0000	.0000 .0000
		KP2=	3	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		4	5			
LINE NO.=	3	KP1=	4	TAN1=	-1.0000	.0000 .0000
		KP2=	5	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		5	6			
LINE NO.=	4	KP1=	5	TAN1=	-1.0000	.0000 .0000
		KP2=	6	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		7	8			
LINE NO.=	5	KP1=	7	TAN1=	-1.0000	.0000 .0000
		KP2=	8	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		8	9			
LINE NO.=	6	KP1=	8	TAN1=	-1.0000	.0000 .0000
		KP2=	9	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		10	11			
LINE NO.=	7	KP1=	10	TAN1=	-1.0000	.0000 .0000
		KP2=	11	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		11	12			
LINE NO.=	8	KP1=	11	TAN1=	-1.0000	.0000 .0000
		KP2=	12	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		13	14			
LINE NO.=	9	KP1=	13	TAN1=	-1.0000	.0000 .0000
		KP2=	14	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		14	15			
LINE NO.=	10	KP1=	14	TAN1=	-1.0000	.0000 .0000
		KP2=	15	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		18	19			
LINE NO.=	11	KP1=	18	TAN1=	-1.0000	.0000 .0000
		KP2=	19	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		19	20			
LINE NO.=	12	KP1=	19	TAN1=	-1.0000	.0000 .0000
		KP2=	20	TAN2=	1.0000	.0000 .0000

LINE CONNECTS KEYPOINTS		21	22			
LINE NO.=	13	KP1=	21	TAN1=	-1.0000	.0000 .0000
		KP2=	22	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		22	23			
LINE NO.=	14	KP1=	22	TAN1=	-1.0000	.0000 .0000
		KP2=	23	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		24	25			
LINE NO.=	15	KP1=	24	TAN1=	-1.0000	.0000 .0000
		KP2=	25	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		25	26			
LINE NO.=	16	KP1=	25	TAN1=	-1.0000	.0000 .0000
		KP2=	26	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		27	28			
LINE NO.=	17	KP1=	27	TAN1=	-1.0000	.0000 .0000
		KP2=	28	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		28	29			
LINE NO.=	18	KP1=	28	TAN1=	-1.0000	.0000 .0000
		KP2=	29	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		30	31			
LINE NO.=	19	KP1=	30	TAN1=	-1.0000	.0000 .0000
		KP2=	31	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		31	32			
LINE NO.=	20	KP1=	31	TAN1=	-1.0000	.0000 .0000
		KP2=	32	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		33	34			
LINE NO.=	21	KP1=	33	TAN1=	-1.0000	.0000 .0000
		KP2=	34	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		34	35			
LINE NO.=	22	KP1=	34	TAN1=	-1.0000	.0000 .0000
		KP2=	35	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		1	4			
LINE NO.=	23	KP1=	1	TAN1=	.0000	1.0000 .0000
		KP2=	4	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		2	5			
LINE NO.=	24	KP1=	2	TAN1=	.0000	1.0000 .0000
		KP2=	5	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		3	6			
LINE NO.=	25	KP1=	3	TAN1=	.0000	1.0000 .0000
		KP2=	6	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		4	7			
LINE NO.=	26	KP1=	4	TAN1=	.0000	1.0000 .0000
		KP2=	7	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		5	8			
LINE NO.=	27	KP1=	5	TAN1=	.0000	1.0000 .0000
		KP2=	8	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		6	9			
LINE NO.=	28	KP1=	6	TAN1=	.0000	1.0000 .0000
		KP2=	9	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		7	10			
LINE NO.=	29	KP1=	7	TAN1=	.0000	1.0000 .0000
		KP2=	10	TAN2=	.0000	-1.0000 .0000
LINE CONNECTS KEYPOINTS		8	11			
LINE NO.=	30	KP1=	8	TAN1=	.0000	1.0000 .0000

	KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		9	12			
LINE NO.= 31	KP1=	9	TAN1=	.0000	1.0000	.0000
	KP2=	12	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		10	13			
LINE NO.= 32	KP1=	10	TAN1=	.0000	1.0000	.0000
	KP2=	13	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		11	14			
LINE NO.= 33	KP1=	11	TAN1=	.0000	1.0000	.0000
	KP2=	14	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		12	15			
LINE NO.= 34	KP1=	12	TAN1=	.0000	1.0000	.0000
	KP2=	15	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		13	16			
LINE NO.= 35	KP1=	13	TAN1=	.0000	1.0000	.0000
	KP2=	16	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		15	17			
LINE NO.= 36	KP1=	15	TAN1=	.0000	1.0000	.0000
	KP2=	17	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		16	18			
LINE NO.= 37	KP1=	16	TAN1=	.0000	1.0000	.0000
	KP2=	18	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		17	20			
LINE NO.= 38	KP1=	17	TAN1=	.0000	1.0000	.0000
	KP2=	20	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		18	21			
LINE NO.= 39	KP1=	18	TAN1=	.0000	1.0000	.0000
	KP2=	21	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		19	22			
LINE NO.= 40	KP1=	19	TAN1=	.0000	1.0000	.0000
	KP2=	22	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		20	23			
LINE NO.= 41	KP1=	20	TAN1=	.0000	1.0000	.0000
	KP2=	23	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		21	24			
LINE NO.= 42	KP1=	21	TAN1=	.0000	1.0000	.0000
	KP2=	24	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		22	25			
LINE NO.= 43	KP1=	22	TAN1=	.0000	1.0000	.0000
	KP2=	25	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		23	26			
LINE NO.= 44	KP1=	23	TAN1=	.0000	1.0000	.0000
	KP2=	26	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		24	27			
LINE NO.= 45	KP1=	24	TAN1=	.0000	1.0000	.0000
	KP2=	27	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		25	28			
LINE NO.= 46	KP1=	25	TAN1=	.0000	1.0000	.0000
	KP2=	28	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		26	29			
LINE NO.= 47	KP1=	26	TAN1=	.0000	1.0000	.0000
	KP2=	29	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 27 30
 LINE NO.= 48 KP1= 27 TAN1= .0000 1.0000 .0000
 KP2= 30 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8

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      (TRAVERSED IN SAME DIRECTION AS LINE 33)
AREA NUMBER =      8
DEFINE AREA BY LIST OF LINES
  LINE LIST = 39 13 40 11
  (TRAVERSED IN SAME DIRECTION AS LINE 39)
AREA NUMBER =      9
DEFINE AREA BY LIST OF LINES
  LINE LIST = 40 14 41 12
  (TRAVERSED IN SAME DIRECTION AS LINE 40)
AREA NUMBER =     10
DEFINE AREA BY LIST OF LINES
  LINE LIST = 42 15 43 13
  (TRAVERSED IN SAME DIRECTION AS LINE 42)
AREA NUMBER =     11
DEFINE AREA BY LIST OF LINES
  LINE LIST = 43 16 44 14
  (TRAVERSED IN SAME DIRECTION AS LINE 43)
AREA NUMBER =     12
DEFINE AREA BY LIST OF LINES
  LINE LIST = 45 17 46 15
  (TRAVERSED IN SAME DIRECTION AS LINE 45)
AREA NUMBER =     13
DEFINE AREA BY LIST OF LINES
  LINE LIST = 46 18 47 16
  (TRAVERSED IN SAME DIRECTION AS LINE 46)
AREA NUMBER =     14
DEFINE AREA BY LIST OF LINES
  LINE LIST = 48 19 49 17
  (TRAVERSED IN SAME DIRECTION AS LINE 48)
AREA NUMBER =     15
DEFINE AREA BY LIST OF LINES
  LINE LIST = 49 20 50 18
  (TRAVERSED IN SAME DIRECTION AS LINE 49)
AREA NUMBER =     16
DEFINE AREA BY LIST OF LINES
  LINE LIST = 51 21 52 19
  (TRAVERSED IN SAME DIRECTION AS LINE 51)
AREA NUMBER =     17
DEFINE AREA BY LIST OF LINES
  LINE LIST = 52 22 53 20
  (TRAVERSED IN SAME DIRECTION AS LINE 52)
AREA NUMBER =     18
*****
      Define center and axis keypoints for drift
      (K's 36,37,38,39,40,41,42,43)
KEYPOINT 36 X,Y,Z= .000000E+00 .000000E+00 .000000E+00 IN CSYS= 0
KEYPOINT 37 X,Y,Z= 000000E+00 .000000E+00 2.74100 IN CSYS= 0

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KEYPOINT 38 X,Y,Z= .000000E+00 .000000E+00 2.84100 IN CSYS= 0
 KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.74100 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.84100 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .137000 9.73850 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .137000 -9.73850 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .8008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .9008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.36300 .000000E+00 IN CSYS= 0

KEYPOINT 53 X,Y,Z= 1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 55 X,Y,Z= .000000E+00 2.63700 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.66300 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44

LINE NO.=	82	KP1=	36	TAN1=	.0000	1.0000	.0000
		KP2=	44	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 36 45							
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 36 46							
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000	.0000
		KP2=	46	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 36 47							
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 44 48							
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000	.0000
		KP2=	48	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 45 49							
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 46 50							
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000	.0000
		KP2=	50	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 47 51							
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 50 55							
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000	.0000
		KP2=	55	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 48 58							
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000	.0000
		KP2=	58	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 58 52							
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000	.0000
		KP2=	52	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 57 58							
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 58 53							
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 52 59							
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000	.0000
		KP2=	59	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 54 60							
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 55 61							
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000	.0000
		KP2=	61	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 56 62							
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 59 63							
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000	.0000
		KP2=	63	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 60 64
 LINE NO.= 100 KP1= 60 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 61 65
 LINE NO.= 101 KP1= 61 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 62 66
 LINE NO.= 102 KP1= 62 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= -1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 63 19
 LINE NO.= 103 KP1= 63 TAN1= .0000 1.0000 .0000
 KP2= 19 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 64 17
 LINE NO.= 104 KP1= 64 TAN1= -1.0000 .0000 .0000
 KP2= 17 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 65 14
 LINE NO.= 105 KP1= 65 TAN1= .0000 -1.0000 .0000
 KP2= 14 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 66 16
 LINE NO.= 106 KP1= 66 TAN1= 1.0000 .0000 .0000
 KP2= 16 TAN2= -1.0000 .0000 .0000

Define areas around drift
 (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
 (35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 82 60 83
 (TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
 LINE LIST = 83 61 84
 (TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
 LINE LIST = 85 84 62
 (TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
 LINE LIST = 63 82 85
 (TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
 LINE LIST = 86 64 87 60
 (TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
 LINE LIST = 61 87 65 88
 (TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
 LINE LIST = 89 62 88 66

(TRAVERSED IN SAME DIRECTION AS LINE 89)
AREA NUMBER = 25
DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)
AREA NUMBER = 26
DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)
AREA NUMBER = 27
DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)
AREA NUMBER = 28
DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)
AREA NUMBER = 29
DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)
AREA NUMBER = 30
DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)
AREA NUMBER = 31
DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)
AREA NUMBER = 32
DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)
AREA NUMBER = 33
DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)
AREA NUMBER = 34
DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)
AREA NUMBER = 35
DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)
AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES

LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1

1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1

10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide

(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 6, SPACING RATIO = 6.000

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 6, SPACING RATIO = 6.000

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000

12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = .300

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 3.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TSw3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHn1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHn1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES

```

      LINES =      36      10

COMPOSITE LINE NO.=      110 KP1=      17 KP2=      14

CONCATENATE LINES
      LINES =      9      35

COMPOSITE LINE NO.=      111 KP1=      14 KP2=      16

CONCATENATE LINES
      LINES =      37      11

COMPOSITE LINE NO.=      112 KP1=      16 KP2=      19
*****
      Mesh 2-D areas
      (first WP, then invert, DF wall and rock layers)
      Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
      PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO      10

ELEMENT TYPE SET TO      1

GENERATE NODES AND ELEMENTS
      IN AREAS      19 TO      22 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      4
MAXIMUM NODE NUMBER      =      121
MAXIMUM ELEMENT NUMBER      =      108

MATERIAL NUMBER SET TO      13

GENERATE NODES AND ELEMENTS
      IN AREAS      23 TO      26 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      4
MAXIMUM NODE NUMBER      =      145
MAXIMUM ELEMENT NUMBER      =      132
      Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
      PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
      OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO      11

GENERATE NODES AND ELEMENTS
      IN AREAS      27 TO      28 IN STEPS OF      1
      ** AREA      27 MESHED WITH      4 QUADRILATERALS,      2 TRIANGLES **
      ** AREA      28 MESHED WITH      4 QUADRILATERALS,      2 TRIANGLES **

NUMBER OF AREAS MESHED      =      2
MAXIMUM NODE NUMBER      =      164
MAXIMUM ELEMENT NUMBER      =      144
      Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
      PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO      4

GENERATE NODES AND ELEMENTS
      IN AREAS      29 TO      32 IN STEPS OF      3

NUMBER OF AREAS MESHED      =      2
MAXIMUM NODE NUMBER      =      218
MAXIMUM ELEMENT NUMBER      =      184

```

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 275
MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 395
MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
IN AREAS 37 TO 40 IN STEPS OF 1

*** WARNING *** CP= 7.040 TIME= 14:56:40
Meshing of area 37 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.040 TIME= 14:56:40
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
353

*** WARNING *** CP= 7.100 TIME= 14:56:40
Meshing of area 38 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.100 TIME= 14:56:40
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
398

*** WARNING *** CP= 7.160 TIME= 14:56:40
Meshing of area 39 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.160 TIME= 14:56:40
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
432

*** WARNING *** CP= 7.220 TIME= 14:56:40
Meshing of area 40 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.220 TIME= 14:56:40
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
442

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 515
MAXIMUM ELEMENT NUMBER = 464

GENERATE NODES AND ELEMENTS
IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 683
MAXIMUM ELEMENT NUMBER = 608

TSw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 746
MAXIMUM ELEMENT NUMBER = 662
PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 767
MAXIMUM ELEMENT NUMBER = 680
TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 788
MAXIMUM ELEMENT NUMBER = 698
TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 809
MAXIMUM ELEMENT NUMBER = 716
CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 823
MAXIMUM ELEMENT NUMBER = 728
CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 872
MAXIMUM ELEMENT NUMBER = 770
CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 8.240 TIME= 14:56:41
Meshing of area 17 produced 12 poorly shaped elements.

*** NOTE *** CP= 8.240 TIME= 14:56:41
Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

779 780 781 782 791 792 793 794 803 804
805 806

*** WARNING *** CP= 8.310 TIME= 14:56:41
Meshing of area 18 produced 12 poorly shaped elements.

*** NOTE *** CP= 8.310 TIME= 14:56:41
Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

815 816 817 818 827 828 829 830 839 840
841 842

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 956
MAXIMUM ELEMENT NUMBER = 842

Delete concatenated lines
(L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
(V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
54,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
54,

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,

ALONG LINES

56,
(plot area numbers before next drag commands)

DRAG AREAS

44, 47, 50, 52,

ALONG LINES

55,

DRAG AREAS

57, 61, 65, 68,

ALONG LINES

55,

DRAG AREAS

72, 75, 78, 80,

ALONG LINES

57,

DRAG AREAS

85, 89, 93, 96,

ALONG LINES

57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172
LINE	175 USED FOR LINE(S)	187
LINE	176 USED FOR LINE(S)	193
LINE	177 USED FOR LINE(S)	192
LINE	179 USED FOR LINE(S)	194
LINE	180 USED FOR LINE(S)	195

LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1561
 MAXIMUM ELEMENT NUMBER = 1382

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1681
 MAXIMUM ELEMENT NUMBER = 1502

GENERATE NODES AND ELEMENTS
 IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 1826
 MAXIMUM ELEMENT NUMBER = 1634

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
 IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 2431
 MAXIMUM ELEMENT NUMBER = 2174

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2551
MAXIMUM ELEMENT NUMBER = 2294

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2696
MAXIMUM ELEMENT NUMBER = 2426

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2810
MAXIMUM ELEMENT NUMBER = 2498
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3188
MAXIMUM ELEMENT NUMBER = 2738

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3386
MAXIMUM ELEMENT NUMBER = 2858

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3584
MAXIMUM ELEMENT NUMBER = 2978

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4088
MAXIMUM ELEMENT NUMBER = 3338

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4352
MAXIMUM ELEMENT NUMBER = 3518

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4616
MAXIMUM ELEMENT NUMBER = 3698
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 27.770 TIME= 14:57:01
Meshing of volume 43 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3735 3736 3737 3738 3739 3740 3741 3742
3743 3744 3745 3746 3747 3748 3749 3750
3751 3752

*** WARNING *** CP= 28.280 TIME= 14:57:02
Meshing of volume 44 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
4005 4006 4007 4008 4009 4010 4011 4012
4013 4014 4015 4016 4017 4018 4019 4020
4021 4022

MAXIMUM NODE NUMBER = 5120
MAXIMUM ELEMENT NUMBER = 4058

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 28.960 TIME= 14:57:02
Meshing of volume 46 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
4101 4102 4103 4104 4105 4106 4161 4162
4163 4164 4165 4166 4221 4222 4223 4224
4225 4226

MAXIMUM NODE NUMBER = 5384
MAXIMUM ELEMENT NUMBER = 4238
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 29.350 TIME= 14:57:03
Meshing of area 200 produced 1 poorly shaped faces.

*** NOTE *** CP= 29.350 TIME= 14:57:03
Worst shape angle is 41 degrees.

*** WARNING *** CP= 29.800 TIME= 14:57:03
Meshing of volume 45 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
4365 4366 4367 4368 4369 4370 4371 4372
4373 4374 4375 4376 4377 4378 4379 4380
4381 4382

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 5648
MAXIMUM ELEMENT NUMBER = 4418

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSW2

(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6740
MAXIMUM ELEMENT NUMBER = 5282
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7160
MAXIMUM ELEMENT NUMBER = 5606
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7328
MAXIMUM ELEMENT NUMBER = 5714
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7496
MAXIMUM ELEMENT NUMBER = 5822
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7664
MAXIMUM ELEMENT NUMBER = 5930
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7790
MAXIMUM ELEMENT NUMBER = 6002
Extrude CHn1z

(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8126
MAXIMUM ELEMENT NUMBER = 6254
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 35.830 TIME= 14:57:09
Meshing of volume 63 produced 81 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

6285	6291	6292	6297	6298	6299	6303	6304
6305	6306	6309	6310	6311	6312	6313	6315
6316	6317	6318	6319	6320	6321	6322	6323
6324	6325	6326	6357	6363	6364	6369	6370
6371	6375	6376	6377	6378	6381	6382	6383
6384	6385	6387	6388	6389	6390	6391	6392
6393	6394	6395	6396	6397	6398	6429	6435
6436	6441	6442	6443	6447	6448	6449	6450
6453	6454	6455	6456	6457	6459	6460	6461
6462	6463	6464	6465	6466	6467	6468	6469
6470							

*** WARNING *** CP= 36.380 TIME= 14:57:10
Meshing of volume 64 produced 81 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

6501	6507	6508	6513	6514	6515	6519	6520
6521	6522	6525	6526	6527	6528	6529	6531
6532	6533	6534	6535	6536	6537	6538	6539
6540	6541	6542	6573	6579	6580	6585	6586
6587	6591	6592	6593	6594	6597	6598	6599
6600	6601	6603	6604	6605	6606	6607	6608
6609	6610	6611	6612	6613	6614	6645	6651
6652	6657	6658	6659	6663	6664	6665	6666
6669	6670	6671	6672	6673	6675	6676	6677
6678	6679	6680	6681	6682	6683	6684	6685
6686							

MAXIMUM NODE NUMBER = 8672
MAXIMUM ELEMENT NUMBER = 6686

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 6196	USED FOR NODES	7497
NODE 7498	USED FOR NODES	7665
NODE 6260	USED FOR NODES	7516
NODE 7792	USED FOR NODES	8127
NODE 5410	USED FOR NODES	5711
NODE 5411	USED FOR NODES	5712
NODE 5412	USED FOR NODES	5713
NODE 5413	USED FOR NODES	5714
NODE 6257	USED FOR NODES	7513

NODE	6258	USED	FOR	NODES	7514
NODE	6261	USED	FOR	NODES	7517
NODE	6259	USED	FOR	NODES	7515
NODE	5122	USED	FOR	NODES	6195
NODE	5414	USED	FOR	NODES	5715
NODE	7523	USED	FOR	NODES	7677
NODE	7524	USED	FOR	NODES	7678
NODE	7525	USED	FOR	NODES	7679
NODE	7526	USED	FOR	NODES	7680
NODE	7527	USED	FOR	NODES	7681
NODE	7833	USED	FOR	NODES	8179
NODE	7834	USED	FOR	NODES	8180
NODE	7835	USED	FOR	NODES	8181
NODE	7836	USED	FOR	NODES	8182
NODE	7837	USED	FOR	NODES	8183
NODE	6782	USED	FOR	NODES	7188
NODE	6783	USED	FOR	NODES	7189
NODE	6784	USED	FOR	NODES	7190
NODE	6785	USED	FOR	NODES	7191
NODE	7177	USED	FOR	NODES	7355
NODE	7178	USED	FOR	NODES	7356
NODE	7179	USED	FOR	NODES	7357
NODE	6741	USED	FOR	NODES	7162
NODE	5649	USED	FOR	NODES	6742
NODE	5121	USED	FOR	NODES	5385
NODE	5165	USED	FOR	NODES	5386
NODE	5166	USED	FOR	NODES	5387
NODE	5167	USED	FOR	NODES	5388
NODE	5168	USED	FOR	NODES	5389
NODE	5169	USED	FOR	NODES	5390
NODE	7161	USED	FOR	NODES	7330
NODE	6781	USED	FOR	NODES	7187
NODE	5701	USED	FOR	NODES	6791
NODE	5702	USED	FOR	NODES	6792
NODE	7666	USED	FOR	NODES	7791
NODE	5703	USED	FOR	NODES	6793
NODE	5704	USED	FOR	NODES	6794
NODE	5705	USED	FOR	NODES	6795
NODE	5409	USED	FOR	NODES	5650
NODE	7687	USED	FOR	NODES	7823
NODE	7180	USED	FOR	NODES	7358
NODE	7688	USED	FOR	NODES	7824
NODE	7689	USED	FOR	NODES	7825
NODE	7690	USED	FOR	NODES	7826
NODE	7691	USED	FOR	NODES	7827
NODE	7181	USED	FOR	NODES	7359
NODE	5170	USED	FOR	NODES	6247
NODE	5171	USED	FOR	NODES	6248
NODE	5172	USED	FOR	NODES	6249
NODE	5173	USED	FOR	NODES	6250
NODE	5174	USED	FOR	NODES	6251
NODE	5290	USED	FOR	NODES	5404
NODE	5294	USED	FOR	NODES	5408
NODE	5146	USED	FOR	NODES	5393
NODE	5291	USED	FOR	NODES	5405
NODE	5293	USED	FOR	NODES	5407
NODE	5292	USED	FOR	NODES	5406
NODE	7502	USED	FOR	NODES	7673
NODE	6209	USED	FOR	NODES	7507
NODE	7800	USED	FOR	NODES	8155
NODE	5190	USED	FOR	NODES	6267
NODE	5191	USED	FOR	NODES	6268
NODE	6277	USED	FOR	NODES	7533
NODE	6278	USED	FOR	NODES	7534
NODE	6279	USED	FOR	NODES	7535
NODE	6280	USED	FOR	NODES	7536
NODE	6281	USED	FOR	NODES	7537
NODE	7543	USED	FOR	NODES	7697
NODE	7544	USED	FOR	NODES	7698
NODE	7545	USED	FOR	NODES	7699

NODE 7546	USED FOR NODES	7700		
NODE 7547	USED FOR NODES	7701		
NODE 5192	USED FOR NODES	6269		
NODE 5193	USED FOR NODES	6270		
NODE 7853	USED FOR NODES	8199		
NODE 7854	USED FOR NODES	8200		
NODE 7855	USED FOR NODES	8201		
NODE 7856	USED FOR NODES	8202		
NODE 7857	USED FOR NODES	8203		
NODE 5194	USED FOR NODES	6271		
NODE 5721	USED FOR NODES	6811		
NODE 5722	USED FOR NODES	6812		
NODE 5723	USED FOR NODES	6813		
NODE 5724	USED FOR NODES	6814		
NODE 5725	USED FOR NODES	6815		
NODE 5677	USED FOR NODES	6752		
NODE 5459	USED FOR NODES	5731		
NODE 6763	USED FOR NODES	7166		
NODE 7197	USED FOR NODES	7375		
NODE 7198	USED FOR NODES	7376		
NODE 5460	USED FOR NODES	5732		
NODE 5130	USED FOR NODES	6223		
NODE 7669	USED FOR NODES	7809		
NODE 6801	USED FOR NODES	7207		
NODE 6802	USED FOR NODES	7208		
NODE 6803	USED FOR NODES	7209		
NODE 6804	USED FOR NODES	7210		
NODE 6805	USED FOR NODES	7211		
NODE 5461	USED FOR NODES	5733		
NODE 7199	USED FOR NODES	7377		
NODE 5462	USED FOR NODES	5734		
NODE 5463	USED FOR NODES	5735		
NODE 7200	USED FOR NODES	7378		
NODE 7707	USED FOR NODES	7843		
NODE 7708	USED FOR NODES	7844		
NODE 7709	USED FOR NODES	7845		
NODE 7710	USED FOR NODES	7846		
NODE 7711	USED FOR NODES	7847		
NODE 7171	USED FOR NODES	7334		
NODE 7201	USED FOR NODES	7379		
NODE 5457	USED FOR NODES	5663		
NODE 5286	USED FOR NODES	5400		
NODE 5145	USED FOR NODES	5392		
NODE 5288	USED FOR NODES	5402		
NODE 5289	USED FOR NODES	5403		
NODE 5285	USED FOR NODES	5399		
NODE 5287	USED FOR NODES	5401		
NODE 4148	USED FOR NODES	4354	5185	5394
NODE 4149	USED FOR NODES	4355	5186	5395
NODE 4150	USED FOR NODES	4356	5187	5396
NODE 4151	USED FOR NODES	4357	5188	5397
NODE 4152	USED FOR NODES	4358	5189	5398
NODE 4089	USED FOR NODES	4353	5135	5391
NODE 4392	USED FOR NODES	5536		
NODE 4393	USED FOR NODES	5537		
NODE 4394	USED FOR NODES	5538		
NODE 4395	USED FOR NODES	5539		
NODE 4396	USED FOR NODES	5540		
NODE 4383	USED FOR NODES	5495		
NODE 4202	USED FOR NODES	5234		
NODE 4198	USED FOR NODES	5230		
NODE 4200	USED FOR NODES	5232		
NODE 4201	USED FOR NODES	5233		
NODE 4199	USED FOR NODES	5231		
NODE 4091	USED FOR NODES	5136		
NODE 4384	USED FOR NODES	5494		
NODE 4092	USED FOR NODES	5137		
NODE 4203	USED FOR NODES	5235		
NODE 4204	USED FOR NODES	5236		
NODE 4205	USED FOR NODES	5237		

NODE	4206	USED	FOR	NODES	5238
NODE	4207	USED	FOR	NODES	5239
NODE	4397	USED	FOR	NODES	5531
NODE	4398	USED	FOR	NODES	5532
NODE	4399	USED	FOR	NODES	5533
NODE	4400	USED	FOR	NODES	5534
NODE	4401	USED	FOR	NODES	5535
NODE	4385	USED	FOR	NODES	5493
NODE	4093	USED	FOR	NODES	5138
NODE	4402	USED	FOR	NODES	5526
NODE	4403	USED	FOR	NODES	5527
NODE	4208	USED	FOR	NODES	5240
NODE	4209	USED	FOR	NODES	5241
NODE	4210	USED	FOR	NODES	5242
NODE	4211	USED	FOR	NODES	5243
NODE	4212	USED	FOR	NODES	5244
NODE	4404	USED	FOR	NODES	5528
NODE	4405	USED	FOR	NODES	5529
NODE	4406	USED	FOR	NODES	5530
NODE	4259	USED	FOR	NODES	4373
NODE	4114	USED	FOR	NODES	4361
NODE	4260	USED	FOR	NODES	4374
NODE	4261	USED	FOR	NODES	4375
NODE	4262	USED	FOR	NODES	4376
NODE	4258	USED	FOR	NODES	4372
NODE	4386	USED	FOR	NODES	5492
NODE	4094	USED	FOR	NODES	5139
NODE	4407	USED	FOR	NODES	5521
NODE	4408	USED	FOR	NODES	5522
NODE	4409	USED	FOR	NODES	5523
NODE	4410	USED	FOR	NODES	5524
NODE	4411	USED	FOR	NODES	5525
NODE	4213	USED	FOR	NODES	5245
NODE	4214	USED	FOR	NODES	5246
NODE	4215	USED	FOR	NODES	5247
NODE	4216	USED	FOR	NODES	5248
NODE	4217	USED	FOR	NODES	5249
NODE	4113	USED	FOR	NODES	4360
NODE	4253	USED	FOR	NODES	4367
NODE	4254	USED	FOR	NODES	4368
NODE	4255	USED	FOR	NODES	4369
NODE	4256	USED	FOR	NODES	4370
NODE	4257	USED	FOR	NODES	4371
NODE	4412	USED	FOR	NODES	5516
NODE	4413	USED	FOR	NODES	5517
NODE	4414	USED	FOR	NODES	5518
NODE	4415	USED	FOR	NODES	5519
NODE	4416	USED	FOR	NODES	5520
NODE	4387	USED	FOR	NODES	5491
NODE	4095	USED	FOR	NODES	5140
NODE	4218	USED	FOR	NODES	5250
NODE	4219	USED	FOR	NODES	5251
NODE	4220	USED	FOR	NODES	5252
NODE	4222	USED	FOR	NODES	5254
NODE	4221	USED	FOR	NODES	5253
NODE	5458	USED	FOR	NODES	5664
NODE	5465	USED	FOR	NODES	5737
NODE	5468	USED	FOR	NODES	5740
NODE	5464	USED	FOR	NODES	5736
NODE	5467	USED	FOR	NODES	5739
NODE	5466	USED	FOR	NODES	5738
NODE	6809	USED	FOR	NODES	7215
NODE	6284	USED	FOR	NODES	7540
NODE	5199	USED	FOR	NODES	6276
NODE	7549	USED	FOR	NODES	7703
NODE	6283	USED	FOR	NODES	7539
NODE	6810	USED	FOR	NODES	7216
NODE	5728	USED	FOR	NODES	6818
NODE	7801	USED	FOR	NODES	8156
NODE	5131	USED	FOR	NODES	6224

NODE 6210	USED FOR NODES	7508		
NODE 7548	USED FOR NODES	7702		
NODE 7204	USED FOR NODES	7382		
NODE 6286	USED FOR NODES	7542		
NODE 5726	USED FOR NODES	6816		
NODE 7205	USED FOR NODES	7383		
NODE 7550	USED FOR NODES	7704		
NODE 5197	USED FOR NODES	6274		
NODE 7860	USED FOR NODES	8206		
NODE 7862	USED FOR NODES	8208		
NODE 7551	USED FOR NODES	7705		
NODE 7670	USED FOR NODES	7810		
NODE 5195	USED FOR NODES	6272		
NODE 7712	USED FOR NODES	7848		
NODE 7552	USED FOR NODES	7706		
NODE 6806	USED FOR NODES	7212		
NODE 7206	USED FOR NODES	7384		
NODE 5727	USED FOR NODES	6817		
NODE 7858	USED FOR NODES	8204		
NODE 6764	USED FOR NODES	7167		
NODE 5730	USED FOR NODES	6820		
NODE 6285	USED FOR NODES	7541		
NODE 7859	USED FOR NODES	8205		
NODE 5196	USED FOR NODES	6273		
NODE 7713	USED FOR NODES	7849		
NODE 7714	USED FOR NODES	7850		
NODE 5198	USED FOR NODES	6275		
NODE 7861	USED FOR NODES	8207		
NODE 6808	USED FOR NODES	7214		
NODE 6807	USED FOR NODES	7213		
NODE 7503	USED FOR NODES	7674		
NODE 5729	USED FOR NODES	6819		
NODE 6282	USED FOR NODES	7538		
NODE 7202	USED FOR NODES	7380		
NODE 7172	USED FOR NODES	7335		
NODE 5678	USED FOR NODES	6753		
NODE 7203	USED FOR NODES	7381		
NODE 7716	USED FOR NODES	7852		
NODE 7715	USED FOR NODES	7851		
NODE 3189	USED FOR NODES	3387	4103	4359
NODE 3242	USED FOR NODES	3388	4138	4362
NODE 3243	USED FOR NODES	3389	4139	4363
NODE 3244	USED FOR NODES	3390	4140	4364
NODE 3245	USED FOR NODES	3391	4141	4365
NODE 3246	USED FOR NODES	3392	4142	4366
NODE 3420	USED FOR NODES	4504		
NODE 3421	USED FOR NODES	4505		
NODE 3422	USED FOR NODES	4506		
NODE 3423	USED FOR NODES	4507		
NODE 3424	USED FOR NODES	4508		
NODE 3411	USED FOR NODES	4463		
NODE 3291	USED FOR NODES	4157		
NODE 3287	USED FOR NODES	4153		
NODE 3288	USED FOR NODES	4154		
NODE 3289	USED FOR NODES	4155		
NODE 3290	USED FOR NODES	4156		
NODE 3191	USED FOR NODES	4104		
NODE 3425	USED FOR NODES	4499		
NODE 3426	USED FOR NODES	4500		
NODE 3427	USED FOR NODES	4501		
NODE 3428	USED FOR NODES	4502		
NODE 3429	USED FOR NODES	4503		
NODE 3412	USED FOR NODES	4462		
NODE 3192	USED FOR NODES	4105		
NODE 3292	USED FOR NODES	4158		
NODE 3293	USED FOR NODES	4159		
NODE 3294	USED FOR NODES	4160		
NODE 3295	USED FOR NODES	4161		
NODE 3296	USED FOR NODES	4162		
NODE 4417	USED FOR NODES	5511		

NODE 4418	USED FOR NODES	5512
NODE 4419	USED FOR NODES	5513
NODE 4420	USED FOR NODES	5514
NODE 4421	USED FOR NODES	5515
NODE 4096	USED FOR NODES	5141
NODE 4223	USED FOR NODES	5255
NODE 4224	USED FOR NODES	5256
NODE 4225	USED FOR NODES	5257
NODE 4226	USED FOR NODES	5258
NODE 4227	USED FOR NODES	5259
NODE 4388	USED FOR NODES	5490
NODE 3413	USED FOR NODES	4461
NODE 3430	USED FOR NODES	4494
NODE 3431	USED FOR NODES	4495
NODE 3193	USED FOR NODES	4106
NODE 3432	USED FOR NODES	4496
NODE 3433	USED FOR NODES	4497
NODE 3434	USED FOR NODES	4498
NODE 3297	USED FOR NODES	4163
NODE 3298	USED FOR NODES	4164
NODE 3299	USED FOR NODES	4165
NODE 3300	USED FOR NODES	4166
NODE 3301	USED FOR NODES	4167
NODE 3339	USED FOR NODES	3402
NODE 3212	USED FOR NODES	3394
NODE 3340	USED FOR NODES	3403
NODE 3341	USED FOR NODES	3404
NODE 3337	USED FOR NODES	3400
NODE 3338	USED FOR NODES	3401
NODE 3435	USED FOR NODES	4489
NODE 3436	USED FOR NODES	4490
NODE 3437	USED FOR NODES	4491
NODE 3438	USED FOR NODES	4492
NODE 3439	USED FOR NODES	4493
NODE 3414	USED FOR NODES	4460
NODE 3304	USED FOR NODES	4170
NODE 3194	USED FOR NODES	4107
NODE 3305	USED FOR NODES	4171
NODE 3306	USED FOR NODES	4172
NODE 3303	USED FOR NODES	4169
NODE 3302	USED FOR NODES	4168
NODE 3206	USED FOR NODES	3393
NODE 3227	USED FOR NODES	3395
NODE 3228	USED FOR NODES	3396
NODE 3229	USED FOR NODES	3397
NODE 3230	USED FOR NODES	3398
NODE 3231	USED FOR NODES	3399
NODE 4422	USED FOR NODES	5506
NODE 4423	USED FOR NODES	5507
NODE 4424	USED FOR NODES	5508
NODE 4425	USED FOR NODES	5509
NODE 4426	USED FOR NODES	5510
NODE 4389	USED FOR NODES	5489
NODE 4231	USED FOR NODES	5263
NODE 4228	USED FOR NODES	5260
NODE 4232	USED FOR NODES	5264
NODE 4230	USED FOR NODES	5262
NODE 4097	USED FOR NODES	5142
NODE 4229	USED FOR NODES	5261
NODE 3440	USED FOR NODES	4484
NODE 3441	USED FOR NODES	4485
NODE 3442	USED FOR NODES	4486
NODE 3443	USED FOR NODES	4487
NODE 3444	USED FOR NODES	4488
NODE 3415	USED FOR NODES	4459
NODE 3195	USED FOR NODES	4108
NODE 3307	USED FOR NODES	4173
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NODE	3731	USED	FOR	NODES	4763
NODE	3732	USED	FOR	NODES	4764
NODE	3733	USED	FOR	NODES	4765
NODE	3851	USED	FOR	NODES	4895
NODE	3944	USED	FOR	NODES	4976
NODE	3947	USED	FOR	NODES	4979
NODE	3945	USED	FOR	NODES	4977
NODE	3946	USED	FOR	NODES	4978
NODE	3948	USED	FOR	NODES	4980
NODE	3850	USED	FOR	NODES	4894
NODE	3738	USED	FOR	NODES	4770
NODE	3737	USED	FOR	NODES	4769
NODE	3598	USED	FOR	NODES	4642
NODE	3734	USED	FOR	NODES	4766
NODE	3735	USED	FOR	NODES	4767
NODE	3736	USED	FOR	NODES	4768
NODE	3589	USED	FOR	NODES	4631
NODE	3644	USED	FOR	NODES	4681
NODE	3645	USED	FOR	NODES	4682
NODE	3646	USED	FOR	NODES	4683
NODE	3647	USED	FOR	NODES	4684
NODE	3648	USED	FOR	NODES	4685
NODE	7284	USED	FOR	NODES	7462
NODE	7285	USED	FOR	NODES	7463
NODE	7286	USED	FOR	NODES	7464
NODE	7287	USED	FOR	NODES	7465
NODE	7288	USED	FOR	NODES	7466
NODE	6509	USED	FOR	NODES	7600
NODE	7773	USED	FOR	NODES	8024

NODE 7774	USED FOR NODES	8025
NODE 7775	USED FOR NODES	8026
NODE 7264	USED FOR NODES	7427
NODE 4890	USED FOR NODES	5963
NODE 7595	USED FOR NODES	7743
NODE 6571	USED FOR NODES	7620
NODE 6572	USED FOR NODES	7621
NODE 6573	USED FOR NODES	7622
NODE 6574	USED FOR NODES	7623
NODE 6575	USED FOR NODES	7624
NODE 7630	USED FOR NODES	7761
NODE 7631	USED FOR NODES	7762
NODE 7632	USED FOR NODES	7763
NODE 7633	USED FOR NODES	7764
NODE 7634	USED FOR NODES	7765
NODE 4692	USED FOR NODES	6562
NODE 6015	USED FOR NODES	7036
NODE 4623	USED FOR NODES	6523
NODE 6994	USED FOR NODES	7259
NODE 4693	USED FOR NODES	6563
NODE 4694	USED FOR NODES	6564
NODE 4695	USED FOR NODES	6565
NODE 5977	USED FOR NODES	6983
NODE 6016	USED FOR NODES	7037
NODE 6017	USED FOR NODES	7038
NODE 6018	USED FOR NODES	7039
NODE 6019	USED FOR NODES	7040
NODE 4941	USED FOR NODES	6025
NODE 4942	USED FOR NODES	6026
NODE 7739	USED FOR NODES	7994
NODE 8032	USED FOR NODES	8493
NODE 4943	USED FOR NODES	6027
NODE 8033	USED FOR NODES	8494
NODE 4944	USED FOR NODES	6028
NODE 8034	USED FOR NODES	8495
NODE 7771	USED FOR NODES	8022
NODE 7772	USED FOR NODES	8023
NODE 7026	USED FOR NODES	7294
NODE 7985	USED FOR NODES	8455
NODE 4945	USED FOR NODES	6029
NODE 8035	USED FOR NODES	8496
NODE 8036	USED FOR NODES	8497
NODE 7027	USED FOR NODES	7295
NODE 4691	USED FOR NODES	6561
NODE 7028	USED FOR NODES	7296
NODE 7029	USED FOR NODES	7297
NODE 7030	USED FOR NODES	7298
NODE 4621	USED FOR NODES	6510
NODE 7260	USED FOR NODES	7425
NODE 4674	USED FOR NODES	6549
NODE 4675	USED FOR NODES	6550
NODE 7012	USED FOR NODES	7275
NODE 7013	USED FOR NODES	7276
NODE 7014	USED FOR NODES	7277
NODE 7015	USED FOR NODES	7278
NODE 4929	USED FOR NODES	6008
NODE 4930	USED FOR NODES	6009
NODE 4881	USED FOR NODES	5961
NODE 7593	USED FOR NODES	7740
NODE 6507	USED FOR NODES	7596
NODE 6551	USED FOR NODES	7605
NODE 6552	USED FOR NODES	7606
NODE 6553	USED FOR NODES	7607
NODE 6554	USED FOR NODES	7608
NODE 6555	USED FOR NODES	7609
NODE 7610	USED FOR NODES	7746
NODE 7611	USED FOR NODES	7747
NODE 7612	USED FOR NODES	7748
NODE 7613	USED FOR NODES	7749
NODE 7614	USED FOR NODES	7750

NODE 5964 USED FOR NODES 6981
 NODE 6984 USED FOR NODES 7257
 NODE 6000 USED FOR NODES 7016
 NODE 6001 USED FOR NODES 7017
 NODE 6002 USED FOR NODES 7018
 NODE 7737 USED FOR NODES 7986
 NODE 6003 USED FOR NODES 7019
 NODE 6004 USED FOR NODES 7020
 NODE 4926 USED FOR NODES 6005
 NODE 4927 USED FOR NODES 6006
 NODE 7751 USED FOR NODES 8007
 NODE 7752 USED FOR NODES 8008
 NODE 7753 USED FOR NODES 8009
 NODE 7754 USED FOR NODES 8010
 NODE 7755 USED FOR NODES 8011
 NODE 8012 USED FOR NODES 8478
 NODE 8013 USED FOR NODES 8479
 NODE 8014 USED FOR NODES 8480
 NODE 8015 USED FOR NODES 8481
 NODE 7983 USED FOR NODES 8442
 NODE 7269 USED FOR NODES 7442
 NODE 8016 USED FOR NODES 8482
 NODE 4671 USED FOR NODES 6546
 NODE 4672 USED FOR NODES 6547
 NODE 7270 USED FOR NODES 7443
 NODE 4673 USED FOR NODES 6548
 NODE 7271 USED FOR NODES 7444
 NODE 4928 USED FOR NODES 6007
 NODE 7272 USED FOR NODES 7445
 NODE 7273 USED FOR NODES 7446
 NODE 7011 USED FOR NODES 7274

*** WARNING ***

CP= 61.250 TIME= 14:57:35

Same node numbers associated with more than one solid model entity.

Future mesh clearing operations could produce unexpected results.

NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	67 USED FOR KEYPOINT(S)	115		
KEYPOINT	72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT	76 USED FOR KEYPOINT(S)	89		
KEYPOINT	80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85 USED FOR KEYPOINT(S)	122		
KEYPOINT	91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93 USED FOR KEYPOINT(S)	104		
KEYPOINT	98 USED FOR KEYPOINT(S)	117		
KEYPOINT	101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121 USED FOR KEYPOINT(S)	137		
KEYPOINT	123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT	134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT	135 USED FOR KEYPOINT(S)	162		
KEYPOINT	138 USED FOR KEYPOINT(S)	155		
KEYPOINT	139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT	142 USED FOR KEYPOINT(S)	146		
KEYPOINT	143 USED FOR KEYPOINT(S)	152		
KEYPOINT	147 USED FOR KEYPOINT(S)	157		
KEYPOINT	151 USED FOR KEYPOINT(S)	164		
KEYPOINT	154 USED FOR KEYPOINT(S)	165		
KEYPOINT	156 USED FOR KEYPOINT(S)	167		
KEYPOINT	158 USED FOR KEYPOINT(S)	181		
KEYPOINT	159 USED FOR KEYPOINT(S)	184		
KEYPOINT	161 USED FOR KEYPOINT(S)	186		
KEYPOINT	163 USED FOR KEYPOINT(S)	170		
KEYPOINT	166 USED FOR KEYPOINT(S)	171		
KEYPOINT	168 USED FOR KEYPOINT(S)	173		
KEYPOINT	169 USED FOR KEYPOINT(S)	176		
KEYPOINT	172 USED FOR KEYPOINT(S)	177		
KEYPOINT	174 USED FOR KEYPOINT(S)	179		

KEYPOINT	182 USED FOR KEYPOINT(S)	187	
KEYPOINT	183 USED FOR KEYPOINT(S)	190	
KEYPOINT	185 USED FOR KEYPOINT(S)	192	
KEYPOINT	188 USED FOR KEYPOINT(S)	193	
KEYPOINT	189 USED FOR KEYPOINT(S)	196	
KEYPOINT	191 USED FOR KEYPOINT(S)	198	
KEYPOINT	194 USED FOR KEYPOINT(S)	199	
KEYPOINT	195 USED FOR KEYPOINT(S)	202	
KEYPOINT	197 USED FOR KEYPOINT(S)	204	
LINE	108 USED FOR LINE(S)	240	
LINE	121 USED FOR LINE(S)	241	
LINE	126 USED FOR LINE(S)	154	239
LINE	134 USED FOR LINE(S)	174	
LINE	137 USED FOR LINE(S)	172	
LINE	141 USED FOR LINE(S)	238	
LINE	159 USED FOR LINE(S)	236	246 270
LINE	160 USED FOR LINE(S)	252	
LINE	161 USED FOR LINE(S)	251	
LINE	187 USED FOR LINE(S)	257	
LINE	192 USED FOR LINE(S)	220	256 264
LINE	193 USED FOR LINE(S)	225	
LINE	194 USED FOR LINE(S)	226	
LINE	200 USED FOR LINE(S)	244	
LINE	203 USED FOR LINE(S)	243	
LINE	205 USED FOR LINE(S)	233	259 272
LINE	207 USED FOR LINE(S)	265	
LINE	228 USED FOR LINE(S)	271	
LINE	245 USED FOR LINE(S)	269	
LINE	247 USED FOR LINE(S)	268	275 307
LINE	248 USED FOR LINE(S)	283	
LINE	249 USED FOR LINE(S)	282	
LINE	253 USED FOR LINE(S)	290	
LINE	254 USED FOR LINE(S)	262	289 299
LINE	255 USED FOR LINE(S)	263	
LINE	258 USED FOR LINE(S)	273	
LINE	260 USED FOR LINE(S)	267	292 309
LINE	261 USED FOR LINE(S)	300	
LINE	266 USED FOR LINE(S)	308	
LINE	274 USED FOR LINE(S)	306	
LINE	276 USED FOR LINE(S)	305	330
LINE	277 USED FOR LINE(S)	336	
LINE	278 USED FOR LINE(S)	335	
LINE	285 USED FOR LINE(S)	320	
LINE	286 USED FOR LINE(S)	319	
LINE	287 USED FOR LINE(S)	297	315
LINE	288 USED FOR LINE(S)	298	
LINE	291 USED FOR LINE(S)	310	
LINE	293 USED FOR LINE(S)	302	
LINE	295 USED FOR LINE(S)	313	
LINE	296 USED FOR LINE(S)	314	
LINE	303 USED FOR LINE(S)	325	
LINE	304 USED FOR LINE(S)	331	
LINE	312 USED FOR LINE(S)	339	
LINE	317 USED FOR LINE(S)	341	
LINE	318 USED FOR LINE(S)	340	
LINE	322 USED FOR LINE(S)	346	
LINE	323 USED FOR LINE(S)	345	
LINE	326 USED FOR LINE(S)	377	
LINE	327 USED FOR LINE(S)	383	
LINE	328 USED FOR LINE(S)	382	
LINE	332 USED FOR LINE(S)	388	
LINE	333 USED FOR LINE(S)	387	
LINE	338 USED FOR LINE(S)	352	
LINE	343 USED FOR LINE(S)	354	
LINE	344 USED FOR LINE(S)	353	
LINE	348 USED FOR LINE(S)	359	
LINE	349 USED FOR LINE(S)	358	
LINE	351 USED FOR LINE(S)	365	
LINE	356 USED FOR LINE(S)	367	
LINE	357 USED FOR LINE(S)	366	

LINE 361 USED FOR LINE(S) 372
 LINE 362 USED FOR LINE(S) 371
 LINE 378 USED FOR LINE(S) 390
 LINE 379 USED FOR LINE(S) 396
 LINE 380 USED FOR LINE(S) 395
 LINE 384 USED FOR LINE(S) 401
 LINE 385 USED FOR LINE(S) 400
 LINE 391 USED FOR LINE(S) 403
 LINE 392 USED FOR LINE(S) 409
 LINE 393 USED FOR LINE(S) 408
 LINE 397 USED FOR LINE(S) 414
 LINE 398 USED FOR LINE(S) 413
 LINE 404 USED FOR LINE(S) 416
 LINE 405 USED FOR LINE(S) 422
 LINE 406 USED FOR LINE(S) 421
 LINE 410 USED FOR LINE(S) 427
 LINE 411 USED FOR LINE(S) 426
 AREA 56 USED FOR AREA(S) 161
 AREA 84 USED FOR AREA(S) 123
 AREA 95 USED FOR AREA(S) 160
 AREA 112 USED FOR AREA(S) 168
 AREA 142 USED FOR AREA(S) 172
 AREA 148 USED FOR AREA(S) 156
 AREA 154 USED FOR AREA(S) 163
 AREA 155 USED FOR AREA(S) 177
 AREA 159 USED FOR AREA(S) 181
 AREA 165 USED FOR AREA(S) 180
 AREA 166 USED FOR AREA(S) 188
 AREA 170 USED FOR AREA(S) 193
 AREA 171 USED FOR AREA(S) 176
 AREA 174 USED FOR AREA(S) 182
 AREA 175 USED FOR AREA(S) 199
 AREA 179 USED FOR AREA(S) 204
 AREA 184 USED FOR AREA(S) 203
 AREA 185 USED FOR AREA(S) 223
 AREA 191 USED FOR AREA(S) 212
 AREA 192 USED FOR AREA(S) 198
 AREA 195 USED FOR AREA(S) 205
 AREA 197 USED FOR AREA(S) 208
 AREA 202 USED FOR AREA(S) 219
 AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
 27, 28,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 8786
MAXIMUM ELEMENT NUMBER = 6758
Rock around drift
(V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9164
MAXIMUM ELEMENT NUMBER = 6998

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9362
MAXIMUM ELEMENT NUMBER = 7118

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 9560
MAXIMUM ELEMENT NUMBER = 7238

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10064
MAXIMUM ELEMENT NUMBER = 7598

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10328
MAXIMUM ELEMENT NUMBER = 7778

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 10592
 MAXIMUM ELEMENT NUMBER = 7958
 Mid-drift rock
 (V's 75,76,77,78)

DRAG AREAS
 37, 38,
 ALONG LINES
 59,

*** WARNING *** CP= 70.420 TIME= 14:57:44
 Meshing of volume 75 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***

7995	7996	7997	7998	7999	8000	8001	8002
8003	8004	8005	8006	8007	8008	8009	8010
8011	8012						

*** WARNING *** CP= 70.940 TIME= 14:57:45
 Meshing of volume 76 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***

8265	8266	8267	8268	8269	8270	8271	8272
8273	8274	8275	8276	8277	8278	8279	8280
8281	8282						

MAXIMUM NODE NUMBER = 11096
 MAXIMUM ELEMENT NUMBER = 8318

ELEMENT TYPE SET TO 1

DRAG AREAS
 39,
 ALONG LINES
 59,

ELEMENT TYPE SET TO 2

DRAG AREAS
 40,
 ALONG LINES
 59,

*** WARNING *** CP= 71.630 TIME= 14:57:45
 Meshing of volume 78 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***

8361	8362	8363	8364	8365	8366	8421	8422
8423	8424	8425	8426	8481	8482	8483	8484
8485	8486						

MAXIMUM NODE NUMBER = 11360
 MAXIMUM ELEMENT NUMBER = 8498
 Concatenate to mesh volume 77
 (L's 443,444 used and freed up)
 (A's 321 used and freed up)

CONCATENATE AREAS
 AREAS = 311 310

COMPOSITE AREA NO.= 321
 LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
 LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 72.010 TIME= 14:57:46
Meshing of area 314 produced 1 poorly shaped faces.

*** NOTE *** CP= 72.010 TIME= 14:57:46
Worst shape angle is 41 degrees.

*** WARNING *** CP= 72.470 TIME= 14:57:46
Meshing of volume 77 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
8625 8626 8627 8628 8629 8630 8631 8632
8633 8634 8635 8636 8637 8638 8639 8640
8641 8642

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 11624
MAXIMUM ELEMENT NUMBER = 8678

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 79,80,81,82)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12716
MAXIMUM ELEMENT NUMBER = 9542
Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13136
MAXIMUM ELEMENT NUMBER = 9866
Extrude PIn
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES

59,

MAXIMUM NODE NUMBER = 13304
 MAXIMUM ELEMENT NUMBER = 9974
 Extrude TCw
 (V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
 1, 2,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 13472
 MAXIMUM ELEMENT NUMBER = 10082
 Extrude TSw3
 (V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
 11, 12,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 13640
 MAXIMUM ELEMENT NUMBER = 10190
 Extrude CHn1v
 (V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
 13, 14,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 13766
 MAXIMUM ELEMENT NUMBER = 10262
 Extrude CHn1z
 (V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
 15, 16,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 14102
 MAXIMUM ELEMENT NUMBER = 10514
 Extrude CHn2
 (V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
 17, 18,
 ALONG LINES
 59,

*** WARNING *** CP= 78.650 TIME= 14:57:52
 Meshing of volume 95 produced 81 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

10545	10551	10552	10557	10558	10559	10563	10564
10565	10566	10569	10570	10571	10572	10573	10575
10576	10577	10578	10579	10580	10581	10582	10583

10584	10585	10586	10617	10623	10624	10629	10630
10631	10635	10636	10637	10638	10641	10642	10643
10644	10645	10647	10648	10649	10650	10651	10652
10653	10654	10655	10656	10657	10658	10689	10695
10696	10701	10702	10703	10707	10708	10709	10710
10713	10714	10715	10716	10717	10719	10720	10721
10722	10723	10724	10725	10726	10727	10728	10729
10730							

*** WARNING *** CP= 79.200 TIME= 14:57:53
 Meshing of volume 96 produced 81 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

10761	10767	10768	10773	10774	10775	10779	10780
10781	10782	10785	10786	10787	10788	10789	10791
10792	10793	10794	10795	10796	10797	10798	10799
10800	10801	10802	10833	10839	10840	10845	10846
10847	10851	10852	10853	10854	10857	10858	10859
10860	10861	10863	10864	10865	10866	10867	10868
10869	10870	10871	10872	10873	10874	10905	10911
10912	10917	10918	10919	10923	10924	10925	10926
10929	10930	10931	10932	10933	10935	10936	10937
10938	10939	10940	10941	10942	10943	10944	10945
10946							

MAXIMUM NODE NUMBER = 14648
 MAXIMUM ELEMENT NUMBER = 10946

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 12234	USED FOR NODES	13490
NODE 12235	USED FOR NODES	13491
NODE 12236	USED FOR NODES	13492
NODE 11098	USED FOR NODES	12171
NODE 12172	USED FOR NODES	13473
NODE 12237	USED FOR NODES	13493
NODE 13474	USED FOR NODES	13641
NODE 13642	USED FOR NODES	13767
NODE 13499	USED FOR NODES	13653
NODE 13500	USED FOR NODES	13654
NODE 13501	USED FOR NODES	13655
NODE 13502	USED FOR NODES	13656
NODE 13503	USED FOR NODES	13657
NODE 13663	USED FOR NODES	13799
NODE 13664	USED FOR NODES	13800
NODE 13665	USED FOR NODES	13801
NODE 13666	USED FOR NODES	13802
NODE 13667	USED FOR NODES	13803
NODE 11146	USED FOR NODES	12223
NODE 11147	USED FOR NODES	12224
NODE 11148	USED FOR NODES	12225
NODE 11149	USED FOR NODES	12226
NODE 11150	USED FOR NODES	12227
NODE 13768	USED FOR NODES	14103
NODE 13809	USED FOR NODES	14155
NODE 13810	USED FOR NODES	14156
NODE 13811	USED FOR NODES	14157
NODE 13812	USED FOR NODES	14158
NODE 13813	USED FOR NODES	14159
NODE 11097	USED FOR NODES	11361
NODE 11141	USED FOR NODES	11362
NODE 11142	USED FOR NODES	11363
NODE 11143	USED FOR NODES	11364
NODE 11144	USED FOR NODES	11365
NODE 11145	USED FOR NODES	11366
NODE 12717	USED FOR NODES	13138
NODE 11625	USED FOR NODES	12718
NODE 12233	USED FOR NODES	13489

NODE 12757	USED FOR NODES	13163
NODE 12758	USED FOR NODES	13164
NODE 12759	USED FOR NODES	13165
NODE 12760	USED FOR NODES	13166
NODE 12761	USED FOR NODES	13167
NODE 11677	USED FOR NODES	12767
NODE 11678	USED FOR NODES	12768
NODE 11679	USED FOR NODES	12769
NODE 11680	USED FOR NODES	12770
NODE 11681	USED FOR NODES	12771
NODE 11385	USED FOR NODES	11626
NODE 11386	USED FOR NODES	11687
NODE 11387	USED FOR NODES	11688
NODE 11388	USED FOR NODES	11689
NODE 11389	USED FOR NODES	11690
NODE 11390	USED FOR NODES	11691
NODE 13137	USED FOR NODES	13306
NODE 13153	USED FOR NODES	13331
NODE 13154	USED FOR NODES	13332
NODE 13155	USED FOR NODES	13333
NODE 13156	USED FOR NODES	13334
NODE 13157	USED FOR NODES	13335
NODE 11266	USED FOR NODES	11380
NODE 11270	USED FOR NODES	11384
NODE 11122	USED FOR NODES	11369
NODE 11267	USED FOR NODES	11381
NODE 11269	USED FOR NODES	11383
NODE 11268	USED FOR NODES	11382
NODE 13645	USED FOR NODES	13785
NODE 13478	USED FOR NODES	13649
NODE 13519	USED FOR NODES	13673
NODE 13520	USED FOR NODES	13674
NODE 13521	USED FOR NODES	13675
NODE 13522	USED FOR NODES	13676
NODE 13523	USED FOR NODES	13677
NODE 13683	USED FOR NODES	13819
NODE 13684	USED FOR NODES	13820
NODE 13685	USED FOR NODES	13821
NODE 13686	USED FOR NODES	13822
NODE 13687	USED FOR NODES	13823
NODE 13776	USED FOR NODES	14131
NODE 13829	USED FOR NODES	14175
NODE 13830	USED FOR NODES	14176
NODE 13831	USED FOR NODES	14177
NODE 13832	USED FOR NODES	14178
NODE 13833	USED FOR NODES	14179
NODE 11106	USED FOR NODES	12199
NODE 11166	USED FOR NODES	12243
NODE 11167	USED FOR NODES	12244
NODE 11168	USED FOR NODES	12245
NODE 11169	USED FOR NODES	12246
NODE 11170	USED FOR NODES	12247
NODE 11653	USED FOR NODES	12728
NODE 12739	USED FOR NODES	13142
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NODE	9678	USED FOR NODES	10710
NODE	9679	USED FOR NODES	10711
NODE	9675	USED FOR NODES	10707
NODE	9676	USED FOR NODES	10708
NODE	8749	USED FOR NODES	8827
NODE	8750	USED FOR NODES	8828
NODE	8751	USED FOR NODES	8829
NODE	8739	USED FOR NODES	8802
NODE	8748	USED FOR NODES	8826
NODE	8747	USED FOR NODES	8825
NODE	9098	USED FOR NODES	9903
NODE	8991	USED FOR NODES	9843
NODE	9099	USED FOR NODES	9904
NODE	9097	USED FOR NODES	9902
NODE	9096	USED FOR NODES	9901
NODE	9095	USED FOR NODES	9900
NODE	8794	USED FOR NODES	9581
NODE	8901	USED FOR NODES	9641
NODE	8902	USED FOR NODES	9642
NODE	8904	USED FOR NODES	9644
NODE	8900	USED FOR NODES	9640
NODE	8903	USED FOR NODES	9643
NODE	9090	USED FOR NODES	9895
NODE	9093	USED FOR NODES	9898
NODE	9092	USED FOR NODES	9897
NODE	9091	USED FOR NODES	9896
NODE	9094	USED FOR NODES	9899
NODE	8990	USED FOR NODES	9842
NODE	8907	USED FOR NODES	9647
NODE	8906	USED FOR NODES	9646
NODE	8905	USED FOR NODES	9645
NODE	8908	USED FOR NODES	9648
NODE	8909	USED FOR NODES	9649
NODE	8795	USED FOR NODES	9582
NODE	9953	USED FOR NODES	10985
NODE	9954	USED FOR NODES	10986
NODE	9832	USED FOR NODES	10876
NODE	9950	USED FOR NODES	10982
NODE	9951	USED FOR NODES	10983
NODE	9952	USED FOR NODES	10984
NODE	9682	USED FOR NODES	10714
NODE	9681	USED FOR NODES	10713
NODE	9568	USED FOR NODES	10612
NODE	9684	USED FOR NODES	10716
NODE	9683	USED FOR NODES	10715
NODE	9680	USED FOR NODES	10712
NODE	9089	USED FOR NODES	9894
NODE	9087	USED FOR NODES	9892
NODE	8989	USED FOR NODES	9841
NODE	9085	USED FOR NODES	9890
NODE	9088	USED FOR NODES	9893
NODE	9086	USED FOR NODES	9891
NODE	8796	USED FOR NODES	9583
NODE	8914	USED FOR NODES	9654
NODE	8912	USED FOR NODES	9652
NODE	8913	USED FOR NODES	9653
NODE	8911	USED FOR NODES	9651
NODE	8910	USED FOR NODES	9650

NODE	8915	USED	FOR	NODES	9655
NODE	8916	USED	FOR	NODES	9656
NODE	8917	USED	FOR	NODES	9657
NODE	8918	USED	FOR	NODES	9658
NODE	8919	USED	FOR	NODES	9659
NODE	8988	USED	FOR	NODES	9840
NODE	8797	USED	FOR	NODES	9584
NODE	9080	USED	FOR	NODES	9885
NODE	9081	USED	FOR	NODES	9886
NODE	9082	USED	FOR	NODES	9887
NODE	9083	USED	FOR	NODES	9888
NODE	9084	USED	FOR	NODES	9889
NODE	9945	USED	FOR	NODES	10977
NODE	9946	USED	FOR	NODES	10978
NODE	9947	USED	FOR	NODES	10979
NODE	9948	USED	FOR	NODES	10980
NODE	9949	USED	FOR	NODES	10981
NODE	9569	USED	FOR	NODES	10613
NODE	9685	USED	FOR	NODES	10717
NODE	9686	USED	FOR	NODES	10718
NODE	9687	USED	FOR	NODES	10719
NODE	9688	USED	FOR	NODES	10720
NODE	9689	USED	FOR	NODES	10721
NODE	9831	USED	FOR	NODES	10875
NODE	9078	USED	FOR	NODES	9883
NODE	8987	USED	FOR	NODES	9839
NODE	9079	USED	FOR	NODES	9884
NODE	9077	USED	FOR	NODES	9882
NODE	9075	USED	FOR	NODES	9880
NODE	9076	USED	FOR	NODES	9881
NODE	8920	USED	FOR	NODES	9660
NODE	8798	USED	FOR	NODES	9585
NODE	8921	USED	FOR	NODES	9661
NODE	8922	USED	FOR	NODES	9662
NODE	8924	USED	FOR	NODES	9664
NODE	8923	USED	FOR	NODES	9663
NODE	9071	USED	FOR	NODES	9876
NODE	9072	USED	FOR	NODES	9877
NODE	9073	USED	FOR	NODES	9878
NODE	8986	USED	FOR	NODES	9838
NODE	9074	USED	FOR	NODES	9879
NODE	9070	USED	FOR	NODES	9875
NODE	8925	USED	FOR	NODES	9665
NODE	8926	USED	FOR	NODES	9666
NODE	8927	USED	FOR	NODES	9667
NODE	8928	USED	FOR	NODES	9668
NODE	8929	USED	FOR	NODES	9669
NODE	8799	USED	FOR	NODES	9586
NODE	8790	USED	FOR	NODES	9575
NODE	8840	USED	FOR	NODES	9610
NODE	8841	USED	FOR	NODES	9611
NODE	8842	USED	FOR	NODES	9612
NODE	8843	USED	FOR	NODES	9613
NODE	8844	USED	FOR	NODES	9614
NODE	12969	USED	FOR	NODES	13234
NODE	13745	USED	FOR	NODES	13996
NODE	13256	USED	FOR	NODES	13434
NODE	13570	USED	FOR	NODES	13718
NODE	12484	USED	FOR	NODES	13575
NODE	12543	USED	FOR	NODES	13592
NODE	10664	USED	FOR	NODES	12534
NODE	10915	USED	FOR	NODES	11999
NODE	11988	USED	FOR	NODES	13009
NODE	13714	USED	FOR	NODES	13969
NODE	13960	USED	FOR	NODES	14430
NODE	14007	USED	FOR	NODES	14468
NODE	13603	USED	FOR	NODES	13734
NODE	13605	USED	FOR	NODES	13736
NODE	13744	USED	FOR	NODES	13995
NODE	13743	USED	FOR	NODES	13994

NODE 13602	USED FOR NODES	13733
NODE 13604	USED FOR NODES	13735
NODE 12544	USED FOR NODES	13593
NODE 10912	USED FOR NODES	11996
NODE 13255	USED FOR NODES	13433
NODE 12545	USED FOR NODES	13594
NODE 13001	USED FOR NODES	13269
NODE 14006	USED FOR NODES	14467
NODE 13257	USED FOR NODES	13435
NODE 13258	USED FOR NODES	13436
NODE 12542	USED FOR NODES	13591
NODE 11990	USED FOR NODES	13011
NODE 11986	USED FOR NODES	13007
NODE 10913	USED FOR NODES	11997
NODE 10865	USED FOR NODES	11938
NODE 10666	USED FOR NODES	12536
NODE 13742	USED FOR NODES	13993
NODE 13601	USED FOR NODES	13732
NODE 12998	USED FOR NODES	13266
NODE 12546	USED FOR NODES	13595
NODE 10662	USED FOR NODES	12532
NODE 13000	USED FOR NODES	13268
NODE 10665	USED FOR NODES	12535
NODE 11987	USED FOR NODES	13008
NODE 11989	USED FOR NODES	13010
NODE 13239	USED FOR NODES	13402
NODE 10663	USED FOR NODES	12533
NODE 13746	USED FOR NODES	13997
NODE 14003	USED FOR NODES	14464
NODE 11952	USED FOR NODES	12958
NODE 12997	USED FOR NODES	13265
NODE 10914	USED FOR NODES	11998
NODE 12999	USED FOR NODES	13267
NODE 14005	USED FOR NODES	14466
NODE 14004	USED FOR NODES	14465
NODE 13259	USED FOR NODES	13437
NODE 10598	USED FOR NODES	12498
NODE 10916	USED FOR NODES	12000
NODE 9940	USED FOR NODES	10972
NODE 9941	USED FOR NODES	10973
NODE 9942	USED FOR NODES	10974
NODE 9943	USED FOR NODES	10975
NODE 9944	USED FOR NODES	10976
NODE 9830	USED FOR NODES	10874
NODE 9691	USED FOR NODES	10723
NODE 9570	USED FOR NODES	10614
NODE 9692	USED FOR NODES	10724
NODE 9694	USED FOR NODES	10726
NODE 9693	USED FOR NODES	10725
NODE 9690	USED FOR NODES	10722
NODE 9935	USED FOR NODES	10967
NODE 9936	USED FOR NODES	10968
NODE 9937	USED FOR NODES	10969
NODE 9938	USED FOR NODES	10970
NODE 9939	USED FOR NODES	10971
NODE 9571	USED FOR NODES	10615
NODE 9829	USED FOR NODES	10873
NODE 9695	USED FOR NODES	10727
NODE 9696	USED FOR NODES	10728
NODE 9697	USED FOR NODES	10729
NODE 9698	USED FOR NODES	10730
NODE 9699	USED FOR NODES	10731
NODE 9930	USED FOR NODES	10962
NODE 9931	USED FOR NODES	10963
NODE 9932	USED FOR NODES	10964
NODE 9933	USED FOR NODES	10965
NODE 9934	USED FOR NODES	10966
NODE 9572	USED FOR NODES	10616
NODE 9828	USED FOR NODES	10872
NODE 9700	USED FOR NODES	10732

NODE	9701	USED FOR NODES	10733
NODE	9702	USED FOR NODES	10734
NODE	9703	USED FOR NODES	10735
NODE	9704	USED FOR NODES	10736
NODE	9925	USED FOR NODES	10957
NODE	9926	USED FOR NODES	10958
NODE	9927	USED FOR NODES	10959
NODE	9573	USED FOR NODES	10617
NODE	9928	USED FOR NODES	10960
NODE	9929	USED FOR NODES	10961
NODE	9707	USED FOR NODES	10739
NODE	9708	USED FOR NODES	10740
NODE	9709	USED FOR NODES	10741
NODE	9827	USED FOR NODES	10871
NODE	9705	USED FOR NODES	10737
NODE	9706	USED FOR NODES	10738
NODE	9920	USED FOR NODES	10952
NODE	9922	USED FOR NODES	10954
NODE	9826	USED FOR NODES	10870
NODE	9921	USED FOR NODES	10953
NODE	9924	USED FOR NODES	10956
NODE	9923	USED FOR NODES	10955
NODE	9713	USED FOR NODES	10745
NODE	9714	USED FOR NODES	10746
NODE	9574	USED FOR NODES	10618
NODE	9711	USED FOR NODES	10743
NODE	9712	USED FOR NODES	10744
NODE	9710	USED FOR NODES	10742
NODE	9620	USED FOR NODES	10657
NODE	9621	USED FOR NODES	10658
NODE	9622	USED FOR NODES	10659
NODE	9623	USED FOR NODES	10660
NODE	9624	USED FOR NODES	10661
NODE	9565	USED FOR NODES	10607
NODE	12547	USED FOR NODES	13596
NODE	12548	USED FOR NODES	13597
NODE	12549	USED FOR NODES	13598
NODE	12550	USED FOR NODES	13599
NODE	12551	USED FOR NODES	13600
NODE	13606	USED FOR NODES	13737
NODE	13607	USED FOR NODES	13738
NODE	13608	USED FOR NODES	13739
NODE	13609	USED FOR NODES	13740
NODE	13610	USED FOR NODES	13741
NODE	10866	USED FOR NODES	11939
NODE	10599	USED FOR NODES	12499
NODE	10667	USED FOR NODES	12537
NODE	10668	USED FOR NODES	12538
NODE	10669	USED FOR NODES	12539
NODE	10670	USED FOR NODES	12540
NODE	10671	USED FOR NODES	12541
NODE	13715	USED FOR NODES	13970
NODE	13571	USED FOR NODES	13719
NODE	13747	USED FOR NODES	13998
NODE	13748	USED FOR NODES	13999
NODE	13749	USED FOR NODES	14000
NODE	13750	USED FOR NODES	14001
NODE	13751	USED FOR NODES	14002
NODE	13260	USED FOR NODES	13438
NODE	13261	USED FOR NODES	13439
NODE	13262	USED FOR NODES	13440
NODE	13263	USED FOR NODES	13441
NODE	13264	USED FOR NODES	13442
NODE	10920	USED FOR NODES	12004
NODE	13961	USED FOR NODES	14431
NODE	10921	USED FOR NODES	12005
NODE	14008	USED FOR NODES	14469
NODE	14009	USED FOR NODES	14470
NODE	14010	USED FOR NODES	14471
NODE	14011	USED FOR NODES	14472

NODE 14012	USED FOR NODES	14473
NODE 10917	USED FOR NODES	12001
NODE 10918	USED FOR NODES	12002
NODE 10919	USED FOR NODES	12003
NODE 11953	USED FOR NODES	12959
NODE 12970	USED FOR NODES	13235
NODE 13240	USED FOR NODES	13403
NODE 13002	USED FOR NODES	13270
NODE 13003	USED FOR NODES	13271
NODE 13004	USED FOR NODES	13272
NODE 13005	USED FOR NODES	13273
NODE 13006	USED FOR NODES	13274
NODE 11991	USED FOR NODES	13012
NODE 11992	USED FOR NODES	13013
NODE 11993	USED FOR NODES	13014
NODE 11994	USED FOR NODES	13015
NODE 11995	USED FOR NODES	13016
NODE 12485	USED FOR NODES	13576
NODE 12527	USED FOR NODES	13581
NODE 12528	USED FOR NODES	13582
NODE 12529	USED FOR NODES	13583
NODE 12530	USED FOR NODES	13584
NODE 12531	USED FOR NODES	13585
NODE 13586	USED FOR NODES	13722
NODE 13587	USED FOR NODES	13723
NODE 13588	USED FOR NODES	13724
NODE 13589	USED FOR NODES	13725
NODE 13590	USED FOR NODES	13726
NODE 10905	USED FOR NODES	11984
NODE 10647	USED FOR NODES	12522
NODE 10906	USED FOR NODES	11985
NODE 10648	USED FOR NODES	12523
NODE 10649	USED FOR NODES	12524
NODE 10650	USED FOR NODES	12525
NODE 10651	USED FOR NODES	12526
NODE 13713	USED FOR NODES	13962
NODE 13569	USED FOR NODES	13716
NODE 13727	USED FOR NODES	13983
NODE 13728	USED FOR NODES	13984
NODE 13729	USED FOR NODES	13985
NODE 13730	USED FOR NODES	13986
NODE 13731	USED FOR NODES	13987
NODE 11940	USED FOR NODES	12957
NODE 10857	USED FOR NODES	11937
NODE 13245	USED FOR NODES	13418
NODE 11976	USED FOR NODES	12992
NODE 11977	USED FOR NODES	12993
NODE 11978	USED FOR NODES	12994
NODE 13959	USED FOR NODES	14418
NODE 11979	USED FOR NODES	12995
NODE 13988	USED FOR NODES	14454
NODE 13989	USED FOR NODES	14455
NODE 13990	USED FOR NODES	14456
NODE 13991	USED FOR NODES	14457
NODE 13992	USED FOR NODES	14458
NODE 11980	USED FOR NODES	12996
NODE 10902	USED FOR NODES	11981
NODE 13246	USED FOR NODES	13419
NODE 10903	USED FOR NODES	11982
NODE 10904	USED FOR NODES	11983
NODE 13247	USED FOR NODES	13420
NODE 13248	USED FOR NODES	13421
NODE 13249	USED FOR NODES	13422
NODE 12960	USED FOR NODES	13233
NODE 12987	USED FOR NODES	13250
NODE 12988	USED FOR NODES	13251
NODE 12989	USED FOR NODES	13252
NODE 12990	USED FOR NODES	13253
NODE 12991	USED FOR NODES	13254
NODE 13236	USED FOR NODES	13401

NODE 10597 USED FOR NODES 12486
 NODE 12483 USED FOR NODES 13572

*** WARNING *** CP= 154.000 TIME= 14:59:08
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78	USED FOR KEYPOINT(S)	132		
KEYPOINT	89	USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104	USED FOR KEYPOINT(S)	117		
KEYPOINT	111	USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114	USED FOR KEYPOINT(S)	144		
KEYPOINT	119	USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122	USED FOR KEYPOINT(S)	128		
KEYPOINT	124	USED FOR KEYPOINT(S)	133		
KEYPOINT	125	USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140	USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141	USED FOR KEYPOINT(S)	170		
KEYPOINT	145	USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149	USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164	USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165	USED FOR KEYPOINT(S)	212		
KEYPOINT	171	USED FOR KEYPOINT(S)	205		
KEYPOINT	173	USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179	USED FOR KEYPOINT(S)	187		
KEYPOINT	181	USED FOR KEYPOINT(S)	199		
KEYPOINT	190	USED FOR KEYPOINT(S)	207		
KEYPOINT	198	USED FOR KEYPOINT(S)	214		
KEYPOINT	204	USED FOR KEYPOINT(S)	215		
KEYPOINT	206	USED FOR KEYPOINT(S)	217		
KEYPOINT	208	USED FOR KEYPOINT(S)	231		
KEYPOINT	209	USED FOR KEYPOINT(S)	234		
KEYPOINT	211	USED FOR KEYPOINT(S)	236		
KEYPOINT	213	USED FOR KEYPOINT(S)	220		
KEYPOINT	216	USED FOR KEYPOINT(S)	221		
KEYPOINT	218	USED FOR KEYPOINT(S)	223		
KEYPOINT	219	USED FOR KEYPOINT(S)	226		
KEYPOINT	222	USED FOR KEYPOINT(S)	227		
KEYPOINT	224	USED FOR KEYPOINT(S)	229		
KEYPOINT	232	USED FOR KEYPOINT(S)	237		
KEYPOINT	233	USED FOR KEYPOINT(S)	240		
KEYPOINT	235	USED FOR KEYPOINT(S)	242		
KEYPOINT	238	USED FOR KEYPOINT(S)	243		
KEYPOINT	239	USED FOR KEYPOINT(S)	246		
KEYPOINT	241	USED FOR KEYPOINT(S)	248		
KEYPOINT	244	USED FOR KEYPOINT(S)	249		
KEYPOINT	245	USED FOR KEYPOINT(S)	252		
KEYPOINT	247	USED FOR KEYPOINT(S)	254		
LINE	154	USED FOR LINE(S)	297		
LINE	172	USED FOR LINE(S)	298		
LINE	174	USED FOR LINE(S)	240	292	
LINE	233	USED FOR LINE(S)	257		
LINE	236	USED FOR LINE(S)	256		
LINE	239	USED FOR LINE(S)	290		
LINE	241	USED FOR LINE(S)	289	306	359
LINE	243	USED FOR LINE(S)	314		
LINE	244	USED FOR LINE(S)	313		
LINE	259	USED FOR LINE(S)	330		
LINE	262	USED FOR LINE(S)	271	325	345
LINE	263	USED FOR LINE(S)	272		
LINE	264	USED FOR LINE(S)	273		
LINE	267	USED FOR LINE(S)	302		
LINE	268	USED FOR LINE(S)	300		
LINE	269	USED FOR LINE(S)	283	335	366
LINE	270	USED FOR LINE(S)	346		
LINE	282	USED FOR LINE(S)	365		
LINE	305	USED FOR LINE(S)	358		
LINE	307	USED FOR LINE(S)	354	372	439

LINE	308	USED FOR LINE(S)	396		
LINE	309	USED FOR LINE(S)	395		
LINE	315	USED FOR LINE(S)	414		
LINE	319	USED FOR LINE(S)	340	413	431
LINE	320	USED FOR LINE(S)	341		
LINE	331	USED FOR LINE(S)	367		
LINE	336	USED FOR LINE(S)	353	421	441
LINE	339	USED FOR LINE(S)	432		
LINE	352	USED FOR LINE(S)	440		
LINE	371	USED FOR LINE(S)	438		
LINE	377	USED FOR LINE(S)	437	462	
LINE	382	USED FOR LINE(S)	468		
LINE	383	USED FOR LINE(S)	467		
LINE	401	USED FOR LINE(S)	452		
LINE	403	USED FOR LINE(S)	451		
LINE	408	USED FOR LINE(S)	429	447	
LINE	409	USED FOR LINE(S)	430		
LINE	416	USED FOR LINE(S)	442		
LINE	422	USED FOR LINE(S)	434		
LINE	427	USED FOR LINE(S)	445		
LINE	428	USED FOR LINE(S)	446		
LINE	435	USED FOR LINE(S)	457		
LINE	436	USED FOR LINE(S)	463		
LINE	444	USED FOR LINE(S)	471		
LINE	449	USED FOR LINE(S)	473		
LINE	450	USED FOR LINE(S)	472		
LINE	454	USED FOR LINE(S)	478		
LINE	455	USED FOR LINE(S)	477		
LINE	458	USED FOR LINE(S)	509		
LINE	459	USED FOR LINE(S)	515		
LINE	460	USED FOR LINE(S)	514		
LINE	464	USED FOR LINE(S)	520		
LINE	465	USED FOR LINE(S)	519		
LINE	470	USED FOR LINE(S)	484		
LINE	475	USED FOR LINE(S)	486		
LINE	476	USED FOR LINE(S)	485		
LINE	480	USED FOR LINE(S)	491		
LINE	481	USED FOR LINE(S)	490		
LINE	483	USED FOR LINE(S)	497		
LINE	488	USED FOR LINE(S)	499		
LINE	489	USED FOR LINE(S)	498		
LINE	493	USED FOR LINE(S)	504		
LINE	494	USED FOR LINE(S)	503		
LINE	510	USED FOR LINE(S)	522		
LINE	511	USED FOR LINE(S)	528		
LINE	512	USED FOR LINE(S)	527		
LINE	516	USED FOR LINE(S)	533		
LINE	517	USED FOR LINE(S)	532		
LINE	523	USED FOR LINE(S)	535		
LINE	524	USED FOR LINE(S)	541		
LINE	525	USED FOR LINE(S)	540		
LINE	529	USED FOR LINE(S)	546		
LINE	530	USED FOR LINE(S)	545		
LINE	536	USED FOR LINE(S)	548		
LINE	537	USED FOR LINE(S)	554		
LINE	538	USED FOR LINE(S)	553		
LINE	542	USED FOR LINE(S)	559		
LINE	543	USED FOR LINE(S)	558		
AREA	123	USED FOR AREA(S)	230		
AREA	163	USED FOR AREA(S)	182		
AREA	176	USED FOR AREA(S)	226		
AREA	177	USED FOR AREA(S)	264		
AREA	193	USED FOR AREA(S)	282		
AREA	198	USED FOR AREA(S)	208		
AREA	204	USED FOR AREA(S)	239		
AREA	205	USED FOR AREA(S)	291		
AREA	223	USED FOR AREA(S)	295		
AREA	248	USED FOR AREA(S)	294		
AREA	255	USED FOR AREA(S)	302		
AREA	273	USED FOR AREA(S)	307		

```

AREA 277 USED FOR AREA(S) 290
AREA 288 USED FOR AREA(S) 296
AREA 289 USED FOR AREA(S) 313
AREA 293 USED FOR AREA(S) 318
AREA 298 USED FOR AREA(S) 317
AREA 299 USED FOR AREA(S) 337
AREA 305 USED FOR AREA(S) 326
AREA 306 USED FOR AREA(S) 312
AREA 309 USED FOR AREA(S) 319
AREA 311 USED FOR AREA(S) 322
AREA 316 USED FOR AREA(S) 333
AREA 324 USED FOR AREA(S) 340
AREA 328 USED FOR AREA(S) 344
AREA 331 USED FOR AREA(S) 369
AREA 335 USED FOR AREA(S) 373
AREA 342 USED FOR AREA(S) 349
AREA 346 USED FOR AREA(S) 353
AREA 351 USED FOR AREA(S) 358
AREA 355 USED FOR AREA(S) 362
AREA 367 USED FOR AREA(S) 378
AREA 371 USED FOR AREA(S) 382
AREA 376 USED FOR AREA(S) 387
AREA 380 USED FOR AREA(S) 391
AREA 385 USED FOR AREA(S) 396
AREA 389 USED FOR AREA(S) 400

```

Clear 2-D mesh

```

SELECT      FOR ITEM=TYPE COMPONENT=
IN RANGE    1 TO      1 STEP      1

```

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

```

*** NOTE ***                      CP= 157.980  TIME= 14:59:12
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 157.980  TIME= 14:59:12
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 157.990  TIME= 14:59:12
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 158.000  TIME= 14:59:12
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 158.000  TIME= 14:59:12
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 158.010  TIME= 14:59:12
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 158.030  TIME= 14:59:12
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 158.040  TIME= 14:59:12
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 158.060  TIME= 14:59:12
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only
elements are deleted.

```

*** NOTE *** CP= 158.070 TIME= 14:59:12
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.090 TIME= 14:59:12
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.090 TIME= 14:59:12
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.100 TIME= 14:59:12
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.100 TIME= 14:59:12
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.110 TIME= 14:59:12
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.120 TIME= 14:59:12
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.130 TIME= 14:59:12
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.140 TIME= 14:59:12
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.160 TIME= 14:59:12
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.170 TIME= 14:59:12
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.180 TIME= 14:59:12
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.200 TIME= 14:59:12
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.210 TIME= 14:59:12
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.210 TIME= 14:59:12
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.220 TIME= 14:59:12
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.220 TIME= 14:59:12
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only
elements are deleted.

*** NOTE *** CP= 158.220 TIME= 14:59:12

Nodes cannot be cleared from area 27 because volume 33 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.230 TIME= 14:59:12
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.230 TIME= 14:59:12
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.240 TIME= 14:59:12
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.250 TIME= 14:59:12
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.260 TIME= 14:59:12
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.270 TIME= 14:59:12
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.290 TIME= 14:59:12
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.300 TIME= 14:59:12
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.310 TIME= 14:59:12
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.330 TIME= 14:59:12
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.340 TIME= 14:59:12
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.350 TIME= 14:59:12
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only elements are deleted.

*** NOTE *** CP= 158.370 TIME= 14:59:12
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 54 TO 54 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1
7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1
8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1
9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1
10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1
11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1
12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1
13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1
14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 12428 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 12428 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

117 NODES (OF 12428 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 96
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

429 NODES (OF 12428 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 384

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14648 STEP 1

12428 NODES (OF 12428 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE *** CP= 238.630 TIME= 15:00:33
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 239.160

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:00:34 JAN 02, 1995 CP= 239.160
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

1032 ELEMENTS (OF 11136 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

1074 NODES (OF 12428 DEFINED) SELECTED FROM
1032 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c21b5a.sub

*** WARNING *** CP= 239.730 TIME= 15:00:34
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 1032 NUMBER OF NODES= 1074
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11978 STEP 1

11136 ELEMENTS (OF 11136 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14648 STEP 1

12428 NODES (OF 12428 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2505.700

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:38:27 JAN 02, 1995 CP= 2505.700
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 11979 c21b5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 11979

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 11979
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

1032 ELEMENTS (OF 11137 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11979 STEP 1

10105 ELEMENTS (OF 10105 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2506.650

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 2506.660 TIME= 15:38:28
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.64 AND 308.64
KABS= 0. TOLERANCE= 1.54319

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT

KEYPOINTS) RELATED TO SELECTED AREA SET.

91 NODES (OF 12428 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 14648 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.36 AND -991.36
KABS= 0. TOLERANCE= 4.95682

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

91 NODES (OF 12428 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 14648 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14648 STEP 1

12428 NODES (OF 12428 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2509.500 TIME= 15:38:31
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:38:31 JAN 02, 1995 CP= 2509.510
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 2511.800 TIME= 15:38:33
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2511.820 TIME= 15:38:33
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution)

procedure) for ALL DOFs.

LOAD STEP OPTIONS

```

LOAD STEP NUMBER. . . . . 1
TIME AT END OF THE LOAD STEP. . . . . .10000E-05
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 0
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 0
  MINIMUM NUMBER OF SUBSTEPS . . . . . 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS . . . . . OFF
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP
    
```

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .72016E+06

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.50448E-09	IXX = .1463E+12	IXX = .9372E+11
YC = -.270.24	IYY = .4366E+08	IYY = .4366E+08
ZC = .48085E-15	IZZ = .1463E+12	IZZ = .9372E+11
	IXY = -.2723	IXY = -.1741
	IYZ = .9034E-07	IYZ = -.3244E-08
	IZX = -.9641E-10	IZX = -.9641E-10

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
2 720158.

Range of element maximum matrix coefficients in global coordinates
Maximum= 170.57564 at element 10581.
Minimum= 6.554465139E-08 at element 11979.

*** WARNING *** CP= 2569.700 TIME= 15:39:39
Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	10104	SOLID70	41.780	.004
18	1	MATRIX50	1.450	1.450

Time at end of element matrix formulation CP= 2569.7.
HT FLOW CONVERGENCE VALUE= 138.7 CRITERION= .1387

Estimated number of active DOF= 12246.
Maximum wavefront= 1329.

Time at end of matrix triangularization CP= 3061.91.
Equation solver maximum pivot= 722.128252 at node 8324 TEMP.
Equation solver minimum pivot= 0.976997419 at node 1098 TEMP.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
HT FLOW CONVERGENCE VALUE= .1901 CRITERION= .2852E-02
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3705E-02

HT FLOW CONVERGENCE VALUE= .9439E-05 CRITERION= .2852E-02 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES
TYPE NUMBER ENAME TOTAL CP AVE CP
2 10104 SOLID70 27.130 .003
18 1 MATRIX50 1.800 1.800

*** NODAL LOAD CALCULATION TIMES
TYPE NUMBER ENAME TOTAL CP AVE CP
2 10104 SOLID70 2.710 .000
18 1 MATRIX50 .000 .000
*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 12246
R.M.S. WAVEFRONT SIZE = 476.2

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
17.219 MB WRITTEN ON ELEMENT MATRIX FILE: c21b5a.emat
9.109 MB WRITTEN ON ELEMENT SAVED DATA FILE: c21b5a.esav
34.328 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c21b5a.tri
.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c21b5a.dsub
7.906 MB WRITTEN ON RESULTS FILE: c21b5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 3709.680

Store drift side temperature

1
***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:00:06 JAN 02, 1995 CP= 3709.760
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.13772

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 3722.880

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS

RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

520 NODES (OF 12428 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 14648 BY 1
REAL= 26.1377204 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14648 STEP 1

12428 NODES (OF 12428 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11979 STEP 1

10105 ELEMENTS (OF 10105 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:00:31 JAN 02, 1995 CP= 3723.760
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 3726.060 TIME= 16:00:33
This load step will be a static (steady-state) step.

*** NOTE *** CP= 3726.870 TIME= 16:00:34
The step data was checked and warning messages were found.
Please review output or errors file (c21b5a.err) for these warning

messages.

*** NOTE *** CP= 3726.880 TIME= 16:00:35
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:00:35 JAN 02, 1995 CP= 3727.340
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
TIME AT END OF THE LOAD STEP.20000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 293.1 CRITERION= .2931
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 150.7
HT FLOW CONVERGENCE VALUE= 142.0 CRITERION= .2931
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -9.114
HT FLOW CONVERGENCE VALUE= 6.997 CRITERION= .2931
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3448
HT FLOW CONVERGENCE VALUE= .8804E-01 CRITERION= .2931 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 162 TO 162 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1
7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1
8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1
9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1
10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1
11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1
12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.
520 NODES (OF 12428 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.
DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 14648 BY 1
NUMBER OF SPECIFIED CONSTRAINTS DELETED= 520
ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1
364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14648 STEP 1
12428 NODES (OF 12428 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters
INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP
USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep
USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE 80 SUBSTEPS AS A MAXIMUM
USE 4 SUBSTEPS AS A MINIMUM
USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.
Begin Transient
Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11979 STEP 1

10105 ELEMENTS (OF 10105 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 4149.940 TIME= 16:09:24
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:09:24 JAN 02, 1995 CP= 4149.940
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 31.558
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 524.4 CRITERION= .2931
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9304E-04
HT FLOW CONVERGENCE VALUE= .9755E-04 CRITERION= .6007 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

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*** LOAD STEP      3  SUBSTEP      1  COMPLETED.    CUM ITER =      7
*** TIME = .394472    TIME INC = .394470
*** RESPONSE EIGENVALUE = .9755E-05  OSCILLATION LIMIT = .3848E-05
*** AUTO STEP TIME: NEXT TIME INC = .39447    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 1049.    CRITERION= .6008
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1861E-03
    HT FLOW CONVERGENCE VALUE= .1951E-03 CRITERION= .6007    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      2  COMPLETED.    CUM ITER =      8
*** TIME = .788942    TIME INC = .394470
*** RESPONSE EIGENVALUE = .9755E-05  OSCILLATION LIMIT = .3848E-05
*** AUTO TIME STEP: NEXT TIME INC = 1.1834    INCREASED (FACTOR = 3.0000)

    HT FLOW CONVERGENCE VALUE= 1049.    CRITERION= .6008
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5582E-03
    HT FLOW CONVERGENCE VALUE= .5853E-03 CRITERION= .6007    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      3  COMPLETED.    CUM ITER =      9
*** TIME = 1.97235    TIME INC = 1.18341
*** RESPONSE EIGENVALUE = .9754E-05  OSCILLATION LIMIT = .1154E-04
*** AUTO TIME STEP: NEXT TIME INC = 3.5502    INCREASED (FACTOR = 3.0000)

    HT FLOW CONVERGENCE VALUE= 1049.    CRITERION= .6008
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1675E-02
    HT FLOW CONVERGENCE VALUE= .1756E-02 CRITERION= .6007    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      4  COMPLETED.    CUM ITER =     10
*** TIME = 5.52258    TIME INC = 3.55023
*** RESPONSE EIGENVALUE = .9751E-05  OSCILLATION LIMIT = .3462E-04
*** AUTO TIME STEP: NEXT TIME INC = 7.8894    INCREASED (FACTOR = 2.2222)

    HT FLOW CONVERGENCE VALUE= 1049.    CRITERION= .6008
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3721E-02
    HT FLOW CONVERGENCE VALUE= .3901E-02 CRITERION= .6006    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      5  COMPLETED.    CUM ITER =     11
*** TIME = 13.4120    TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9745E-05  OSCILLATION LIMIT = .7688E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 1049.    CRITERION= .6007
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3720E-02
    HT FLOW CONVERGENCE VALUE= .3900E-02 CRITERION= .6006    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      6  COMPLETED.    CUM ITER =     12
*** TIME = 21.3014    TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9736E-05  OSCILLATION LIMIT = .7681E-04
*** AUTO TIME STEP: NEXT TIME INC = 5.1281    DECREASED (FACTOR = .6500)

    HT FLOW CONVERGENCE VALUE= 1048.    CRITERION= .6007
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2418E-02
    HT FLOW CONVERGENCE VALUE= .2534E-02 CRITERION= .6005    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      7  COMPLETED.    CUM ITER =     13
*** TIME = 26.4295    TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9730E-05  OSCILLATION LIMIT = .4990E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 1048.    CRITERION= .6006
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2417E-02
    HT FLOW CONVERGENCE VALUE= .2534E-02 CRITERION= .6005    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      8  COMPLETED.    CUM ITER =     14
*** TIME = 31.5576    TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9725E-05  OSCILLATION LIMIT = .4987E-04

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 16:44:31 JAN 02, 1995 CP= 5907.840
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 1048.    CRITERION= .6006
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 12.81
HT FLOW CONVERGENCE VALUE= 13.00    CRITERION= .4458
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2786
HT FLOW CONVERGENCE VALUE= .3637    CRITERION= .4453    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
*** TIME = 39478.6    TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .7946E-05    OSCILLATION LIMIT = .3135
*** AUTO STEP TIME: NEXT TIME INC = 39447.    UNCHANGED

HT FLOW CONVERGENCE VALUE= 694.8    CRITERION= .4638
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.318
HT FLOW CONVERGENCE VALUE= 7.328    CRITERION= .3970
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1256
HT FLOW CONVERGENCE VALUE= .1920    CRITERION= .3986    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
*** TIME = 78925.6    TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4749E-05    OSCILLATION LIMIT = .1873
*** AUTO TIME STEP: NEXT TIME INC = .10529E+06    INCREASED (FACTOR = 2.6692)

HT FLOW CONVERGENCE VALUE= 584.3    CRITERION= .4286
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.496
HT FLOW CONVERGENCE VALUE= 12.61    CRITERION= .3656
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3000
HT FLOW CONVERGENCE VALUE= .5065    CRITERION= .3681
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1031E-01
HT FLOW CONVERGENCE VALUE= .1294E-01    CRITERION= .3679    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 21
*** TIME = 184218.    TIME INC = 105292.
*** RESPONSE EIGENVALUE = .2439E-05    OSCILLATION LIMIT = .2568
*** AUTO STEP TIME: NEXT TIME INC = .10529E+06    UNCHANGED

HT FLOW CONVERGENCE VALUE= 499.1    CRITERION= .4012
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.128
HT FLOW CONVERGENCE VALUE= 8.165    CRITERION= .3568
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1605
HT FLOW CONVERGENCE VALUE= .2977    CRITERION= .3586    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
*** TIME = 289510.    TIME INC = 105292.
*** RESPONSE EIGENVALUE = .1212E-05    OSCILLATION LIMIT = .1276
*** AUTO STEP TIME: NEXT TIME INC = .31588E+06    INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 465.1    CRITERION= .3891
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.800
HT FLOW CONVERGENCE VALUE= 16.78    CRITERION= .3488
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4745
HT FLOW CONVERGENCE VALUE= .9175    CRITERION= .3510
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2804E-01
HT FLOW CONVERGENCE VALUE= .4992E-01    CRITERION= .3509    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 26
*** TIME = 605387.    TIME INC = 315877.
*** RESPONSE EIGENVALUE = .7392E-06    OSCILLATION LIMIT = .2335
*** AUTO STEP TIME: NEXT TIME INC = .31588E+06    UNCHANGED
    
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HT FLOW CONVERGENCE VALUE= 419.6    CRITERION= .3696
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.976
    
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HT FLOW CONVERGENCE VALUE= 10.43 CRITERION= .3444
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2878
 HT FLOW CONVERGENCE VALUE= .5763 CRITERION= .3457
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1656E-01
 HT FLOW CONVERGENCE VALUE= .3072E-01 CRITERION= .3456 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 29
 *** TIME = 921263. TIME INC = 315877.
 *** RESPONSE EIGENVALUE = .4701E-06 OSCILLATION LIMIT = .1485
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.4976)

HT FLOW CONVERGENCE VALUE= 392.3 CRITERION= .3593
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.162
 HT FLOW CONVERGENCE VALUE= 17.50 CRITERION= .3419
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6157
 HT FLOW CONVERGENCE VALUE= 1.263 CRITERION= .3431
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4569E-01
 HT FLOW CONVERGENCE VALUE= .9741E-01 CRITERION= .3429 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 32
 *** TIME = .171020E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3121E-06 OSCILLATION LIMIT = .2462
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 368.0 CRITERION= .3486
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.345
 HT FLOW CONVERGENCE VALUE= 10.78 CRITERION= .3425
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3835
 HT FLOW CONVERGENCE VALUE= .8045 CRITERION= .3431
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2657E-01
 HT FLOW CONVERGENCE VALUE= .5814E-01 CRITERION= .3430 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 35
 *** TIME = .249914E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1952E-06 OSCILLATION LIMIT = .1540
 *** AUTO TIME STEP: NEXT TIME INC = .65665E+06 DECREASED (FACTOR = .8323)

HT FLOW CONVERGENCE VALUE= 368.3 CRITERION= .3484
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.665
 HT FLOW CONVERGENCE VALUE= 6.918 CRITERION= .3449
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2334
 HT FLOW CONVERGENCE VALUE= .4928 CRITERION= .3453
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1477E-01
 HT FLOW CONVERGENCE VALUE= .3214E-01 CRITERION= .3452 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 38
 *** TIME = .315579E+07 TIME INC = 656648.
 *** RESPONSE EIGENVALUE = .1389E-06 OSCILLATION LIMIT = .9118E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:04:41 JAN 02, 1995 CP= 9907.950
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 372.4 CRITERION= .3482
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.163
 HT FLOW CONVERGENCE VALUE= 5.703 CRITERION= .3454
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1912
 HT FLOW CONVERGENCE VALUE= .4051 CRITERION= .3457
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1181E-01
 HT FLOW CONVERGENCE VALUE= .2596E-01 CRITERION= .3457 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 41
 *** TIME = .381244E+07 TIME INC = 656648.
 *** RESPONSE EIGENVALUE = .1113E-06 OSCILLATION LIMIT = .7309E-01

*** AUTO STEP TIME: NEXT TIME INC = .65665E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 376.0 CRITERION= .3495
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.814
HT FLOW CONVERGENCE VALUE= 4.891 CRITERION= .3470
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1639
HT FLOW CONVERGENCE VALUE= .3483 CRITERION= .3472
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9905E-02
HT FLOW CONVERGENCE VALUE= .2185E-01 CRITERION= .3472 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 44
*** TIME = .446909E+07 TIME INC = 656648.
*** RESPONSE EIGENVALUE = .9326E-07 OSCILLATION LIMIT = .6124E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.2015)

HT FLOW CONVERGENCE VALUE= 378.6 CRITERION= .3491
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.868
HT FLOW CONVERGENCE VALUE= 5.107 CRITERION= .3470
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1771
HT FLOW CONVERGENCE VALUE= .3775 CRITERION= .3472
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1118E-01
HT FLOW CONVERGENCE VALUE= .2522E-01 CRITERION= .3471 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 47
*** TIME = .525803E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7989E-07 OSCILLATION LIMIT = .6303E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 380.8 CRITERION= .3501
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.617
HT FLOW CONVERGENCE VALUE= 4.491 CRITERION= .3482
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1553
HT FLOW CONVERGENCE VALUE= .3315 CRITERION= .3483 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 49
*** TIME = .604697E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .6906E-07 OSCILLATION LIMIT = .5449E-01
*** AUTO STEP TIME: NEXT TIME INC = .26458E+06 DECREASED (FACTOR = .3354)

HT FLOW CONVERGENCE VALUE= 382.3 CRITERION= .3497
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4970
HT FLOW CONVERGENCE VALUE= 1.366 CRITERION= .3476
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3512E-01
HT FLOW CONVERGENCE VALUE= .7307E-01 CRITERION= .3477 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 51
*** TIME = .631155E+07 TIME INC = 264584.
*** RESPONSE EIGENVALUE = .6378E-07 OSCILLATION LIMIT = .1688E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:48:48 JAN 02, 1995 CP= 12098.760
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 382.7 CRITERION= .3504
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4792
HT FLOW CONVERGENCE VALUE= 1.312 CRITERION= .3484
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3393E-01
HT FLOW CONVERGENCE VALUE= .7082E-01 CRITERION= .3485 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 53
*** TIME = .657614E+07 TIME INC = 264584.
*** RESPONSE EIGENVALUE = .6113E-07 OSCILLATION LIMIT = .1618E-01
*** AUTO STEP TIME: NEXT TIME INC = .26458E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 383.1 CRITERION= .3497
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4626
 HT FLOW CONVERGENCE VALUE= 1.275 CRITERION= .3478
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3279E-01
 HT FLOW CONVERGENCE VALUE= .6823E-01 CRITERION= .3479 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 55
 *** TIME = .684072E+07 TIME INC = 264584.
 *** RESPONSE EIGENVALUE = .5874E-07 OSCILLATION LIMIT = .1554E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.9818)

HT FLOW CONVERGENCE VALUE= 383.4 CRITERION= .3503
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.300
 HT FLOW CONVERGENCE VALUE= 3.628 CRITERION= .3487
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1247
 HT FLOW CONVERGENCE VALUE= .2661 CRITERION= .3488 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 57
 *** TIME = .762966E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .5410E-07 OSCILLATION LIMIT = .4268E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 384.5 CRITERION= .3497
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.202
 HT FLOW CONVERGENCE VALUE= 3.324 CRITERION= .3483
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1136
 HT FLOW CONVERGENCE VALUE= .2420 CRITERION= .3484 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 59
 *** TIME = .841860E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4853E-07 OSCILLATION LIMIT = .3829E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52436E+06 DECREASED (FACTOR = .6646)

HT FLOW CONVERGENCE VALUE= 385.6 CRITERION= .3506
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7551
 HT FLOW CONVERGENCE VALUE= 2.043 CRITERION= .3492
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6358E-01
 HT FLOW CONVERGENCE VALUE= .1345 CRITERION= .3492 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 61
 *** TIME = .894296E+07 TIME INC = 524356.
 *** RESPONSE EIGENVALUE = .4454E-07 OSCILLATION LIMIT = .2335E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52436E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 386.3 CRITERION= .3500
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7237
 HT FLOW CONVERGENCE VALUE= 1.948 CRITERION= .3486
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6032E-01
 HT FLOW CONVERGENCE VALUE= .1274 CRITERION= .3487 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 6 COMPLETED. CUM ITER = 63
 *** TIME = .946731E+07 TIME INC = 524356.
 *** RESPONSE EIGENVALUE = .4164E-07 OSCILLATION LIMIT = .2183E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 19:32:11 JAN 02, 1995 CP= 14254.920
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 387.1 CRITERION= .3507
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6957
 HT FLOW CONVERGENCE VALUE= 1.860 CRITERION= .3495
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5764E-01
 HT FLOW CONVERGENCE VALUE= .1217 CRITERION= .3496 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 65
 *** TIME = .999167E+07 TIME INC = 524356.
 *** RESPONSE EIGENVALUE = .3898E-07 OSCILLATION LIMIT = .2044E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52436E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 387.9 CRITERION= .3502
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6698
 HT FLOW CONVERGENCE VALUE= 1.783 CRITERION= .3490
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5491E-01
 HT FLOW CONVERGENCE VALUE= .1157 CRITERION= .3491 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 67
 *** TIME = .105160E+08 TIME INC = 524356.
 *** RESPONSE EIGENVALUE = .3657E-07 OSCILLATION LIMIT = .1918E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5046)

HT FLOW CONVERGENCE VALUE= 388.7 CRITERION= .3509
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9623
 HT FLOW CONVERGENCE VALUE= 2.566 CRITERION= .3499
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8677E-01
 HT FLOW CONVERGENCE VALUE= .1842 CRITERION= .3500 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 69
 *** TIME = .113050E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3376E-07 OSCILLATION LIMIT = .2663E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 389.9 CRITERION= .3505
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9141
 HT FLOW CONVERGENCE VALUE= 2.419 CRITERION= .3496
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8133E-01
 HT FLOW CONVERGENCE VALUE= .1723 CRITERION= .3496 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 71
 *** TIME = .120939E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3082E-07 OSCILLATION LIMIT = .2432E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52917E+06 DECREASED (FACTOR = .6707)

HT FLOW CONVERGENCE VALUE= 391.2 CRITERION= .3514
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5890
 HT FLOW CONVERGENCE VALUE= 1.534 CRITERION= .3504
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4708E-01
 HT FLOW CONVERGENCE VALUE= .9903E-01 CRITERION= .3505 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 73
 *** TIME = .126231E+08 TIME INC = 529168.
 *** RESPONSE EIGENVALUE = .2868E-07 OSCILLATION LIMIT = .1518E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 20:08:23 JAN 02, 1995 CP= 16055.940
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 392.1 CRITERION= .3509
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5705
 HT FLOW CONVERGENCE VALUE= 1.481 CRITERION= .3500
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4525E-01
 HT FLOW CONVERGENCE VALUE= .9499E-01 CRITERION= .3500 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 75
 *** TIME = .131522E+08 TIME INC = 529168.
 *** RESPONSE EIGENVALUE = .2708E-07 OSCILLATION LIMIT = .1433E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52917E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 393.0 CRITERION= .3517

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5535
HT FLOW CONVERGENCE VALUE= 1.429 CRITERION= .3508
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4380E-01
HT FLOW CONVERGENCE VALUE= .9195E-01 CRITERION= .3508 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 77
*** TIME = .136814E+08 TIME INC = 529168.
*** RESPONSE EIGENVALUE = .2558E-07 OSCILLATION LIMIT = .1353E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4909)

HT FLOW CONVERGENCE VALUE= 393.9 CRITERION= .3511
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7944
HT FLOW CONVERGENCE VALUE= 2.059 CRITERION= .3504
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6882E-01
HT FLOW CONVERGENCE VALUE= .1453 CRITERION= .3505 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 79
*** TIME = .144703E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2382E-07 OSCILLATION LIMIT = .1880E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED,

HT FLOW CONVERGENCE VALUE= 395.2 CRITERION= .3520
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7619
HT FLOW CONVERGENCE VALUE= 1.963 CRITERION= .3513
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6562E-01
HT FLOW CONVERGENCE VALUE= .1384 CRITERION= .3514 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 81
*** TIME = .152593E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2199E-07 OSCILLATION LIMIT = .1735E-01
*** AUTO TIME STEP: NEXT TIME INC = .51954E+06 DECREASED (FACTOR = .6585)

HT FLOW CONVERGENCE VALUE= 396.5 CRITERION= .3516
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4857
HT FLOW CONVERGENCE VALUE= 1.236 CRITERION= .3509
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3728E-01
HT FLOW CONVERGENCE VALUE= .7788E-01 CRITERION= .3509 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 83
*** TIME = .157788E+08 TIME INC = 519545.
*** RESPONSE EIGENVALUE = .2073E-07 OSCILLATION LIMIT = .1077E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:44:40 JAN 02, 1995 CP= 17857.390
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 397.3 CRITERION= .3524
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4731
HT FLOW CONVERGENCE VALUE= 1.200 CRITERION= .3517
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3633E-01
HT FLOW CONVERGENCE VALUE= .7590E-01 CRITERION= .3517 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 85
*** TIME = .162984E+08 TIME INC = 519545.
*** RESPONSE EIGENVALUE = .1972E-07 OSCILLATION LIMIT = .1025E-01
*** AUTO STEP TIME: NEXT TIME INC = .51954E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 398.1 CRITERION= .3519
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4616
HT FLOW CONVERGENCE VALUE= 1.170 CRITERION= .3512
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3521E-01
HT FLOW CONVERGENCE VALUE= .7342E-01 CRITERION= .3512 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 87

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*** TIME = .168179E+08 TIME INC = 519545.
*** RESPONSE EIGENVALUE = .1882E-07 OSCILLATION LIMIT = .9776E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5185)

HT FLOW CONVERGENCE VALUE= 398.9 CRITERION= .3526
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6792
HT FLOW CONVERGENCE VALUE= 1.727 CRITERION= .3521
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5741E-01
HT FLOW CONVERGENCE VALUE= .1206 CRITERION= .3521 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 89
*** TIME = .176069E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1766E-07 OSCILLATION LIMIT = .1393E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 400.1 CRITERION= .3522
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6562
HT FLOW CONVERGENCE VALUE= 1.663 CRITERION= .3516
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5496E-01
HT FLOW CONVERGENCE VALUE= .1152 CRITERION= .3517 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 91
*** TIME = .183958E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1652E-07 OSCILLATION LIMIT = .1303E-01
*** AUTO TIME STEP: NEXT TIME INC = .53879E+06 DECREASED (FACTOR = .6829)

HT FLOW CONVERGENCE VALUE= 401.3 CRITERION= .3530
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4362
HT FLOW CONVERGENCE VALUE= 1.091 CRITERION= .3524
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3311E-01
HT FLOW CONVERGENCE VALUE= .6890E-01 CRITERION= .3524 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 93
*** TIME = .189346E+08 TIME INC = 538790.
*** RESPONSE EIGENVALUE = .1570E-07 OSCILLATION LIMIT = .8461E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 21:21:11 JAN 02, 1995 CP= 19659.440
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 402.0 CRITERION= .3525
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4266
HT FLOW CONVERGENCE VALUE= 1.067 CRITERION= .3519
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3218E-01
HT FLOW CONVERGENCE VALUE= .6684E-01 CRITERION= .3519 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 95
*** TIME = .194734E+08 TIME INC = 538790.
*** RESPONSE EIGENVALUE = .1506E-07 OSCILLATION LIMIT = .8115E-02
*** AUTO STEP TIME: NEXT TIME INC = .53879E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 402.7 CRITERION= .3533
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4177
HT FLOW CONVERGENCE VALUE= 1.041 CRITERION= .3527
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3152E-01
HT FLOW CONVERGENCE VALUE= .6547E-01 CRITERION= .3527 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 97
*** TIME = .200122E+08 TIME INC = 538790.
*** RESPONSE EIGENVALUE = .1443E-07 OSCILLATION LIMIT = .7777E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4643)

HT FLOW CONVERGENCE VALUE= 403.5 CRITERION= .3527
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5955

HT FLOW CONVERGENCE VALUE= 1.493 CRITERION= .3522
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4904E-01
 HT FLOW CONVERGENCE VALUE= .1024 CRITERION= .3522 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 99
 *** TIME = .208011E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1368E-07 OSCILLATION LIMIT = .1079E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 404.5 CRITERION= .3535
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5786
 HT FLOW CONVERGENCE VALUE= 1.444 CRITERION= .3530
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4752E-01
 HT FLOW CONVERGENCE VALUE= .9915E-01 CRITERION= .3530 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 101
 *** TIME = .215901E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1293E-07 OSCILLATION LIMIT = .1020E-01
 *** AUTO TIME STEP: NEXT TIME INC = .50030E+06 DECREASED (FACTOR = .6341)

HT FLOW CONVERGENCE VALUE= 405.4 CRITERION= .3530
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3591
 HT FLOW CONVERGENCE VALUE= .8864 CRITERION= .3525
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2606E-01
 HT FLOW CONVERGENCE VALUE= .5379E-01 CRITERION= .3525 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 103
 *** TIME = .220904E+08 TIME INC = 500299.
 *** RESPONSE EIGENVALUE = .1249E-07 OSCILLATION LIMIT = .6249E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:57:13 JAN 02, 1995 CP= 21460.220
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 406.0 CRITERION= .3537
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3528
 HT FLOW CONVERGENCE VALUE= .8691 CRITERION= .3532
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2566E-01
 HT FLOW CONVERGENCE VALUE= .5298E-01 CRITERION= .3532 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 105
 *** TIME = .225907E+08 TIME INC = 500299.
 *** RESPONSE EIGENVALUE = .1206E-07 OSCILLATION LIMIT = .6035E-02
 *** AUTO STEP TIME: NEXT TIME INC = .50030E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 406.6 CRITERION= .3532
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3471
 HT FLOW CONVERGENCE VALUE= .8570 CRITERION= .3527
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2511E-01
 HT FLOW CONVERGENCE VALUE= .5172E-01 CRITERION= .3527 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 107
 *** TIME = .230909E+08 TIME INC = 500299.
 *** RESPONSE EIGENVALUE = .1170E-07 OSCILLATION LIMIT = .5852E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5769)

HT FLOW CONVERGENCE VALUE= 407.1 CRITERION= .3539
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5354
 HT FLOW CONVERGENCE VALUE= 1.329 CRITERION= .3535
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4343E-01
 HT FLOW CONVERGENCE VALUE= .9023E-01 CRITERION= .3535 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 109
 *** TIME = .238799E+08 TIME INC = 788940.

*** RESPONSE EIGENVALUE = .1114E-07 OSCILLATION LIMIT = .8786E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 408.0 CRITERION= .3534
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5226
 HT FLOW CONVERGENCE VALUE= 1.295 CRITERION= .3530
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4206E-01
 HT FLOW CONVERGENCE VALUE= .8721E-01 CRITERION= .3530 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 111
 *** TIME = .246688E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1065E-07 OSCILLATION LIMIT = .8399E-02
 *** AUTO TIME STEP: NEXT TIME INC = .57728E+06 DECREASED (FACTOR = .7317)

HT FLOW CONVERGENCE VALUE= 408.8 CRITERION= .3542
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3751
 HT FLOW CONVERGENCE VALUE= .9196 CRITERION= .3537
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2792E-01
 HT FLOW CONVERGENCE VALUE= .5755E-01 CRITERION= .3537 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 113.
 *** TIME = .252461E+08 TIME INC = 577282.
 *** RESPONSE EIGENVALUE = .1029E-07 OSCILLATION LIMIT = .5942E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:34:02 JAN 02, 1995 CP= 23261.630
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 409.4 CRITERION= .3536
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3689
 HT FLOW CONVERGENCE VALUE= .9034 CRITERION= .3531
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2729E-01
 HT FLOW CONVERGENCE VALUE= .5614E-01 CRITERION= .3532 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 115
 *** TIME = .258234E+08 TIME INC = 577282.
 *** RESPONSE EIGENVALUE = .9999E-08 OSCILLATION LIMIT = .5772E-02
 *** AUTO STEP TIME: NEXT TIME INC = .57728E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 409.9 CRITERION= .3543
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3630
 HT FLOW CONVERGENCE VALUE= .8849 CRITERION= .3538
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2687E-01
 HT FLOW CONVERGENCE VALUE= .5529E-01 CRITERION= .3538 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 117
 *** TIME = .264007E+08 TIME INC = 577282.
 *** RESPONSE EIGENVALUE = .9692E-08 OSCILLATION LIMIT = .5595E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3666)

HT FLOW CONVERGENCE VALUE= 410.5 CRITERION= .3537
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4865
 HT FLOW CONVERGENCE VALUE= 1.191 CRITERION= .3533
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3857E-01
 HT FLOW CONVERGENCE VALUE= .7967E-01 CRITERION= .3533 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 119
 *** TIME = .271896E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .9325E-08 OSCILLATION LIMIT = .7357E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 411.2 CRITERION= .3544
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4766
 HT FLOW CONVERGENCE VALUE= 1.162 CRITERION= .3540

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3773E-01
 HT FLOW CONVERGENCE VALUE= .7788E-01 CRITERION= .3540 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 121
 *** TIME = .279786E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .8967E-08 OSCILLATION LIMIT = .7075E-02
 *** AUTO TIME STEP: NEXT TIME INC = .42332E+06 DECREASED (FACTOR = .5366)

HT FLOW CONVERGENCE VALUE= 411.8 CRITERION= .3539
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2523
 HT FLOW CONVERGENCE VALUE= .6072 CRITERION= .3534
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1685E-01
 HT FLOW CONVERGENCE VALUE= .3427E-01 CRITERION= .3534 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 123
 *** TIME = .284019E+08 TIME INC = 423316.
 *** RESPONSE EIGENVALUE = .8902E-08 OSCILLATION LIMIT = .3769E-02
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
 TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 906.986869 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 11979 STEP 1

10105 ELEMENTS (OF 10105 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 25064.740 TIME= 23:10:14
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:10:14 JAN 02, 1995 CP= 25064.740
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
 TIME AT END OF THE LOAD STEP.31558E+08
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25

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STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
  THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS
  THETA . . . . . .50000
  OSCILLATION LIMIT CRITERION . . . . . .50000
  TOLERANCE . . . . . .20000
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS . . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS . . . . .ALL DATA WRITTEN
                                     FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 412.2    CRITERION= .3545
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2496
HT FLOW CONVERGENCE VALUE= .5991    CRITERION= .3541
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1673E-01
HT FLOW CONVERGENCE VALUE= .3405E-01 CRITERION= .3541 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 125
*** TIME = .288252E+08 TIME INC = 423316.
*** RESPONSE EIGENVALUE = .8704E-08 OSCILLATION LIMIT = .3685E-02
*** AUTO STEP TIME: NEXT TIME INC = .42332E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 412.5    CRITERION= .3540
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2470
HT FLOW CONVERGENCE VALUE= .5956    CRITERION= .3535
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1648E-01
HT FLOW CONVERGENCE VALUE= .3347E-01 CRITERION= .3535 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 127
*** TIME = .292485E+08 TIME INC = 423316.
*** RESPONSE EIGENVALUE = .8557E-08 OSCILLATION LIMIT = .3622E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.8637)

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HT FLOW CONVERGENCE VALUE= 412.8    CRITERION= .3545
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4530
HT FLOW CONVERGENCE VALUE= 1.101    CRITERION= .3542
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3554E-01
HT FLOW CONVERGENCE VALUE= .7309E-01 CRITERION= .3542 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 129
*** TIME = .300374E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8170E-08 OSCILLATION LIMIT = .6446E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 413.4    CRITERION= .3540
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4451
HT FLOW CONVERGENCE VALUE= 1.081    CRITERION= .3536
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3466E-01
HT FLOW CONVERGENCE VALUE= .7113E-01 CRITERION= .3536 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 131
*** TIME = .308264E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7924E-08 OSCILLATION LIMIT = .6251E-02
*** AUTO TIME STEP: NEXT TIME INC = .73125E+06 DECREASED (FACTOR = .9269)

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HT FLOW CONVERGENCE VALUE= 414.0    CRITERION= .3547
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4058
HT FLOW CONVERGENCE VALUE= .9795    CRITERION= .3543
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3100E-01
HT FLOW CONVERGENCE VALUE= .6353E-01 CRITERION= .3543 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 133
*** TIME = .315576E+08 TIME INC = 731247.
*** RESPONSE EIGENVALUE = .7692E-08 OSCILLATION LIMIT = .5625E-02

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:46:36 JAN 02, 1995 CP= 26868.410
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 414.5 CRITERION= .3541
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3994
 HT FLOW CONVERGENCE VALUE= .9635 CRITERION= .3537
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3037E-01
 HT FLOW CONVERGENCE VALUE= .6200E-01 CRITERION= .3537 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 135
 *** TIME = .322889E+08 TIME INC = 731247.
 *** RESPONSE EIGENVALUE = .7498E-08 OSCILLATION LIMIT = .5483E-02
 *** AUTO STEP TIME: NEXT TIME INC = .73125E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 415.0 CRITERION= .3547
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3933
 HT FLOW CONVERGENCE VALUE= .9524 CRITERION= .3544
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3104E-01
 HT FLOW CONVERGENCE VALUE= .6226E-01 CRITERION= .3544 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 137
 *** TIME = .330201E+08 TIME INC = 731247.
 *** RESPONSE EIGENVALUE = .7296E-08 OSCILLATION LIMIT = .5335E-02
 *** AUTO TIME STEP: NEXT TIME INC = .21937E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 415.4 CRITERION= .3540
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.143
 HT FLOW CONVERGENCE VALUE= 2.847 CRITERION= .3539
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1231
 HT FLOW CONVERGENCE VALUE= .2423 CRITERION= .3538 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 139
 *** TIME = .352139E+08 TIME INC = .219374E+07
 *** RESPONSE EIGENVALUE = .6896E-08 OSCILLATION LIMIT = .1513E-01
 *** AUTO TIME STEP: NEXT TIME INC = .65812E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 416.7 CRITERION= .3540
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.175
 HT FLOW CONVERGENCE VALUE= 7.600 CRITERION= .3548
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3932
 HT FLOW CONVERGENCE VALUE= .7797 CRITERION= .3544
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2677E-01
 HT FLOW CONVERGENCE VALUE= .6216E-01 CRITERION= .3544 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 142
 *** TIME = .417951E+08 TIME INC = .658122E+07
 *** RESPONSE EIGENVALUE = .6038E-08 OSCILLATION LIMIT = .3974E-01
 *** AUTO STEP TIME: NEXT TIME INC = .65812E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 419.5 CRITERION= .3532
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.864
 HT FLOW CONVERGENCE VALUE= 6.724 CRITERION= .3537
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3161
 HT FLOW CONVERGENCE VALUE= .6522 CRITERION= .3533
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2368E-01
 HT FLOW CONVERGENCE VALUE= .5610E-01 CRITERION= .3533 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 145
 *** TIME = .483763E+08 TIME INC = .658122E+07
 *** RESPONSE EIGENVALUE = .5099E-08 OSCILLATION LIMIT = .3356E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1988)

HT FLOW CONVERGENCE VALUE= 421.0 CRITERION= .3532

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.155
HT FLOW CONVERGENCE VALUE= 7.473 CRITERION= .3536
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3694
HT FLOW CONVERGENCE VALUE= .7733 CRITERION= .3531
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2367E-01
HT FLOW CONVERGENCE VALUE= .5282E-01 CRITERION= .3531 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 148
*** TIME = .562657E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .4391E-08 OSCILLATION LIMIT = .3464E-01
*** AUTO TIME STEP: NEXT TIME INC = .68495E+07 DECREASED (FACTOR = .8682)

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HT FLOW CONVERGENCE VALUE= 421.9 CRITERION= .3518
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.559
HT FLOW CONVERGENCE VALUE= 5.913 CRITERION= .3519
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2862
HT FLOW CONVERGENCE VALUE= .5974 CRITERION= .3515
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1615E-01
HT FLOW CONVERGENCE VALUE= .3507E-01 CRITERION= .3515 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 151
*** TIME = .631152E+08 TIME INC = .684952E+07
*** RESPONSE EIGENVALUE = .3879E-08 OSCILLATION LIMIT = .2657E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:48:33 JAN 03, 1995 CP= 29907.710
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 421.8 CRITERION= .3515
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.411
HT FLOW CONVERGENCE VALUE= 5.650 CRITERION= .3514
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2593
HT FLOW CONVERGENCE VALUE= .5267 CRITERION= .3510
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1364E-01
HT FLOW CONVERGENCE VALUE= .2901E-01 CRITERION= .3510 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 154
*** TIME = .699647E+08 TIME INC = .684952E+07
*** RESPONSE EIGENVALUE = .3471E-08 OSCILLATION LIMIT = .2377E-01
*** AUTO STEP TIME: NEXT TIME INC = .68495E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 421.1 CRITERION= .3498
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.278
HT FLOW CONVERGENCE VALUE= 5.305 CRITERION= .3496
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2459
HT FLOW CONVERGENCE VALUE= .5078 CRITERION= .3492
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1132E-01
HT FLOW CONVERGENCE VALUE= .2444E-01 CRITERION= .3492 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 157
*** TIME = .768143E+08 TIME INC = .684952E+07
*** RESPONSE EIGENVALUE = .3164E-08 OSCILLATION LIMIT = .2167E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1518)

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HT FLOW CONVERGENCE VALUE= 420.1 CRITERION= .3490
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.477
HT FLOW CONVERGENCE VALUE= 5.570 CRITERION= .3487
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2651
HT FLOW CONVERGENCE VALUE= .5504 CRITERION= .3483
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1056E-01
HT FLOW CONVERGENCE VALUE= .2265E-01 CRITERION= .3482 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 160
*** TIME = .847037E+08 TIME INC = .788940E+07

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*** RESPONSE EIGENVALUE = .2889E-08 OSCILLATION LIMIT = .2279E-01
 *** AUTO TIME STEP: NEXT TIME INC = .49846E+07 DECREASED (FACTOR = .6318)

HT FLOW CONVERGENCE VALUE= 418.3 CRITERION= .3473
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.488
 HT FLOW CONVERGENCE VALUE= 3.828 CRITERION= .3469
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1415
 HT FLOW CONVERGENCE VALUE= .2874 CRITERION= .3466 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 162
 *** TIME = .896882E+08 TIME INC = .498458E+07
 *** RESPONSE EIGENVALUE = .2686E-08 OSCILLATION LIMIT = .1339E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49846E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 417.0 CRITERION= .3468
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.435
 HT FLOW CONVERGENCE VALUE= 3.252 CRITERION= .3464
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1323
 HT FLOW CONVERGENCE VALUE= .2663 CRITERION= .3461 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 164
 *** TIME = .946728E+08 TIME INC = .498458E+07
 *** RESPONSE EIGENVALUE = .2559E-08 OSCILLATION LIMIT = .1275E-01

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:33:13 JAN 03, 1995 CP= 32103.730
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 415.6 CRITERION= .3451
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.385
 HT FLOW CONVERGENCE VALUE= 3.939 CRITERION= .3447
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1354
 HT FLOW CONVERGENCE VALUE= .2722 CRITERION= .3444 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 166
 *** TIME = .996574E+08 TIME INC = .498458E+07
 *** RESPONSE EIGENVALUE = .2460E-08 OSCILLATION LIMIT = .1226E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49846E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 413.9 CRITERION= .3446
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.336
 HT FLOW CONVERGENCE VALUE= 3.766 CRITERION= .3441
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1243
 HT FLOW CONVERGENCE VALUE= .2674 CRITERION= .3438 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 168
 *** TIME = .104642E+09 TIME INC = .498458E+07
 *** RESPONSE EIGENVALUE = .2373E-08 OSCILLATION LIMIT = .1183E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.5828)

HT FLOW CONVERGENCE VALUE= 412.0 CRITERION= .3425
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.022
 HT FLOW CONVERGENCE VALUE= 5.686 CRITERION= .3418
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1849
 HT FLOW CONVERGENCE VALUE= .4116 CRITERION= .3413
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7308E-02
 HT FLOW CONVERGENCE VALUE= .1192E-01 CRITERION= .3413 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 171
 *** TIME = .112531E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2212E-08 OSCILLATION LIMIT = .1745E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 408.9 CRITERION= .3411

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.913
 HT FLOW CONVERGENCE VALUE= 6.384 CRITERION= .3405
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1812
 HT FLOW CONVERGENCE VALUE= .4314 CRITERION= .3400
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7307E-02
 HT FLOW CONVERGENCE VALUE= .1240E-01 CRITERION= .3400 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 174
 *** TIME = .120421E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2052E-08 OSCILLATION LIMIT = .1619E-01
 *** AUTO TIME STEP: NEXT TIME INC = .58096E+07 DECREASED (FACTOR = .7364)

HT FLOW CONVERGENCE VALUE= 405.6 CRITERION= .3388
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.343
 HT FLOW CONVERGENCE VALUE= 4.516 CRITERION= .3382
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1106
 HT FLOW CONVERGENCE VALUE= .2470 CRITERION= .3379 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 176
 *** TIME = .126230E+09 TIME INC = .580964E+07
 *** RESPONSE EIGENVALUE = .1961E-08 OSCILLATION LIMIT = .1139E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 02:15:47 JAN 03, 1995 CP= 34172.260
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 403.1 CRITERION= .3380
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.292
 HT FLOW CONVERGENCE VALUE= 4.432 CRITERION= .3374
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1060
 HT FLOW CONVERGENCE VALUE= .2443 CRITERION= .3370 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 178
 *** TIME = .132040E+09 TIME INC = .580964E+07
 *** RESPONSE EIGENVALUE = .1857E-08 OSCILLATION LIMIT = .1079E-01
 *** AUTO STEP TIME: NEXT TIME INC = .58096E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 400.5 CRITERION= .3359
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.244
 HT FLOW CONVERGENCE VALUE= 4.422 CRITERION= .3353
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1014
 HT FLOW CONVERGENCE VALUE= .2414 CRITERION= .3350 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 180
 *** TIME = .137850E+09 TIME INC = .580964E+07
 *** RESPONSE EIGENVALUE = .1787E-08 OSCILLATION LIMIT = .1038E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3580)

HT FLOW CONVERGENCE VALUE= 397.8 CRITERION= .3348
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.619
 HT FLOW CONVERGENCE VALUE= 6.106 CRITERION= .3340
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1322
 HT FLOW CONVERGENCE VALUE= .3565 CRITERION= .3336
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4856E-02
 HT FLOW CONVERGENCE VALUE= .1346E-01 CRITERION= .3336 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 183
 *** TIME = .145739E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1691E-08 OSCILLATION LIMIT = .1334E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 394.1 CRITERION= .3322
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.541
 HT FLOW CONVERGENCE VALUE= 6.191 CRITERION= .3315

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1237
HT FLOW CONVERGENCE VALUE= .3434 CRITERION= .3310
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7567E-02
HT FLOW CONVERGENCE VALUE= .1542E-01 CRITERION= .3310 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 186
*** TIME = .153629E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1607E-08 OSCILLATION LIMIT = .1268E-01
*** AUTO TIME STEP: NEXT TIME INC = .41595E+07 DECREASED (FACTOR = .5272)

HT FLOW CONVERGENCE VALUE= 390.5 CRITERION= .3312
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7816
HT FLOW CONVERGENCE VALUE= 3.093 CRITERION= .3307
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5065E-01
HT FLOW CONVERGENCE VALUE= .1258 CRITERION= .3305 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 188
*** TIME = .157788E+09 TIME INC = .415953E+07
*** RESPONSE EIGENVALUE = .1553E-08 OSCILLATION LIMIT = .6461E-02

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:57:57 JAN 03, 1995 CP= 36243.090
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 388.6 CRITERION= .3296
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7623
HT FLOW CONVERGENCE VALUE= 3.105 CRITERION= .3291
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4936E-01
HT FLOW CONVERGENCE VALUE= .1214 CRITERION= .3289 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 190
*** TIME = .161948E+09 TIME INC = .415953E+07
*** RESPONSE EIGENVALUE = .1508E-08 OSCILLATION LIMIT = .6271E-02
*** AUTO STEP TIME: NEXT TIME INC = .41595E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 386.6 CRITERION= .3292
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7439
HT FLOW CONVERGENCE VALUE= 3.142 CRITERION= .3287
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4961E-01
HT FLOW CONVERGENCE VALUE= .1293 CRITERION= .3285 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 192
*** TIME = .166107E+09 TIME INC = .415953E+07
*** RESPONSE EIGENVALUE = .1457E-08 OSCILLATION LIMIT = .6061E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8967)

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HT FLOW CONVERGENCE VALUE= 384.7 CRITERION= .3271
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.366
HT FLOW CONVERGENCE VALUE= 6.253 CRITERION= .3264
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1018
HT FLOW CONVERGENCE VALUE= .3290 CRITERION= .3259
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5307E-02
HT FLOW CONVERGENCE VALUE= .1569E-01 CRITERION= .3259 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 195
*** TIME = .173996E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1401E-08 OSCILLATION LIMIT = .1105E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 381.0 CRITERION= .3257
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.306
HT FLOW CONVERGENCE VALUE= 6.125 CRITERION= .3250
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1016
HT FLOW CONVERGENCE VALUE= .2922 CRITERION= .3246 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 197
*** TIME = .181886E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1339E-08 OSCILLATION LIMIT = .1056E-01
*** AUTO TIME STEP: NEXT TIME INC = .74597E+07 DECREASED (FACTOR = .9455)
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HT FLOW CONVERGENCE VALUE= 377.4 CRITERION= .3232
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.184
HT FLOW CONVERGENCE VALUE= 5.352 CRITERION= .3226
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8031E-01
HT FLOW CONVERGENCE VALUE= .2644 CRITERION= .3221 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 199
*** TIME = .189346E+09 TIME INC = .745974E+07
*** RESPONSE EIGENVALUE = .1283E-08 OSCILLATION LIMIT = .9568E-02
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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 03:37:40 JAN 03, 1995 CP= 38181.620
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 374.0 CRITERION= .3220
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.139
HT FLOW CONVERGENCE VALUE= 5.770 CRITERION= .3214
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7533E-01
HT FLOW CONVERGENCE VALUE= .2598 CRITERION= .3210 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 201
*** TIME = .196805E+09 TIME INC = .745974E+07
*** RESPONSE EIGENVALUE = .1220E-08 OSCILLATION LIMIT = .9099E-02
*** AUTO STEP TIME: NEXT TIME INC = .74597E+07 UNCHANGED
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```
HT FLOW CONVERGENCE VALUE= 370.7 CRITERION= .3197
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.098
HT FLOW CONVERGENCE VALUE= 5.598 CRITERION= .3191
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7319E-01
HT FLOW CONVERGENCE VALUE= .2712 CRITERION= .3186 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 203
*** TIME = .204265E+09 TIME INC = .745974E+07
*** RESPONSE EIGENVALUE = .1178E-08 OSCILLATION LIMIT = .8787E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.0576)
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HT FLOW CONVERGENCE VALUE= 367.4 CRITERION= .3185
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.119
HT FLOW CONVERGENCE VALUE= 6.818 CRITERION= .3179
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1424
HT FLOW CONVERGENCE VALUE= .4360 CRITERION= .3174
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EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1100E-01
HT FLOW CONVERGENCE VALUE= .3904E-01 CRITERION= .3174 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 206
*** TIME = .212155E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1145E-08 OSCILLATION LIMIT = .9032E-02
*** AUTO TIME STEP: NEXT TIME INC = .43744E+07 DECREASED (FACTOR = .5545)
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HT FLOW CONVERGENCE VALUE= 364.0 CRITERION= .3164
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6027
HT FLOW CONVERGENCE VALUE= 4.166 CRITERION= .3161
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5265E-01
HT FLOW CONVERGENCE VALUE= .1958 CRITERION= .3158 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 208
*** TIME = .216529E+09 TIME INC = .437436E+07
*** RESPONSE EIGENVALUE = .1165E-08 OSCILLATION LIMIT = .5096E-02
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*** AUTO STEP TIME: NEXT TIME INC = .43744E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 362.2 CRITERION= .3160
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5911
 HT FLOW CONVERGENCE VALUE= 4.226 CRITERION= .3157
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4428E-01
 HT FLOW CONVERGENCE VALUE= .2039 CRITERION= .3154 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 210
 *** TIME = .220903E+09 TIME INC = .437436E+07
 *** RESPONSE EIGENVALUE = .1152E-08 OSCILLATION LIMIT = .5037E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 04:17:26 JAN 03, 1995 CP= 40121.140
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 360.5 CRITERION= .3145
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5797
 HT FLOW CONVERGENCE VALUE= 4.521 CRITERION= .3143
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4805E-01
 HT FLOW CONVERGENCE VALUE= .1957 CRITERION= .3140 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 212
 *** TIME = .225278E+09 TIME INC = .437436E+07
 *** RESPONSE EIGENVALUE = .1099E-08 OSCILLATION LIMIT = .4806E-02
 *** AUTO STEP TIME: NEXT TIME INC = .43744E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 358.8 CRITERION= .3143
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5685
 HT FLOW CONVERGENCE VALUE= 4.400 CRITERION= .3141
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4335E-01
 HT FLOW CONVERGENCE VALUE= .2140 CRITERION= .3137 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 214
 *** TIME = .229652E+09 TIME INC = .437436E+07
 *** RESPONSE EIGENVALUE = .1062E-08 OSCILLATION LIMIT = .4645E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8036)

HT FLOW CONVERGENCE VALUE= 357.2 CRITERION= .3125
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.000
 HT FLOW CONVERGENCE VALUE= 9.824 CRITERION= .3124
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1160
 HT FLOW CONVERGENCE VALUE= .6799 CRITERION= .3117
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1204E-01
 HT FLOW CONVERGENCE VALUE= .6197E-01 CRITERION= .3117 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 217
 *** TIME = .237541E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1035E-08 OSCILLATION LIMIT = .8164E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 354.6 CRITERION= .3117
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9674
 HT FLOW CONVERGENCE VALUE= 9.344 CRITERION= .3117
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1136
 HT FLOW CONVERGENCE VALUE= .5740 CRITERION= .3109
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1241E-01
 HT FLOW CONVERGENCE VALUE= .4957E-01 CRITERION= .3110 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 220
 *** TIME = .245431E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1019E-08 OSCILLATION LIMIT = .8041E-02
 *** AUTO TIME STEP: NEXT TIME INC = .70301E+07 DECREASED (FACTOR = .8911)

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HT FLOW CONVERGENCE VALUE= 352.3      CRITERION= .3098
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8368
HT FLOW CONVERGENCE VALUE= 8.765      CRITERION= .3098
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1023
HT FLOW CONVERGENCE VALUE= .5510      CRITERION= .3091
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8215E-02
HT FLOW CONVERGENCE VALUE= .4193E-01 CRITERION= .3091 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 223
*** TIME = .252461E+09 TIME INC = .703009E+07
*** RESPONSE EIGENVALUE = .1032E-08 OSCILLATION LIMIT = .7254E-02

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 05:02:22 JAN 03, 1995 CP= 42323.610
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 350.2      CRITERION= .3086
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8143
HT FLOW CONVERGENCE VALUE= 8.692      CRITERION= .3086
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8460E-01
HT FLOW CONVERGENCE VALUE= .5379      CRITERION= .3079
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7183E-02
HT FLOW CONVERGENCE VALUE= .4170E-01 CRITERION= .3079 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 226
*** TIME = .259491E+09 TIME INC = .703009E+07
*** RESPONSE EIGENVALUE = .1271E-08 OSCILLATION LIMIT = .8937E-02
*** AUTO STEP TIME: NEXT TIME INC = .70301E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 347.9      CRITERION= .3061
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7925
HT FLOW CONVERGENCE VALUE= 9.102      CRITERION= .3061
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8148E-01
HT FLOW CONVERGENCE VALUE= .5500      CRITERION= .3053
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7567E-02
HT FLOW CONVERGENCE VALUE= .4191E-01 CRITERION= .3054 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 229
*** TIME = .266521E+09 TIME INC = .703009E+07
*** RESPONSE EIGENVALUE = .1342E-08 OSCILLATION LIMIT = .9437E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1222)

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HT FLOW CONVERGENCE VALUE= 345.5      CRITERION= .3047
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8639
HT FLOW CONVERGENCE VALUE= 11.71      CRITERION= .3050
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1125
HT FLOW CONVERGENCE VALUE= .8412      CRITERION= .3039
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1134E-01
HT FLOW CONVERGENCE VALUE= .7806E-01 CRITERION= .3039 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 232
*** TIME = .274410E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1308E-08 OSCILLATION LIMIT = .1032E-01
*** AUTO TIME STEP: NEXT TIME INC = .48040E+07 DECREASED (FACTOR = .6089)

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HT FLOW CONVERGENCE VALUE= 343.0      CRITERION= .3025
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5123
HT FLOW CONVERGENCE VALUE= 6.046      CRITERION= .3026
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4856E-01
HT FLOW CONVERGENCE VALUE= .2922      CRITERION= .3020 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 234
*** TIME = .279214E+09 TIME INC = .480401E+07
*** RESPONSE EIGENVALUE = .1432E-08 OSCILLATION LIMIT = .6877E-02

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*** AUTO STEP TIME: NEXT TIME INC = .48040E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 341.4 CRITERION= .3018
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5024
 HT FLOW CONVERGENCE VALUE= 5.394 CRITERION= .3019
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4194E-01
 HT FLOW CONVERGENCE VALUE= .2332 CRITERION= .3014 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 236
 *** TIME = .284018E+09 TIME INC = .480401E+07
 *** RESPONSE EIGENVALUE = .1346E-08 OSCILLATION LIMIT = .6468E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09
 TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 769.132473 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 11979 STEP 1

10105 ELEMENTS (OF 10105 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 44527.250 TIME= 05:47:20
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 05:47:20 JAN 03, 1995 CP= 44527.250
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
 TIME AT END OF THE LOAD STEP.31558E+09
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000

TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 339.9 CRITERION= .3002
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4925
 HT FLOW CONVERGENCE VALUE= 5.209 CRITERION= .3002
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3388E-01
 HT FLOW CONVERGENCE VALUE= .2230 CRITERION= .2997 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 238
 *** TIME = .288822E+09 TIME INC = .480401E+07
 *** RESPONSE EIGENVALUE = .1169E-08 OSCILLATION LIMIT = .5617E-02
 *** AUTO STEP TIME: NEXT TIME INC = .48040E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 338.4 CRITERION= .2998
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4826
 HT FLOW CONVERGENCE VALUE= 5.387 CRITERION= .2999
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4094E-01
 HT FLOW CONVERGENCE VALUE= .2576 CRITERION= .2993 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 240
 *** TIME = .293626E+09 TIME INC = .480401E+07
 *** RESPONSE EIGENVALUE = .1072E-08 OSCILLATION LIMIT = .5151E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6423)

HT FLOW CONVERGENCE VALUE= 337.1 CRITERION= .2977
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7740
 HT FLOW CONVERGENCE VALUE= 8.341 CRITERION= .2979
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9151E-01
 HT FLOW CONVERGENCE VALUE= .4646 CRITERION= .2971
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8295E-02
 HT FLOW CONVERGENCE VALUE= .3220E-01 CRITERION= .2971 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 243
 *** TIME = .301516E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1095E-08 OSCILLATION LIMIT = .8643E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 335.0 CRITERION= .2968
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7544
 HT FLOW CONVERGENCE VALUE= 7.260 CRITERION= .2968
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7542E-01
 HT FLOW CONVERGENCE VALUE= .4560 CRITERION= .2961
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8202E-02
 HT FLOW CONVERGENCE VALUE= .3912E-01 CRITERION= .2961 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 246
 *** TIME = .309405E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1060E-08 OSCILLATION LIMIT = .8362E-02
 *** AUTO TIME STEP: NEXT TIME INC = .61708E+07 DECREASED (FACTOR = .7822)

HT FLOW CONVERGENCE VALUE= 332.8 CRITERION= .2947
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5767
 HT FLOW CONVERGENCE VALUE= 6.161 CRITERION= .2947
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5656E-01
 HT FLOW CONVERGENCE VALUE= .4040 CRITERION= .2941
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6575E-02
 HT FLOW CONVERGENCE VALUE= .3076E-01 CRITERION= .2942 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 249
 *** TIME = .315576E+09 TIME INC = .617077E+07
 *** RESPONSE EIGENVALUE = .1104E-08 OSCILLATION LIMIT = .6812E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 06:32:31 JAN 03, 1995 CP= 46731.240
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 330.9 CRITERION= .2942
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5656
 HT FLOW CONVERGENCE VALUE= 6.891 CRITERION= .2943
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6963E-01
 HT FLOW CONVERGENCE VALUE= .4681 CRITERION= .2936
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7461E-02
 HT FLOW CONVERGENCE VALUE= .4126E-01 CRITERION= .2936 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 252
 *** TIME = .321747E+09 TIME INC = .617077E+07
 *** RESPONSE EIGENVALUE = .9987E-09 OSCILLATION LIMIT = .6163E-02
 *** AUTO STEP TIME: NEXT TIME INC = .61708E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 329.0 CRITERION= .2925
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5546
 HT FLOW CONVERGENCE VALUE= 6.743 CRITERION= .2926
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6089E-01
 HT FLOW CONVERGENCE VALUE= .4572 CRITERION= .2919
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7178E-02
 HT FLOW CONVERGENCE VALUE= .4184E-01 CRITERION= .2919 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 255
 *** TIME = .327918E+09 TIME INC = .617077E+07
 *** RESPONSE EIGENVALUE = .1034E-08 OSCILLATION LIMIT = .6383E-02
 *** AUTO TIME STEP: NEXT TIME INC = .18512E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 327.2 CRITERION= .2907
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.601
 HT FLOW CONVERGENCE VALUE= 20.89 CRITERION= .2921
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2921
 HT FLOW CONVERGENCE VALUE= 1.878 CRITERION= .2889
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3782E-01
 HT FLOW CONVERGENCE VALUE= .2177 CRITERION= .2892 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 258
 *** TIME = .346430E+09 TIME INC = .185123E+08
 *** RESPONSE EIGENVALUE = .1021E-08 OSCILLATION LIMIT = .1890E-01
 *** AUTO TIME STEP: NEXT TIME INC = .55537E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 321.8 CRITERION= .2831
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.321
 HT FLOW CONVERGENCE VALUE= 38.90 CRITERION= .2866
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6866
 HT FLOW CONVERGENCE VALUE= 5.292 CRITERION= .2789
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1107
 HT FLOW CONVERGENCE VALUE= .8197 CRITERION= .2795
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1960E-01
 HT FLOW CONVERGENCE VALUE= .1344 CRITERION= .2794 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 262
 *** TIME = .401967E+09 TIME INC = .555370E+08
 *** RESPONSE EIGENVALUE = .8646E-09 OSCILLATION LIMIT = .4801E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55537E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 308.9 CRITERION= .2745
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.699
 HT FLOW CONVERGENCE VALUE= 27.50 CRITERION= .2760
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4677
 HT FLOW CONVERGENCE VALUE= 2.838 CRITERION= .2713
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6296E-01

HT FLOW CONVERGENCE VALUE= .4008 CRITERION= .2716
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9751E-02
 HT FLOW CONVERGENCE VALUE= .6295E-01 CRITERION= .2715 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 266
 *** TIME = .457504E+09 TIME INC = .555370E+08
 *** RESPONSE EIGENVALUE = .7770E-09 OSCILLATION LIMIT = .4315E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.4206)

HT FLOW CONVERGENCE VALUE= 298.3 CRITERION= .2631
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.536
 HT FLOW CONVERGENCE VALUE= 38.12 CRITERION= .2648
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6129
 HT FLOW CONVERGENCE VALUE= 4.693 CRITERION= .2583
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1012
 HT FLOW CONVERGENCE VALUE= .7750 CRITERION= .2589
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1914E-01
 HT FLOW CONVERGENCE VALUE= .1352 CRITERION= .2588 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 270
 *** TIME = .536398E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7437E-09 OSCILLATION LIMIT = .5867E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47377E+08 DECREASED (FACTOR = .6005)

HT FLOW CONVERGENCE VALUE= 282.8 CRITERION= .2546
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.385
 HT FLOW CONVERGENCE VALUE= 17.88 CRITERION= .2553
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1973
 HT FLOW CONVERGENCE VALUE= 1.584 CRITERION= .2528
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2537E-01
 HT FLOW CONVERGENCE VALUE= .1721 CRITERION= .2530 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 273
 *** TIME = .583775E+09 TIME INC = .473771E+08
 *** RESPONSE EIGENVALUE = .7844E-09 OSCILLATION LIMIT = .3716E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47377E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 276.8 CRITERION= .2477
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.199
 HT FLOW CONVERGENCE VALUE= 17.90 CRITERION= .2479
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1952
 HT FLOW CONVERGENCE VALUE= 1.254 CRITERION= .2457
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1867E-01
 HT FLOW CONVERGENCE VALUE= .1197 CRITERION= .2458 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 276
 *** TIME = .631152E+09 TIME INC = .473771E+08
 *** RESPONSE EIGENVALUE = .7884E-09 OSCILLATION LIMIT = .3735E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:01:59 JAN 03, 1995 CP= 51083.500
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 270.2 CRITERION= .2429
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.043
 HT FLOW CONVERGENCE VALUE= 19.09 CRITERION= .2435
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2355
 HT FLOW CONVERGENCE VALUE= 1.907 CRITERION= .2413
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3200E-01
 HT FLOW CONVERGENCE VALUE= .3443 CRITERION= .2416
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6100E-02
 HT FLOW CONVERGENCE VALUE= .6439E-01 CRITERION= .2416 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 280

*** TIME = .678529E+09 TIME INC = .473771E+08
 *** RESPONSE EIGENVALUE = .6117E-09 OSCILLATION LIMIT = .2898E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47377E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 265.6 CRITERION= .2374
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.907
 HT FLOW CONVERGENCE VALUE= 29.25 CRITERION= .2421
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2232
 HT FLOW CONVERGENCE VALUE= 2.824 CRITERION= .2369
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3233E-01
 HT FLOW CONVERGENCE VALUE= .4533 CRITERION= .2373
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7159E-02
 HT FLOW CONVERGENCE VALUE= .7358E-01 CRITERION= .2373 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 284
 *** TIME = .725906E+09 TIME INC = .473771E+08
 *** RESPONSE EIGENVALUE = .6246E-09 OSCILLATION LIMIT = .2959E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6652)

HT FLOW CONVERGENCE VALUE= 265.1 CRITERION= .2320
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.938
 HT FLOW CONVERGENCE VALUE= 21.68 CRITERION= .2330
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7796
 HT FLOW CONVERGENCE VALUE= 2.908 CRITERION= .2322
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1622
 HT FLOW CONVERGENCE VALUE= .5682 CRITERION= .2325
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2810E-01
 HT FLOW CONVERGENCE VALUE= .1092 CRITERION= .2326 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 288
 *** TIME = .804800E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7604E-09 OSCILLATION LIMIT = .5999E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 267.2 CRITERION= .2262
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.966
 HT FLOW CONVERGENCE VALUE= 37.27 CRITERION= .2303
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4249
 HT FLOW CONVERGENCE VALUE= 3.798 CRITERION= .2245
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9007E-01
 HT FLOW CONVERGENCE VALUE= .8867 CRITERION= .2251
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2262E-01
 HT FLOW CONVERGENCE VALUE= .1994 CRITERION= .2250 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 292
 *** TIME = .883694E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7595E-09 OSCILLATION LIMIT = .5992E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63034E+08 DECREASED (FACTOR = .7990)

HT FLOW CONVERGENCE VALUE= 263.3 CRITERION= .2210
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.162
 HT FLOW CONVERGENCE VALUE= 13.27 CRITERION= .2216
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1987
 HT FLOW CONVERGENCE VALUE= 1.862 CRITERION= .2208
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2643E-01
 HT FLOW CONVERGENCE VALUE= .4002 CRITERION= .2212
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5361E-02
 HT FLOW CONVERGENCE VALUE= .8744E-01 CRITERION= .2212 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 296
 *** TIME = .946728E+09 TIME INC = .630338E+08
 *** RESPONSE EIGENVALUE = .7795E-09 OSCILLATION LIMIT = .4914E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:11:38 JAN 03, 1995 CP= 54314.540
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 263.9    CRITERION= .2166
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.014
HT FLOW CONVERGENCE VALUE= 31.60    CRITERION= .2245
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2534
HT FLOW CONVERGENCE VALUE= 3.137    CRITERION= .2160
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4464E-01
HT FLOW CONVERGENCE VALUE= .5918    CRITERION= .2166
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9009E-02
HT FLOW CONVERGENCE VALUE= .1114    CRITERION= .2165    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 300
*** TIME = .100976E+10 TIME INC = .630338E+08
*** RESPONSE EIGENVALUE = .6340E-09 OSCILLATION LIMIT = .3996E-01
*** AUTO STEP TIME: NEXT TIME INC = .63034E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 263.6    CRITERION= .2131
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.843
HT FLOW CONVERGENCE VALUE= 9.035    CRITERION= .2133
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1164
HT FLOW CONVERGENCE VALUE= .4650    CRITERION= .2134
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8746E-02
HT FLOW CONVERGENCE VALUE= .3745E-01 CRITERION= .2134    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 303
*** TIME = .107280E+10 TIME INC = .630338E+08
*** RESPONSE EIGENVALUE = .6714E-09 OSCILLATION LIMIT = .4232E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2516)

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HT FLOW CONVERGENCE VALUE= 264.5    CRITERION= .2080
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.145
HT FLOW CONVERGENCE VALUE= 23.00    CRITERION= .2071
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3129
HT FLOW CONVERGENCE VALUE= .6181    CRITERION= .2056
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1271E-01
HT FLOW CONVERGENCE VALUE= .4539E-01 CRITERION= .2056    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 306
*** TIME = .115169E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7199E-09 OSCILLATION LIMIT = .5680E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 257.0    CRITERION= .2014
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.063
HT FLOW CONVERGENCE VALUE= 25.99    CRITERION= .2025
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3350
HT FLOW CONVERGENCE VALUE= 1.686    CRITERION= .1981
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2407E-01
HT FLOW CONVERGENCE VALUE= .4073    CRITERION= .1985
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5669E-02
HT FLOW CONVERGENCE VALUE= .9922E-01 CRITERION= .1985    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 310
*** TIME = .123058E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8151E-09 OSCILLATION LIMIT = .6431E-01
*** AUTO TIME STEP: NEXT TIME INC = .31720E+08 DECREASED (FACTOR = .4021)

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HT FLOW CONVERGENCE VALUE= 247.8    CRITERION= .1959
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8716
HT FLOW CONVERGENCE VALUE= 13.77    CRITERION= .1973
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8266E-01
HT FLOW CONVERGENCE VALUE= .8447    CRITERION= .1947
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6591E-02
HT FLOW CONVERGENCE VALUE= .6643E-01 CRITERION= .1948    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 313
*** TIME = .126230E+10 TIME INC = .317204E+08
*** RESPONSE EIGENVALUE = .8846E-09 OSCILLATION LIMIT = .2806E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 10:15:28 JAN 03, 1995 CP= 57157.640
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 244.2 CRITERION= .1939
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7402
 HT FLOW CONVERGENCE VALUE= 3.479 CRITERION= .1927
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3888E-01
 HT FLOW CONVERGENCE VALUE= .1482 CRITERION= .1929 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 315
 *** TIME = .129402E+10 TIME INC = .317204E+08
 *** RESPONSE EIGENVALUE = .6221E-09 OSCILLATION LIMIT = .1973E-01
 *** AUTO STEP TIME: NEXT TIME INC = .31720E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 240.9 CRITERION= .1909
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7224
 HT FLOW CONVERGENCE VALUE= 3.567 CRITERION= .1893
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3665E-01
 HT FLOW CONVERGENCE VALUE= .1623 CRITERION= .1899 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 317
 *** TIME = .132574E+10 TIME INC = .317204E+08
 *** RESPONSE EIGENVALUE = .5493E-09 OSCILLATION LIMIT = .1742E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.4872)

HT FLOW CONVERGENCE VALUE= 237.7 CRITERION= .1869
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.752
 HT FLOW CONVERGENCE VALUE= 23.17 CRITERION= .1886
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2322
 HT FLOW CONVERGENCE VALUE= .3180 CRITERION= .1845
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1026E-01
 HT FLOW CONVERGENCE VALUE= .1913E-01 CRITERION= .1845 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 320
 *** TIME = .140464E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .5925E-09 OSCILLATION LIMIT = .4674E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 230.3 CRITERION= .1804
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.681
 HT FLOW CONVERGENCE VALUE= 20.29 CRITERION= .1796
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2566
 HT FLOW CONVERGENCE VALUE= 1.327 CRITERION= .1781
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2561E-01
 HT FLOW CONVERGENCE VALUE= .2138 CRITERION= .1783
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4479E-02
 HT FLOW CONVERGENCE VALUE= .3481E-01 CRITERION= .1783 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 324
 *** TIME = .148353E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6810E-09 OSCILLATION LIMIT = .5373E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47174E+08 DECREASED (FACTOR = .5979)

HT FLOW CONVERGENCE VALUE= 223.7 CRITERION= .1767
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9969
 HT FLOW CONVERGENCE VALUE= 8.143 CRITERION= .1746
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1364
 HT FLOW CONVERGENCE VALUE= .9530 CRITERION= .1757
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2010E-01
 HT FLOW CONVERGENCE VALUE= .1253 CRITERION= .1758 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 327

*** TIME = .153071E+10 TIME INC = .471736E+08
 *** RESPONSE EIGENVALUE = .7344E-09 OSCILLATION LIMIT = .3464E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47174E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 220.6 CRITERION= .1731
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.004
 HT FLOW CONVERGENCE VALUE= 3.817 CRITERION= .1724
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6448E-01
 HT FLOW CONVERGENCE VALUE= .4822 CRITERION= .1718
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4473E-02
 HT FLOW CONVERGENCE VALUE= .7844E-01 CRITERION= .1719 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 26 SUBSTEP 6 COMPLETED. CUM ITER = 330
 *** TIME = .157788E+10 TIME INC = .471736E+08
 *** RESPONSE EIGENVALUE = .6865E-09 OSCILLATION LIMIT = .3239E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 11:22:52 JAN 03, 1995 CP= 60112.020
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 216.9 CRITERION= .1708
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9006
 HT FLOW CONVERGENCE VALUE= 21.35 CRITERION= .1744
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1660
 HT FLOW CONVERGENCE VALUE= 1.985 CRITERION= .1685
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1734E-01
 HT FLOW CONVERGENCE VALUE= .2087 CRITERION= .1690
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1924E-02
 HT FLOW CONVERGENCE VALUE= .2206E-01 CRITERION= .1689 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 334
 *** TIME = .162505E+10 TIME INC = .471736E+08
 *** RESPONSE EIGENVALUE = .5532E-09 OSCILLATION LIMIT = .2610E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47174E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.0 CRITERION= .1667
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8734
 HT FLOW CONVERGENCE VALUE= 3.754 CRITERION= .1662
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3541E-01
 HT FLOW CONVERGENCE VALUE= .1619E-01 CRITERION= .1653 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 336
 *** TIME = .167223E+10 TIME INC = .471736E+08
 *** RESPONSE EIGENVALUE = .5717E-09 OSCILLATION LIMIT = .2697E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6724)

HT FLOW CONVERGENCE VALUE= 206.3 CRITERION= .1631
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.412
 HT FLOW CONVERGENCE VALUE= 2.510 CRITERION= .1608
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5222E-01
 HT FLOW CONVERGENCE VALUE= .2499 CRITERION= .1611
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5058E-02
 HT FLOW CONVERGENCE VALUE= .2589E-01 CRITERION= .1611 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 339
 *** TIME = .175112E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .5453E-09 OSCILLATION LIMIT = .4302E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 199.9 CRITERION= .1577
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.445
 HT FLOW CONVERGENCE VALUE= 13.53 CRITERION= .1559
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1235
 HT FLOW CONVERGENCE VALUE= 1.780 CRITERION= .1550

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EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1799E-01
HT FLOW CONVERGENCE VALUE= .3151 CRITERION= .1555
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3734E-02
HT FLOW CONVERGENCE VALUE= .5481E-01 CRITERION= .1555 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 343
*** TIME = .183002E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6122E-09 OSCILLATION LIMIT = .4830E-01
*** AUTO TIME STEP: NEXT TIME INC = .63441E+08 DECREASED (FACTOR = .8041)

HT FLOW CONVERGENCE VALUE= 192.6 CRITERION= .1538
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.206
HT FLOW CONVERGENCE VALUE= 14.61 CRITERION= .1556
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1277
HT FLOW CONVERGENCE VALUE= .1560E-01 CRITERION= .1522 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 345
*** TIME = .189346E+10 TIME INC = .634408E+08
*** RESPONSE EIGENVALUE = .6981E-09 OSCILLATION LIMIT = .4429E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:18:33 JAN 03, 1995 CP= 62653.360
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 187.4 CRITERION= .1499
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.013
HT FLOW CONVERGENCE VALUE= .2430 CRITERION= .1486
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1308E-01
HT FLOW CONVERGENCE VALUE= .1511E-01 CRITERION= .1486 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 347
*** TIME = .195690E+10 TIME INC = .634408E+08
*** RESPONSE EIGENVALUE = .5190E-09 OSCILLATION LIMIT = .3293E-01
*** AUTO STEP TIME: NEXT TIME INC = .63441E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 183.4 CRITERION= .1474
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9811
HT FLOW CONVERGENCE VALUE= 4.676 CRITERION= .1459
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9465E-01
HT FLOW CONVERGENCE VALUE= .6520 CRITERION= .1463
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1373E-01
HT FLOW CONVERGENCE VALUE= .9679E-01 CRITERION= .1464 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 350
*** TIME = .202034E+10 TIME INC = .634408E+08
*** RESPONSE EIGENVALUE = .4927E-09 OSCILLATION LIMIT = .3126E-01
*** AUTO STEP TIME: NEXT TIME INC = .63441E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 180.0 CRITERION= .1440
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9529
HT FLOW CONVERGENCE VALUE= 12.21 CRITERION= .1449
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1077
HT FLOW CONVERGENCE VALUE= 1.020 CRITERION= .1429
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9610E-02
HT FLOW CONVERGENCE VALUE= .9432E-01 CRITERION= .1431 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 353
*** TIME = .208378E+10 TIME INC = .634408E+08
*** RESPONSE EIGENVALUE = .5321E-09 OSCILLATION LIMIT = .3376E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2436)

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HT FLOW CONVERGENCE VALUE= 180.0 CRITERION= .1440
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9529
HT FLOW CONVERGENCE VALUE= 12.21 CRITERION= .1449
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1077
HT FLOW CONVERGENCE VALUE= 1.020 CRITERION= .1429
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9610E-02
HT FLOW CONVERGENCE VALUE= .9432E-01 CRITERION= .1431 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 353
*** TIME = .208378E+10 TIME INC = .634408E+08
*** RESPONSE EIGENVALUE = .5321E-09 OSCILLATION LIMIT = .3376E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2436)

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HT FLOW CONVERGENCE VALUE= 177.0 CRITERION= .1415
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.214
HT FLOW CONVERGENCE VALUE= 8.532 CRITERION= .1407

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1400
 HT FLOW CONVERGENCE VALUE= 1.226 CRITERION= .1401
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2481E-01
 HT FLOW CONVERGENCE VALUE= .2034 CRITERION= .1403
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3774E-02
 HT FLOW CONVERGENCE VALUE= .3592E-01 CRITERION= .1403 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 357
 *** TIME = .216267E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .5725E-09 OSCILLATION LIMIT = .4517E-01
 *** AUTO TIME STEP: NEXT TIME INC = .46360E+08 DECREASED (FACTOR = .5876)

HT FLOW CONVERGENCE VALUE= 173.3 CRITERION= .1384
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7158
 HT FLOW CONVERGENCE VALUE= 7.651 CRITERION= .1387
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7357E-01
 HT FLOW CONVERGENCE VALUE= .6306 CRITERION= .1375
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6256E-02
 HT FLOW CONVERGENCE VALUE= .5542E-01 CRITERION= .1376 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 360
 *** TIME = .220903E+10 TIME INC = .463597E+08
 *** RESPONSE EIGENVALUE = .5822E-09 OSCILLATION LIMIT = .2699E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:11:56 JAN 03, 1995 CP= 65171.130
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 170.5 CRITERION= .1369
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6802
 HT FLOW CONVERGENCE VALUE= 2.916 CRITERION= .1364
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2607E-01
 HT FLOW CONVERGENCE VALUE= .6124E-02 CRITERION= .1360 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 362
 *** TIME = .225539E+10 TIME INC = .463597E+08
 *** RESPONSE EIGENVALUE = .5431E-09 OSCILLATION LIMIT = .2518E-01
 *** AUTO STEP TIME: NEXT TIME INC = .46360E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 167.4 CRITERION= .1342
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6895
 HT FLOW CONVERGENCE VALUE= .1542 CRITERION= .1333
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6161E-02
 HT FLOW CONVERGENCE VALUE= .5360E-02 CRITERION= .1333 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 364
 *** TIME = .230175E+10 TIME INC = .463597E+08
 *** RESPONSE EIGENVALUE = .5303E-09 OSCILLATION LIMIT = .2459E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7018)

HT FLOW CONVERGENCE VALUE= 164.6 CRITERION= .1319
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.251
 HT FLOW CONVERGENCE VALUE= 8.433 CRITERION= .1311
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1276
 HT FLOW CONVERGENCE VALUE= .9501 CRITERION= .1301
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1535E-01
 HT FLOW CONVERGENCE VALUE= .1201 CRITERION= .1302 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 367
 *** TIME = .238065E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .5628E-09 OSCILLATION LIMIT = .4440E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 159.3 CRITERION= .1276

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.304
HT FLOW CONVERGENCE VALUE= 6.886 CRITERION= .1268
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6361E-01
HT FLOW CONVERGENCE VALUE= .4933 CRITERION= .1259
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5994E-02
HT FLOW CONVERGENCE VALUE= .6073E-01 CRITERION= .1260 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 370
*** TIME = .245954E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6366E-09 OSCILLATION LIMIT = .5022E-01
*** AUTO TIME STEP: NEXT TIME INC = .65069E+08 DECREASED (FACTOR = .8248)

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HT FLOW CONVERGENCE VALUE= 154.2 CRITERION= .1249
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.122
HT FLOW CONVERGENCE VALUE= 8.406 CRITERION= .1256
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7083E-01
HT FLOW CONVERGENCE VALUE= .6344 CRITERION= .1238
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5481E-02
HT FLOW CONVERGENCE VALUE= .5037E-01 CRITERION= .1239 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 373
*** TIME = .252461E+10 TIME INC = .650685E+08
*** RESPONSE EIGENVALUE = .6618E-09 OSCILLATION LIMIT = .4306E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:07:20 JAN 03, 1995 CP= 67495.340
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 150.9 CRITERION= .1221
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7943
HT FLOW CONVERGENCE VALUE= 2.451 CRITERION= .1216
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1903E-01
HT FLOW CONVERGENCE VALUE= .2626E-01 CRITERION= .1212 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 375
*** TIME = .258968E+10 TIME INC = .650685E+08
*** RESPONSE EIGENVALUE = .4924E-09 OSCILLATION LIMIT = .3204E-01
*** AUTO STEP TIME: NEXT TIME INC = .65069E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 147.9 CRITERION= .1205
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7734
HT FLOW CONVERGENCE VALUE= 7.825 CRITERION= .1206
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6998E-01
HT FLOW CONVERGENCE VALUE= .5875 CRITERION= .1196
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5444E-02
HT FLOW CONVERGENCE VALUE= .4634E-01 CRITERION= .1197 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 378
*** TIME = .265475E+10 TIME INC = .650685E+08
*** RESPONSE EIGENVALUE = .4597E-09 OSCILLATION LIMIT = .2991E-01
*** AUTO STEP TIME: NEXT TIME INC = .65069E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 145.1 CRITERION= .1179
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7821
HT FLOW CONVERGENCE VALUE= 5.063 CRITERION= .1176
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3526E-01
HT FLOW CONVERGENCE VALUE= .1743 CRITERION= .1172
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2569E-02
HT FLOW CONVERGENCE VALUE= .9980E-02 CRITERION= .1172 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 381
*** TIME = .271981E+10 TIME INC = .650685E+08
*** RESPONSE EIGENVALUE = .4961E-09 OSCILLATION LIMIT = .3228E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2125)

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HT FLOW CONVERGENCE VALUE= 142.9 CRITERION= .1163
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9514
 HT FLOW CONVERGENCE VALUE= 2.770 CRITERION= .1154
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5770E-01
 HT FLOW CONVERGENCE VALUE= .3059 CRITERION= .1157
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6576E-02
 HT FLOW CONVERGENCE VALUE= .3532E-01 CRITERION= .1157 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 384
 *** TIME = .279871E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4853E-09 OSCILLATION LIMIT = .3829E-01
 *** AUTO TIME STEP: NEXT TIME INC = .41476E+08 DECREASED (FACTOR = .5257)

HT FLOW CONVERGENCE VALUE= 140.8 CRITERION= .1143
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5003
 HT FLOW CONVERGENCE VALUE= .7285 CRITERION= .1139
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1499E-01
 HT FLOW CONVERGENCE VALUE= .1928E-02 CRITERION= .1140 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 386
 *** TIME = .284018E+10 TIME INC = .414765E+08
 *** RESPONSE EIGENVALUE = .4817E-09 OSCILLATION LIMIT = .1998E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 265.631169 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 11979 STEP 1

10105 ELEMENTS (OF 10105 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 69803.880 TIME= 15:00:09
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:00:09 JAN 03, 1995 CP= 69303.880
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
 TIME AT END OF THE LOAD STEP.31558E+10

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AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 10
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
  MINIMUM NUMBER OF SUBSTEPS . . . . . 4
  START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
  MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
  STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
  TRANSIENT (INERTIA) EFFECTS
    THERMAL DOFS . . . . . ON
  TRANSIENT INTEGRATION PARAMETERS
    THETA . . . . . .50000
    OSCILLATION LIMIT CRITERION. . . . . .50000
    TOLERANCE . . . . . .20000
  TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
  CONVERGENCE CONTROLS. . . . .USE DEFAULTS
  PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
  DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                  FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 139.6    CRITERION= .1139
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4420
HT FLOW CONVERGENCE VALUE= .1043    CRITERION= .1134    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 387
*** TIME = .288166E+10 TIME INC = .414765E+08
*** RESPONSE EIGENVALUE = .4000E-09 OSCILLATION LIMIT = .1659E-01
*** AUTO STEP TIME: NEXT TIME INC = .41476E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 138.1    CRITERION= .1122
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4351
HT FLOW CONVERGENCE VALUE= 1.913    CRITERION= .1119
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2377E-01
HT FLOW CONVERGENCE VALUE= .1919    CRITERION= .1117
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2421E-02
HT FLOW CONVERGENCE VALUE= .1989E-01 CRITERION= .1117    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 390
*** TIME = .292314E+10 TIME INC = .414765E+08
*** RESPONSE EIGENVALUE = .3933E-09 OSCILLATION LIMIT = .1631E-01
*** AUTO STEP TIME: NEXT TIME INC = .41476E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 136.5    CRITERION= .1116
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4288
HT FLOW CONVERGENCE VALUE= 3.616    CRITERION= .1115
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3611E-01
HT FLOW CONVERGENCE VALUE= .2515    CRITERION= .1110
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2559E-02
HT FLOW CONVERGENCE VALUE= .1820E-01 CRITERION= .1110    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 393
*** TIME = .296461E+10 TIME INC = .414765E+08
*** RESPONSE EIGENVALUE = .4107E-09 OSCILLATION LIMIT = .1703E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.9021)

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HT FLOW CONVERGENCE VALUE= 134.5    CRITERION= .1092
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8023
HT FLOW CONVERGENCE VALUE= 7.594    CRITERION= .1095
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8424E-01
HT FLOW CONVERGENCE VALUE= .5423    CRITERION= .1080
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8745E-02
HT FLOW CONVERGENCE VALUE= .5771E-01 CRITERION= .1080    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 396
*** TIME = .304351E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .4274E-09 OSCILLATION LIMIT = .3372E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 130.7    CRITERION= .1074
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8328

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HT FLOW CONVERGENCE VALUE= 5.224 CRITERION= .1069
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6438E-01
 HT FLOW CONVERGENCE VALUE= .1632 CRITERION= .1064
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2609E-02
 HT FLOW CONVERGENCE VALUE= .1360E-01 CRITERION= .1064 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 399
 *** TIME = .312240E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4531E-09 OSCILLATION LIMIT = .3575E-01
 *** AUTO TIME STEP: NEXT TIME INC = .33359E+08 DECREASED (FACTOR = .4228)

HT FLOW CONVERGENCE VALUE= 127.4 CRITERION= .1053
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3533
 HT FLOW CONVERGENCE VALUE= 1.046 CRITERION= .1049
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1111E-01
 HT FLOW CONVERGENCE VALUE= .5400E-01 CRITERION= .1050 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 6 COMPLETED. CUM ITER = 401
 *** TIME = .315576E+10 TIME INC = .333585E+08
 *** RESPONSE EIGENVALUE = .4602E-09 OSCILLATION LIMIT = .1535E-01

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 16:04:04 JAN 03, 1995 CP= 72494.020
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 126.4 CRITERION= .1052
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3771
 HT FLOW CONVERGENCE VALUE= 1.210 CRITERION= .1048
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1681E-01
 HT FLOW CONVERGENCE VALUE= .8351E-01 CRITERION= .1049 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 403
 *** TIME = .319521E+10 TIME INC = .394470E+08
 *** RESPONSE EIGENVALUE = .3078E-09 OSCILLATION LIMIT = .1214E-01
 *** AUTO STEP TIME: NEXT TIME INC = .39447E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 125.3 CRITERION= .1040
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3715
 HT FLOW CONVERGENCE VALUE= .9247 CRITERION= .1037
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1659E-01
 HT FLOW CONVERGENCE VALUE= .6789E-03 CRITERION= .1037 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 405
 *** TIME = .323465E+10 TIME INC = .394470E+08
 *** RESPONSE EIGENVALUE = .2582E-09 OSCILLATION LIMIT = .1018E-01
 *** AUTO TIME STEP: NEXT TIME INC = .11834E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 124.5 CRITERION= .1034
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.083
 HT FLOW CONVERGENCE VALUE= 3.505 CRITERION= .1029
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3846E-01
 HT FLOW CONVERGENCE VALUE= .3907 CRITERION= .1024
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4350E-02
 HT FLOW CONVERGENCE VALUE= .4947E-01 CRITERION= .1025 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 408
 *** TIME = .335300E+10 TIME INC = .118341E+09
 *** RESPONSE EIGENVALUE = .2218E-09 OSCILLATION LIMIT = .2624E-01
 *** AUTO STEP TIME: NEXT TIME INC = .11834E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 121.7 CRITERION= .1010
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.039

HT FLOW CONVERGENCE VALUE= 10.84 CRITERION= .1029
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9637E-01
 HT FLOW CONVERGENCE VALUE= .8590 CRITERION= .1001
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8122E-02
 HT FLOW CONVERGENCE VALUE= .7367E-01 CRITERION= .1003 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 411
 *** TIME = .347134E+10 TIME INC = .118341E+09
 *** RESPONSE EIGENVALUE = .2118E-09 OSCILLATION LIMIT = .2506E-01
 *** AUTO TIME STEP: NEXT TIME INC = .35502E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 119.5 CRITERION= .9797E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.902
 HT FLOW CONVERGENCE VALUE= 2.550 CRITERION= .9669E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9546E-01
 HT FLOW CONVERGENCE VALUE= .3982 CRITERION= .9664E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1664E-01
 HT FLOW CONVERGENCE VALUE= .8017E-01 CRITERION= .9669E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 414
 *** TIME = .382636E+10 TIME INC = .355023E+09
 *** RESPONSE EIGENVALUE = .1986E-09 OSCILLATION LIMIT = .7050E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 115.6 CRITERION= .8973E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.628
 HT FLOW CONVERGENCE VALUE= 23.93 CRITERION= .8960E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7013
 HT FLOW CONVERGENCE VALUE= 3.499 CRITERION= .8472E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1804
 HT FLOW CONVERGENCE VALUE= 1.215 CRITERION= .8546E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5280E-01
 HT FLOW CONVERGENCE VALUE= .3319 CRITERION= .8527E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1664E-01
 HT FLOW CONVERGENCE VALUE= .1086 CRITERION= .8534E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4840E-02
 HT FLOW CONVERGENCE VALUE= .3053E-01 CRITERION= .8532E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 420
 *** TIME = .461530E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .2116E-09 OSCILLATION LIMIT = .1670
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 101.2 CRITERION= .7947E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.682
 HT FLOW CONVERGENCE VALUE= 12.88 CRITERION= .7888E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5154
 HT FLOW CONVERGENCE VALUE= 3.136 CRITERION= .7579E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1320
 HT FLOW CONVERGENCE VALUE= .9845 CRITERION= .7654E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4132E-01
 HT FLOW CONVERGENCE VALUE= .3011 CRITERION= .7630E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1421E-01
 HT FLOW CONVERGENCE VALUE= .9618E-01 CRITERION= .7637E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4915E-02
 HT FLOW CONVERGENCE VALUE= .3126E-01 CRITERION= .7635E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 426
 *** TIME = .540424E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .2720E-09 OSCILLATION LIMIT = .2146
 *** AUTO TIME STEP: NEXT TIME INC = .45364E+09 DECREASED (FACTOR = .5750)

HT FLOW CONVERGENCE VALUE= 90.87 CRITERION= .7208E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.178
 HT FLOW CONVERGENCE VALUE= 6.704 CRITERION= .7109E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1579
 HT FLOW CONVERGENCE VALUE= .1813 CRITERION= .6983E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7180E-02
 HT FLOW CONVERGENCE VALUE= .2083E-01 CRITERION= .6984E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 429
 *** TIME = .585788E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .3492E-09 OSCILLATION LIMIT = .1584
 *** AUTO STEP TIME: NEXT TIME INC = .45364E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 83.45 CRITERION= .6671E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.578
 HT FLOW CONVERGENCE VALUE= 7.822 CRITERION= .6636E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1858
 HT FLOW CONVERGENCE VALUE= .8170 CRITERION= .6463E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2813E-01
 HT FLOW CONVERGENCE VALUE= .1320 CRITERION= .6482E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4758E-02
 HT FLOW CONVERGENCE VALUE= .2117E-01 CRITERION= .6479E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 32 SUBSTEP 9 COMPLETED. CUM ITER = 433
 *** TIME = .631152E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .4266E-09 OSCILLATION LIMIT = .1935

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 19:28:50 JAN 03, 1995 CP= 78157.470
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 77.02 CRITERION= .6295E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.995
 HT FLOW CONVERGENCE VALUE= 2.169 CRITERION= .6176E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7728E-01
 HT FLOW CONVERGENCE VALUE= .2126 CRITERION= .6140E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8230E-02
 HT FLOW CONVERGENCE VALUE= .3784E-03 CRITERION= .6143E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 436
 *** TIME = .676516E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .2144E-09 OSCILLATION LIMIT = .9724E-01
 *** AUTO STEP TIME: NEXT TIME INC = .45364E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 71.81 CRITERION= .6073E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.860
 HT FLOW CONVERGENCE VALUE= 5.223 CRITERION= .6048E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1459
 HT FLOW CONVERGENCE VALUE= .2654 CRITERION= .5966E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1190E-01
 HT FLOW CONVERGENCE VALUE= .5100E-01 CRITERION= .5970E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 439
 *** TIME = .721880E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .1396E-09 OSCILLATION LIMIT = .6332E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7391)

HT FLOW CONVERGENCE VALUE= 68.22 CRITERION= .5688E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.960
 HT FLOW CONVERGENCE VALUE= 4.524 CRITERION= .5625E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1899
 HT FLOW CONVERGENCE VALUE= .4375 CRITERION= .5554E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2636E-01
 HT FLOW CONVERGENCE VALUE= .8982E-01 CRITERION= .5559E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5375E-02
 HT FLOW CONVERGENCE VALUE= .1820E-01 CRITERION= .5558E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 443
 *** TIME = .800774E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1329E-09 OSCILLATION LIMIT = .1049
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 63.47 CRITERION= .5394E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.655
HT FLOW CONVERGENCE VALUE= 6.112 CRITERION= .5402E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1942
HT FLOW CONVERGENCE VALUE= .6590 CRITERION= .5271E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3349E-01
HT FLOW CONVERGENCE VALUE= .1199 CRITERION= .5280E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6030E-02
HT FLOW CONVERGENCE VALUE= .2141E-01 CRITERION= .5278E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 447
*** TIME = .879668E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .1339E-09 OSCILLATION LIMIT = .1057
*** AUTO TIME STEP: NEXT TIME INC = .67060E+09 DECREASED (FACTOR = .8500)

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HT FLOW CONVERGENCE VALUE= 59.13 CRITERION= .5029E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.054
HT FLOW CONVERGENCE VALUE= 3.270 CRITERION= .4986E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1094
HT FLOW CONVERGENCE VALUE= .6788E-01 CRITERION= .4957E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3306E-02
HT FLOW CONVERGENCE VALUE= .4823E-02 CRITERION= .4957E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 450
*** TIME = .946728E+10 TIME INC = .670599E+09
*** RESPONSE EIGENVALUE = .1550E-09 OSCILLATION LIMIT = .1039

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 21:20:37 JAN 03, 1995 CP= 81221.050
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 56.13 CRITERION= .4906E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.904
HT FLOW CONVERGENCE VALUE= 4.044 CRITERION= .4885E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1778
HT FLOW CONVERGENCE VALUE= .4760 CRITERION= .4821E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2133E-01
HT FLOW CONVERGENCE VALUE= .6295E-01 CRITERION= .4828E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2666E-02
HT FLOW CONVERGENCE VALUE= .8509E-02 CRITERION= .4827E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 454
*** TIME = .101379E+11 TIME INC = .670599E+09
*** RESPONSE EIGENVALUE = .1098E-09 OSCILLATION LIMIT = .7363E-01
*** AUTO STEP TIME: NEXT TIME INC = .67060E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 52.85 CRITERION= .4658E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.775
HT FLOW CONVERGENCE VALUE= 2.805 CRITERION= .4632E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1229
HT FLOW CONVERGENCE VALUE= .5475E-01 CRITERION= .4600E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3219E-02
HT FLOW CONVERGENCE VALUE= .4021E-02 CRITERION= .4601E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 457
*** TIME = .108085E+11 TIME INC = .670599E+09
*** RESPONSE EIGENVALUE = .9668E-10 OSCILLATION LIMIT = .6483E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1765)

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HT FLOW CONVERGENCE VALUE= 50.13 CRITERION= .4530E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.940
HT FLOW CONVERGENCE VALUE= 4.409 CRITERION= .4573E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1378
HT FLOW CONVERGENCE VALUE= .3872 CRITERION= .4486E-01

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EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1333E-01
 HT FLOW CONVERGENCE VALUE= .4487E-01 CRITERION= .4494E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 460
 *** TIME = .115974E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .9765E-10 OSCILLATION LIMIT = .7704E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51281E+09 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 47.97 CRITERION= .4351E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.182
 HT FLOW CONVERGENCE VALUE= 1.022 CRITERION= .4351E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3012E-01
 HT FLOW CONVERGENCE VALUE= .9404E-03 CRITERION= .4334E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 462
 *** TIME = .121102E+11 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .1033E-09 OSCILLATION LIMIT = .5295E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 46.69 CRITERION= .4309E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.128
 HT FLOW CONVERGENCE VALUE= .2255 CRITERION= .4287E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7088E-02
 HT FLOW CONVERGENCE VALUE= .7090E-02 CRITERION= .4288E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 464
 *** TIME = .126230E+11 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .1067E-09 OSCILLATION LIMIT = .5474E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:57:36 JAN 03, 1995 CP= 83838.220
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 45.27 CRITERION= .4172E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.078
 HT FLOW CONVERGENCE VALUE= 1.614 CRITERION= .4164E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6840E-01
 HT FLOW CONVERGENCE VALUE= .1668 CRITERION= .4143E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7130E-02
 HT FLOW CONVERGENCE VALUE= .1873E-01 CRITERION= .4146E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 467
 *** TIME = .131359E+11 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .9231E-10 OSCILLATION LIMIT = .4734E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 43.51 CRITERION= .4146E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.031
 HT FLOW CONVERGENCE VALUE= 2.718 CRITERION= .4162E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8234E-01
 HT FLOW CONVERGENCE VALUE= .1683 CRITERION= .4120E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6661E-02
 HT FLOW CONVERGENCE VALUE= .1394E-01 CRITERION= .4122E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 470
 *** TIME = .136487E+11 TIME INC = .512811E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5385)

HT FLOW CONVERGENCE VALUE= 41.85 CRITERION= .3976E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.499
 HT FLOW CONVERGENCE VALUE= .6686 CRITERION= .3965E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2332E-01
 HT FLOW CONVERGENCE VALUE= .1916E-01 CRITERION= .3960E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 472
 *** TIME = .144376E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 39.90 CRITERION= .3929E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.396
 HT FLOW CONVERGENCE VALUE= 1.809 CRITERION= .3943E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7134E-01
 HT FLOW CONVERGENCE VALUE= .1600 CRITERION= .3922E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6845E-02
 HT FLOW CONVERGENCE VALUE= .1548E-01 CRITERION= .3924E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 475
 *** TIME = .152265E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .55226E+09 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 38.31 CRITERION= .3807E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9201
 HT FLOW CONVERGENCE VALUE= 1.226 CRITERION= .3824E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3530E-01
 HT FLOW CONVERGENCE VALUE= .9611E-02 CRITERION= .3808E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 477
 *** TIME = .157788E+11 TIME INC = .552258E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:29:34 JAN 04, 1995 CP= 86313.040
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 37.28 CRITERION= .3811E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8772
 HT FLOW CONVERGENCE VALUE= .2415 CRITERION= .3811E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1390E-01
 HT FLOW CONVERGENCE VALUE= .3966E-02 CRITERION= .3810E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 479
 *** TIME = .163311E+11 TIME INC = .552258E+09
 *** AUTO STEP TIME: NEXT TIME INC = .55226E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 36.22 CRITERION= .3702E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8363
 HT FLOW CONVERGENCE VALUE= .1788 CRITERION= .3702E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7526E-02
 HT FLOW CONVERGENCE VALUE= .3847E-02 CRITERION= .3702E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 481
 *** TIME = .168833E+11 TIME INC = .552258E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 35.09 CRITERION= .3683E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.141
 HT FLOW CONVERGENCE VALUE= .8018 CRITERION= .3690E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4353E-01
 HT FLOW CONVERGENCE VALUE= .8315E-01 CRITERION= .3682E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5148E-02
 HT FLOW CONVERGENCE VALUE= .9977E-02 CRITERION= .3683E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 484
 *** TIME = .176723E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 33.48 CRITERION= .3556E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.095
 HT FLOW CONVERGENCE VALUE= 1.747 CRITERION= .3574E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8299E-01
 HT FLOW CONVERGENCE VALUE= .1318 CRITERION= .3556E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6527E-02
 HT FLOW CONVERGENCE VALUE= .1061E-01 CRITERION= .3558E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 487
 *** TIME = .184612E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 31.84 CRITERION= .3568E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6361
 HT FLOW CONVERGENCE VALUE= .2866 CRITERION= .3573E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9659E-02
 HT FLOW CONVERGENCE VALUE= .4130E-02 CRITERION= .3572E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 489
 *** TIME = .189346E+11 TIME INC = .473364E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:55:47 JAN 04, 1995 CP= 88642.810
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 31.00 CRITERION= .3487E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6213
 HT FLOW CONVERGENCE VALUE= .1796 CRITERION= .3492E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7174E-02
 HT FLOW CONVERGENCE VALUE= .2925E-02 CRITERION= .3492E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 491
 *** TIME = .194079E+11 TIME INC = .473364E+09
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 30.15 CRITERION= .3513E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6069
 HT FLOW CONVERGENCE VALUE= .2706 CRITERION= .3521E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7267E-02
 HT FLOW CONVERGENCE VALUE= .1409E-01 CRITERION= .3519E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 493
 *** TIME = .198813E+11 TIME INC = .473364E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 29.40 CRITERION= .3416E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9811
 HT FLOW CONVERGENCE VALUE= 1.304 CRITERION= .3444E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5113E-01
 HT FLOW CONVERGENCE VALUE= .8234E-01 CRITERION= .3428E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3320E-02
 HT FLOW CONVERGENCE VALUE= .5426E-02 CRITERION= .3429E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 496
 *** TIME = .206702E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 28.19 CRITERION= .3429E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9443
 HT FLOW CONVERGENCE VALUE= .6562 CRITERION= .3452E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2294E-01
 HT FLOW CONVERGENCE VALUE= .5179E-02 CRITERION= .3445E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 498
 *** TIME = .214592E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 27.21 CRITERION= .3356E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7301
 HT FLOW CONVERGENCE VALUE= .1934 CRITERION= .3369E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1053E-01
 HT FLOW CONVERGENCE VALUE= .3729E-02 CRITERION= .3369E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 500
 *** TIME = .220903E+11 TIME INC = .631152E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 03:17:22 JAN 04, 1995 CP= 90818.500
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 26.40 CRITERION= .3387E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7105
 HT FLOW CONVERGENCE VALUE= .8574 CRITERION= .3402E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5359E-01
 HT FLOW CONVERGENCE VALUE= .7254E-01 CRITERION= .3398E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4701E-02
 HT FLOW CONVERGENCE VALUE= .6512E-02 CRITERION= .3398E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 503
 *** TIME = .227215E+11 TIME INC = .631152E+09
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.59 CRITERION= .3320E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6911
 HT FLOW CONVERGENCE VALUE= .7817 CRITERION= .3336E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4516E-01
 HT FLOW CONVERGENCE VALUE= .8726E-01 CRITERION= .3332E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6206E-02
 HT FLOW CONVERGENCE VALUE= .1237E-01 CRITERION= .3332E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 506
 *** TIME = .233526E+11 TIME INC = .631152E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 24.78 CRITERION= .3342E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8359
 HT FLOW CONVERGENCE VALUE= 1.084 CRITERION= .3365E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6013E-01
 HT FLOW CONVERGENCE VALUE= .1280 CRITERION= .3355E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7226E-02
 HT FLOW CONVERGENCE VALUE= .8777E-02 CRITERION= .3356E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 509
 *** TIME = .241416E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.78 CRITERION= .3273E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8031
 HT FLOW CONVERGENCE VALUE= 1.452 CRITERION= .3300E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5817E-01
 HT FLOW CONVERGENCE VALUE= .1224 CRITERION= .3288E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5423E-02
 HT FLOW CONVERGENCE VALUE= .1134E-01 CRITERION= .3289E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 512
 *** TIME = .249305E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+09 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 22.85 CRITERION= .3320E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3128
 HT FLOW CONVERGENCE VALUE= .3315 CRITERION= .3329E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5808E-02
HT FLOW CONVERGENCE VALUE= .8444E-02 CRITERION= .3326E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 514
*** TIME = .252461E+11 TIME INC = .315576E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 04:54:09 JAN 04, 1995 CP= 93442.460
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 22.55 CRITERION= .3270E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3083
HT FLOW CONVERGENCE VALUE= .2826 CRITERION= .3280E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5068E-02
HT FLOW CONVERGENCE VALUE= .9188E-02 CRITERION= .3277E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 516
*** TIME = .255617E+11 TIME INC = .315576E+09
*** AUTO STEP TIME: NEXT TIME INC = .31558E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.26 CRITERION= .3311E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3037
HT FLOW CONVERGENCE VALUE= .2787 CRITERION= .3320E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8825E-02
HT FLOW CONVERGENCE VALUE= .1164E-01 CRITERION= .3318E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 518
*** TIME = .258772E+11 TIME INC = .315576E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 22.00 CRITERION= .3246E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7398
HT FLOW CONVERGENCE VALUE= .4972 CRITERION= .3267E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2596E-01
HT FLOW CONVERGENCE VALUE= .2444E-01 CRITERION= .3264E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 520
*** TIME = .266662E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 21.32 CRITERION= .3280E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7121
HT FLOW CONVERGENCE VALUE= .4142 CRITERION= .3300E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1820E-01
HT FLOW CONVERGENCE VALUE= .1621E-01 CRITERION= .3297E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 522
*** TIME = .274551E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 20.76 CRITERION= .3239E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4151
HT FLOW CONVERGENCE VALUE= .9408E-01 CRITERION= .3250E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2626E-02
HT FLOW CONVERGENCE VALUE= .2141E-03 CRITERION= .3249E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 524
*** TIME = .279285E+11 TIME INC = .473364E+09
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 20.41 CRITERION= .3276E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4070
HT FLOW CONVERGENCE VALUE= .3202 CRITERION= .3288E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9787E-02

HT FLOW CONVERGENCE VALUE= .1252E-01 CRITERION= .3286E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 6 COMPLETED. CUM ITER = 526
 *** TIME = .284018E+11 TIME INC = .473364E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 06:21:40 JAN 04, 1995 CP= 95871.690
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 20.11 CRITERION= .3232E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3991
 HT FLOW CONVERGENCE VALUE= .4879 CRITERION= .3246E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1130E-01
 HT FLOW CONVERGENCE VALUE= .5231E-01 CRITERION= .3242E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1481E-02
 HT FLOW CONVERGENCE VALUE= .6865E-02 CRITERION= .3242E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 529
 *** TIME = .288752E+11 TIME INC = .473364E+09
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 19.79 CRITERION= .3271E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3914
 HT FLOW CONVERGENCE VALUE= 1.208 CRITERION= .3292E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2574E-01
 HT FLOW CONVERGENCE VALUE= .9561E-01 CRITERION= .3281E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2135E-02
 HT FLOW CONVERGENCE VALUE= .8193E-02 CRITERION= .3282E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 532
 *** TIME = .293486E+11 TIME INC = .473364E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 19.58 CRITERION= .3222E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6361
 HT FLOW CONVERGENCE VALUE= 1.567 CRITERION= .3259E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3782E-01
 HT FLOW CONVERGENCE VALUE= .1289 CRITERION= .3241E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3279E-02
 HT FLOW CONVERGENCE VALUE= .1152E-01 CRITERION= .3242E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 535
 *** TIME = .301375E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 19.38 CRITERION= .3263E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6160
 HT FLOW CONVERGENCE VALUE= 1.141 CRITERION= .3296E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2346E-01
 HT FLOW CONVERGENCE VALUE= .7311E-01 CRITERION= .3282E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1559E-02
 HT FLOW CONVERGENCE VALUE= .4963E-02 CRITERION= .3283E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 538
 *** TIME = .309264E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 19.30 CRITERION= .3228E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4788
 HT FLOW CONVERGENCE VALUE= .7153 CRITERION= .3252E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1112E-01
 HT FLOW CONVERGENCE VALUE= .3305E-01 CRITERION= .3244E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5187E-03
 HT FLOW CONVERGENCE VALUE= .1559E-02 CRITERION= .3244E-01 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 541
*** TIME = .315576E+11 TIME INC = .631152E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 98657.390

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21b5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:04:24 JAN 04, 1995 CP= 98672.120
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 68.92851

PARAMETER WPSID(JINC) = 68.98817

PARAMETER WPBOT(JINC) = 68.99200

PARAMETER DFTOP(JINC) = 26.13789

PARAMETER DFSID(JINC) = 26.13788

PARAMETER DFEDG(JINC) = 26.13783

PARAMETER DFBOT(JINC) = 26.16045

PARAMETER WPTOP(JINC,0) = 31.55760

PARAMETER WPSID(JINC,0) = 31.55760

PARAMETER WPBOT(JINC,0) = 31.55760

PARAMETER DFTOP(JINC,0) = 31.55760

PARAMETER DFSID(JINC,0) = 31.55760

PARAMETER DFEDG(JINC,0) = 31.55760

PARAMETER DFBOT(JINC,0) = 31.55760

PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 133
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 117.3923
PARAMETER WPSID(JINC) = 118.4981
PARAMETER WPBOT(JINC) = 121.0245
PARAMETER DFTOP(JINC) = 70.79963
PARAMETER DFSID(JINC) = 70.70818
PARAMETER DFEDG(JINC) = 69.16886
PARAMETER DFBOT(JINC) = 63.26642
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08
PARAMETER DFSID(JINC,0) = .3155763E+08
PARAMETER DFEDG(JINC,0) = .3155763E+08
PARAMETER DFBOT(JINC,0) = .3155763E+08
PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 249
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 152.1940
PARAMETER WPSID(JINC) = 153.0537
PARAMETER WPBOT(JINC) = 155.0201
PARAMETER DFTOP(JINC) = 122.4306
PARAMETER DFSID(JINC) = 122.6668
PARAMETER DFEDG(JINC) = 121.3413
PARAMETER DFBOT(JINC) = 115.1581
PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09
PARAMETER WPBOT(JINC,0) = .3155760E+09
PARAMETER DFTOP(JINC,0) = .3155760E+09
PARAMETER DFSID(JINC,0) = .3155760E+09
PARAMETER DFEDG(JINC,0) = .3155760E+09
PARAMETER DFBOT(JINC,0) = .3155760E+09
PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 401
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 158.8712
PARAMETER WPSID(JINC) = 159.1750
PARAMETER WPBOT(JINC) = 159.8449
PARAMETER DFTOP(JINC) = 149.6099
PARAMETER DFSID(JINC) = 149.7672
PARAMETER DFEDG(JINC) = 149.3083
PARAMETER DFBOT(JINC) = 146.9943
PARAMETER WPTOP(JINC,0) = .3155760E+10
PARAMETER WPSID(JINC,0) = .3155760E+10
PARAMETER WPBOT(JINC,0) = .3155760E+10
PARAMETER DFTOP(JINC,0) = .3155760E+10
PARAMETER DFSID(JINC,0) = .3155760E+10
PARAMETER DFEDG(JINC,0) = .3155760E+10
PARAMETER DFBOT(JINC,0) = .3155760E+10
PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 101822.240

*** NOTE *** CP= 101822.250 TIME= 09:36:13
Write parameters to file= c21b5a.parm.

*** NOTE *** CP= 101822.320 TIME= 09:36:13
Parameters written. Lines= 770.

*** WARNING *** CP= 101822.320 TIME= 09:36:13
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c21b5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 09:36:13 JAN 04, 1995 CP= 101822.420
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 21.23

DISTANCE MULTIPLIER FOR WINDOW 1 1.250

DISTANCE FOR WINDOW 1 26.54

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5052 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE MULTIPLIER FOR WINDOW 1 .8000

DISTANCE FOR WINDOW 1 21.23

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5052 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 12.18

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1

DIRECTION -.36934 .15899 -.91559

INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5052 ELEMENTS (OF 10105 DEFINED) SELECTED FROM

48 SELECTED VOLUMES BY ESLV COMMAND.

Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 101853.640 TIME= 09:37:16
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 83
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 101879.660 TIME= 09:37:51
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 133
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 101905.780 TIME= 09:38:29
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 188
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 101931.690 TIME= 09:39:21
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 249
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 101957.290 TIME= 09:40:18
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 330
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 101983.350 TIME= 09:41:07
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 401
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102008.970 TIME= 09:41:50
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 477
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102034.890 TIME= 09:42:32
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 541
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102060.560 TIME= 09:43:14
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 7.622

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1

DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2526 ELEMENTS (OF 10105 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102087.040 TIME= 09:44:00
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 83
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102109.120 TIME= 09:44:38
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 133
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102131.280 TIME= 09:45:14
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 188
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102153.020 TIME= 09:45:49
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 249
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102174.960 TIME= 09:46:23
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 330
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102196.880 TIME= 09:46:51
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 401
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102218.900 TIME= 09:47:21
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 477
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102240.530 TIME= 09:48:00
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 541
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 102261.960 TIME= 09:48:41
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 102268.210

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 09:48:57 JAN 04, 1995 CP= 102268.210
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

 * Waste Package Surface Temperatures *

wmidside = midlength side surface
 wwpeside = end of WP side surface
 wmidtop = midlength top surface
 wwpetop = end of WP top surface
 wmidbot = midlength bottom surface
 wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
 VARIABLE 3 IS AT NODE 1804 ITEM= TEMP COMP= NAME= wwpeside
 VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
 VARIABLE 5 IS AT NODE 1810 ITEM= TEMP COMP= NAME= wwpetop
 VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
 VARIABLE 7 IS AT NODE 1803 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	164.9	.1262E+10
3	NSOL	1804 TEMP	wwpeside	26.14	.1000E-05	158.7	.1578E+10
4	NSOL	129 TEMP	wmidtop	26.13	.1000E-05	164.4	.1262E+10
5	NSOL	1810 TEMP	wwpetop	26.13	.1000E-05	158.5	.1578E+10
6	NSOL	122 TEMP	wmidbot	26.14	.1000E-05	166.1	.1262E+10
7	NSOL	1803 TEMP	wwpebot	26.14	.1000E-05	159.2	.1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:12 JAN 04, 1995 CP= 102270.790
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1804 TEMP wwpeside	129 TEMP wmidtop	1810 TEMP wwpetop	122 TEMP wmidbot	1803 TEMP wwpebot
.10000E-05	26.1379	26.1377	26.1323	26.1339	26.1426	26.1404
.20000E-05	68.9882	56.0363	68.9285	55.9696	68.9920	56.3400
31.558	68.9882	56.0363	68.9285	55.9696	68.9920	56.3400
.31558E+07	96.5982	78.8183	95.4409	78.3021	99.1974	80.1513
.63116E+07	102.374	84.7291	101.211	84.2137	104.997	86.0715
.94673E+07	106.013	88.5708	104.857	88.0628	108.626	89.9045
.12623E+08	108.759	91.5079	107.613	91.0079	111.356	92.8299
.15779E+08	110.983	93.9093	109.845	93.4155	113.571	95.2250
.18935E+08	112.855	95.9434	111.726	95.4551	115.429	97.2486
.22090E+08	114.491	97.7283	113.369	97.2442	117.054	99.0271
.25246E+08	115.952	99.3249	114.836	98.8445	118.502	100.614
.28402E+08	117.277	100.778	116.166	100.301	119.816	102.061
.31558E+08	118.498	102.118	117.392	101.644	121.025	103.392
.63115E+08	127.393	112.022	126.321	111.563	129.838	113.238
.94673E+08	133.549	118.901	132.511	118.459	135.905	120.068
.12623E+09	138.183	124.057	137.177	123.629	140.464	125.181
.15779E+09	141.902	128.222	140.923	127.808	144.119	129.307
.18935E+09	145.037	131.753	144.084	131.353	147.198	132.806

.22090E+09	147.721	134.801	146.792	134.413	149.835	135.825
.25246E+09	150.162	137.556	149.254	137.179	152.237	138.559
.28402E+09	151.661	139.476	150.775	139.108	153.676	140.447
.31558E+09	153.054	141.188	152.194	140.832	155.020	142.134
.63115E+09	160.265	150.605	159.557	150.317	161.895	151.378
.94673E+09	163.876	155.714	163.262	155.462	165.260	156.361
.12623E+10	164.930	157.963	164.400	157.746	166.116	158.515
.15779E+10	164.833	158.715	164.367	158.524	165.877	159.199
.18935E+10	164.083	158.599	163.664	158.428	165.017	159.031
.22090E+10	163.162	158.177	162.780	158.021	164.013	158.570
.25246E+10	161.602	157.068	161.254	156.925	162.373	157.423
.28402E+10	160.310	156.098	159.985	155.965	161.027	156.429
.31558E+10	159.175	155.236	158.871	155.111	159.845	155.545
.63115E+10	152.398	149.911	152.204	149.830	152.818	150.104
.94673E+10	148.194	146.201	148.038	146.136	148.530	146.356
.12623E+11	145.785	144.087	145.652	144.032	146.070	144.219
.15779E+11	143.815	142.325	143.698	142.276	144.065	142.441
.18935E+11	141.638	140.331	141.535	140.288	141.856	140.432
.22090E+11	139.700	138.529	139.607	138.490	139.896	138.620
.25246E+11	137.997	136.935	137.912	136.899	138.174	137.017
.28402E+11	136.472	135.495	136.393	135.462	136.634	135.571
.31558E+11	135.144	134.234	135.070	134.202	135.296	134.305

 * Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 102271.160 TIME= 09:49:12
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 992 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1142 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 957 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	165.3 .1262E+10
3	NSOL	992 TEMP	swpeside	26.14	.1000E-05	159.1 .1578E+10
4	NSOL	38 TEMP	smidtop	26.13	.1000E-05	164.8 .1262E+10
5	NSOL	1142 TEMP	swpetop	26.13	.1000E-05	158.9 .1578E+10
6	NSOL	2 TEMP	smidbot	26.14	.1000E-05	166.5 .1262E+10
7	NSOL	957 TEMP	swpebot	26.14	.1000E-05	159.6 .1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:15 JAN 04, 1995 CP= 102273.170
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	992 TEMP swpeside	38 TEMP smidtop	1142 TEMP swpetop	2 TEMP smidbot	957 TEMP swpebot
.10000E-05	26.1379	26.1377	26.1324	26.1340	26.1426	26.1404
.20000E-05	69.7936	56.9212	69.7376	56.8470	69.7980	57.1837
31.558	69.7936	56.9212	69.7376	56.8470	69.7980	57.1837
.31558E+07	97.3891	79.7911	96.2388	79.2614	99.9277	81.0516
.63116E+07	103.167	85.7011	102.011	85.1721	105.729	86.9699
.94673E+07	106.805	89.5383	105.657	89.0166	109.357	90.7987
.12623E+08	109.551	92.4708	108.411	91.9569	112.087	93.7201
.15779E+08	111.773	94.8679	110.643	94.3600	114.300	96.1112
.18935E+08	113.645	96.8980	112.522	96.3956	116.158	98.1315
.22090E+08	115.279	98.6789	114.164	98.1807	117.781	99.9062
.25246E+08	116.739	100.272	115.630	99.7776	119.229	101.490
.28402E+08	118.062	101.722	116.958	101.230	120.541	102.934
.31558E+08	119.282	103.059	118.183	102.570	121.749	104.262
.63115E+08	128.163	112.930	127.098	112.458	130.550	114.081
.94673E+08	134.305	119.784	133.275	119.329	136.606	120.887
.12623E+09	138.926	124.919	137.927	124.479	141.152	125.981
.15779E+09	142.633	129.065	141.661	128.639	144.797	130.091
.18935E+09	145.756	132.579	144.810	132.167	147.866	133.574
.22090E+09	148.429	135.611	147.507	135.211	150.492	136.579
.25246E+09	150.861	138.352	149.960	137.963	152.886	139.300
.28402E+09	152.342	140.249	151.463	139.870	154.309	141.167
.31558E+09	153.722	141.944	152.868	141.578	155.640	142.838
.63115E+09	160.830	151.235	160.127	150.938	162.420	151.966
.94673E+09	164.363	156.253	163.754	155.993	165.714	156.865
.12623E+10	165.348	158.425	164.823	158.201	166.506	158.947
.15779E+10	165.201	159.121	164.738	158.924	166.218	159.578
.18935E+10	164.411	158.962	163.996	158.786	165.323	159.371
.22090E+10	163.460	158.506	163.081	158.345	164.290	158.878
.25246E+10	161.871	157.365	161.526	157.219	162.624	157.702
.28402E+10	160.558	156.373	160.236	156.237	161.257	156.687
.31558E+10	159.406	155.493	159.105	155.364	160.059	155.786
.63115E+10	152.540	150.069	152.347	149.987	152.950	150.253
.94673E+10	148.305	146.326	148.151	146.260	148.633	146.474
.12623E+11	145.879	144.193	145.747	144.137	146.157	144.318
.15779E+11	143.897	142.418	143.781	142.367	144.140	142.528
.18935E+11	141.709	140.412	141.607	140.368	141.922	140.507
.22090E+11	139.763	138.601	139.671	138.561	139.954	138.687
.25246E+11	138.054	137.000	137.970	136.963	138.227	137.078
.28402E+11	136.523	135.555	136.445	135.520	136.682	135.626
.31558E+11	135.192	134.289	135.119	134.256	135.340	134.356

 * Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 102273.550 TIME= 09:49:16
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 962 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1683 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2710 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2698 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	1 TEMP	wmidcent	26.14	.1000E-05	235.9	.2525E+09
3 NSOL	962 TEMP	shellcnt	26.14	.1000E-05	160.7	.1578E+10
4 NSOL	1683 TEMP	wwpecent	26.14	.1000E-05	160.3	.1578E+10
5 NSOL	147 TEMP	imidbot	26.16	.2000E-05	152.7	.2209E+10
6 NSOL	2710 TEMP	iwpebot	26.16	.2000E-05	151.0	.2209E+10
7 NSOL	2698 TEMP	idfebot	26.16	.2000E-05	147.7	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:19 JAN 04, 1995 CP= 102275.550
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	962 TEMP shellcnt	1683 TEMP wwpecent	147 TEMP imidbot	2710 TEMP iwpebot	2698 TEMP idfebot
.10000E-05	26.1377	26.1374	26.1374	26.1687	26.1676	26.1676
.20000E-05	167.489	62.2018	61.4572	26.1605	26.1605	26.1605
31.558	167.489	62.2019	61.4572	26.1605	26.1605	26.1605
.31558E+07	194.129	83.5619	82.7584	54.7663	47.9393	34.8354
.63116E+07	200.021	89.3643	88.5605	62.6635	55.6354	41.0832
.94673E+07	203.569	93.1564	92.3527	67.4603	60.4805	45.6629
.12623E+08	206.194	96.0685	95.2622	71.0171	64.1259	49.3490
.15779E+08	208.254	98.4402	97.6376	73.8692	67.0725	52.4439
.18935E+08	209.955	100.460	99.6554	76.2630	69.5571	55.1128
.22090E+08	211.407	102.221	101.421	78.3385	71.7173	57.4641
.25246E+08	212.703	103.807	103.005	80.1848	73.6416	59.5737
.28402E+08	213.838	105.239	104.442	81.8561	75.3856	61.4951
.31558E+08	214.887	106.569	105.770	83.3923	76.9894	63.2664
.63115E+08	221.982	116.352	115.570	94.6880	88.8425	76.4656
.94673E+08	226.423	123.134	122.364	102.324	96.9405	85.6831
.12623E+09	229.432	128.180	127.425	108.215	103.043	92.5930
.15779E+09	231.624	132.253	131.508	113.009	108.003	97.9082
.18935E+09	233.289	135.693	134.961	117.113	112.214	102.378
.22090E+09	234.588	138.667	137.944	120.648	115.893	106.283
.25246E+09	235.897	141.357	140.645	123.794	119.189	109.773
.28402E+09	235.174	143.174	142.479	126.176	121.769	112.689
.31558E+09	234.915	144.803	144.124	128.239	123.950	115.158
.63115E+09	229.416	153.633	153.058	140.040	136.648	129.828
.94673E+09	223.412	158.309	157.811	146.696	143.870	138.250
.12623E+10	216.067	160.183	159.757	150.263	147.872	143.139
.15779E+10	209.777	160.664	160.289	151.959	149.869	145.750
.18935E+10	204.265	160.345	160.008	152.559	150.693	147.021
.22090E+10	199.561	159.755	159.452	152.700	151.007	147.681
.25246E+10	194.496	158.498	158.222	152.098	150.560	147.541
.28402E+10	190.693	157.416	157.163	151.496	150.068	147.270
.31558E+10	187.452	156.463	156.228	150.943	149.609	146.994
.63115E+10	169.742	150.669	150.523	147.239	146.399	144.757
.94673E+10	161.833	146.795	146.683	144.074	143.400	142.084
.12623E+11	157.278	144.592	144.495	142.284	141.710	140.589
.15779E+11	153.810	142.762	142.679	140.745	140.242	139.257
.18935E+11	150.317	140.714	140.641	138.953	138.511	137.646
.22090E+11	147.408	138.866	138.803	137.298	136.902	136.127
.25246E+11	144.936	137.242	137.183	135.827	135.467	134.762
.28402E+11	142.803	135.776	135.722	134.481	134.150	133.502
.31558E+11	141.010	134.491	134.443	133.288	132.979	132.374

```

*      Surface Temperature of Invert      *
*****
imidcent = midlength center of invert surface
iwpecent = end of WP center of invert surface
idfecent = end of drift center of invert surface
imidedge = midlength corner of invert surface
iwpeedge = end of WP corner of invert surface
idfeedge = end of drift corner of invert surface

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VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 102275.930 TIME= 09:49:20
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2720 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2702 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2773 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2763 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	160.3	.1578E+10
3	NSOL	2720 TEMP	iwpecent	26.14	.2000E-05	156.3	.1893E+10
4	NSOL	2702 TEMP	idfecent	26.14	.2000E-05	151.4	.2209E+10
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	157.4	.1893E+10
6	NSOL	2773 TEMP	iwpeedge	26.14	.2000E-05	154.7	.1893E+10
7	NSOL	2763 TEMP	idfeedge	26.14	.2000E-05	150.7	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:27 JAN 04, 1995 CP= 102277.970
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2720 TEMP iwpecent	2702 TEMP idfecent	157 TEMP imidedge	2773 TEMP iwpeedge	2763 TEMP idfeedge
.10000E-05	26.1476	26.1449	26.1437	26.1508	26.1507	26.1527
.20000E-05	26.1377	26.1377	26.1377	26.1377	26.1377	26.1377
31.558	26.1525	26.1451	26.1379	26.1422	26.1400	26.1378
.31558E+07	77.8439	63.6608	41.6014	66.6166	56.5988	39.2488
.63116E+07	84.8000	70.8475	48.8076	74.0936	64.0819	46.1406
.94673E+07	89.1323	75.4362	53.7820	78.7477	68.8736	51.0171
.12623E+08	92.3777	78.9110	57.6716	82.2299	72.5006	54.8714
.15779E+08	94.9880	81.7269	60.8812	85.0334	75.4407	58.0727
.18935E+08	97.1879	84.1081	63.6206	87.3943	77.9265	60.8171
.22090E+08	99.0987	86.1821	66.0192	89.4464	80.0926	63.2278
.25246E+08	100.806	88.0351	68.1643	91.2777	82.0273	65.3887
.28402E+08	102.348	89.7135	70.1130	92.9350	83.7814	67.3555
.31558E+08	103.771	91.2609	71.9074	94.4621	85.3977	69.1689
.63115E+08	114.114	102.597	85.1538	105.524	97.2411	82.6157
.94673E+08	121.206	110.381	94.2650	113.163	105.351	91.8978
.12623E+09	126.535	116.180	100.956	118.936	111.429	98.6815
.15779E+09	130.817	120.853	106.276	123.566	116.332	104.075
.18935E+09	134.430	124.800	110.771	127.470	120.480	108.629
.22090E+09	137.528	128.205	114.663	130.816	124.050	112.570

.25246E+09	140.311	131.254	118.142	133.801	127.229	116.100
.28402E+09	142.199	133.480	120.900	135.933	129.611	118.935
.31558E+09	143.887	135.422	123.251	137.811	131.674	121.341
.63115E+09	153.002	146.237	136.727	148.160	143.271	135.203
.94673E+09	157.817	152.157	144.293	153.775	149.696	143.039
.12623E+10	159.784	154.983	148.364	156.360	152.908	147.310
.15779E+10	160.318	156.119	150.356	157.323	154.308	149.438
.18935E+10	160.033	156.278	151.141	157.355	154.662	150.325
.22090E+10	159.472	156.064	151.411	157.041	154.599	150.673
.25246E+10	158.233	155.136	150.913	156.022	153.806	150.246
.28402E+10	157.169	154.294	150.377	155.115	153.060	149.760
.31558E+10	156.229	153.541	149.882	154.309	152.389	149.308
.63115E+10	150.507	148.812	146.511	149.293	148.088	146.159
.94673E+10	146.658	145.299	143.454	145.683	144.719	143.175
.12623E+11	144.470	143.312	141.739	143.638	142.818	141.503
.15779E+11	142.652	141.636	140.255	141.921	141.202	140.048
.18935E+11	140.613	139.721	138.509	139.972	139.341	138.329
.22090E+11	138.775	137.975	136.887	138.199	137.634	136.727
.25246E+11	137.157	136.430	135.441	136.634	136.121	135.298
.28402E+11	135.696	135.027	134.117	135.215	134.744	133.987
.31558E+11	134.416	133.792	132.942	133.967	133.527	132.821

 * Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddftetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 102278.350 TIME= 09:49:28
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2856 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2824 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3041 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 3019 ITEM= TEMP COMP= NAME= ddftetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	157.9 .1578E+10
3	NSOL	2856 TEMP	dwpeside	26.14	.2000E-05	155.2 .1893E+10
4	NSOL	2824 TEMP	ddfeside	26.14	.2000E-05	151.3 .2209E+10
5	NSOL	229 TEMP	dmidtop	26.12	.1000E-05	157.2 .1893E+10
6	NSOL	3041 TEMP	dwpetop	26.12	.1000E-05	154.9 .1893E+10
7	NSOL	3019 TEMP	ddftetop	26.12	.1000E-05	151.1 .2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:31 JAN 04, 1995 CP= 102280.370
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmdside	2856 TEMP dwpeside	2824 TEMP ddfeside	229 TEMP dmdtop	3041 TEMP dwpetop	3019 TEMP ddfetop
.10000E-05	26.1377	26.1384	26.1395	26.1243	26.1233	26.1185
.20000E-05	26.1377	26.1377	26.1377	26.1377	26.1377	26.1377
31.558	26.1437	26.1409	26.1379	26.1434	26.1407	26.1379
.31558E+07	68.5934	58.3204	40.5065	66.4500	57.5131	40.6014
.63116E+07	75.9425	65.7421	47.5748	73.8196	64.9529	47.6936
.94673E+07	80.5309	70.4961	52.5118	78.4506	69.7334	52.6431
.12623E+08	83.9684	74.0946	56.3875	81.9276	73.3564	56.5310
.15779E+08	86.7389	77.0130	59.5958	84.7305	76.2929	59.7455
.18935E+08	89.0745	79.4826	62.3429	87.0920	78.7741	62.4912
.22090E+08	91.1063	81.6365	64.7558	89.1445	80.9342	64.8960
.25246E+08	92.9212	83.5621	66.9198	90.9759	82.8622	67.0468
.28402E+08	94.5643	85.3090	68.8904	92.6330	84.6087	69.0006
.31558E+08	96.0792	86.9198	70.7082	94.1596	86.2174	70.7996
.63115E+08	107.037	98.6833	84.1814	105.192	97.9441	84.0965
.94673E+08	114.615	106.762	93.4404	112.842	106.019	93.2644
.12623E+09	120.327	112.802	100.124	118.625	112.071	99.9194
.15779E+09	124.903	117.677	105.506	123.254	116.957	105.281
.18935E+09	128.755	121.782	110.047	127.166	121.088	109.811
.22090E+09	132.051	125.312	113.970	130.512	124.641	113.733
.25246E+09	134.998	128.451	117.483	133.506	127.810	117.262
.28402E+09	137.088	130.795	120.288	135.632	130.156	120.059
.31558E+09	138.935	132.830	122.667	137.531	132.218	122.431
.63115E+09	149.063	144.208	136.287	147.936	143.715	136.077
.94673E+09	154.554	150.516	144.004	153.570	150.044	143.730
.12623E+10	157.023	153.609	148.140	156.179	153.195	147.883
.15779E+10	157.906	154.923	150.165	157.166	154.560	149.938
.18935E+10	157.876	155.212	150.975	157.213	154.885	150.767
.22090E+10	157.513	155.098	151.261	156.910	154.799	151.069
.25246E+10	156.453	154.260	150.780	155.903	153.986	150.603
.28402E+10	155.514	153.479	150.253	155.003	153.224	150.087
.31558E+10	154.681	152.780	149.767	154.202	152.540	149.610
.63115E+10	149.526	148.331	146.442	149.219	148.174	146.335
.94673E+10	145.869	144.912	143.397	145.623	144.786	143.311
.12623E+11	143.796	142.981	141.691	143.586	142.873	141.618
.15779E+11	142.060	141.344	140.213	141.875	141.249	140.147
.18935E+11	140.092	139.465	138.472	139.930	139.381	138.413
.22090E+11	138.307	137.744	136.854	138.160	137.667	136.799
.25246E+11	136.730	136.219	135.411	136.595	136.148	135.359
.28402E+11	135.302	134.833	134.090	135.178	134.767	134.041
.31558E+11	134.048	133.611	132.916	133.931	133.548	132.870

```

*****
*      1 meter Rock Temperatures      *
*****
1mdside = midlength 1 meter from drift side
1dfeside = end of drift 1 meter from drift side
1mdtop = midlength 1 meter above drift top
1dfetop = end of drift 1 meter above drift top
1mdbot = midlength 1 meter below drift cut
1dfebot = end of drift 1 meter below drift cut

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VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1mdside

*** WARNING *** CP= 102280.750 TIME= 09:49:32
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2814 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1mdtop

VARIABLE 5 IS AT NODE 3009 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1mdbot

VARIABLE 7 IS AT NODE 2812 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	167 TEMP	1midside	26.14	.2000E-05	151.0	.2209E+10
3 NSOL	2814 TEMP	1dfeside	26.14	.2000E-05	147.2	.2209E+10
4 NSOL	219 TEMP	1midtop	26.10	.1000E-05	150.0	.2209E+10
5 NSOL	3009 TEMP	1dfetop	26.09	.1000E-05	146.4	.2209E+10
6 NSOL	165 TEMP	1midbot	26.18	.2000E-05	147.5	.2209E+10
7 NSOL	2812 TEMP	1dfebot	26.18	.2000E-05	144.5	.2525E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:35 JAN 04, 1995 CP= 102282.780
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2814 TEMP 1dfeside	219 TEMP 1midtop	3009 TEMP 1dfetop	165 TEMP 1midbot	2812 TEMP 1dfebot
.10000E-05	26.1392	26.1400	26.0977	26.0949	26.1891	26.1888
.20000E-05	26.1391	26.1391	26.1081	26.1081	26.1821	26.1821
31.558	26.1391	26.1391	26.1081	26.1081	26.1821	26.1821
.31558E+07	47.0601	33.1539	46.1328	33.2067	40.5399	30.5570
.63116E+07	54.7552	38.8977	53.7263	38.9716	48.0123	35.4768
.94673E+07	59.5792	43.2613	58.5634	43.3557	52.7661	39.4618
.12623E+08	63.1741	46.8187	62.1909	46.9354	56.3378	42.8133
.15779E+08	66.0745	49.8339	65.1126	49.9611	59.2210	45.6968
.18935E+08	68.5279	52.4588	67.5708	52.5803	61.6510	48.2214
.22090E+08	70.6728	54.7930	69.7057	54.8934	63.7643	50.4676
.25246E+08	72.5948	56.9049	71.6064	56.9722	65.6470	52.4961
.28402E+08	74.3468	58.8425	73.3295	58.8681	67.3558	54.3524
.31558E+08	75.9656	60.6394	74.9145	60.6179	68.9285	56.0698
.63115E+08	87.9202	74.2132	86.5433	73.7277	80.6631	69.0411
.94673E+08	96.1375	83.7116	94.5725	82.9483	88.8015	78.2624
.12623E+09	102.384	90.7055	100.767	89.8049	95.0178	85.3167
.15779E+09	107.475	96.1076	105.774	95.1989	100.059	90.8094
.18935E+09	111.758	100.654	110.090	99.6846	104.356	95.2701
.22090E+09	115.447	104.582	113.805	103.609	108.115	99.1366
.25246E+09	118.700	108.052	117.113	107.126	111.462	102.593
.28402E+09	121.287	111.012	119.609	110.084	114.171	105.590
.31558E+09	123.498	113.531	121.921	112.548	116.501	108.088
.63115E+09	136.228	128.530	134.880	127.605	130.211	123.687
.94673E+09	143.757	137.418	142.239	136.275	138.200	132.841
.12623E+10	147.823	142.495	146.433	141.414	142.963	138.447
.15779E+10	149.842	145.201	148.610	144.238	145.542	141.609
.18935E+10	150.677	146.538	149.554	145.659	146.821	143.314
.22090E+10	150.992	147.245	149.963	146.433	147.500	144.324
.25246E+10	150.556	147.155	149.612	146.410	147.388	144.504
.28402E+10	150.061	146.908	149.180	146.210	147.145	144.471
.31558E+10	149.601	146.657	148.772	145.998	146.890	144.393
.63115E+10	146.393	144.545	145.847	144.106	144.743	143.174
.94673E+10	143.390	141.910	142.957	141.561	142.107	140.850
.12623E+11	141.701	140.440	141.332	140.144	140.624	139.552
.15779E+11	140.232	139.126	139.908	138.865	139.299	138.359
.18935E+11	138.501	137.530	138.214	137.299	137.695	136.870
.22090E+11	136.889	136.019	136.627	135.805	136.182	135.442
.25246E+11	135.451	134.661	135.206	134.460	134.824	134.152
.28402E+11	134.133	133.406	133.905	133.219	133.566	132.948
.31558E+11	132.962	132.285	132.748	132.107	132.440	131.863

 * 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtopy = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 102283.160 TIME= 09:49:36
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 3589 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtopy

VARIABLE 5 IS AT NODE 3849 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3586 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	144.0	.2525E+10
3	NSOL	3589 TEMP	3dfeside	26.14	.2000E-05	142.8	.3156E+10
4	NSOL	309 TEMP	3midtopy	26.05	.1000E-05	141.8	.3156E+10
5	NSOL	3849 TEMP	3dfetop	26.05	.1000E-05	140.8	.6312E+10
6	NSOL	276 TEMP	3midbot	26.22	.2000E-05	141.1	.6312E+10
7	NSOL	3586 TEMP	3dfebot	26.22	.2000E-05	140.4	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:39 JAN 04, 1995 CP= 102285.180
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3589 TEMP 3dfeside	309 TEMP 3midtopy	3849 TEMP 3dfetop	276 TEMP 3midbot	3586 TEMP 3dfebot
.10000E-05	26.1402	26.1404	26.0545	26.0536	26.2289	26.2289
.20000E-05	26.1404	26.1404	26.0621	26.0621	26.2236	26.2236
31.558	26.1404	26.1404	26.0621	26.0621	26.2236	26.2236
.31558E+07	29.9402	27.4061	29.4440	27.2499	28.4588	26.9158
.63116E+07	35.1855	30.3494	34.4623	30.1210	32.7951	29.1475
.94673E+07	39.1116	33.2869	38.3706	33.0523	36.3892	31.6788
.12623E+08	42.2353	35.9787	41.5021	35.7462	39.3328	34.1145
.15779E+08	44.8663	38.4293	44.1126	38.1744	41.8171	36.3681
.18935E+08	47.1703	40.6745	46.3594	40.3636	43.9730	38.4338
.22090E+08	49.2426	42.7492	48.3431	42.3513	45.8875	40.3303
.25246E+08	51.1414	44.6820	50.1307	44.1732	47.6201	42.0819
.28402E+08	52.9051	46.4956	51.7685	45.8598	49.2126	43.7121
.31558E+08	54.5590	48.2074	53.2880	47.4348	50.6940	45.2407
.63115E+08	67.4524	61.7348	64.9778	59.7071	62.2196	57.2781
.94673E+08	76.6896	71.5190	73.5182	68.7489	70.7317	66.2465
.12623E+09	83.8003	79.0300	80.2774	75.8428	77.5034	73.3863
.15779E+09	89.4529	84.9737	85.7451	81.5755	83.0406	79.1625
.18935E+09	94.0283	89.8054	90.3438	86.3377	87.6742	83.9648
.22090E+09	97.7143	93.7659	94.2258	90.3656	91.5993	88.0332
.25246E+09	101.105	96.9291	97.5247	93.8457	95.0236	91.5255

.28402E+09	104.007	99.8792	100.329	96.6942	97.7630	94.5236
.31558E+09	106.456	102.381	103.016	99.1973	100.311	96.8853
.63115E+09	121.814	118.570	118.635	115.484	116.074	113.231
.94673E+09	131.787	129.166	127.935	125.492	125.773	123.501
.12623E+10	137.625	135.432	134.043	132.014	132.205	130.297
.15779E+10	140.904	138.994	137.713	135.945	136.060	134.404
.18935E+10	142.699	140.995	139.788	138.211	138.324	136.851
.22090E+10	143.767	142.225	141.098	139.671	139.803	138.467
.25246E+10	144.025	142.625	141.572	140.276	140.404	139.193
.28402E+10	144.024	142.728	141.743	140.542	140.704	139.581
.31558E+10	143.980	142.769	141.835	140.714	140.894	139.845
.63115E+10	142.934	142.174	141.531	140.827	141.055	140.397
.94673E+10	140.659	140.051	139.555	138.991	139.218	138.691
.12623E+11	139.393	138.875	138.457	137.977	138.187	137.738
.15779E+11	138.223	137.768	137.402	136.981	137.182	136.788
.18935E+11	136.752	136.353	136.027	135.656	135.855	135.509
.22090E+11	135.334	134.976	134.673	134.341	134.555	134.245
.25246E+11	134.048	133.723	133.435	133.134	133.365	133.083
.28402E+11	132.851	132.552	132.281	132.004	132.237	131.978
.31558E+11	131.773	131.494	131.240	130.981	131.211	130.969

 * Upper Rock Layer Interface Temperatures *

surfTCw = center ground surface
 TCwPTn = center TCw and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 771 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 102285.570 TIME= 09:49:40
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 750 ITEM= TEMP COMP= NAME= TCwPTn
 VARIABLE 4 IS AT NODE 693 ITEM= TEMP COMP= NAME= PTnTSw1
 VARIABLE 5 IS AT NODE 528 ITEM= TEMP COMP= NAME= TSw1TSw2
 VARIABLE 6 IS AT NODE 436 ITEM= TEMP COMP= NAME= upmodel
 VARIABLE 7 IS AT NODE 402 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	771 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	750 TEMP	TCwPTn	19.53	.1000E-05	29.31	.3156E+11
4	NSOL	693 TEMP	PTnTSw1	21.24	.1000E-05	51.75	.3156E+11
5	NSOL	528 TEMP	TSw1TSw2	24.25	.1000E-05	96.40	.3156E+11
6	NSOL	436 TEMP	upmodel	25.95	.1000E-05	134.0	.6312E+10
7	NSOL	402 TEMP	middrift	26.14	.1000E-05	140.1	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:44 JAN 04, 1995 CP= 102287.620
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	771 TEMP surTCw	750 TEMP TCwPTn	693 TEMP PTnTSw1	528 TEMP TSw1TSw2	436 TEMP upmodel	402 TEMP middrift
.10000E-05	18.7000	19.5284	21.2405	24.2523	25.9457	26.1406
.20000E-05	18.7000	19.5290	21.2423	24.2562	25.9512	26.1411
.31.558	18.7000	19.5290	21.2423	24.2562	25.9512	26.1411
.31558E+07	18.7000	19.5290	21.2423	24.2562	25.9592	26.1656
.63116E+07	18.7000	19.5290	21.2423	24.2562	26.0859	26.5029
.94673E+07	18.7000	19.5290	21.2423	24.2562	26.4500	27.3566
.12623E+08	18.7000	19.5290	21.2423	24.2562	27.0209	28.5850
.15779E+08	18.7000	19.5290	21.2423	24.2562	27.7238	30.0210
.18935E+08	18.7000	19.5290	21.2423	24.2562	28.5000	31.5565
.22090E+08	18.7000	19.5290	21.2423	24.2562	29.3123	33.1290
.25246E+08	18.7000	19.5290	21.2423	24.2562	30.1399	34.7025
.28402E+08	18.7000	19.5290	21.2423	24.2562	30.9711	36.2567
.31558E+08	18.7000	19.5290	21.2423	24.2562	31.8000	37.7802
.63115E+08	18.7000	19.5290	21.2423	24.2562	39.6942	50.8808
.94673E+08	18.7000	19.5290	21.2423	24.2562	46.7996	60.8397
.12623E+09	18.7000	19.5290	21.2423	24.2562	53.1036	68.7357
.15779E+09	18.7000	19.5290	21.2423	24.2562	58.6400	75.1380
.18935E+09	18.7000	19.5290	21.2423	24.2562	63.5090	80.4334
.22090E+09	18.7000	19.5290	21.2423	24.2564	67.8081	84.8667
.25246E+09	18.7000	19.5290	21.2423	24.2568	71.6238	88.5842
.28402E+09	18.7000	19.5290	21.2423	24.2578	74.9643	91.6214
.31558E+09	18.7000	19.5290	21.2423	24.2598	77.9650	93.9500
.63115E+09	18.7000	19.5290	21.2423	24.4978	95.2089	109.102
.94673E+09	18.7000	19.5290	21.2423	25.5554	105.169	121.823
.12623E+10	18.7000	19.5290	21.2425	27.4803	113.360	129.200
.15779E+10	18.7000	19.5290	21.2440	29.9698	119.338	133.517
.18935E+10	18.7000	19.5291	21.2500	32.7529	123.221	136.103
.22090E+10	18.7000	19.5296	21.2663	35.6464	126.015	137.799
.25246E+10	18.7000	19.5310	21.3004	38.5328	127.793	138.630
.28402E+10	18.7000	19.5344	21.3602	41.3424	129.000	139.044
.31558E+10	18.7000	19.5412	21.4528	44.0362	129.934	139.344
.63115E+10	18.7000	20.1042	24.5725	63.8314	134.034	140.087
.94673E+10	18.7000	21.6488	30.0615	74.8738	133.692	138.419
.12623E+11	18.7000	23.4696	35.5534	81.6427	133.506	137.500
.15779E+11	18.7000	25.0970	40.1732	86.2783	133.089	136.577
.18935E+11	18.7000	26.4162	43.8308	89.6170	132.255	135.319
.22090E+11	18.7000	27.4466	46.6609	92.0729	131.302	134.062
.25246E+11	18.7000	28.2396	48.8289	93.9308	130.375	132.900
.28402E+11	18.7000	28.8464	50.4838	95.3629	129.474	131.802
.31558E+11	18.7000	29.3092	51.7467	96.3953	128.632	130.802

```

*****
*       Lower Rock Layer Interface Temperatures       *
*****
dwnmodel = center TSw2 1/2 drift spacing below WP
TSw2TSw3 = center TSw2 and TSw3 interface
TSw3CHnv = center TSw3 and CHn1v interface
CHnvCHnz = center CHn1v and CHn1z interface
CHnzCHn2 = center CHn1z and CHn2 interface
CHn2bot  = center actual lower contact of CHn2

```

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 102288.020 TIME= 09:49:45
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 5 IS AT NODE 612 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 6 IS AT NODE 792 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 7 IS AT NODE 812 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 831 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 888 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	396 TEMP	dwnmodel	26.33	.2000E-05	134.1	.6312E+10
3 NSOL	750 TEMP	TCwPTn	19.53	.1000E-05	29.31	.3156E+11
4 NSOL	693 TEMP	PTnTSw1	21.24	.1000E-05	51.75	.3156E+11
5 NSOL	612 TEMP	TSw2TSw3	27.68	.3156E+07	106.1	.3156E+11
6 NSOL	792 TEMP	TSw3CHnv	28.15	.9467E+07	98.62	.3156E+11
7 NSOL	888 TEMP	CHn2bot	31.86	.2000E-05	59.05	.3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:49:49 JAN 04, 1995 CP= 102290.020
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	750 TEMP TCwPTn	693 TEMP PTnTSw1	612 TEMP TSw2TSw3	792 TEMP TSw3CHnv	888 TEMP CHn2bot
.10000E-05	26.3364	19.5284	21.2405	27.6786	28.1501	31.8637
.20000E-05	26.3325	19.5290	21.2423	27.6752	28.1467	31.8608
31.558	26.3325	19.5290	21.2423	27.6752	28.1467	31.8608
.31558E+07	26.3377	19.5290	21.2423	27.6752	28.1467	31.8608
.63116E+07	26.4358	19.5290	21.2423	27.6752	28.1467	31.8608
.94673E+07	26.7421	19.5290	21.2423	27.6752	28.1467	31.8608
.12623E+08	27.2418	19.5290	21.2423	27.6752	28.1467	31.8608
.15779E+08	27.8704	19.5290	21.2423	27.6752	28.1467	31.8608
.18935E+08	28.5742	19.5290	21.2423	27.6752	28.1467	31.8608
.22090E+08	29.3187	19.5290	21.2423	27.6752	28.1467	31.8608
.25246E+08	30.0838	19.5290	21.2423	27.6752	28.1467	31.8608
.28402E+08	30.8579	19.5290	21.2423	27.6752	28.1467	31.8608
.31558E+08	31.6347	19.5290	21.2423	27.6752	28.1467	31.8608
.63115E+08	39.1862	19.5290	21.2423	27.6752	28.1467	31.8608
.94673E+08	46.1113	19.5290	21.2423	27.6752	28.1467	31.8608
.12623E+09	52.3104	19.5290	21.2423	27.6752	28.1467	31.8608
.15779E+09	57.7862	19.5290	21.2423	27.6755	28.1467	31.8608
.18935E+09	62.6167	19.5290	21.2423	27.6766	28.1467	31.8608
.22090E+09	66.8934	19.5290	21.2423	27.6799	28.1468	31.8608
.25246E+09	70.6935	19.5290	21.2423	27.6870	28.1472	31.8608
.28402E+09	74.0615	19.5290	21.2423	27.7007	28.1479	31.8608
.31558E+09	77.0199	19.5290	21.2423	27.7236	28.1495	31.8608
.63115E+09	94.3459	19.5290	21.2423	28.9173	28.3705	31.8608
.94673E+09	104.291	19.5290	21.2423	31.9705	29.3758	31.8608
.12623E+10	112.526	19.5290	21.2425	35.9820	31.2210	31.8608
.15779E+10	118.550	19.5290	21.2440	40.2584	33.6211	31.8610
.18935E+10	122.529	19.5291	21.2500	44.4717	36.3139	31.8616
.22090E+10	125.444	19.5296	21.2663	48.4663	39.1195	31.8637
.25246E+10	127.320	19.5310	21.3004	52.1770	41.9219	31.8691
.28402E+10	128.650	19.5344	21.3602	55.5866	44.6523	31.8801
.31558E+10	129.653	19.5412	21.4528	58.6984	47.2700	31.8997
.63115E+10	134.096	20.1042	24.5725	78.4681	66.4143	33.0524
.94673E+10	133.826	21.6488	30.0615	87.6543	76.8572	36.0101
.12623E+11	133.651	23.4696	35.5534	92.9117	83.2255	39.7843
.15779E+11	133.247	25.0970	40.1732	96.5791	87.6771	43.6397
.18935E+11	132.439	26.4162	43.8308	99.7181	91.2980	47.2845
.22090E+11	131.544	27.4466	46.6609	102.211	94.2093	50.6531
.25246E+11	130.674	28.2396	48.8289	104.020	96.1285	53.7452
.28402E+11	129.794	28.8464	50.4838	105.230	97.5539	56.5468
.31558E+11	128.955	29.3092	51.7467	106.085	98.6238	59.0523

***** ROUTINE COMPLETED ***** CP = 102290.030

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21b5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 52
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|               REV. 5.0 A               |               HP 9000/7XX               |
| CP TIME      (sec) = 102300.440         | TIME = 09:50:22         |
| ELAPSED TIME (sec) = 154439.000         | DATE  = 01/04/95         |
|-----|
*-----*
```

```

*-----*
| WELCOME TO THE ANSYS PROGRAM |
*-----*

```

```

***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = c21w5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

```

```

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED      = 16777216  64.000 MB  COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592   18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496  25.568 MB
WORK SPACE OBTAINED       = 16777214  64.000 MB
BYTES PER WORD            = 4

```

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RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON     TO START THE ANSYS MENU SYSTEM
ENTER HELP        FOR GENERAL ANSYS HELP INFORMATION

```

```

1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 1/6/1995
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c21w5a.inp
7 /COM, *
8 /COM, * 21 PWR WP/MPC (10 cm overpack)
9 /COM, * Average SNF: 22 years old, 42.2 Gwd/MTU burnup
10 /COM, * 5.0 m Diameter Drift with Concrete Invert
11 /COM, * 25 MTU/acre (6.18 kgU/m^2) AML (Low Thermal Loading)
12 /COM, * Drift spacing = 45.0 m (22.5 m model half width)
13 /COM, * WP c/c spacing = 32.331 m
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat
16 /COM, * SNF Heat Loads file: snf2242.dat
17 /COM, *
18 /COM, *****

```

```

19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,21 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.9008,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.682,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,32.331,
42 *SET,WPNUM,21.0,
43 *SET,MODEL,22.5,
44 *SET,OFFST,0.137,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

```

```

89 TME100=TM1100+TM_START
90 TME1000=TM11000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWLL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWLL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WSPSP/2.0),
248 K,43, 0.0,DFCENT, -1*(WSPSP/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWLL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4*6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM, Model is 6 elements wide
371 /COM, (3+7=10 divisions)
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 6,3.0,
378 /COM, Extrude WP 5 elements
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM, 1 element thick steel
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM, Extrude drift 5 elements with smallest
386 /COM, elements at WP mid-length
387 LESIZE, 58,,, 8,8.4,
388 LESIZE, 59,,, 8,8.4,
389 /COM, *****
390 /COM, Set element sizes in rock layers
391 /COM, 3 element thick TCw
392 LESIZE, 24,,, 3,
393 /COM, 3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM, 9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM, 12 elements above and below near field
398 /COM, with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,, 9,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,, 9,
403 LSEL,ALL,
404 /COM, 3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM, 2 element thick CHn1v
407 LESIZE, 46,,, 2,
408 /COM, 7 element thick CHn1z
409 LESIZE, 49,,, 7,
410 /COM, 12 element thick CHN2 with smaller elements
411 /COM, near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM, Concatenate lines for mapped meshing
417 /COM, (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM, Mesh 2-D areas
426 /COM, (first WP, then invert, DF wall and rock layers)
427 /COM, Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM, Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM, Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatenated lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,          Rock around drift
513 /COM,          (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,58,
527 VMESH,41,
528 /COM,          Mid-drift rock
529 /COM,          (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,58,
535 /COM,          Concatenate to mesh volume 45
536 /COM,          (L's 311,312 used and freed up)
537 /COM,          (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,          Extrude rest of TSw2
546 /COM,          (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,          Extrude TSw1
549 /COM,          (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,          Extrude PTn
553 /COM,          (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,          Extrude TCw
557 /COM,          (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,          Extrude TSw3
561 /COM,          (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,          Extrude CHn1v
565 /COM,          (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,          Extrude CHn1z
569 /COM,          (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,          Extrude CHn2
573 /COM,          (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,          *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TM1100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM, *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TM10,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TM11,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TM110,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TM1100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0)))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0)))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0)))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0)))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAB,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPlot
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 50.0,
984 /VCON,1, 25.000,
985 /TYPE,1,HIDP,
986 /SHADE,,GOUR,
987 /GLINE,,0,
988 /TITLE,
989 VSEL,S,LOC,Z,0,100
990 ESLV,S
991 /SHOW,meshdrift,grph,0,8,
992 EPlot
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1,+90,YS,1
995 /DIST,1, 35.0,
996 VSEL,S,LOC,X,-100,0
997 ESLV,S
998 /SHOW,meshside,grph,0,8,

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999  EPLOT
1000 /COM, *****
1001 /COM,          Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM,          Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT, 1,
1009 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1010 /VIEW,1, -.36934, .15899, -.91559,
1011 /FOC, 1, 2.7776, -.97308, 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088, ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM,          Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM,          Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0, 100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05, 100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1, 100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5, 100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10, 100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50, 100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100, 100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500, 100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k, 100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM,          View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPLOT
1065 /COM, *****
1066 /COM,          Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM,          Set view settings

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1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT , 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC, 1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG, 1, -.52088,ZS,
1079 /VCON,1, 25.000,
1080 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM, Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM, Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM, View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLOT
1131 FINISH
1132 /COM, *****
1133 /COM, Print time/temperature output at specific locations
1134 /POST26,
1135 /COM, *****
1136 /COM, *****
1137 /COM, * Waste Package Surface Temperatures *
1138 /COM, *****

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1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpeside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE( WPRAD,          0.0,          0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE( WPRAD,          0.0,          (WPLEN/2.0))),TEMP,,wwpeside,
1147 NSOL,4,(NODE( 0.0,          WPRAD,          0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE( 0.0,          WPRAD,          (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE( 0.0, (0.0-WPRAD),          0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE( 0.0, (0.0-WPRAD),          (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpeside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWL), 0.0,          0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWL), 0.0, (WPLEN/2.0-WPWL))),TEMP,,swpeside,
1164 NSOL,4,(NODE(0.0, (WPRAD-WPWL), 0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0, (WPRAD-WPWL), (WPLEN/2.0-WPWL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWL), 0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWL), (WPLEN/2.0-WPWL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE( 0.0,          0.0,          0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE( 0.0,          0.0, (WPLEN/2.0-WPWL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE( 0.0,          0.0,          (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE( 0.0, (DFCENT-DFRAD), 0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE( 0.0, (DFCENT-DFRAD), (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE( 0.0, (DFCENT-DFRAD), (WSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfecent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE( 0.0,          YYY,          0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE( 0.0,          YYY,          (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE( 0.0,          YYY,          (WSPC/2.0))),TEMP,,idfecent,
1199 NSOL,5,(NODE( XXX,          YYY,          0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE( XXX,          YYY,          (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE( XXX,          YYY,          (WSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpeside = end of WP drift wall side surface

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1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddfetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmidside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WSPC/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,,dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,,dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WSPC/2.0))),TEMP,,ddfetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *      1 meter Rock Temperatures      *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dfetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WSPC/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,,1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WSPC/2.0))),TEMP,,1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,,1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WSPC/2.0))),TEMP,,1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *      3 meter Rock Temperatures      *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WSPC/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,,3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WSPC/2.0))),TEMP,,3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,,3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WSPC/2.0))),TEMP,,3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *      Upper Rock Layer Interface Temperatures      *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,,surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,,TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,,PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,,TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,,upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,,middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *      Lower Rock Layer Interface Temperatures      *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHnvCHnz = center CHn1v and CHn1z interface

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1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL),          0.0)),TEMP,,dwnmodel,
1282 NSOL,5,(NODE( 0.0,(GSURF-393.5),          0.0)),TEMP,,TSw2TSw3,
1283 NSOL,6,(NODE( 0.0,(GSURF-409.3),          0.0)),TEMP,,TSw3CHnv,
1284 NSOL,7,(NODE( 0.0,(GSURF-414.5),          0.0)),TEMP,,CHnvCHnz,
1285 NSOL,7,(NODE( 0.0,(GSURF-518.5),          0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2),          0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM,          *****
1291 /COM,          End of batch input file
1292 /COM,          *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE= 0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,,1,

```

ABBREVIATION= RAS /show,,,0,
 ABBREVIATION= ON /menu,on,
 ABBREVIATION= OFF /menu,off,
 ABBREVIATION= NVP /config,nvpag,512,
 ABBREVIATION= QUIT /exit,nosav,
 XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

 END start.ans

To start ANSYS menu:

type: x3d for console
 x11 for X-term

type: on

 ANSYS REVISION 5.0A 1/6/1995
 3-D Model of Waste Package Drift Emplacement R.Bahney III

*
 * File name: c21w5a.inp *
 *
 * 21 PWR WP/MPC (10 cm overpack) *
 * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
 * 5.0 m Diameter Drift with Concrete Invert *
 * 25 MTU/acre (6.18 kgU/m²) AML (Low Thermal Loading) *
 * Drift spacing = 45.0 m (22.5 m model half width) *
 * WP c/c spacing = 32.331 m *
 *
 * Material Properties file: Proprep.dat *
 * SNF Heat Loads file: snf2242.dat *
 *

 Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512
 Work space must also be increased (-m 64)

TITLE=
 21 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
 MASS = KILOGRAMS(KG)
 TIME = SECONDS(SEC)
 TEMPERATURE = CENTIGRADE
 CURRENT = AMPS

Define emplacement parameters

WPRAD = radius of waste package (m)
 DFRAD = radius of drift (m)
 INVRT = height of invert backfill floor (m)
 WPLEN = length of waste package (m)
 WPWLL = thickness of outer barrier (m)
 WPSPC = waste package c/c spacing (m)
 WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .9008000
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.682000
 PARAMETER WPWLL = .1000000
 PARAMETER WSPC = 32.33100
 PARAMETER WPNUM = 21.00000
 PARAMETER MODEL = 22.50000
 PARAMETER OFFST = .1370000

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1
 PARAMETER GSURF = 308.6370
 PARAMETER DFCENT = .1370000
 PARAMETER XXX = 1.734935

PARAMETER YYY = -1.663000
 PARAMETER WPVOL = 11.04426
 PARAMETER TM_START = 31.55760
 PARAMETER TM10 = 3155760.
 PARAMETER TM11 = .3155760E+08
 PARAMETER TM110 = .3155760E+09
 PARAMETER TM1100 = .3155760E+10
 PARAMETER TM11000 = .3155760E+11
 PARAMETER TME0 = .2840187E+08
 PARAMETER TME1 = .3155763E+08
 PARAMETER TME9 = .2840184E+09
 PARAMETER TME10 = .3155760E+09
 PARAMETER TME90 = .2840184E+10
 PARAMETER TME100 = .3155760E+10
 PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:20:38 JAN 16, 1995 CP= .840
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
 KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCW	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smearred Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **

** Emissivity EMIS **

** Conductivity: KXX (W/m/K) **

** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***
SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C MAT= 4 NUM. POINTS= 8
SLOC= 5 .1046900E+08 .1019840E+08 2006500. 2111400.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 11
SLOC= 9 2191200. 2269200. 2341000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 4
SLOC= 1 1844300. 2031500. 2283100. 4559000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 8
SLOC= 5 4518800. 4480000. 2295300. 2448900.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 11
SLOC= 9 2574000. 2679200. 2770200.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 4
SLOC= 1 2443600. 2555700. 2696000. .3660130E+08

PROPERTY TABLE C MAT= 6 NUM. POINTS= 8
SLOC= 5 .3532630E+08 .3417640E+08 1501300. 1601800.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 11
SLOC= 9 1683600. 1752500. 1812000.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 4
SLOC= 1 2603200. 2664700. 2744700. .3660690E+08

PROPERTY TABLE C MAT= 7 NUM. POINTS= 8
SLOC= 5 .3534400E+08 .3420530E+08 2791400. 2741900.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 11
SLOC= 9 2670700. 1581400. 1632000.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 4
SLOC= 1 2430900. 2538500. 2680250. .2798690E+08

PROPERTY TABLE C MAT= 8 NUM. POINTS= 8
SLOC= 5 .2705530E+08 .2621460E+08 2564400. 2593500.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 11
SLOC= 9 2598500. 1981950. 2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
SLOC= 1 21.11000 37.78000 65.56000
93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
SLOC= 7 176.6700 204.4400 232.2200
260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
SLOC= 13 343.3300 371.1100 398.8900
426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
SLOC= 19 510.0000 537.7800 565.5600

593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
 477.0000 467.8000

```

PARAMETER ASSY(13,1) =    459.2000    451.1000    443.5000    436.2000
                        429.3000    423.7000
PARAMETER ASSY(19,1) =    412.6000    404.5000    341.6000    294.1000
                        252.6000    222.0000
PARAMETER ASSY(25,1) =    198.5000    179.8000    162.5000    150.1000
                        139.7000    85.70000
PARAMETER ASSY(31,1) =    67.40000    56.80000    49.40000    42.90000
                        38.10000    34.30000
PARAMETER ASSY(37,1) =    31.30000    29.00000    15.50000    12.80000
                        11.10000    10.00000
PARAMETER ASSY(43,1) =    9.200000    8.600000    8.000000    7.600000
                        7.200000
PARAMETER ASSY(1,0) =    .1000000E-05 .1000000 .2000000 .3000000
                        .4000000 .5000000
PARAMETER ASSY(7,0) =    .6000000 .7000000 .8000000 .9000000
                        1.000000 2.000000
PARAMETER ASSY(13,0) =    3.000000    4.000000    5.000000    6.000000
                        7.000000    8.000000
PARAMETER ASSY(19,0) =    9.000000    10.00000    20.00000    30.00000
                        40.00000    50.00000
PARAMETER ASSY(25,0) =    60.00000    70.00000    80.00000    90.00000
                        100.0000 200.0000
PARAMETER ASSY(31,0) =    300.0000    400.0000    500.0000    600.0000
                        700.0000 800.0000
PARAMETER ASSY(37,0) =    900.0000    1000.000    2000.000    3000.000
                        4000.000 5000.000
PARAMETER ASSY(43,0) =    6000.000    7000.000    8000.000    9000.000
                        10000.00
PARAMETER ASSY(0,1) =    1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE=    47 ROWS BY    2 COLUMNS
RESULT MATRIX SIZE=    47 ROWS BY    2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.9014
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
WPHOT(1) = COPY ASSY(1)
SCALE FACTORS RESULT= 1.9014 INPUT= 1.0000
VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) =    1.000000
PARAMETER WPTOP(0,1) =    1.000000
PARAMETER WPSID(0,1) =    1.000000

```


PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-22.5000	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	22.5000	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	-22.5000	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	22.5000	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	-22.5000	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	9	X,Y,Z=	22.5000	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	-22.5000	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	22.5000	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	-22.5000	22.6370	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.000000E+00	22.6370	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	22.5000	22.6370	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	-22.5000	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	22.5000	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	-22.5000	-22.3630	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.000000E+00	-22.3630	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	22.5000	-22.3630	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	-22.5000	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	23	X,Y,Z=	22.5000	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	24	X,Y,Z=	-22.5000	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	26	X,Y,Z=	22.5000	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	27	X,Y,Z=	-22.5000	-105.863	.000000E+00	IN CSYS= 0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.863	.000000E+00	IN CSYS= 0

KEYPOINT 29 X,Y,Z= 22.5000 -105.863 .000000E+00 IN CSYS= 0
 KEYPOINT 30 X,Y,Z= -22.5000 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 31 X,Y,Z= .000000E+00 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 32 X,Y,Z= 22.5000 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 33 X,Y,Z= -22.5000 -991.363 .000000E+00 IN CSYS= 0
 KEYPOINT 34 X,Y,Z= .000000E+00 -991.363 .000000E+00 IN CSYS= 0
 KEYPOINT 35 X,Y,Z= 22.5000 -991.363 .000000E+00 IN CSYS= 0

Define lines connecting rock layers
 (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS 1 2
 LINE NO.= 1 KP1= 1 TAN1= -1.0000 .0000 .0000
 KP2= 2 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 2 3
 LINE NO.= 2 KP1= 2 TAN1= -1.0000 .0000 .0000
 KP2= 3 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 4 5
 LINE NO.= 3 KP1= 4 TAN1= -1.0000 .0000 .0000
 KP2= 5 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 5 6
 LINE NO.= 4 KP1= 5 TAN1= -1.0000 .0000 .0000
 KP2= 6 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 7 8
 LINE NO.= 5 KP1= 7 TAN1= -1.0000 .0000 .0000
 KP2= 8 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 8 9
 LINE NO.= 6 KP1= 8 TAN1= -1.0000 .0000 .0000
 KP2= 9 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 10 11
 LINE NO.= 7 KP1= 10 TAN1= -1.0000 .0000 .0000
 KP2= 11 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 11 12
 LINE NO.= 8 KP1= 11 TAN1= -1.0000 .0000 .0000
 KP2= 12 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 13 14
 LINE NO.= 9 KP1= 13 TAN1= -1.0000 .0000 .0000
 KP2= 14 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 14 15
 LINE NO.= 10 KP1= 14 TAN1= -1.0000 .0000 .0000
 KP2= 15 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 18 19
 LINE NO.= 11 KP1= 18 TAN1= -1.0000 .0000 .0000
 KP2= 19 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 19 20
 LINE NO.= 12 KP1= 19 TAN1= -1.0000 .0000 .0000
 KP2= 20 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 21 22
 LINE NO.= 13 KP1= 21 TAN1= -1.0000 .0000 .0000
 KP2= 22 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.=	31	KP1=	9	TAN1=	.0000	1.0000	.0000
		KP2=	12	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13							
LINE NO.=	32	KP1=	10	TAN1=	.0000	1.0000	.0000
		KP2=	13	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14							
LINE NO.=	33	KP1=	11	TAN1=	.0000	1.0000	.0000
		KP2=	14	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15							
LINE NO.=	34	KP1=	12	TAN1=	.0000	1.0000	.0000
		KP2=	15	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16							
LINE NO.=	35	KP1=	13	TAN1=	.0000	1.0000	.0000
		KP2=	16	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17							
LINE NO.=	36	KP1=	15	TAN1=	.0000	1.0000	.0000
		KP2=	17	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18							
LINE NO.=	37	KP1=	16	TAN1=	.0000	1.0000	.0000
		KP2=	18	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20							
LINE NO.=	38	KP1=	17	TAN1=	.0000	1.0000	.0000
		KP2=	20	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21							
LINE NO.=	39	KP1=	18	TAN1=	.0000	1.0000	.0000
		KP2=	21	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22							
LINE NO.=	40	KP1=	19	TAN1=	.0000	1.0000	.0000
		KP2=	22	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23							
LINE NO.=	41	KP1=	20	TAN1=	.0000	1.0000	.0000
		KP2=	23	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24							
LINE NO.=	42	KP1=	21	TAN1=	.0000	1.0000	.0000
		KP2=	24	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25							
LINE NO.=	43	KP1=	22	TAN1=	.0000	1.0000	.0000
		KP2=	25	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26							
LINE NO.=	44	KP1=	23	TAN1=	.0000	1.0000	.0000
		KP2=	26	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27							
LINE NO.=	45	KP1=	24	TAN1=	.0000	1.0000	.0000
		KP2=	27	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28							
LINE NO.=	46	KP1=	25	TAN1=	.0000	1.0000	.0000
		KP2=	28	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29							
LINE NO.=	47	KP1=	26	TAN1=	.0000	1.0000	.0000
		KP2=	29	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30							
LINE NO.=	48	KP1=	27	TAN1=	.0000	1.0000	.0000
		KP2=	30	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES

LINE LIST = 39 13 40 11
(TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES

LINE LIST = 40 14 41 12
(TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES

LINE LIST = 42 15 43 13
(TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES

LINE LIST = 43 16 44 14
(TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES

LINE LIST = 45 17 46 15
(TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES

LINE LIST = 46 18 47 16
(TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES

LINE LIST = 48 19 49 17
(TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES

LINE LIST = 49 20 50 18
(TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES

LINE LIST = 51 21 52 19
(TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES

LINE LIST = 52 22 53 20
(TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
(K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS=	0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.74100	IN CSYS=	0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.84100	IN CSYS=	0

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.74100 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.84100 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .137000 16.1655 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .137000 -16.1655 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .8008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .9008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.36300 .000000E+00 IN CSYS= 0
 KEYPOINT 53 X,Y,Z= 1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .137000 .000000E+00 IN CSYS= 0

KEYPOINT 55 X,Y,Z= .000000E+00 2.63700 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.66300 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS	36	45			
LINE NO.= 83 KP1=	36	TAN1=	-1.0000	.0000	.0000
KP2=	45	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	36	46			
LINE NO.= 84 KP1=	36	TAN1=	.0000	-1.0000	.0000
KP2=	46	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS	36	47			
LINE NO.= 85 KP1=	36	TAN1=	1.0000	.0000	.0000
KP2=	47	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	44	48			
LINE NO.= 86 KP1=	44	TAN1=	.0000	1.0000	.0000
KP2=	48	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	45	49			
LINE NO.= 87 KP1=	45	TAN1=	-1.0000	.0000	.0000
KP2=	49	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	46	50			
LINE NO.= 88 KP1=	46	TAN1=	.0000	-1.0000	.0000
KP2=	50	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS	47	51			
LINE NO.= 89 KP1=	47	TAN1=	1.0000	.0000	.0000
KP2=	51	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	50	55			
LINE NO.= 90 KP1=	50	TAN1=	.0000	-1.0000	.0000
KP2=	55	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS	48	58			
LINE NO.= 91 KP1=	48	TAN1=	.0000	1.0000	.0000
KP2=	58	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	58	52			
LINE NO.= 92 KP1=	58	TAN1=	.0000	1.0000	.0000
KP2=	52	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	57	58			
LINE NO.= 93 KP1=	57	TAN1=	-1.0000	.0000	.0000
KP2=	58	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	58	53			
LINE NO.= 94 KP1=	58	TAN1=	-1.0000	.0000	.0000
KP2=	53	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	52	59			
LINE NO.= 95 KP1=	52	TAN1=	.0000	1.0000	.0000
KP2=	59	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	54	60			
LINE NO.= 96 KP1=	54	TAN1=	-1.0000	.0000	.0000
KP2=	60	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	55	61			
LINE NO.= 97 KP1=	55	TAN1=	.0000	-1.0000	.0000
KP2=	61	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS	56	62			
LINE NO.= 98 KP1=	56	TAN1=	1.0000	.0000	.0000
KP2=	62	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	59	63			
LINE NO.= 99 KP1=	59	TAN1=	.0000	1.0000	.0000
KP2=	63	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	60	64			
LINE NO.= 100 KP1=	60	TAN1=	-1.0000	.0000	.0000

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      KP2=    64 TAN2=    1.0000    .0000    .0000
LINE CONNECTS KEYPOINTS    61    65
LINE NO.=   101 KP1=    61 TAN1=    .0000   -1.0000    .0000
      KP2=    65 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    62    66
LINE NO.=   102 KP1=    62 TAN1=    1.0000    .0000    .0000
      KP2=    66 TAN2=   -1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    63    19
LINE NO.=   103 KP1=    63 TAN1=    .0000    1.0000    .0000
      KP2=    19 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS    64    17
LINE NO.=   104 KP1=    64 TAN1=   -1.0000    .0000    .0000
      KP2=    17 TAN2=    1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    65    14
LINE NO.=   105 KP1=    65 TAN1=    .0000   -1.0000    .0000
      KP2=    14 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    66    16
LINE NO.=   106 KP1=    66 TAN1=    1.0000    .0000    .0000
      KP2=    16 TAN2=   -1.0000    .0000    .0000

```

Define areas around drift
(A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
(35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
LINE LIST = 82 60 83
(TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
LINE LIST = 83 61 84
(TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
LINE LIST = 85 84 62
(TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
LINE LIST = 63 82 85
(TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
LINE LIST = 86 64 87 60
(TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
LINE LIST = 61 87 65 88
(TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
LINE LIST = 89 62 88 66
(TRAVERSED IN SAME DIRECTION AS LINE 89)

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES

LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES

LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES

LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES

LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES

LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES

LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES

LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES

LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES

LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES

LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES

LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES

LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

```
ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    68 TO    68 STEP    1

    3 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    73 TO    73 STEP    1

    4 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV =    4, SPACING RATIO =    1.000

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    69 TO    69 STEP    1

    1 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    72 TO    72 STEP    1

    2 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV =    6, SPACING RATIO =    1.000

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    70 TO    71 STEP    1

    2 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    74 TO    81 STEP    1

   10 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV =   10, SPACING RATIO =    1.000
    2 element deep invert

ALL SELECT  FOR ITEM=LINE COMPONENT=
IN RANGE    1 TO    106 STEP    1

  106 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE    92 (IF SELECTED AND UNMESHED)
  TO NDIV =    2, SPACING RATIO =    1.000
    2 elements in 1st meter of rock

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    95 TO    98 STEP    1

    4 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV =    2, SPACING RATIO =    1.000
    3 elements in next 2 meters

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    99 TO   102 STEP    1

    4 LINES (OF    106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV =    3, SPACING RATIO =    1.000
    Model is 6 elements wide
    (3+7=10 divisions)

SELECT      FOR ITEM=LINE COMPONENT=
```

IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 3.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 8, SPACING RATIO = 8.400

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 8, SPACING RATIO = 8.400

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 9, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 9, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TSw3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHn1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHn1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES
LINES = 36 10

COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)
Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132
Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS
IN AREAS 27 TO 28 IN STEPS OF 1
** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144
Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS
IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 275
MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 395
MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
IN AREAS 37 TO 40 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 635
MAXIMUM ELEMENT NUMBER = 584

GENERATE NODES AND ELEMENTS
IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 761
MAXIMUM ELEMENT NUMBER = 692

TSW1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 824
MAXIMUM ELEMENT NUMBER = 746

PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 845
MAXIMUM ELEMENT NUMBER = 764

TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 866
MAXIMUM ELEMENT NUMBER = 782

TSW3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 887
MAXIMUM ELEMENT NUMBER = 800

CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 901
MAXIMUM ELEMENT NUMBER = 812
CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 950
MAXIMUM ELEMENT NUMBER = 854
CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 8.110 TIME= 17:20:55
Meshing of area 17 produced 3 poorly shaped elements.

*** NOTE *** CP= 8.110 TIME= 17:20:55
Worst aspect ratio is 21.4173987 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
866 878 890

*** WARNING *** CP= 8.180 TIME= 17:20:55
Meshing of area 18 produced 3 poorly shaped elements.

*** NOTE *** CP= 8.180 TIME= 17:20:55
Worst aspect ratio is 21.4173987 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
902 914 926

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 1034
MAXIMUM ELEMENT NUMBER = 926

Delete concatenated lines
(L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

 Extrude 2-D waste package into 3-D
 (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 54,

DRAG AREAS
 23, 24, 25, 26,
 ALONG LINES
 54,

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 56,

DRAG AREAS
 23, 24, 25, 26,
 ALONG LINES
 56,

(plot area numbers before next drag commands)

DRAG AREAS
 44, 47, 50, 52,
 ALONG LINES
 55,

DRAG AREAS
 57, 61, 65, 68,
 ALONG LINES
 55,

DRAG AREAS
 72, 75, 78, 80,
 ALONG LINES
 57,

DRAG AREAS
 85, 89, 93, 96,
 ALONG LINES
 57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE 54 USED FOR LINE(S) 108
 LINE 55 USED FOR LINE(S) 174
 LINE 56 USED FOR LINE(S) 141
 LINE 57 USED FOR LINE(S) 207
 LINE 109 USED FOR LINE(S) 121
 LINE 110 USED FOR LINE(S) 127
 LINE 111 USED FOR LINE(S) 126
 LINE 113 USED FOR LINE(S) 128
 LINE 114 USED FOR LINE(S) 129
 LINE 117 USED FOR LINE(S) 134
 LINE 118 USED FOR LINE(S) 137
 LINE 119 USED FOR LINE(S) 139
 LINE 142 USED FOR LINE(S) 154
 LINE 143 USED FOR LINE(S) 160
 LINE 144 USED FOR LINE(S) 159
 LINE 146 USED FOR LINE(S) 161
 LINE 147 USED FOR LINE(S) 162
 LINE 150 USED FOR LINE(S) 167
 LINE 151 USED FOR LINE(S) 170
 LINE 152 USED FOR LINE(S) 172
 LINE 175 USED FOR LINE(S) 187
 LINE 176 USED FOR LINE(S) 193
 LINE 177 USED FOR LINE(S) 192
 LINE 179 USED FOR LINE(S) 194
 LINE 180 USED FOR LINE(S) 195
 LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1639
 MAXIMUM ELEMENT NUMBER = 1466

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1759
MAXIMUM ELEMENT NUMBER = 1586

GENERATE NODES AND ELEMENTS
IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 1904
MAXIMUM ELEMENT NUMBER = 1718

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2509
MAXIMUM ELEMENT NUMBER = 2258

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2629
MAXIMUM ELEMENT NUMBER = 2378

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2774
MAXIMUM ELEMENT NUMBER = 2510

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2926
MAXIMUM ELEMENT NUMBER = 2606
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3430

MAXIMUM ELEMENT NUMBER = 2926

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3694
MAXIMUM ELEMENT NUMBER = 3086

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3958
MAXIMUM ELEMENT NUMBER = 3246

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4630
MAXIMUM ELEMENT NUMBER = 3726

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4982
MAXIMUM ELEMENT NUMBER = 3966

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 5334
MAXIMUM ELEMENT NUMBER = 4206
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 30.340 TIME= 17:21:39
Meshing of volume 43 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
4327 4328 4329 4330 4331 4332 4333 4334

4335	4336	4337	4338	4339	4340	4341	4342
4343	4344	4345	4346	4347	4348	4349	4350

*** WARNING *** CP= 31.510 TIME= 17:21:41
Meshing of volume 44 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***

5047	5048	5049	5050	5051	5052	5053	5054
5055	5056	5057	5058	5059	5060	5061	5062
5063	5064	5065	5066	5067	5068	5069	5070

MAXIMUM NODE NUMBER = 6510
MAXIMUM ELEMENT NUMBER = 5166

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 32.870 TIME= 17:21:43
Meshing of volume 46 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***

5223	5224	5225	5226	5227	5228	5229	5230
5303	5304	5305	5306	5307	5308	5309	5310
5383	5384	5385	5386	5387	5388	5389	5390

MAXIMUM NODE NUMBER = 7126
MAXIMUM ELEMENT NUMBER = 5646
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 34.530 TIME= 17:21:47
Meshing of volume 45 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***

5986	5987	5988	5992	5993	5994	5998	5999
6000	6004	6005	6006	6010	6011	6012	6016

6017 6018 6022 6023 6024 6028 6029 6030

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 7742
MAXIMUM ELEMENT NUMBER = 6126

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8862
MAXIMUM ELEMENT NUMBER = 6990
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 9422
MAXIMUM ELEMENT NUMBER = 7422
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 9646
MAXIMUM ELEMENT NUMBER = 7566
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 9870
MAXIMUM ELEMENT NUMBER = 7710
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS

11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 10094
MAXIMUM ELEMENT NUMBER = 7854
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 10262
MAXIMUM ELEMENT NUMBER = 7950
Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 10710
MAXIMUM ELEMENT NUMBER = 8286
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 41.700 TIME= 17:22:00
Meshing of volume 63 produced 57 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

8343	8351	8352	8359	8360	8361	8362	8367
8368	8369	8370	8371	8375	8376	8377	8378
8379	8380	8381	8439	8447	8448	8455	8456
8457	8458	8463	8464	8465	8466	8467	8471
8472	8473	8474	8475	8476	8477	8535	8543
8544	8551	8552	8553	8554	8559	8560	8561
8562	8563	8567	8568	8569	8570	8571	8572
8573							

*** WARNING *** CP= 42.450 TIME= 17:22:01
Meshing of volume 64 produced 57 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

8631	8639	8640	8647	8648	8649	8650	8655
8656	8657	8658	8659	8663	8664	8665	8666
8667	8668	8669	8727	8735	8736	8743	8744
8745	8746	8751	8752	8753	8754	8755	8759
8760	8761	8762	8763	8764	8765	8823	8831
8832	8839	8840	8841	8842	8847	8848	8849
8850	8851	8855	8856	8857	8858	8859	8860
8861							

MAXIMUM NODE NUMBER = 11438
MAXIMUM ELEMENT NUMBER = 8862

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 7187	USED FOR NODES	7800
NODE 7188	USED FOR NODES	7801
NODE 7189	USED FOR NODES	7802
NODE 7190	USED FOR NODES	7803
NODE 10309	USED FOR NODES	10763
NODE 10310	USED FOR NODES	10764
NODE 10311	USED FOR NODES	10765
NODE 10312	USED FOR NODES	10766
NODE 10313	USED FOR NODES	10767
NODE 10314	USED FOR NODES	10768
NODE 6595	USED FOR NODES	8343
NODE 6596	USED FOR NODES	8344
NODE 10315	USED FOR NODES	10769
NODE 9423	USED FOR NODES	9648
NODE 6597	USED FOR NODES	8345
NODE 6598	USED FOR NODES	8346
NODE 8304	USED FOR NODES	9871
NODE 8357	USED FOR NODES	9887
NODE 6599	USED FOR NODES	8347
NODE 6600	USED FOR NODES	8348
NODE 6601	USED FOR NODES	8349
NODE 9872	USED FOR NODES	10095
NODE 10096	USED FOR NODES	10263
NODE 9901	USED FOR NODES	10107
NODE 9902	USED FOR NODES	10108
NODE 9903	USED FOR NODES	10109
NODE 9904	USED FOR NODES	10110
NODE 9905	USED FOR NODES	10111
NODE 9906	USED FOR NODES	10112
NODE 9907	USED FOR NODES	10113
NODE 10121	USED FOR NODES	10295
NODE 10122	USED FOR NODES	10296
NODE 10123	USED FOR NODES	10297
NODE 10124	USED FOR NODES	10298
NODE 10125	USED FOR NODES	10299
NODE 10126	USED FOR NODES	10300
NODE 10127	USED FOR NODES	10301
NODE 6511	USED FOR NODES	7127
NODE 6512	USED FOR NODES	8303
NODE 7783	USED FOR NODES	8917
NODE 8358	USED FOR NODES	9888
NODE 8359	USED FOR NODES	9889
NODE 9439	USED FOR NODES	9677
NODE 9440	USED FOR NODES	9678
NODE 9441	USED FOR NODES	9679
NODE 9442	USED FOR NODES	9680
NODE 9443	USED FOR NODES	9681
NODE 8360	USED FOR NODES	9890
NODE 8361	USED FOR NODES	9891
NODE 8362	USED FOR NODES	9892
NODE 8363	USED FOR NODES	9893
NODE 6588	USED FOR NODES	7128
NODE 6589	USED FOR NODES	7129
NODE 6590	USED FOR NODES	7130
NODE 6591	USED FOR NODES	7131
NODE 6592	USED FOR NODES	7132
NODE 6593	USED FOR NODES	7133
NODE 6594	USED FOR NODES	7134
NODE 9444	USED FOR NODES	9682
NODE 10264	USED FOR NODES	10711
NODE 7784	USED FOR NODES	8918
NODE 9445	USED FOR NODES	9683
NODE 7785	USED FOR NODES	8919
NODE 7786	USED FOR NODES	8920
NODE 7787	USED FOR NODES	8921
NODE 8863	USED FOR NODES	9424

NODE 7788	USED FOR NODES	8922
NODE 7789	USED FOR NODES	8923
NODE 7743	USED FOR NODES	8864
NODE 8903	USED FOR NODES	9453
NODE 8904	USED FOR NODES	9454
NODE 8905	USED FOR NODES	9455
NODE 7184	USED FOR NODES	7797
NODE 8906	USED FOR NODES	9456
NODE 8907	USED FOR NODES	9457
NODE 8908	USED FOR NODES	9458
NODE 8909	USED FOR NODES	9459
NODE 7185	USED FOR NODES	7798
NODE 7186	USED FOR NODES	7799
NODE 7183	USED FOR NODES	7744
NODE 6807	USED FOR NODES	7178
NODE 6810	USED FOR NODES	7181
NODE 6542	USED FOR NODES	7140
NODE 6806	USED FOR NODES	7177
NODE 6811	USED FOR NODES	7182
NODE 6805	USED FOR NODES	7176
NODE 6808	USED FOR NODES	7179
NODE 6809	USED FOR NODES	7180
NODE 8314	USED FOR NODES	9881
NODE 6520	USED FOR NODES	8325
NODE 10272	USED FOR NODES	10739
NODE 7811	USED FOR NODES	8945
NODE 7812	USED FOR NODES	8946
NODE 7813	USED FOR NODES	8947
NODE 7814	USED FOR NODES	8948
NODE 7815	USED FOR NODES	8949
NODE 7816	USED FOR NODES	8950
NODE 7817	USED FOR NODES	8951
NODE 7765	USED FOR NODES	8874
NODE 9473	USED FOR NODES	9711
NODE 8388	USED FOR NODES	9918
NODE 10337	USED FOR NODES	10791
NODE 10338	USED FOR NODES	10792
NODE 10339	USED FOR NODES	10793
NODE 10340	USED FOR NODES	10794
NODE 10341	USED FOR NODES	10795
NODE 10342	USED FOR NODES	10796
NODE 10343	USED FOR NODES	10797
NODE 7249	USED FOR NODES	7825
NODE 7250	USED FOR NODES	7826
NODE 7251	USED FOR NODES	7827
NODE 10099	USED FOR NODES	10281
NODE 9876	USED FOR NODES	10103
NODE 7252	USED FOR NODES	7828
NODE 7253	USED FOR NODES	7829
NODE 7254	USED FOR NODES	7830
NODE 7255	USED FOR NODES	7831
NODE 8931	USED FOR NODES	9481
NODE 8932	USED FOR NODES	9482
NODE 8933	USED FOR NODES	9483
NODE 8934	USED FOR NODES	9484
NODE 8935	USED FOR NODES	9485
NODE 8936	USED FOR NODES	9486
NODE 8937	USED FOR NODES	9487
NODE 9929	USED FOR NODES	10135
NODE 9930	USED FOR NODES	10136
NODE 9931	USED FOR NODES	10137
NODE 9932	USED FOR NODES	10138
NODE 9933	USED FOR NODES	10139
NODE 9934	USED FOR NODES	10140
NODE 9935	USED FOR NODES	10141
NODE 8885	USED FOR NODES	9428
NODE 7247	USED FOR NODES	7754
NODE 10149	USED FOR NODES	10323
NODE 10150	USED FOR NODES	10324
NODE 10151	USED FOR NODES	10325

NODE 10152	USED FOR NODES	10326
NODE 9433	USED FOR NODES	9652
NODE 10153	USED FOR NODES	10327
NODE 10154	USED FOR NODES	10328
NODE 10155	USED FOR NODES	10329
NODE 8389	USED FOR NODES	9919
NODE 8390	USED FOR NODES	9920
NODE 8391	USED FOR NODES	9921
NODE 6623	USED FOR NODES	8371
NODE 6624	USED FOR NODES	8372
NODE 6625	USED FOR NODES	8373
NODE 6626	USED FOR NODES	8374
NODE 6627	USED FOR NODES	8375
NODE 6628	USED FOR NODES	8376
NODE 6629	USED FOR NODES	8377
NODE 9467	USED FOR NODES	9705
NODE 9468	USED FOR NODES	9706
NODE 9469	USED FOR NODES	9707
NODE 9470	USED FOR NODES	9708
NODE 8385	USED FOR NODES	9915
NODE 8386	USED FOR NODES	9916
NODE 8387	USED FOR NODES	9917
NODE 9471	USED FOR NODES	9709
NODE 9472	USED FOR NODES	9710
NODE 6803	USED FOR NODES	7174
NODE 6541	USED FOR NODES	7139
NODE 6798	USED FOR NODES	7169
NODE 6800	USED FOR NODES	7171
NODE 6801	USED FOR NODES	7172
NODE 6802	USED FOR NODES	7173
NODE 6799	USED FOR NODES	7170
NODE 6804	USED FOR NODES	7175
NODE 6794	USED FOR NODES	7165
NODE 6793	USED FOR NODES	7164
NODE 6792	USED FOR NODES	7163
NODE 6540	USED FOR NODES	7138
NODE 6795	USED FOR NODES	7166
NODE 6796	USED FOR NODES	7167
NODE 6797	USED FOR NODES	7168
NODE 6791	USED FOR NODES	7162
NODE 6539	USED FOR NODES	7137
NODE 6784	USED FOR NODES	7155
NODE 6785	USED FOR NODES	7156
NODE 6786	USED FOR NODES	7157
NODE 6787	USED FOR NODES	7158
NODE 6788	USED FOR NODES	7159
NODE 6789	USED FOR NODES	7160
NODE 6790	USED FOR NODES	7161
NODE 8315	USED FOR NODES	9882
NODE 6521	USED FOR NODES	8326
NODE 10273	USED FOR NODES	10740
NODE 7818	USED FOR NODES	8952
NODE 7766	USED FOR NODES	8875
NODE 9936	USED FOR NODES	10142
NODE 10344	USED FOR NODES	10798
NODE 10345	USED FOR NODES	10799
NODE 10346	USED FOR NODES	10800
NODE 10347	USED FOR NODES	10801
NODE 10348	USED FOR NODES	10802
NODE 10349	USED FOR NODES	10803
NODE 10350	USED FOR NODES	10804
NODE 7819	USED FOR NODES	8953
NODE 7820	USED FOR NODES	8954
NODE 7821	USED FOR NODES	8955
NODE 7822	USED FOR NODES	8956
NODE 7823	USED FOR NODES	8957
NODE 7824	USED FOR NODES	8958
NODE 10100	USED FOR NODES	10282
NODE 9877	USED FOR NODES	10104
NODE 7256	USED FOR NODES	7832

NODE 7257	USED FOR NODES	7833	
NODE 7258	USED FOR NODES	7834	
NODE 8938	USED FOR NODES	9488	
NODE 8939	USED FOR NODES	9489	
NODE 8940	USED FOR NODES	9490	
NODE 7259	USED FOR NODES	7835	
NODE 8941	USED FOR NODES	9491	
NODE 8942	USED FOR NODES	9492	
NODE 8943	USED FOR NODES	9493	
NODE 8944	USED FOR NODES	9494	
NODE 7260	USED FOR NODES	7836	
NODE 7261	USED FOR NODES	7837	
NODE 7262	USED FOR NODES	7838	
NODE 8886	USED FOR NODES	9429	
NODE 7248	USED FOR NODES	7755	
NODE 9937	USED FOR NODES	10143	
NODE 9938	USED FOR NODES	10144	
NODE 9939	USED FOR NODES	10145	
NODE 9940	USED FOR NODES	10146	
NODE 9941	USED FOR NODES	10147	
NODE 9942	USED FOR NODES	10148	
NODE 9434	USED FOR NODES	9653	
NODE 10156	USED FOR NODES	10330	
NODE 10157	USED FOR NODES	10331	
NODE 10158	USED FOR NODES	10332	
NODE 9474	USED FOR NODES	9712	
NODE 9475	USED FOR NODES	9713	
NODE 9476	USED FOR NODES	9714	
NODE 9477	USED FOR NODES	9715	
NODE 9478	USED FOR NODES	9716	
NODE 9479	USED FOR NODES	9717	
NODE 9480	USED FOR NODES	9718	
NODE 10159	USED FOR NODES	10333	
NODE 10160	USED FOR NODES	10334	
NODE 10161	USED FOR NODES	10335	
NODE 10162	USED FOR NODES	10336	
NODE 8392	USED FOR NODES	9922	
NODE 8393	USED FOR NODES	9923	
NODE 8394	USED FOR NODES	9924	
NODE 8395	USED FOR NODES	9925	
NODE 6630	USED FOR NODES	8378	
NODE 6631	USED FOR NODES	8379	
NODE 6632	USED FOR NODES	8380	
NODE 6633	USED FOR NODES	8381	
NODE 6634	USED FOR NODES	8382	
NODE 6635	USED FOR NODES	8383	
NODE 6636	USED FOR NODES	8384	
NODE 8396	USED FOR NODES	9926	
NODE 8397	USED FOR NODES	9927	
NODE 8398	USED FOR NODES	9928	
NODE 6783	USED FOR NODES	7154	
NODE 6777	USED FOR NODES	7148	
NODE 6538	USED FOR NODES	7136	
NODE 6779	USED FOR NODES	7150	
NODE 6781	USED FOR NODES	7152	
NODE 6782	USED FOR NODES	7153	
NODE 6780	USED FOR NODES	7151	
NODE 6778	USED FOR NODES	7149	
NODE 4699	USED FOR NODES	4987	6619 7144
NODE 4702	USED FOR NODES	4990	6622 7147
NODE 4696	USED FOR NODES	4984	6616 7141
NODE 4631	USED FOR NODES	4983	6528 7135
NODE 4698	USED FOR NODES	4986	6618 7143
NODE 4697	USED FOR NODES	4985	6617 7142
NODE 4700	USED FOR NODES	4988	6620 7145
NODE 4701	USED FOR NODES	4989	6621 7146
NODE 5032	USED FOR NODES	7376	
NODE 5033	USED FOR NODES	7377	
NODE 5034	USED FOR NODES	7378	
NODE 5035	USED FOR NODES	7379	

NODE	5036	USED FOR NODES	7380
NODE	5037	USED FOR NODES	7381
NODE	5038	USED FOR NODES	7382
NODE	5023	USED FOR NODES	7319
NODE	4770	USED FOR NODES	6683
NODE	4771	USED FOR NODES	6684
NODE	4766	USED FOR NODES	6679
NODE	4767	USED FOR NODES	6680
NODE	4768	USED FOR NODES	6681
NODE	4769	USED FOR NODES	6682
NODE	4633	USED FOR NODES	6529
NODE	4772	USED FOR NODES	6685
NODE	5039	USED FOR NODES	7369
NODE	5040	USED FOR NODES	7370
NODE	5041	USED FOR NODES	7371
NODE	5042	USED FOR NODES	7372
NODE	5043	USED FOR NODES	7373
NODE	5044	USED FOR NODES	7374
NODE	5045	USED FOR NODES	7375
NODE	4634	USED FOR NODES	6530
NODE	5024	USED FOR NODES	7318
NODE	4773	USED FOR NODES	6686
NODE	4774	USED FOR NODES	6687
NODE	4775	USED FOR NODES	6688
NODE	4776	USED FOR NODES	6689
NODE	4777	USED FOR NODES	6690
NODE	4778	USED FOR NODES	6691
NODE	4779	USED FOR NODES	6692
NODE	5046	USED FOR NODES	7362
NODE	5047	USED FOR NODES	7363
NODE	5048	USED FOR NODES	7364
NODE	5049	USED FOR NODES	7365
NODE	5050	USED FOR NODES	7366
NODE	5051	USED FOR NODES	7367
NODE	5052	USED FOR NODES	7368
NODE	5025	USED FOR NODES	7317
NODE	4635	USED FOR NODES	6531
NODE	4780	USED FOR NODES	6693
NODE	4781	USED FOR NODES	6694
NODE	4782	USED FOR NODES	6695
NODE	4783	USED FOR NODES	6696
NODE	4785	USED FOR NODES	6698
NODE	4786	USED FOR NODES	6699
NODE	4784	USED FOR NODES	6697
NODE	4856	USED FOR NODES	5014
NODE	4855	USED FOR NODES	5013
NODE	4854	USED FOR NODES	5012
NODE	4656	USED FOR NODES	4993
NODE	4852	USED FOR NODES	5010
NODE	4850	USED FOR NODES	5008
NODE	4851	USED FOR NODES	5009
NODE	4853	USED FOR NODES	5011
NODE	5053	USED FOR NODES	7355
NODE	5054	USED FOR NODES	7356
NODE	5055	USED FOR NODES	7357
NODE	5056	USED FOR NODES	7358
NODE	5057	USED FOR NODES	7359
NODE	5058	USED FOR NODES	7360
NODE	5059	USED FOR NODES	7361
NODE	5026	USED FOR NODES	7316
NODE	4790	USED FOR NODES	6703
NODE	4636	USED FOR NODES	6532
NODE	4787	USED FOR NODES	6700
NODE	4788	USED FOR NODES	6701
NODE	4789	USED FOR NODES	6702
NODE	4793	USED FOR NODES	6706
NODE	4791	USED FOR NODES	6704
NODE	4792	USED FOR NODES	6705
NODE	4849	USED FOR NODES	5007
NODE	4655	USED FOR NODES	4992

NODE 4843	USED FOR NODES	5001		
NODE 4844	USED FOR NODES	5002		
NODE 4845	USED FOR NODES	5003		
NODE 4847	USED FOR NODES	5005		
NODE 4846	USED FOR NODES	5004		
NODE 4848	USED FOR NODES	5006		
NODE 5060	USED FOR NODES	7348		
NODE 5061	USED FOR NODES	7349		
NODE 5062	USED FOR NODES	7350		
NODE 5063	USED FOR NODES	7351		
NODE 5064	USED FOR NODES	7352		
NODE 5065	USED FOR NODES	7353		
NODE 5066	USED FOR NODES	7354		
NODE 5027	USED FOR NODES	7315		
NODE 4797	USED FOR NODES	6710		
NODE 4637	USED FOR NODES	6533		
NODE 4794	USED FOR NODES	6707		
NODE 4795	USED FOR NODES	6708		
NODE 4796	USED FOR NODES	6709		
NODE 4800	USED FOR NODES	6713		
NODE 4798	USED FOR NODES	6711		
NODE 4799	USED FOR NODES	6712		
NODE 3493	USED FOR NODES	3697	4683	4995
NODE 3494	USED FOR NODES	3698	4684	4996
NODE 3496	USED FOR NODES	3700	4686	4998
NODE 3495	USED FOR NODES	3699	4685	4997
NODE 3497	USED FOR NODES	3701	4687	4999
NODE 3431	USED FOR NODES	3695	4645	4991
NODE 3498	USED FOR NODES	3702	4688	5000
NODE 3492	USED FOR NODES	3696	4682	4994
NODE 3736	USED FOR NODES	5184		
NODE 3737	USED FOR NODES	5185		
NODE 3738	USED FOR NODES	5186		
NODE 3739	USED FOR NODES	5187		
NODE 3740	USED FOR NODES	5188		
NODE 3741	USED FOR NODES	5189		
NODE 3742	USED FOR NODES	5190		
NODE 3727	USED FOR NODES	5127		
NODE 3558	USED FOR NODES	4706		
NODE 3433	USED FOR NODES	4646		
NODE 3559	USED FOR NODES	4707		
NODE 3557	USED FOR NODES	4705		
NODE 3561	USED FOR NODES	4709		
NODE 3555	USED FOR NODES	4703		
NODE 3560	USED FOR NODES	4708		
NODE 3556	USED FOR NODES	4704		
NODE 3743	USED FOR NODES	5177		
NODE 3744	USED FOR NODES	5178		
NODE 3745	USED FOR NODES	5179		
NODE 3746	USED FOR NODES	5180		
NODE 3747	USED FOR NODES	5181		
NODE 3748	USED FOR NODES	5182		
NODE 3749	USED FOR NODES	5183		
NODE 3728	USED FOR NODES	5126		
NODE 3434	USED FOR NODES	4647		
NODE 3568	USED FOR NODES	4716		
NODE 3567	USED FOR NODES	4715		
NODE 3562	USED FOR NODES	4710		
NODE 3563	USED FOR NODES	4711		
NODE 3564	USED FOR NODES	4712		
NODE 3565	USED FOR NODES	4713		
NODE 3566	USED FOR NODES	4714		
NODE 5067	USED FOR NODES	7341		
NODE 5068	USED FOR NODES	7342		
NODE 5069	USED FOR NODES	7343		
NODE 5070	USED FOR NODES	7344		
NODE 5071	USED FOR NODES	7345		
NODE 5072	USED FOR NODES	7346		
NODE 5073	USED FOR NODES	7347		
NODE 5028	USED FOR NODES	7314		

NODE	4805	USED FOR NODES	6718
NODE	4803	USED FOR NODES	6716
NODE	4638	USED FOR NODES	6534
NODE	4801	USED FOR NODES	6714
NODE	4802	USED FOR NODES	6715
NODE	4804	USED FOR NODES	6717
NODE	4806	USED FOR NODES	6719
NODE	4807	USED FOR NODES	6720
NODE	3750	USED FOR NODES	5170
NODE	3751	USED FOR NODES	5171
NODE	3752	USED FOR NODES	5172
NODE	3753	USED FOR NODES	5173
NODE	3754	USED FOR NODES	5174
NODE	3755	USED FOR NODES	5175
NODE	3756	USED FOR NODES	5176
NODE	3729	USED FOR NODES	5125
NODE	3435	USED FOR NODES	4648
NODE	3573	USED FOR NODES	4721
NODE	3574	USED FOR NODES	4722
NODE	3575	USED FOR NODES	4723
NODE	3571	USED FOR NODES	4719
NODE	3569	USED FOR NODES	4717
NODE	3570	USED FOR NODES	4718
NODE	3572	USED FOR NODES	4720
NODE	3631	USED FOR NODES	3718
NODE	3454	USED FOR NODES	3704
NODE	3626	USED FOR NODES	3713
NODE	3628	USED FOR NODES	3715
NODE	3629	USED FOR NODES	3716
NODE	3627	USED FOR NODES	3714
NODE	3625	USED FOR NODES	3712
NODE	3630	USED FOR NODES	3717
NODE	3757	USED FOR NODES	5163
NODE	3758	USED FOR NODES	5164
NODE	3759	USED FOR NODES	5165
NODE	3760	USED FOR NODES	5166
NODE	3761	USED FOR NODES	5167
NODE	3762	USED FOR NODES	5168
NODE	3763	USED FOR NODES	5169
NODE	3730	USED FOR NODES	5124
NODE	3577	USED FOR NODES	4725
NODE	3576	USED FOR NODES	4724
NODE	3580	USED FOR NODES	4728
NODE	3581	USED FOR NODES	4729
NODE	3578	USED FOR NODES	4726
NODE	3436	USED FOR NODES	4649
NODE	3579	USED FOR NODES	4727
NODE	3582	USED FOR NODES	4730
NODE	3477	USED FOR NODES	3711
NODE	3471	USED FOR NODES	3705
NODE	3472	USED FOR NODES	3706
NODE	3473	USED FOR NODES	3707
NODE	3474	USED FOR NODES	3708
NODE	3448	USED FOR NODES	3703
NODE	3475	USED FOR NODES	3709
NODE	3476	USED FOR NODES	3710
NODE	5074	USED FOR NODES	7334
NODE	5075	USED FOR NODES	7335
NODE	5076	USED FOR NODES	7336
NODE	5077	USED FOR NODES	7337
NODE	5078	USED FOR NODES	7338
NODE	5079	USED FOR NODES	7339
NODE	5080	USED FOR NODES	7340
NODE	5029	USED FOR NODES	7313
NODE	4814	USED FOR NODES	6727
NODE	4812	USED FOR NODES	6725
NODE	4808	USED FOR NODES	6721
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NODE	3080	USED	FOR	NODES	4060
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NODE 6047	USED FOR NODES	8126
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NODE 10233	USED FOR NODES	10562
NODE 10234	USED FOR NODES	10563
NODE 6048	USED FOR NODES	8127
NODE 10520	USED FOR NODES	11142
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NODE 10577	USED FOR NODES	11186
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NODE 10001	USED FOR NODES	10197
NODE 8625	USED FOR NODES	10006
NODE 8076	USED FOR NODES	9185
NODE 5344	USED FOR NODES	8636
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NODE 8693	USED FOR NODES	10037
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NODE 9590	USED FOR NODES	9828
NODE 10584	USED FOR NODES	11193
NODE 10046	USED FOR NODES	10221
NODE 10047	USED FOR NODES	10222
NODE 10048	USED FOR NODES	10223
NODE 10049	USED FOR NODES	10224
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NODE 10051	USED FOR NODES	10226
NODE 10052	USED FOR NODES	10227
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NODE 5455	USED FOR NODES	8675
NODE 5456	USED FOR NODES	8676
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NODE 5459	USED FOR NODES	8679
NODE 5460	USED FOR NODES	8680
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NODE 9237	USED FOR NODES	9601
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NODE 9196	USED FOR NODES	9553
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NODE 10193	USED FOR NODES	10530
NODE 8116	USED FOR NODES	9250
NODE 8117	USED FOR NODES	9251

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NODE	8120	USED	FOR	NODES	9254
NODE	9238	USED	FOR	NODES	9602
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NODE	10019	USED	FOR	NODES	10201
NODE	10020	USED	FOR	NODES	10202
NODE	10021	USED	FOR	NODES	10203
NODE	10022	USED	FOR	NODES	10204
NODE	10023	USED	FOR	NODES	10205
NODE	10024	USED	FOR	NODES	10206
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NODE	9219	USED	FOR	NODES	9576
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NODE	5427	USED	FOR	NODES	8654
NODE	5428	USED	FOR	NODES	8655
NODE	5431	USED	FOR	NODES	8658
NODE	5432	USED	FOR	NODES	8659
NODE	8093	USED	FOR	NODES	9220
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NODE	8096	USED	FOR	NODES	9223
NODE	8097	USED	FOR	NODES	9224
NODE	8098	USED	FOR	NODES	9225
NODE	8099	USED	FOR	NODES	9226
NODE	6028	USED	FOR	NODES	8100
NODE	6029	USED	FOR	NODES	8101

NODE 6030 USED FOR NODES 8102
 NODE 6031 USED FOR NODES 8103
 NODE 6032 USED FOR NODES 8104
 NODE 6033 USED FOR NODES 8105
 NODE 6034 USED FOR NODES 8106
 NODE 9186 USED FOR NODES 9551
 NODE 9563 USED FOR NODES 9794
 NODE 9564 USED FOR NODES 9795
 NODE 9565 USED FOR NODES 9796
 NODE 9566 USED FOR NODES 9797
 NODE 9567 USED FOR NODES 9798
 NODE 9568 USED FOR NODES 9799
 NODE 9569 USED FOR NODES 9800
 NODE 10191 USED FOR NODES 10522
 NODE 9213 USED FOR NODES 9570
 NODE 9214 USED FOR NODES 9571
 NODE 10207 USED FOR NODES 10543
 NODE 10208 USED FOR NODES 10544
 NODE 10209 USED FOR NODES 10545
 NODE 10210 USED FOR NODES 10546
 NODE 10211 USED FOR NODES 10547
 NODE 10212 USED FOR NODES 10548
 NODE 10213 USED FOR NODES 10549
 NODE 9215 USED FOR NODES 9572
 NODE 9216 USED FOR NODES 9573
 NODE 9217 USED FOR NODES 9574
 NODE 9218 USED FOR NODES 9575
 NODE 10519 USED FOR NODES 11130
 NODE 10550 USED FOR NODES 11166
 NODE 10551 USED FOR NODES 11167
 NODE 10552 USED FOR NODES 11168
 NODE 10553 USED FOR NODES 11169
 NODE 10554 USED FOR NODES 11170
 NODE 10555 USED FOR NODES 11171
 NODE 10556 USED FOR NODES 11172
 NODE 9554 USED FOR NODES 9775

*** WARNING ***

CP= 79.510 TIME= 17:22:59

Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	67 USED FOR KEYPOINT(S)	115		
KEYPOINT	72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT	76 USED FOR KEYPOINT(S)	89		
KEYPOINT	80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85 USED FOR KEYPOINT(S)	122		
KEYPOINT	91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93 USED FOR KEYPOINT(S)	104		
KEYPOINT	98 USED FOR KEYPOINT(S)	117		
KEYPOINT	101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121 USED FOR KEYPOINT(S)	137		
KEYPOINT	123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT	134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT	135 USED FOR KEYPOINT(S)	162		
KEYPOINT	138 USED FOR KEYPOINT(S)	155		
KEYPOINT	139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT	142 USED FOR KEYPOINT(S)	146		
KEYPOINT	143 USED FOR KEYPOINT(S)	152		
KEYPOINT	147 USED FOR KEYPOINT(S)	157		
KEYPOINT	151 USED FOR KEYPOINT(S)	164		
KEYPOINT	154 USED FOR KEYPOINT(S)	165		
KEYPOINT	156 USED FOR KEYPOINT(S)	167		
KEYPOINT	158 USED FOR KEYPOINT(S)	181		
KEYPOINT	159 USED FOR KEYPOINT(S)	184		
KEYPOINT	161 USED FOR KEYPOINT(S)	186		
KEYPOINT	163 USED FOR KEYPOINT(S)	170		

KEYPOINT	166	USED FOR KEYPOINT(S)	171
KEYPOINT	168	USED FOR KEYPOINT(S)	173
KEYPOINT	169	USED FOR KEYPOINT(S)	176
KEYPOINT	172	USED FOR KEYPOINT(S)	177
KEYPOINT	174	USED FOR KEYPOINT(S)	179
KEYPOINT	182	USED FOR KEYPOINT(S)	187
KEYPOINT	183	USED FOR KEYPOINT(S)	190
KEYPOINT	185	USED FOR KEYPOINT(S)	192
KEYPOINT	188	USED FOR KEYPOINT(S)	193
KEYPOINT	189	USED FOR KEYPOINT(S)	196
KEYPOINT	191	USED FOR KEYPOINT(S)	198
KEYPOINT	194	USED FOR KEYPOINT(S)	199
KEYPOINT	195	USED FOR KEYPOINT(S)	202
KEYPOINT	197	USED FOR KEYPOINT(S)	204
LINE	108	USED FOR LINE(S)	240
LINE	121	USED FOR LINE(S)	241
LINE	126	USED FOR LINE(S)	154 239
LINE	134	USED FOR LINE(S)	174
LINE	137	USED FOR LINE(S)	172
LINE	141	USED FOR LINE(S)	238
LINE	159	USED FOR LINE(S)	236 246 270
LINE	160	USED FOR LINE(S)	252
LINE	161	USED FOR LINE(S)	251
LINE	187	USED FOR LINE(S)	257
LINE	192	USED FOR LINE(S)	220 256 264
LINE	193	USED FOR LINE(S)	225
LINE	194	USED FOR LINE(S)	226
LINE	200	USED FOR LINE(S)	244
LINE	203	USED FOR LINE(S)	243
LINE	205	USED FOR LINE(S)	233 259 272
LINE	207	USED FOR LINE(S)	265
LINE	228	USED FOR LINE(S)	271
LINE	245	USED FOR LINE(S)	269
LINE	247	USED FOR LINE(S)	268 275 307
LINE	248	USED FOR LINE(S)	283
LINE	249	USED FOR LINE(S)	282
LINE	253	USED FOR LINE(S)	290
LINE	254	USED FOR LINE(S)	262 289 299
LINE	255	USED FOR LINE(S)	263
LINE	258	USED FOR LINE(S)	273
LINE	260	USED FOR LINE(S)	267 292 309
LINE	261	USED FOR LINE(S)	300
LINE	266	USED FOR LINE(S)	308
LINE	274	USED FOR LINE(S)	306
LINE	276	USED FOR LINE(S)	305 330
LINE	277	USED FOR LINE(S)	336
LINE	278	USED FOR LINE(S)	335
LINE	285	USED FOR LINE(S)	320
LINE	286	USED FOR LINE(S)	319
LINE	287	USED FOR LINE(S)	297 315
LINE	288	USED FOR LINE(S)	298
LINE	291	USED FOR LINE(S)	310
LINE	293	USED FOR LINE(S)	302
LINE	295	USED FOR LINE(S)	313
LINE	296	USED FOR LINE(S)	314
LINE	303	USED FOR LINE(S)	325
LINE	304	USED FOR LINE(S)	331
LINE	312	USED FOR LINE(S)	339
LINE	317	USED FOR LINE(S)	341
LINE	318	USED FOR LINE(S)	340
LINE	322	USED FOR LINE(S)	346
LINE	323	USED FOR LINE(S)	345
LINE	326	USED FOR LINE(S)	377
LINE	327	USED FOR LINE(S)	383
LINE	328	USED FOR LINE(S)	382
LINE	332	USED FOR LINE(S)	388
LINE	333	USED FOR LINE(S)	387
LINE	338	USED FOR LINE(S)	352
LINE	343	USED FOR LINE(S)	354
LINE	344	USED FOR LINE(S)	353

LINE 348 USED FOR LINE(S) 359
 LINE 349 USED FOR LINE(S) 358
 LINE 351 USED FOR LINE(S) 365
 LINE 356 USED FOR LINE(S) 367
 LINE 357 USED FOR LINE(S) 366
 LINE 361 USED FOR LINE(S) 372
 LINE 362 USED FOR LINE(S) 371
 LINE 378 USED FOR LINE(S) 390
 LINE 379 USED FOR LINE(S) 396
 LINE 380 USED FOR LINE(S) 395
 LINE 384 USED FOR LINE(S) 401
 LINE 385 USED FOR LINE(S) 400
 LINE 391 USED FOR LINE(S) 403
 LINE 392 USED FOR LINE(S) 409
 LINE 393 USED FOR LINE(S) 408
 LINE 397 USED FOR LINE(S) 414
 LINE 398 USED FOR LINE(S) 413
 LINE 404 USED FOR LINE(S) 416
 LINE 405 USED FOR LINE(S) 422
 LINE 406 USED FOR LINE(S) 421
 LINE 410 USED FOR LINE(S) 427
 LINE 411 USED FOR LINE(S) 426
 AREA 56 USED FOR AREA(S) 161
 AREA 84 USED FOR AREA(S) 123
 AREA 95 USED FOR AREA(S) 160
 AREA 112 USED FOR AREA(S) 168
 AREA 142 USED FOR AREA(S) 172
 AREA 148 USED FOR AREA(S) 156
 AREA 154 USED FOR AREA(S) 163
 AREA 155 USED FOR AREA(S) 177
 AREA 159 USED FOR AREA(S) 181
 AREA 165 USED FOR AREA(S) 180
 AREA 166 USED FOR AREA(S) 188
 AREA 170 USED FOR AREA(S) 193
 AREA 171 USED FOR AREA(S) 176
 AREA 174 USED FOR AREA(S) 182
 AREA 175 USED FOR AREA(S) 199
 AREA 179 USED FOR AREA(S) 204
 AREA 184 USED FOR AREA(S) 203
 AREA 185 USED FOR AREA(S) 223
 AREA 191 USED FOR AREA(S) 212
 AREA 192 USED FOR AREA(S) 198
 AREA 195 USED FOR AREA(S) 205
 AREA 197 USED FOR AREA(S) 208
 AREA 202 USED FOR AREA(S) 219
 AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11590
MAXIMUM ELEMENT NUMBER = 8958
Rock around drift
(V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12094
MAXIMUM ELEMENT NUMBER = 9278

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12358
MAXIMUM ELEMENT NUMBER = 9438

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 12622
MAXIMUM ELEMENT NUMBER = 9598

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13294
MAXIMUM ELEMENT NUMBER = 10078

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13646

MAXIMUM ELEMENT NUMBER = 10318

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 13998
MAXIMUM ELEMENT NUMBER = 10558
Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 91.570 TIME= 17:23:21
Meshing of volume 75 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
10679 10680 10681 10682 10683 10684 10685 10686
10687 10688 10689 10690 10691 10692 10693 10694
10695 10696 10697 10698 10699 10700 10701 10702

*** WARNING *** CP= 92.790 TIME= 17:23:23
Meshing of volume 76 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
11399 11400 11401 11402 11403 11404 11405 11406
11407 11408 11409 11410 11411 11412 11413 11414
11415 11416 11417 11418 11419 11420 11421 11422

MAXIMUM NODE NUMBER = 15174
MAXIMUM ELEMENT NUMBER = 11518

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
59,

*** WARNING *** CP= 94.200 TIME= 17:23:26
Meshing of volume 78 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
11575 11576 11577 11578 11579 11580 11581 11582
11655 11656 11657 11658 11659 11660 11661 11662
11735 11736 11737 11738 11739 11740 11741 11742

MAXIMUM NODE NUMBER = 15790
MAXIMUM ELEMENT NUMBER = 11998
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321

```

LINE LIST =      9  429  428  426  422  35

CONCATENATE LINES
  LINES =      9  35

COMPOSITE LINE NO.=  443  KP1=   14  KP2=   16

CONCATENATE LINES
  LINES =  428  426

COMPOSITE LINE NO.=  444  KP1=  184  KP2=  179

GENERATE NODES AND ELEMENTS
  IN VOLUMES      77 TO      77  IN STEPS OF      1

*** WARNING ***                      CP=   95.840  TIME= 17:23:29
Meshing of volume 77 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME      77 WITH EXCESSIVE DISTORTION ***
  12359  12360  12361  12362  12363  12364  12365  12366
  12367  12368  12369  12370  12371  12372  12373  12374
  12375  12376  12377  12378  12379  12380  12381  12382

NUMBER OF VOLUMES MESHED   =      1
MAXIMUM NODE NUMBER       =  16406
MAXIMUM ELEMENT NUMBER    =  12478

DELETE SELECTED LINES FROM  443 TO  443 BY  1

  DELETED      1 LINES

DELETE SELECTED LINES FROM  444 TO  444 BY  1

  DELETED      1 LINES

DELETE SELECTED AREAS FROM  321 TO  321 BY  1

  DELETED      1 AREAS
    Extrude rest of TSw2
    (V's 79,80,81,82)

DRAG AREAS
  7,      8,      9,      10,
  ALONG LINES
  59,

MAXIMUM NODE NUMBER       =  17526
MAXIMUM ELEMENT NUMBER    =  13342
    Extrude TSw1
    (V's 83,84)

MATERIAL NUMBER SET TO    3

DRAG AREAS
  5,      6,
  ALONG LINES
  59,

MAXIMUM NODE NUMBER       =  18086
MAXIMUM ELEMENT NUMBER    =  13774
    Extrude PTn
    (V's 85,86)

MATERIAL NUMBER SET TO    2

DRAG AREAS
  3,      4,
  ALONG LINES
  59,

```

MAXIMUM NODE NUMBER = 18310
 MAXIMUM ELEMENT NUMBER = 13918
 Extrude TCw
 (V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
 1, 2,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 18534
 MAXIMUM ELEMENT NUMBER = 14062
 Extrude TSu3
 (V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
 11, 12,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 18758
 MAXIMUM ELEMENT NUMBER = 14206
 Extrude CHn1v
 (V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
 13, 14,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 18926
 MAXIMUM ELEMENT NUMBER = 14302
 Extrude CHn1z
 (V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
 15, 16,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 19374
 MAXIMUM ELEMENT NUMBER = 14638
 Extrude CHn2
 (V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
 17, 18,
 ALONG LINES
 59,

*** WARNING *** CP= 103.220 TIME= 17:23:42
 Meshing of volume 95 produced 57 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

14695	14703	14704	14711	14712	14713	14714	14719
14720	14721	14722	14723	14727	14728	14729	14730
14731	14732	14733	14791	14799	14800	14807	14808
14809	14810	14815	14816	14817	14818	14819	14823

14824	14825	14826	14827	14828	14829	14887	14895
14896	14903	14904	14905	14906	14911	14912	14913
14914	14915	14919	14920	14921	14922	14923	14924
14925							

*** WARNING *** CP= 103.940 TIME= 17:23:43
 Meshing of volume 96 produced 57 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

14983	14991	14992	14999	15000	15001	15002	15007
15008	15009	15010	15011	15015	15016	15017	15018
15019	15020	15021	15079	15087	15088	15095	15096
15097	15098	15103	15104	15105	15106	15107	15111
15112	15113	15114	15115	15116	15117	15175	15183
15184	15191	15192	15193	15194	15199	15200	15201
15202	15203	15207	15208	15209	15210	15211	15212
15213							

MAXIMUM NODE NUMBER = 20102
 MAXIMUM ELEMENT NUMBER = 15214

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 17022	USED FOR NODES	18552
NODE 17527	USED FOR NODES	18088
NODE 16407	USED FOR NODES	17528
NODE 18760	USED FOR NODES	18927
NODE 18928	USED FOR NODES	19375
NODE 18785	USED FOR NODES	18959
NODE 18786	USED FOR NODES	18960
NODE 18787	USED FOR NODES	18961
NODE 18788	USED FOR NODES	18962
NODE 18789	USED FOR NODES	18963
NODE 18790	USED FOR NODES	18964
NODE 18791	USED FOR NODES	18965
NODE 17567	USED FOR NODES	18117
NODE 17568	USED FOR NODES	18118
NODE 18973	USED FOR NODES	19427
NODE 18974	USED FOR NODES	19428
NODE 18975	USED FOR NODES	19429
NODE 18976	USED FOR NODES	19430
NODE 18977	USED FOR NODES	19431
NODE 17569	USED FOR NODES	18119
NODE 18978	USED FOR NODES	19432
NODE 18979	USED FOR NODES	19433
NODE 17570	USED FOR NODES	18120
NODE 17571	USED FOR NODES	18121
NODE 17572	USED FOR NODES	18122
NODE 17573	USED FOR NODES	18123
NODE 16447	USED FOR NODES	17581
NODE 16448	USED FOR NODES	17582
NODE 16449	USED FOR NODES	17583
NODE 16450	USED FOR NODES	17584
NODE 16451	USED FOR NODES	17585
NODE 16452	USED FOR NODES	17586
NODE 16453	USED FOR NODES	17587
NODE 17023	USED FOR NODES	18553
NODE 17024	USED FOR NODES	18554
NODE 17025	USED FOR NODES	18555
NODE 17026	USED FOR NODES	18556
NODE 17027	USED FOR NODES	18557
NODE 15175	USED FOR NODES	15791
NODE 15252	USED FOR NODES	15792
NODE 15253	USED FOR NODES	15793
NODE 15254	USED FOR NODES	15794
NODE 15255	USED FOR NODES	15795
NODE 15256	USED FOR NODES	15796
NODE 15257	USED FOR NODES	15797

NODE 15258	USED FOR NODES	15798
NODE 15847	USED FOR NODES	16408
NODE 15848	USED FOR NODES	16461
NODE 15849	USED FOR NODES	16462
NODE 15850	USED FOR NODES	16463
NODE 15851	USED FOR NODES	16464
NODE 15852	USED FOR NODES	16465
NODE 15853	USED FOR NODES	16466
NODE 15854	USED FOR NODES	16467
NODE 15176	USED FOR NODES	16967
NODE 16968	USED FOR NODES	18535
NODE 15259	USED FOR NODES	17007
NODE 15260	USED FOR NODES	17008
NODE 18536	USED FOR NODES	18759
NODE 15261	USED FOR NODES	17009
NODE 18565	USED FOR NODES	18771
NODE 18566	USED FOR NODES	18772
NODE 18567	USED FOR NODES	18773
NODE 18568	USED FOR NODES	18774
NODE 18569	USED FOR NODES	18775
NODE 15262	USED FOR NODES	17010
NODE 15263	USED FOR NODES	17011
NODE 15264	USED FOR NODES	17012
NODE 15265	USED FOR NODES	17013
NODE 18570	USED FOR NODES	18776
NODE 18571	USED FOR NODES	18777
NODE 17021	USED FOR NODES	18551
NODE 18087	USED FOR NODES	18312
NODE 18103	USED FOR NODES	18341
NODE 18104	USED FOR NODES	18342
NODE 18105	USED FOR NODES	18343
NODE 18106	USED FOR NODES	18344
NODE 18107	USED FOR NODES	18345
NODE 18108	USED FOR NODES	18346
NODE 18109	USED FOR NODES	18347
NODE 15474	USED FOR NODES	15845
NODE 15471	USED FOR NODES	15842
NODE 15475	USED FOR NODES	15846
NODE 15206	USED FOR NODES	15804
NODE 15470	USED FOR NODES	15841
NODE 15472	USED FOR NODES	15843
NODE 15473	USED FOR NODES	15844
NODE 15469	USED FOR NODES	15840
NODE 18813	USED FOR NODES	18987
NODE 18814	USED FOR NODES	18988
NODE 18815	USED FOR NODES	18989
NODE 18816	USED FOR NODES	18990
NODE 18817	USED FOR NODES	18991
NODE 18818	USED FOR NODES	18992
NODE 18819	USED FOR NODES	18993
NODE 16429	USED FOR NODES	17538
NODE 17549	USED FOR NODES	18092
NODE 18936	USED FOR NODES	19403
NODE 18763	USED FOR NODES	18945
NODE 19001	USED FOR NODES	19455
NODE 19002	USED FOR NODES	19456
NODE 19003	USED FOR NODES	19457
NODE 19004	USED FOR NODES	19458
NODE 19005	USED FOR NODES	19459
NODE 19006	USED FOR NODES	19460
NODE 19007	USED FOR NODES	19461
NODE 17595	USED FOR NODES	18145
NODE 17596	USED FOR NODES	18146
NODE 17597	USED FOR NODES	18147
NODE 17598	USED FOR NODES	18148
NODE 17599	USED FOR NODES	18149
NODE 17600	USED FOR NODES	18150
NODE 17601	USED FOR NODES	18151
NODE 16475	USED FOR NODES	17609
NODE 16476	USED FOR NODES	17610

NODE 16477	USED FOR NODES	17611
NODE 16478	USED FOR NODES	17612
NODE 16479	USED FOR NODES	17613
NODE 16480	USED FOR NODES	17614
NODE 16481	USED FOR NODES	17615
NODE 18593	USED FOR NODES	18799
NODE 15287	USED FOR NODES	17035
NODE 15288	USED FOR NODES	17036
NODE 15289	USED FOR NODES	17037
NODE 15290	USED FOR NODES	17038
NODE 15291	USED FOR NODES	17039
NODE 15292	USED FOR NODES	17040
NODE 15293	USED FOR NODES	17041
NODE 18594	USED FOR NODES	18800
NODE 15911	USED FOR NODES	16418
NODE 15913	USED FOR NODES	16489
NODE 15914	USED FOR NODES	16490
NODE 15915	USED FOR NODES	16491
NODE 15916	USED FOR NODES	16492
NODE 15917	USED FOR NODES	16493
NODE 15918	USED FOR NODES	16494
NODE 15919	USED FOR NODES	16495
NODE 18595	USED FOR NODES	18801
NODE 18596	USED FOR NODES	18802
NODE 18597	USED FOR NODES	18803
NODE 18598	USED FOR NODES	18804
NODE 18599	USED FOR NODES	18805
NODE 16978	USED FOR NODES	18545
NODE 18540	USED FOR NODES	18767
NODE 17049	USED FOR NODES	18579
NODE 17050	USED FOR NODES	18580
NODE 17051	USED FOR NODES	18581
NODE 17052	USED FOR NODES	18582
NODE 17053	USED FOR NODES	18583
NODE 17054	USED FOR NODES	18584
NODE 17055	USED FOR NODES	18585
NODE 15184	USED FOR NODES	16989
NODE 18097	USED FOR NODES	18316
NODE 18131	USED FOR NODES	18369
NODE 18132	USED FOR NODES	18370
NODE 18133	USED FOR NODES	18371
NODE 18134	USED FOR NODES	18372
NODE 18135	USED FOR NODES	18373
NODE 18136	USED FOR NODES	18374
NODE 18137	USED FOR NODES	18375
NODE 15467	USED FOR NODES	15838
NODE 15462	USED FOR NODES	15833
NODE 15463	USED FOR NODES	15834
NODE 15464	USED FOR NODES	15835
NODE 15465	USED FOR NODES	15836
NODE 15468	USED FOR NODES	15839
NODE 15205	USED FOR NODES	15803
NODE 15466	USED FOR NODES	15837
NODE 15458	USED FOR NODES	15829
NODE 15457	USED FOR NODES	15828
NODE 15455	USED FOR NODES	15826
NODE 15456	USED FOR NODES	15827
NODE 15459	USED FOR NODES	15830
NODE 15460	USED FOR NODES	15831
NODE 15204	USED FOR NODES	15802
NODE 15461	USED FOR NODES	15832
NODE 15450	USED FOR NODES	15821
NODE 15451	USED FOR NODES	15822
NODE 15448	USED FOR NODES	15819
NODE 15452	USED FOR NODES	15823
NODE 15453	USED FOR NODES	15824
NODE 15454	USED FOR NODES	15825
NODE 15203	USED FOR NODES	15801
NODE 15449	USED FOR NODES	15820
NODE 18601	USED FOR NODES	18807

NODE 18602	USED FOR NODES	18808
NODE 18603	USED FOR NODES	18809
NODE 18604	USED FOR NODES	18810
NODE 18605	USED FOR NODES	18811
NODE 18606	USED FOR NODES	18812
NODE 17056	USED FOR NODES	18586
NODE 18820	USED FOR NODES	18994
NODE 18821	USED FOR NODES	18995
NODE 18822	USED FOR NODES	18996
NODE 18823	USED FOR NODES	18997
NODE 18824	USED FOR NODES	18998
NODE 18825	USED FOR NODES	18999
NODE 18826	USED FOR NODES	19000
NODE 16430	USED FOR NODES	17539
NODE 17550	USED FOR NODES	18093
NODE 18937	USED FOR NODES	19404
NODE 18764	USED FOR NODES	18946
NODE 19008	USED FOR NODES	19462
NODE 19009	USED FOR NODES	19463
NODE 19010	USED FOR NODES	19464
NODE 19011	USED FOR NODES	19465
NODE 17602	USED FOR NODES	18152
NODE 19012	USED FOR NODES	19466
NODE 19013	USED FOR NODES	19467
NODE 19014	USED FOR NODES	19468
NODE 17603	USED FOR NODES	18153
NODE 17604	USED FOR NODES	18154
NODE 17605	USED FOR NODES	18155
NODE 17606	USED FOR NODES	18156
NODE 17607	USED FOR NODES	18157
NODE 17608	USED FOR NODES	18158
NODE 16482	USED FOR NODES	17616
NODE 16483	USED FOR NODES	17617
NODE 16484	USED FOR NODES	17618
NODE 16485	USED FOR NODES	17619
NODE 16486	USED FOR NODES	17620
NODE 16487	USED FOR NODES	17621
NODE 16488	USED FOR NODES	17622
NODE 17057	USED FOR NODES	18587
NODE 17058	USED FOR NODES	18588
NODE 17059	USED FOR NODES	18589
NODE 17060	USED FOR NODES	18590
NODE 17061	USED FOR NODES	18591
NODE 17062	USED FOR NODES	18592
NODE 15294	USED FOR NODES	17042
NODE 15912	USED FOR NODES	16419
NODE 15920	USED FOR NODES	16496
NODE 15921	USED FOR NODES	16497
NODE 15922	USED FOR NODES	16498
NODE 15923	USED FOR NODES	16499
NODE 15924	USED FOR NODES	16500
NODE 15925	USED FOR NODES	16501
NODE 15926	USED FOR NODES	16502
NODE 18600	USED FOR NODES	18806
NODE 15295	USED FOR NODES	17043
NODE 16979	USED FOR NODES	18546
NODE 15296	USED FOR NODES	17044
NODE 18541	USED FOR NODES	18768
NODE 15297	USED FOR NODES	17045
NODE 15298	USED FOR NODES	17046
NODE 15299	USED FOR NODES	17047
NODE 15300	USED FOR NODES	17048
NODE 15185	USED FOR NODES	16990
NODE 18098	USED FOR NODES	18317
NODE 18138	USED FOR NODES	18376
NODE 18139	USED FOR NODES	18377
NODE 18140	USED FOR NODES	18378
NODE 18141	USED FOR NODES	18379
NODE 18142	USED FOR NODES	18380
NODE 18143	USED FOR NODES	18381

NODE 18144	USED FOR NODES	18382		
NODE 15441	USED FOR NODES	15812		
NODE 15447	USED FOR NODES	15818		
NODE 15445	USED FOR NODES	15816		
NODE 15446	USED FOR NODES	15817		
NODE 15444	USED FOR NODES	15815		
NODE 15442	USED FOR NODES	15813		
NODE 15443	USED FOR NODES	15814		
NODE 15202	USED FOR NODES	15800		
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NODE 13361	USED FOR NODES	13649	15281	15806
NODE 13364	USED FOR NODES	13652	15284	15809
NODE 13365	USED FOR NODES	13653	15285	15810
NODE 13295	USED FOR NODES	13647	15192	15799
NODE 13362	USED FOR NODES	13650	15282	15807
NODE 13360	USED FOR NODES	13648	15280	15805
NODE 13366	USED FOR NODES	13654	15286	15811
NODE 13696	USED FOR NODES	16040		
NODE 13697	USED FOR NODES	16041		
NODE 13698	USED FOR NODES	16042		
NODE 13699	USED FOR NODES	16043		
NODE 13700	USED FOR NODES	16044		
NODE 13701	USED FOR NODES	16045		
NODE 13702	USED FOR NODES	16046		
NODE 13687	USED FOR NODES	15983		
NODE 13297	USED FOR NODES	15193		
NODE 13436	USED FOR NODES	15349		
NODE 13434	USED FOR NODES	15347		
NODE 13435	USED FOR NODES	15348		
NODE 13433	USED FOR NODES	15346		
NODE 13430	USED FOR NODES	15343		
NODE 13431	USED FOR NODES	15344		
NODE 13432	USED FOR NODES	15345		
NODE 13437	USED FOR NODES	15350		
NODE 13438	USED FOR NODES	15351		
NODE 13439	USED FOR NODES	15352		
NODE 13440	USED FOR NODES	15353		
NODE 13441	USED FOR NODES	15354		
NODE 13442	USED FOR NODES	15355		
NODE 13443	USED FOR NODES	15356		
NODE 13688	USED FOR NODES	15982		
NODE 13703	USED FOR NODES	16033		
NODE 13704	USED FOR NODES	16034		
NODE 13705	USED FOR NODES	16035		
NODE 13706	USED FOR NODES	16036		
NODE 13707	USED FOR NODES	16037		
NODE 13708	USED FOR NODES	16038		
NODE 13709	USED FOR NODES	16039		
NODE 13298	USED FOR NODES	15194		
NODE 13710	USED FOR NODES	16026		
NODE 13711	USED FOR NODES	16027		
NODE 13712	USED FOR NODES	16028		
NODE 13713	USED FOR NODES	16029		
NODE 13714	USED FOR NODES	16030		
NODE 13715	USED FOR NODES	16031		
NODE 13716	USED FOR NODES	16032		
NODE 13689	USED FOR NODES	15981		
NODE 13448	USED FOR NODES	15361		
NODE 13447	USED FOR NODES	15360		
NODE 13445	USED FOR NODES	15358		
NODE 13450	USED FOR NODES	15363		
NODE 13446	USED FOR NODES	15359		
NODE 13444	USED FOR NODES	15357		
NODE 13299	USED FOR NODES	15195		
NODE 13449	USED FOR NODES	15362		
NODE 13518	USED FOR NODES	13676		
NODE 13519	USED FOR NODES	13677		
NODE 13520	USED FOR NODES	13678		
NODE 13516	USED FOR NODES	13674		
NODE 13517	USED FOR NODES	13675		

NODE 13320	USED FOR NODES	13657	
NODE 13514	USED FOR NODES	13672	
NODE 13515	USED FOR NODES	13673	
NODE 13717	USED FOR NODES	16019	
NODE 13718	USED FOR NODES	16020	
NODE 13719	USED FOR NODES	16021	
NODE 13720	USED FOR NODES	16022	
NODE 13721	USED FOR NODES	16023	
NODE 13722	USED FOR NODES	16024	
NODE 13723	USED FOR NODES	16025	
NODE 13690	USED FOR NODES	15980	
NODE 13454	USED FOR NODES	15367	
NODE 13451	USED FOR NODES	15364	
NODE 13455	USED FOR NODES	15368	
NODE 13457	USED FOR NODES	15370	
NODE 13452	USED FOR NODES	15365	
NODE 13453	USED FOR NODES	15366	
NODE 13456	USED FOR NODES	15369	
NODE 13300	USED FOR NODES	15196	
NODE 13513	USED FOR NODES	13671	
NODE 13507	USED FOR NODES	13665	
NODE 13508	USED FOR NODES	13666	
NODE 13319	USED FOR NODES	13656	
NODE 13510	USED FOR NODES	13668	
NODE 13509	USED FOR NODES	13667	
NODE 13511	USED FOR NODES	13669	
NODE 13512	USED FOR NODES	13670	
NODE 13724	USED FOR NODES	16012	
NODE 13725	USED FOR NODES	16013	
NODE 13726	USED FOR NODES	16014	
NODE 13727	USED FOR NODES	16015	
NODE 13728	USED FOR NODES	16016	
NODE 13729	USED FOR NODES	16017	
NODE 13730	USED FOR NODES	16018	
NODE 13691	USED FOR NODES	15979	
NODE 13462	USED FOR NODES	15375	
NODE 13464	USED FOR NODES	15377	
NODE 13459	USED FOR NODES	15372	
NODE 13301	USED FOR NODES	15197	
NODE 13460	USED FOR NODES	15373	
NODE 13463	USED FOR NODES	15376	
NODE 13458	USED FOR NODES	15371	
NODE 13461	USED FOR NODES	15374	
NODE 12156	USED FOR NODES	12360	13346 13658
NODE 12157	USED FOR NODES	12361	13347 13659
NODE 12158	USED FOR NODES	12362	13348 13660
NODE 12159	USED FOR NODES	12363	13349 13661
NODE 12160	USED FOR NODES	12364	13350 13662
NODE 12161	USED FOR NODES	12365	13351 13663
NODE 12162	USED FOR NODES	12366	13352 13664
NODE 12095	USED FOR NODES	12359	13309 13655
NODE 12400	USED FOR NODES	13848	
NODE 12401	USED FOR NODES	13849	
NODE 12402	USED FOR NODES	13850	
NODE 12403	USED FOR NODES	13851	
NODE 12404	USED FOR NODES	13852	
NODE 12405	USED FOR NODES	13853	
NODE 12406	USED FOR NODES	13854	
NODE 12391	USED FOR NODES	13791	
NODE 12219	USED FOR NODES	13367	
NODE 12223	USED FOR NODES	13371	
NODE 12220	USED FOR NODES	13368	
NODE 12221	USED FOR NODES	13369	
NODE 12222	USED FOR NODES	13370	
NODE 12224	USED FOR NODES	13372	
NODE 12225	USED FOR NODES	13373	
NODE 12097	USED FOR NODES	13310	
NODE 12407	USED FOR NODES	13841	
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NODE 17892	USED FOR NODES	18256
NODE 17893	USED FOR NODES	18257
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NODE 17895	USED FOR NODES	18259
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NODE 17347	USED FOR NODES	18691
NODE 17897	USED FOR NODES	18261
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NODE 16772	USED FOR NODES	17906
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NODE 16774	USED FOR NODES	17908
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NODE 16776	USED FOR NODES	17910
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NODE 16777	USED FOR NODES	17911
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NODE 18712	USED FOR NODES	18887
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NODE 18716	USED FOR NODES	18891
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NODE 18903	USED FOR NODES	19232

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NODE 18905	USED FOR NODES	19234
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NODE 16783	USED FOR NODES	17917
NODE 16784	USED FOR NODES	17918
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NODE 14119	USED FOR NODES	17339
NODE 14120	USED FOR NODES	17340
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NODE 19185	USED FOR NODES	19807
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NODE 14716	USED FOR NODES	16795
NODE 14717	USED FOR NODES	16796
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NODE 14719	USED FOR NODES	16798
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NODE 19244	USED FOR NODES	19853
NODE 19245	USED FOR NODES	19854
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NODE 19248	USED FOR NODES	19857
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NODE 16779	USED FOR NODES	17913
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NODE 18687 USED FOR NODES 18869
 NODE 18688 USED FOR NODES 18870
 NODE 18871 USED FOR NODES 19207
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 NODE 18873 USED FOR NODES 19209
 NODE 18874 USED FOR NODES 19210
 NODE 18875 USED FOR NODES 19211
 NODE 18876 USED FOR NODES 19212
 NODE 18877 USED FOR NODES 19213
 NODE 14090 USED FOR NODES 17317
 NODE 14091 USED FOR NODES 17318
 NODE 14092 USED FOR NODES 17319
 NODE 14093 USED FOR NODES 17320
 NODE 14094 USED FOR NODES 17321
 NODE 14095 USED FOR NODES 17322
 NODE 14096 USED FOR NODES 17323
 NODE 16757 USED FOR NODES 17884
 NODE 17287 USED FOR NODES 18666
 NODE 16758 USED FOR NODES 17885
 NODE 16759 USED FOR NODES 17886
 NODE 16760 USED FOR NODES 17887
 NODE 16761 USED FOR NODES 17888
 NODE 14615 USED FOR NODES 16727
 NODE 16762 USED FOR NODES 17889
 NODE 16763 USED FOR NODES 17890
 NODE 19183 USED FOR NODES 19794
 NODE 14692 USED FOR NODES 16764
 NODE 14693 USED FOR NODES 16765
 NODE 14694 USED FOR NODES 16766
 NODE 19214 USED FOR NODES 19830
 NODE 19215 USED FOR NODES 19831
 NODE 19216 USED FOR NODES 19832
 NODE 19217 USED FOR NODES 19833
 NODE 19218 USED FOR NODES 19834
 NODE 19219 USED FOR NODES 19835
 NODE 19220 USED FOR NODES 19836
 NODE 16730 USED FOR NODES 17847
 NODE 17850 USED FOR NODES 18215
 NODE 17877 USED FOR NODES 18234
 NODE 17878 USED FOR NODES 18235
 NODE 17879 USED FOR NODES 18236
 NODE 17880 USED FOR NODES 18237
 NODE 17881 USED FOR NODES 18238
 NODE 17882 USED FOR NODES 18239
 NODE 17883 USED FOR NODES 18240
 NODE 14695 USED FOR NODES 16767
 NODE 14696 USED FOR NODES 16768
 NODE 14697 USED FOR NODES 16769
 NODE 14698 USED FOR NODES 16770
 NODE 18218 USED FOR NODES 18439
 NODE 18227 USED FOR NODES 18458
 NODE 18228 USED FOR NODES 18459
 NODE 18229 USED FOR NODES 18460
 NODE 18230 USED FOR NODES 18461
 NODE 18231 USED FOR NODES 18462
 NODE 18232 USED FOR NODES 18463
 NODE 18233 USED FOR NODES 18464

*** WARNING *** CP= 219.880 TIME= 17:26:54
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
 KEYPOINT 78 USED FOR KEYPOINT(S) 132
 KEYPOINT 89 USED FOR KEYPOINT(S) 106 131
 KEYPOINT 104 USED FOR KEYPOINT(S) 117
 KEYPOINT 111 USED FOR KEYPOINT(S) 130 137 157
 KEYPOINT 114 USED FOR KEYPOINT(S) 144
 KEYPOINT 119 USED FOR KEYPOINT(S) 127 146 152

KEYPOINT	122 USED FOR KEYPOINT(S)	128		
KEYPOINT	124 USED FOR KEYPOINT(S)	133		
KEYPOINT	125 USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140 USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141 USED FOR KEYPOINT(S)	170		
KEYPOINT	145 USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149 USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164 USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165 USED FOR KEYPOINT(S)	212		
KEYPOINT	171 USED FOR KEYPOINT(S)	205		
KEYPOINT	173 USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179 USED FOR KEYPOINT(S)	187		
KEYPOINT	181 USED FOR KEYPOINT(S)	199		
KEYPOINT	190 USED FOR KEYPOINT(S)	207		
KEYPOINT	198 USED FOR KEYPOINT(S)	214		
KEYPOINT	204 USED FOR KEYPOINT(S)	215		
KEYPOINT	206 USED FOR KEYPOINT(S)	217		
KEYPOINT	208 USED FOR KEYPOINT(S)	231		
KEYPOINT	209 USED FOR KEYPOINT(S)	234		
KEYPOINT	211 USED FOR KEYPOINT(S)	236		
KEYPOINT	213 USED FOR KEYPOINT(S)	220		
KEYPOINT	216 USED FOR KEYPOINT(S)	221		
KEYPOINT	218 USED FOR KEYPOINT(S)	223		
KEYPOINT	219 USED FOR KEYPOINT(S)	226		
KEYPOINT	222 USED FOR KEYPOINT(S)	227		
KEYPOINT	224 USED FOR KEYPOINT(S)	229		
KEYPOINT	232 USED FOR KEYPOINT(S)	237		
KEYPOINT	233 USED FOR KEYPOINT(S)	240		
KEYPOINT	235 USED FOR KEYPOINT(S)	242		
KEYPOINT	238 USED FOR KEYPOINT(S)	243		
KEYPOINT	239 USED FOR KEYPOINT(S)	246		
KEYPOINT	241 USED FOR KEYPOINT(S)	248		
KEYPOINT	244 USED FOR KEYPOINT(S)	249		
KEYPOINT	245 USED FOR KEYPOINT(S)	252		
KEYPOINT	247 USED FOR KEYPOINT(S)	254		
LINE	154 USED FOR LINE(S)	297		
LINE	172 USED FOR LINE(S)	298		
LINE	174 USED FOR LINE(S)	240	292	
LINE	233 USED FOR LINE(S)	257		
LINE	236 USED FOR LINE(S)	256		
LINE	239 USED FOR LINE(S)	290		
LINE	241 USED FOR LINE(S)	289	306	359
LINE	243 USED FOR LINE(S)	314		
LINE	244 USED FOR LINE(S)	313		
LINE	259 USED FOR LINE(S)	330		
LINE	262 USED FOR LINE(S)	271	325	345
LINE	263 USED FOR LINE(S)	272		
LINE	264 USED FOR LINE(S)	273		
LINE	267 USED FOR LINE(S)	302		
LINE	268 USED FOR LINE(S)	300		
LINE	269 USED FOR LINE(S)	283	335	366
LINE	270 USED FOR LINE(S)	346		
LINE	282 USED FOR LINE(S)	365		
LINE	305 USED FOR LINE(S)	358		
LINE	307 USED FOR LINE(S)	354	372	439
LINE	308 USED FOR LINE(S)	396		
LINE	309 USED FOR LINE(S)	395		
LINE	315 USED FOR LINE(S)	414		
LINE	319 USED FOR LINE(S)	340	413	431
LINE	320 USED FOR LINE(S)	341		
LINE	331 USED FOR LINE(S)	367		
LINE	336 USED FOR LINE(S)	353	421	441
LINE	339 USED FOR LINE(S)	432		
LINE	352 USED FOR LINE(S)	440		
LINE	371 USED FOR LINE(S)	438		
LINE	377 USED FOR LINE(S)	437	462	
LINE	382 USED FOR LINE(S)	468		
LINE	383 USED FOR LINE(S)	467		
LINE	401 USED FOR LINE(S)	452		
LINE	403 USED FOR LINE(S)	451		

LINE	408 USED FOR LINE(S)	429	447
LINE	409 USED FOR LINE(S)	430	
LINE	416 USED FOR LINE(S)	442	
LINE	422 USED FOR LINE(S)	434	
LINE	427 USED FOR LINE(S)	445	
LINE	428 USED FOR LINE(S)	446	
LINE	435 USED FOR LINE(S)	457	
LINE	436 USED FOR LINE(S)	463	
LINE	444 USED FOR LINE(S)	471	
LINE	449 USED FOR LINE(S)	473	
LINE	450 USED FOR LINE(S)	472	
LINE	454 USED FOR LINE(S)	478	
LINE	455 USED FOR LINE(S)	477	
LINE	458 USED FOR LINE(S)	509	
LINE	459 USED FOR LINE(S)	515	
LINE	460 USED FOR LINE(S)	514	
LINE	464 USED FOR LINE(S)	520	
LINE	465 USED FOR LINE(S)	519	
LINE	470 USED FOR LINE(S)	484	
LINE	475 USED FOR LINE(S)	486	
LINE	476 USED FOR LINE(S)	485	
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LINE	481 USED FOR LINE(S)	490	
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LINE	489 USED FOR LINE(S)	498	
LINE	493 USED FOR LINE(S)	504	
LINE	494 USED FOR LINE(S)	503	
LINE	510 USED FOR LINE(S)	522	
LINE	511 USED FOR LINE(S)	528	
LINE	512 USED FOR LINE(S)	527	
LINE	516 USED FOR LINE(S)	533	
LINE	517 USED FOR LINE(S)	532	
LINE	523 USED FOR LINE(S)	535	
LINE	524 USED FOR LINE(S)	541	
LINE	525 USED FOR LINE(S)	540	
LINE	529 USED FOR LINE(S)	546	
LINE	530 USED FOR LINE(S)	545	
LINE	536 USED FOR LINE(S)	548	
LINE	537 USED FOR LINE(S)	554	
LINE	538 USED FOR LINE(S)	553	
LINE	542 USED FOR LINE(S)	559	
LINE	543 USED FOR LINE(S)	558	
AREA	123 USED FOR AREA(S)	230	
AREA	163 USED FOR AREA(S)	182	
AREA	176 USED FOR AREA(S)	226	
AREA	177 USED FOR AREA(S)	264	
AREA	193 USED FOR AREA(S)	282	
AREA	198 USED FOR AREA(S)	208	
AREA	204 USED FOR AREA(S)	239	
AREA	205 USED FOR AREA(S)	291	
AREA	223 USED FOR AREA(S)	295	
AREA	248 USED FOR AREA(S)	294	
AREA	255 USED FOR AREA(S)	302	
AREA	273 USED FOR AREA(S)	307	
AREA	277 USED FOR AREA(S)	290	
AREA	288 USED FOR AREA(S)	296	
AREA	289 USED FOR AREA(S)	313	
AREA	293 USED FOR AREA(S)	318	
AREA	298 USED FOR AREA(S)	317	
AREA	299 USED FOR AREA(S)	337	
AREA	305 USED FOR AREA(S)	326	
AREA	306 USED FOR AREA(S)	312	
AREA	309 USED FOR AREA(S)	319	
AREA	311 USED FOR AREA(S)	322	
AREA	316 USED FOR AREA(S)	333	
AREA	324 USED FOR AREA(S)	340	
AREA	328 USED FOR AREA(S)	344	
AREA	331 USED FOR AREA(S)	369	
AREA	335 USED FOR AREA(S)	373	

AREA	342 USED FOR AREA(S)	349
AREA	346 USED FOR AREA(S)	353
AREA	351 USED FOR AREA(S)	358
AREA	355 USED FOR AREA(S)	362
AREA	367 USED FOR AREA(S)	378
AREA	371 USED FOR AREA(S)	382
AREA	376 USED FOR AREA(S)	387
AREA	380 USED FOR AREA(S)	391
AREA	385 USED FOR AREA(S)	396
AREA	389 USED FOR AREA(S)	400

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 225.030 TIME= 17:27:06
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.040 TIME= 17:27:06
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.040 TIME= 17:27:06
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.050 TIME= 17:27:06
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.050 TIME= 17:27:06
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.070 TIME= 17:27:06
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.080 TIME= 17:27:06
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.090 TIME= 17:27:06
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.110 TIME= 17:27:06
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.120 TIME= 17:27:06
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.130 TIME= 17:27:06
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.130 TIME= 17:27:06
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.140 TIME= 17:27:06
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only elements are deleted.

elements are deleted.

*** NOTE *** CP= 225.140 TIME= 17:27:06
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.150 TIME= 17:27:06
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.160 TIME= 17:27:06
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.170 TIME= 17:27:06
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.180 TIME= 17:27:06
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.210 TIME= 17:27:06
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.220 TIME= 17:27:06
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.220 TIME= 17:27:06
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.240 TIME= 17:27:06
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.250 TIME= 17:27:06
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.250 TIME= 17:27:06
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.260 TIME= 17:27:06
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.260 TIME= 17:27:06
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.270 TIME= 17:27:06
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.270 TIME= 17:27:06
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.270 TIME= 17:27:06
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.280 TIME= 17:27:06
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only
elements are deleted.

*** NOTE *** CP= 225.290 TIME= 17:27:06
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.300 TIME= 17:27:06
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.320 TIME= 17:27:06
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.340 TIME= 17:27:06
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.350 TIME= 17:27:06
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.360 TIME= 17:27:06
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.370 TIME= 17:27:06
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.400 TIME= 17:27:06
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.420 TIME= 17:27:06
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only elements are deleted.

*** NOTE *** CP= 225.450 TIME= 17:27:06
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 16998 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1
7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1
8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1
9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1
10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1
11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1
12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1
13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 16998 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

153 NODES (OF 16998 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 128
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

```
IN RANGE      151 TO      151 STEP      1
      2 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      157 TO      157 STEP      1
      3 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      162 TO      162 STEP      1
      4 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      181 TO      181 STEP      1
      5 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      199 TO      199 STEP      1
      6 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      212 TO      212 STEP      1
      7 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      235 TO      235 STEP      1
      8 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
SELECT        ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES,   AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.
      561 NODES (OF 16998 DEFINED) SELECTED FROM
      8 SELECTED AREAS BY NSLA COMMAND.
GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL=      1 MATERIAL=      4 ESYS= 0
NUMBER OF ELEMENTS GENERATED=      512
ALL SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      1 TO      401 STEP      1
      364 AREAS (OF  364 DEFINED) SELECTED BY ASEL  COMMAND.
ALL SELECT   FOR ITEM=NODE COMPONENT=
IN RANGE      1 TO     20102 STEP      1
      16998 NODES (OF 16998 DEFINED) SELECTED BY NSEL  COMMAND.
MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03
*** NOTE ***                      CP=   347.620   TIME= 17:30:37
Zero nodes were merged.
MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
***** ROUTINE COMPLETED ***** CP =      348.320
```

```
*****
Generate super-element
```

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:30:50 JAN 16, 1995 CP= 348.320
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

1192 ELEMENTS (OF 15480 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

1234 NODES (OF 16998 DEFINED) SELECTED FROM
1192 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c21w5a.sub

*** WARNING *** CP= 349.190 TIME= 17:31:00
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 1192 NUMBER OF NODES= 1234
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16406 STEP 1

15480 ELEMENTS (OF 15480 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 20102 STEP 1

16998 NODES (OF 16998 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 3351.410

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:48:51 JAN 16, 1995 CP= 3351.410
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 16407 c21w5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 16407

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 16407
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

1192 ELEMENTS (OF 15481 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16407 STEP 1

14289 ELEMENTS (OF 14289 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 3352.750

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 3352.770 TIME= 18:49:02
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.64 AND 308.64
KABS= 0. TOLERANCE= 1.54319

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

119 NODES (OF 16998 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 20102 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.36 AND -991.36
KABS= 0. TOLERANCE= 4.95682

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

119 NODES (OF 16998 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 20102 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 20102 STEP 1

16998 NODES (OF 16998 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 3356.660 TIME= 18:49:19
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:49:19 JAN 16, 1995 CP= 3356.660
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 3360.100 TIME= 18:49:24
This load step will be a static (steady-state) step.

*** NOTE *** CP= 3360.140 TIME= 18:49:25
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER.1
TIME AT END OF THE LOAD STEP.1.0000E-05
AUTOMATIC TIME STEPPINGON
INITIAL NUMBER OF SUBSTEPS0
MAXIMUM NUMBER OF SUBSTEPS0
MINIMUM NUMBER OF SUBSTEPS1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS.25
STEP CHANGE BOUNDARY CONDITIONSNO
TRANSIENT (INERTIA) EFFECTSOFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS

PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .20901E+07

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.58282E-09	IXX = .4859E+12	IXX = .2863E+12
YC = -309.02	IYY = .4843E+09	IYY = .4843E+09
ZC = .46343E-15	IZZ = .4860E+12	IZZ = .2864E+12
	IXY = -.9140	IXY = -.5375
	IYZ = .1492E-06	IYZ = -.1501E-06
	IZX = -.4919E-08	IZX = -.4919E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
 2 .209010E+07

Range of element maximum matrix coefficients in global coordinates
 Maximum= 335.796769 at element 14727.
 Minimum= 9.379161121E-08 at element 16407.

*** WARNING *** CP= 3446.820 TIME= 18:52:36
 Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	14288	SOLID70	62.200	.004
18	1	MATRIX50	1.870	1.870

Time at end of element matrix formulation CP= 3446.83.

HT FLOW CONVERGENCE VALUE= 417.4 CRITERION= .4174

Estimated number of active DOF= 16760.
 Maximum wavefront= 1667.

Time at end of matrix triangularization CP= 4697.33.
 Equation solver maximum pivot= 1280.38376 at node 10966 TEMP.
 Equation solver minimum pivot= 0.965539755 at node 1176 TEMP.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05

HT FLOW CONVERGENCE VALUE= .2909 CRITERION= .8582E-02

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3668E-02

HT FLOW CONVERGENCE VALUE= .1501E-04 CRITERION= .8582E-02 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	14288	SOLID70	41.460	.003
18	1	MATRIX50	2.620	2.620

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	14288	SOLID70	3.570	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2

*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 16760
R.M.S. WAVEFRONT SIZE = 627.4

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
23.484 MB WRITTEN ON ELEMENT MATRIX FILE: c21w5a.emat
12.844 MB WRITTEN ON ELEMENT SAVED DATA FILE: c21w5a.esav
65.875 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c21w5a.tri
.031 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c21w5a.dsub
11.141 MB WRITTEN ON RESULTS FILE: c21w5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 6168.770

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:24:03 JAN 16, 1995 CP= 6168.860
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.14003

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 6187.950

Apply initial conditions wall temperature
as a temporary boundry condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

680 NODES (OF 16998 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 20102 BY 1
REAL= 26.1400304 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 20102 STEP 1

16998 NODES (OF 16998 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16407 STEP 1

14289 ELEMENTS (OF 14289 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP intial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:24:45 JAN 16, 1995 CP= 6189.160
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 6192.520 TIME= 20:24:52
This load step will be a static (steady-state) step.

*** NOTE *** CP= 6193.630 TIME= 20:24:54
The step data was checked and warning messages were found.
Please review output or errors file (c21w5a.err) for these warning
messages.

*** NOTE *** CP= 6193.630 TIME= 20:24:54
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:24:56 JAN 16, 1995 CP= 6194.290
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 2
TIME AT END OF THE LOAD STEP. . . . . .20000E-05
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 0
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 0
  MINIMUM NUMBER OF SUBSTEPS . . . . . 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS . . . . . OFF
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 293.1 CRITERION= .2932
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 150.4
HT FLOW CONVERGENCE VALUE= 140.6 CRITERION= .2932
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -9.035
HT FLOW CONVERGENCE VALUE= 6.868 CRITERION= .2932
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3376
HT FLOW CONVERGENCE VALUE= .8539E-01 CRITERION= .2932 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
Release drift wall temperatures

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SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

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IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

680 NODES (OF 16998 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 20102 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 680

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 20102 STEP 1

16998 NODES (OF 16998 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:

USE 80 SUBSTEPS AS A MAXIMUM

USE 4 SUBSTEPS AS A MINIMUM

USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

Begin Transient

Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 16407 STEP 1

14289 ELEMENTS (OF 14289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 6937.140 TIME= 20:58:34
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 20:58:34 JAN 16, 1995 CP= 6937.140
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
 TIME AT END OF THE LOAD STEP. 31.558
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 504.8 CRITERION= .2933
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9261E-04
 HT FLOW CONVERGENCE VALUE= .9716E-04 CRITERION= .5837 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
 *** TIME = .394472 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9799E-05 OSCILLATION LIMIT = .3865E-05
 *** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1010. CRITERION= .5838
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1852E-03
 HT FLOW CONVERGENCE VALUE= .1943E-03 CRITERION= .5837 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
 *** TIME = .788942 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9799E-05 OSCILLATION LIMIT = .3865E-05
 *** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1010. CRITERION= .5838

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5557E-03
HT FLOW CONVERGENCE VALUE= .5830E-03 CRITERION= .5837 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
*** TIME = 1.97235 TIME INC = 1.18341
*** RESPONSE EIGENVALUE = .9798E-05 OSCILLATION LIMIT = .1159E-04
*** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1010. CRITERION= .5838
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1667E-02
HT FLOW CONVERGENCE VALUE= .1749E-02 CRITERION= .5837 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
*** TIME = 5.52258 TIME INC = 3.55023
*** RESPONSE EIGENVALUE = .9795E-05 OSCILLATION LIMIT = .3477E-04
*** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 1009. CRITERION= .5838
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3704E-02
HT FLOW CONVERGENCE VALUE= .3885E-02 CRITERION= .5837 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
*** TIME = 13.4120 TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9788E-05 OSCILLATION LIMIT = .7722E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1009. CRITERION= .5837
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3703E-02
HT FLOW CONVERGENCE VALUE= .3884E-02 CRITERION= .5836 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
*** TIME = 21.3014 TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9780E-05 OSCILLATION LIMIT = .7716E-04
*** AUTO TIME STEP: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 1009. CRITERION= .5837
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2407E-02
HT FLOW CONVERGENCE VALUE= .2524E-02 CRITERION= .5836 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
*** TIME = 26.4295 TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9773E-05 OSCILLATION LIMIT = .5012E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1009. CRITERION= .5837
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2406E-02
HT FLOW CONVERGENCE VALUE= .2524E-02 CRITERION= .5835 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
*** TIME = 31.5576 TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9768E-05 OSCILLATION LIMIT = .5009E-04

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 23:07:04 JAN 16, 1995 CP= 9761.850
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 1009. CRITERION= .5836
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 12.72
HT FLOW CONVERGENCE VALUE= 12.89 CRITERION= .4328
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2773
HT FLOW CONVERGENCE VALUE= .3498 CRITERION= .4324 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP      4  SUBSTEP      1  COMPLETED.    CUM ITER =    16
*** TIME = 39478.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .7973E-05  OSCILLATION LIMIT = .3145
*** AUTO STEP TIME: NEXT TIME INC = 39447.    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 661.0      CRITERION= .4513
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.238
    HT FLOW CONVERGENCE VALUE= 7.164      CRITERION= .3856
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1238
    HT FLOW CONVERGENCE VALUE= .1826      CRITERION= .3872    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      4  SUBSTEP      2  COMPLETED.    CUM ITER =    18
*** TIME = 78925.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4736E-05  OSCILLATION LIMIT = .1868
*** AUTO TIME STEP: NEXT TIME INC = .10558E+06  INCREASED (FACTOR = 2.6765)

    HT FLOW CONVERGENCE VALUE= 551.9      CRITERION= .4176
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.352
    HT FLOW CONVERGENCE VALUE= 12.14      CRITERION= .3550
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2944
    HT FLOW CONVERGENCE VALUE= .4770      CRITERION= .3574
    EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1007E-01
    HT FLOW CONVERGENCE VALUE= .1247E-01  CRITERION= .3573    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP      4  SUBSTEP      3  COMPLETED.    CUM ITER =    21
*** TIME = 184507.      TIME INC = 105582.
*** RESPONSE EIGENVALUE = .2402E-05  OSCILLATION LIMIT = .2536
*** AUTO STEP TIME: NEXT TIME INC = .10558E+06  UNCHANGED

    HT FLOW CONVERGENCE VALUE= 465.4      CRITERION= .3906
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.056
    HT FLOW CONVERGENCE VALUE= 7.696      CRITERION= .3463
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1544
    HT FLOW CONVERGENCE VALUE= .2748      CRITERION= .3479    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      4  SUBSTEP      4  COMPLETED.    CUM ITER =    23
*** TIME = 290089.      TIME INC = 105582.
*** RESPONSE EIGENVALUE = .1181E-05  OSCILLATION LIMIT = .1247
*** AUTO TIME STEP: NEXT TIME INC = .31675E+06  INCREASED (FACTOR = 3.0000)

    HT FLOW CONVERGENCE VALUE= 429.4      CRITERION= .3783
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.573
    HT FLOW CONVERGENCE VALUE= 15.47      CRITERION= .3382
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4497
    HT FLOW CONVERGENCE VALUE= .8245      CRITERION= .3402
    EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2631E-01
    HT FLOW CONVERGENCE VALUE= .4538E-01  CRITERION= .3401    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP      4  SUBSTEP      5  COMPLETED.    CUM ITER =    26
*** TIME = 606834.      TIME INC = 316745.
*** RESPONSE EIGENVALUE = .7196E-06  OSCILLATION LIMIT = .2279
*** AUTO STEP TIME: NEXT TIME INC = .31675E+06  UNCHANGED

    HT FLOW CONVERGENCE VALUE= 379.8      CRITERION= .3581
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.716
    HT FLOW CONVERGENCE VALUE= 9.335      CRITERION= .3338
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2628
    HT FLOW CONVERGENCE VALUE= .4989      CRITERION= .3350
    EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1508E-01
    HT FLOW CONVERGENCE VALUE= .2710E-01  CRITERION= .3349    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP      4  SUBSTEP      6  COMPLETED.    CUM ITER =    29
*** TIME = 923580.      TIME INC = 316745.
*** RESPONSE EIGENVALUE = .4618E-06  OSCILLATION LIMIT = .1463
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06  INCREASED (FACTOR = 2.4908)

    HT FLOW CONVERGENCE VALUE= 350.3      CRITERION= .3477
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.605
    HT FLOW CONVERGENCE VALUE= 15.01      CRITERION= .3302
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5447

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HT FLOW CONVERGENCE VALUE= 1.051 CRITERION= .3313
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3953E-01
 HT FLOW CONVERGENCE VALUE= .8104E-01 CRITERION= .3312 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 32
 *** TIME = .171252E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3042E-06 OSCILLATION LIMIT = .2400
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 319.7 CRITERION= .3360
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.938
 HT FLOW CONVERGENCE VALUE= 8.741 CRITERION= .3284
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3227
 HT FLOW CONVERGENCE VALUE= .6374 CRITERION= .3290
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2188E-01
 HT FLOW CONVERGENCE VALUE= .4589E-01 CRITERION= .3289 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 35
 *** TIME = .250146E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1950E-06 OSCILLATION LIMIT = .1539
 *** AUTO TIME STEP: NEXT TIME INC = .65433E+06 DECREASED (FACTOR = .8294)

HT FLOW CONVERGENCE VALUE= 310.2 CRITERION= .3336
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.345
 HT FLOW CONVERGENCE VALUE= 5.407 CRITERION= .3291
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1907
 HT FLOW CONVERGENCE VALUE= .3793 CRITERION= .3295
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1183E-01
 HT FLOW CONVERGENCE VALUE= .2475E-01 CRITERION= .3294 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 38
 *** TIME = .315579E+07 TIME INC = 654332.
 *** RESPONSE EIGENVALUE = .1445E-06 OSCILLATION LIMIT = .9457E-01

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 04:32:48 JAN 17, 1995 CP= 17248.310
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 307.8 CRITERION= .3317
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.881
 HT FLOW CONVERGENCE VALUE= 4.369 CRITERION= .3284
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1533
 HT FLOW CONVERGENCE VALUE= .3067 CRITERION= .3287 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 40
 *** TIME = .381012E+07 TIME INC = 654332.
 *** RESPONSE EIGENVALUE = .1199E-06 OSCILLATION LIMIT = .7842E-01
 *** AUTO STEP TIME: NEXT TIME INC = .65433E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 307.2 CRITERION= .3320
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.566
 HT FLOW CONVERGENCE VALUE= 3.686 CRITERION= .3294
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1296
 HT FLOW CONVERGENCE VALUE= .2608 CRITERION= .3296 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 42
 *** TIME = .446446E+07 TIME INC = 654332.
 *** RESPONSE EIGENVALUE = .1025E-06 OSCILLATION LIMIT = .6706E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.2057)

HT FLOW CONVERGENCE VALUE= 307.5 CRITERION= .3309
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.596
 HT FLOW CONVERGENCE VALUE= 3.771 CRITERION= .3289
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1382

HT FLOW CONVERGENCE VALUE= .2799 CRITERION= .3291 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 44
 *** TIME = .525340E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .8899E-07 OSCILLATION LIMIT = .7020E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 308.4 CRITERION= .3316
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.358
 HT FLOW CONVERGENCE VALUE= 3.247 CRITERION= .3300
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1196
 HT FLOW CONVERGENCE VALUE= .2432 CRITERION= .3301 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 46
 *** TIME = .604234E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7745E-07 OSCILLATION LIMIT = .6110E-01
 *** AUTO TIME STEP: NEXT TIME INC = .26922E+06 DECREASED (FACTOR = .3412)

HT FLOW CONVERGENCE VALUE= 309.5 CRITERION= .3309
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4181
 HT FLOW CONVERGENCE VALUE= .9831 CRITERION= .3294
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2700E-01
 HT FLOW CONVERGENCE VALUE= .5339E-01 CRITERION= .3295 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 48
 *** TIME = .631155E+07 TIME INC = 269216.
 *** RESPONSE EIGENVALUE = .7212E-07 OSCILLATION LIMIT = .1942E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 06:56:31 JAN 17, 1995 CP= 20560.510
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 309.8 CRITERION= .3317
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3994
 HT FLOW CONVERGENCE VALUE= .9432 CRITERION= .3302
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2613E-01
 HT FLOW CONVERGENCE VALUE= .5192E-01 CRITERION= .3303 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 50
 *** TIME = .658077E+07 TIME INC = 269216.
 *** RESPONSE EIGENVALUE = .6912E-07 OSCILLATION LIMIT = .1861E-01
 *** AUTO STEP TIME: NEXT TIME INC = .26922E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 310.2 CRITERION= .3309
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3823
 HT FLOW CONVERGENCE VALUE= .9093 CRITERION= .3295
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2506E-01
 HT FLOW CONVERGENCE VALUE= .4963E-01 CRITERION= .3296 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 52
 *** TIME = .684998E+07 TIME INC = 269216.
 *** RESPONSE EIGENVALUE = .6658E-07 OSCILLATION LIMIT = .1792E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.9305)

HT FLOW CONVERGENCE VALUE= 310.5 CRITERION= .3316
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.040
 HT FLOW CONVERGENCE VALUE= 2.518 CRITERION= .3304
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9347E-01
 HT FLOW CONVERGENCE VALUE= .1910 CRITERION= .3305 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 54
 *** TIME = .763892E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .6152E-07 OSCILLATION LIMIT = .4854E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 311.7 CRITERION= .3309
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9352
 HT FLOW CONVERGENCE VALUE= 2.270 CRITERION= .3299
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8411E-01
 HT FLOW CONVERGENCE VALUE= .1719 CRITERION= .3300 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 56
 *** TIME = .842786E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .5592E-07 OSCILLATION LIMIT = .4412E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51972E+06 DECREASED (FACTOR = .6588)

HT FLOW CONVERGENCE VALUE= 312.8 CRITERION= .3318
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5669
 HT FLOW CONVERGENCE VALUE= 1.364 CRITERION= .3307
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4591E-01
 HT FLOW CONVERGENCE VALUE= .9317E-01 CRITERION= .3308 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 58
 *** TIME = .894759E+07 TIME INC = 519724.
 *** RESPONSE EIGENVALUE = .5206E-07 OSCILLATION LIMIT = .2706E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51972E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 313.4 CRITERION= .3311
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5334
 HT FLOW CONVERGENCE VALUE= 1.288 CRITERION= .3301
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4324E-01
 HT FLOW CONVERGENCE VALUE= .8764E-01 CRITERION= .3302 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 6 COMPLETED. CUM ITER = 60
 *** TIME = .946731E+07 TIME INC = 519724.
 *** RESPONSE EIGENVALUE = .4930E-07 OSCILLATION LIMIT = .2562E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:52:49 JAN 17, 1995 CP= 24558.290
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 314.0 CRITERION= .3318
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5035
 HT FLOW CONVERGENCE VALUE= 1.220 CRITERION= .3309
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4111E-01
 HT FLOW CONVERGENCE VALUE= .8353E-01 CRITERION= .3310 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 62
 *** TIME = .998704E+07 TIME INC = 519724.
 *** RESPONSE EIGENVALUE = .4676E-07 OSCILLATION LIMIT = .2430E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51972E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 314.6 CRITERION= .3311
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4767
 HT FLOW CONVERGENCE VALUE= 1.160 CRITERION= .3303
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3889E-01
 HT FLOW CONVERGENCE VALUE= .7891E-01 CRITERION= .3304 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 64
 *** TIME = .105068E+08 TIME INC = 519724.
 *** RESPONSE EIGENVALUE = .4454E-07 OSCILLATION LIMIT = .2315E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5180)

HT FLOW CONVERGENCE VALUE= 315.2 CRITERION= .3319
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6793
 HT FLOW CONVERGENCE VALUE= 1.669 CRITERION= .3311
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6220E-01
 HT FLOW CONVERGENCE VALUE= .1279 CRITERION= .3312 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 66
*** TIME = .112957E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .4185E-07 OSCILLATION LIMIT = .3301E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 316.0 CRITERION= .3312
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6311
HT FLOW CONVERGENCE VALUE= 1.553 CRITERION= .3305
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5779E-01
HT FLOW CONVERGENCE VALUE= .1187 CRITERION= .3306 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 68
*** TIME = .120846E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3916E-07 OSCILLATION LIMIT = .3090E-01
*** AUTO TIME STEP: NEXT TIME INC = .53843E+06 DECREASED (FACTOR = .6825)

HT FLOW CONVERGENCE VALUE= 316.7 CRITERION= .3320
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4057
HT FLOW CONVERGENCE VALUE= .9911 CRITERION= .3313
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3377E-01
HT FLOW CONVERGENCE VALUE= .6885E-01 CRITERION= .3313 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 70
*** TIME = .126231E+08 TIME INC = 538432.
*** RESPONSE EIGENVALUE = .3725E-07 OSCILLATION LIMIT = .2006E-01
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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:19:20 JAN 17, 1995 CP= 27894.970
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 317.2 CRITERION= .3313
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3877
HT FLOW CONVERGENCE VALUE= .9488 CRITERION= .3306
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3225E-01
HT FLOW CONVERGENCE VALUE= .6564E-01 CRITERION= .3307 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 72
*** TIME = .131615E+08 TIME INC = 538432.
*** RESPONSE EIGENVALUE = .3578E-07 OSCILLATION LIMIT = .1927E-01
*** AUTO STEP TIME: NEXT TIME INC = .53843E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 317.7 CRITERION= .3320
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3711
HT FLOW CONVERGENCE VALUE= .9081 CRITERION= .3313
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3108E-01
HT FLOW CONVERGENCE VALUE= .6341E-01 CRITERION= .3314 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 74
*** TIME = .136999E+08 TIME INC = 538432.
*** RESPONSE EIGENVALUE = .3437E-07 OSCILLATION LIMIT = .1850E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4653)

HT FLOW CONVERGENCE VALUE= 318.1 CRITERION= .3312
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5171
HT FLOW CONVERGENCE VALUE= 1.275 CRITERION= .3307
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4782E-01
HT FLOW CONVERGENCE VALUE= .9840E-01 CRITERION= .3307 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 76
*** TIME = .144889E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3270E-07 OSCILLATION LIMIT = .2580E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 318.7    CRITERION= .3319
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4879
HT FLOW CONVERGENCE VALUE= 1.203    CRITERION= .3314
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4536E-01
HT FLOW CONVERGENCE VALUE= .9352E-01 CRITERION= .3314    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 78
*** TIME = .152778E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3100E-07 OSCILLATION LIMIT = .2446E-01
*** AUTO TIME STEP: NEXT TIME INC = .50102E+06 DECREASED (FACTOR = .6350)

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HT FLOW CONVERGENCE VALUE= 319.2    CRITERION= .3312
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2956
HT FLOW CONVERGENCE VALUE= .7236    CRITERION= .3307
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2423E-01
HT FLOW CONVERGENCE VALUE= .4926E-01 CRITERION= .3307    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 80
*** TIME = .157788E+08 TIME INC = 501016.
*** RESPONSE EIGENVALUE = .2996E-07 OSCILLATION LIMIT = .1501E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:48:39 JAN 17, 1995 CP= 31231.510
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 319.6    CRITERION= .3319
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2856
HT FLOW CONVERGENCE VALUE= .6990    CRITERION= .3314
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2359E-01
HT FLOW CONVERGENCE VALUE= .4807E-01 CRITERION= .3314    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 82
*** TIME = .162798E+08 TIME INC = 501016.
*** RESPONSE EIGENVALUE = .2900E-07 OSCILLATION LIMIT = .1453E-01
*** AUTO STEP TIME: NEXT TIME INC = .50102E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 319.9    CRITERION= .3312
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2763
HT FLOW CONVERGENCE VALUE= .6785    CRITERION= .3307
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2277E-01
HT FLOW CONVERGENCE VALUE= .4630E-01 CRITERION= .3307    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 84
*** TIME = .167809E+08 TIME INC = 501016.
*** RESPONSE EIGENVALUE = .2817E-07 OSCILLATION LIMIT = .1411E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5747)

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HT FLOW CONVERGENCE VALUE= 320.2    CRITERION= .3318
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4184
HT FLOW CONVERGENCE VALUE= 1.034    CRITERION= .3314
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3918E-01
HT FLOW CONVERGENCE VALUE= .8081E-01 CRITERION= .3314    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 86
*** TIME = .175698E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2693E-07 OSCILLATION LIMIT = .2124E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 320.6    CRITERION= .3311
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3992
HT FLOW CONVERGENCE VALUE= .9864    CRITERION= .3307
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3725E-01
HT FLOW CONVERGENCE VALUE= .7672E-01 CRITERION= .3307    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 88
 *** TIME = .183587E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2579E-07 OSCILLATION LIMIT = .2035E-01
 *** AUTO TIME STEP: NEXT TIME INC = .57585E+06 DECREASED (FACTOR = .7299)

HT FLOW CONVERGENCE VALUE= 321.0 CRITERION= .3318
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2801
 HT FLOW CONVERGENCE VALUE= .6858 CRITERION= .3313
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2410E-01
 HT FLOW CONVERGENCE VALUE= .4931E-01 CRITERION= .3314 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 90
 *** TIME = .189346E+08 TIME INC = 575849.
 *** RESPONSE EIGENVALUE = .2495E-07 OSCILLATION LIMIT = .1437E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:13:10 JAN 17, 1995 CP= 34560.590
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 321.3 CRITERION= .3311
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2712
 HT FLOW CONVERGENCE VALUE= .6650 CRITERION= .3306
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2326E-01
 HT FLOW CONVERGENCE VALUE= .4749E-01 CRITERION= .3307 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 92
 *** TIME = .195104E+08 TIME INC = 575849.
 *** RESPONSE EIGENVALUE = .2424E-07 OSCILLATION LIMIT = .1396E-01
 *** AUTO STEP TIME: NEXT TIME INC = .57585E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 321.6 CRITERION= .3317
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2630
 HT FLOW CONVERGENCE VALUE= .6439 CRITERION= .3313
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2268E-01
 HT FLOW CONVERGENCE VALUE= .4640E-01 CRITERION= .3313 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 94
 *** TIME = .200863E+08 TIME INC = 575849.
 *** RESPONSE EIGENVALUE = .2351E-07 OSCILLATION LIMIT = .1354E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3700)

HT FLOW CONVERGENCE VALUE= 321.9 CRITERION= .3310
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3485
 HT FLOW CONVERGENCE VALUE= .8570 CRITERION= .3306
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3250E-01
 HT FLOW CONVERGENCE VALUE= .6694E-01 CRITERION= .3306 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 96
 *** TIME = .208752E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2265E-07 OSCILLATION LIMIT = .1787E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 322.2 CRITERION= .3316
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3355
 HT FLOW CONVERGENCE VALUE= .8222 CRITERION= .3312
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3136E-01
 HT FLOW CONVERGENCE VALUE= .6469E-01 CRITERION= .3312 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 98
 *** TIME = .216642E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2179E-07 OSCILLATION LIMIT = .1719E-01
 *** AUTO TIME STEP: NEXT TIME INC = .42618E+06 DECREASED (FACTOR = .5402)

HT FLOW CONVERGENCE VALUE= 322.5 CRITERION= .3309

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1760
HT FLOW CONVERGENCE VALUE= .4260 CRITERION= .3305
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1371E-01
HT FLOW CONVERGENCE VALUE= .2771E-01 CRITERION= .3306 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 100
*** TIME = .220904E+08 TIME INC = 426183.
*** RESPONSE EIGENVALUE = .2155E-07 OSCILLATION LIMIT = .9186E-02

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:38:17 JAN 17, 1995 CP= 37834.800
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 322.7 CRITERION= .3315
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1726
HT FLOW CONVERGENCE VALUE= .4170 CRITERION= .3312
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1353E-01
HT FLOW CONVERGENCE VALUE= .2742E-01 CRITERION= .3312 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 102
*** TIME = .225165E+08 TIME INC = 426183.
*** RESPONSE EIGENVALUE = .2108E-07 OSCILLATION LIMIT = .8984E-02
*** AUTO STEP TIME: NEXT TIME INC = .42618E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 322.9 CRITERION= .3309
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1694
HT FLOW CONVERGENCE VALUE= .4111 CRITERION= .3305
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1322E-01
HT FLOW CONVERGENCE VALUE= .2669E-01 CRITERION= .3305 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 104
*** TIME = .229427E+08 TIME INC = 426183.
*** RESPONSE EIGENVALUE = .2071E-07 OSCILLATION LIMIT = .8825E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.8512)

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HT FLOW CONVERGENCE VALUE= 323.0 CRITERION= .3314
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3060
HT FLOW CONVERGENCE VALUE= .7479 CRITERION= .3311
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2852E-01
HT FLOW CONVERGENCE VALUE= .5876E-01 CRITERION= .3311 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 106
*** TIME = .237317E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1981E-07 OSCILLATION LIMIT = .1563E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 323.3 CRITERION= .3307
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2965
HT FLOW CONVERGENCE VALUE= .7231 CRITERION= .3304
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2742E-01
HT FLOW CONVERGENCE VALUE= .5639E-01 CRITERION= .3304 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 108
*** TIME = .245206E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1919E-07 OSCILLATION LIMIT = .1514E-01
*** AUTO TIME STEP: NEXT TIME INC = .72551E+06 DECREASED (FACTOR = .9196)

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HT FLOW CONVERGENCE VALUE= 323.6 CRITERION= .3313
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2647
HT FLOW CONVERGENCE VALUE= .6407 CRITERION= .3310
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2397E-01
HT FLOW CONVERGENCE VALUE= .4926E-01 CRITERION= .3310 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 110

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*** TIME = .252461E+08 TIME INC = 725514.
 *** RESPONSE EIGENVALUE = .1860E-07 OSCILLATION LIMIT = .1349E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:02:45 JAN 17, 1995 CP= 41204.470
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 323.9 CRITERION= .3306
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2574
 HT FLOW CONVERGENCE VALUE= .6211 CRITERION= .3303
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2315E-01
 HT FLOW CONVERGENCE VALUE= .4751E-01 CRITERION= .3303 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 112
 *** TIME = .259716E+08 TIME INC = 725514.
 *** RESPONSE EIGENVALUE = .1811E-07 OSCILLATION LIMIT = .1314E-01
 *** AUTO STEP TIME: NEXT TIME INC = .72551E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 324.1 CRITERION= .3312
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2505
 HT FLOW CONVERGENCE VALUE= .6001 CRITERION= .3309
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2256E-01
 HT FLOW CONVERGENCE VALUE= .4641E-01 CRITERION= .3309 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 114
 *** TIME = .266971E+08 TIME INC = 725514.
 *** RESPONSE EIGENVALUE = .1758E-07 OSCILLATION LIMIT = .1276E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0874)

HT FLOW CONVERGENCE VALUE= 324.4 CRITERION= .3305
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2649
 HT FLOW CONVERGENCE VALUE= .6343 CRITERION= .3302
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2419E-01
 HT FLOW CONVERGENCE VALUE= .4978E-01 CRITERION= .3302 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 116
 *** TIME = .274861E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1708E-07 OSCILLATION LIMIT = .1348E-01
 *** AUTO TIME STEP: NEXT TIME INC = .45790E+06 DECREASED (FACTOR = .5804)

HT FLOW CONVERGENCE VALUE= 324.6 CRITERION= .3311
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1507
 HT FLOW CONVERGENCE VALUE= .3546 CRITERION= .3308
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1180E-01
 HT FLOW CONVERGENCE VALUE= .2394E-01 CRITERION= .3308 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 118
 *** TIME = .279440E+08 TIME INC = 457896.
 *** RESPONSE EIGENVALUE = .1693E-07 OSCILLATION LIMIT = .7753E-02
 *** AUTO STEP TIME: NEXT TIME INC = .45790E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 324.8 CRITERION= .3304
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1486
 HT FLOW CONVERGENCE VALUE= .3490 CRITERION= .3301
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1151E-01
 HT FLOW CONVERGENCE VALUE= .2328E-01 CRITERION= .3302 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 120
 *** TIME = .284019E+08 TIME INC = 457896.
 *** RESPONSE EIGENVALUE = .1670E-07 OSCILLATION LIMIT = .7645E-02
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
906.986869 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16407 STEP 1

14289 ELEMENTS (OF 14289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 44526.070 TIME= 00:27:33
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:27:33 JAN 18, 1995 CP= 44526.070
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
TIME AT END OF THE LOAD STEP.31558E+08
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 324.9 CRITERION= .3310
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1466
HT FLOW CONVERGENCE VALUE= .3432 CRITERION= .3307
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1141E-01
HT FLOW CONVERGENCE VALUE= .2315E-01 CRITERION= .3308 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 122

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*** TIME = .288598E+08    TIME INC = 457896.
*** RESPONSE EIGENVALUE = .1635E-07    OSCILLATION LIMIT = .7488E-02
*** AUTO STEP TIME: NEXT TIME INC = .45790E+06    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 325.0    CRITERION= .3303
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1446
    HT FLOW CONVERGENCE VALUE= .3388    CRITERION= .3301
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1115E-01
    HT FLOW CONVERGENCE VALUE= .2251E-01    CRITERION= .3301    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 124
*** TIME = .293177E+08    TIME INC = 457896.
*** RESPONSE EIGENVALUE = .1612E-07    OSCILLATION LIMIT = .7379E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06    INCREASED (FACTOR = 1.7230)

    HT FLOW CONVERGENCE VALUE= 325.2    CRITERION= .3309
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2443
    HT FLOW CONVERGENCE VALUE= .5760    CRITERION= .3307
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2208E-01
    HT FLOW CONVERGENCE VALUE= .4544E-01    CRITERION= .3307    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 126
*** TIME = .301066E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1545E-07    OSCILLATION LIMIT = .1219E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 325.4    CRITERION= .3302
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2390
    HT FLOW CONVERGENCE VALUE= .5606    CRITERION= .3300
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2135E-01
    HT FLOW CONVERGENCE VALUE= .4383E-01    CRITERION= .3300    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 128
*** TIME = .308955E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1506E-07    OSCILLATION LIMIT = .1188E-01
*** AUTO TIME STEP: NEXT TIME INC = .66209E+06    DECREASED (FACTOR = .8392)

    HT FLOW CONVERGENCE VALUE= 325.7    CRITERION= .3308
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1967
    HT FLOW CONVERGENCE VALUE= .4558    CRITERION= .3306
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1675E-01
    HT FLOW CONVERGENCE VALUE= .3429E-01    CRITERION= .3306    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 130
*** TIME = .315576E+08    TIME INC = 662089.
*** RESPONSE EIGENVALUE = .1472E-07    OSCILLATION LIMIT = .9747E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:51:57 JAN 18, 1995 CP= 47847.790
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

    HT FLOW CONVERGENCE VALUE= 325.9    CRITERION= .3301
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1931
    HT FLOW CONVERGENCE VALUE= .4460    CRITERION= .3299
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1628E-01
    HT FLOW CONVERGENCE VALUE= .3325E-01    CRITERION= .3299    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 132
*** TIME = .322197E+08    TIME INC = 662089.
*** RESPONSE EIGENVALUE = .1443E-07    OSCILLATION LIMIT = .9556E-02
*** AUTO STEP TIME: NEXT TIME INC = .66209E+06    UNCHANGED

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HT FLOW CONVERGENCE VALUE= 326.1 CRITERION= .3307
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1897
 HT FLOW CONVERGENCE VALUE= .4352 CRITERION= .3305
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1603E-01
 HT FLOW CONVERGENCE VALUE= .3281E-01 CRITERION= .3305 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 134
 *** TIME = .328818E+08 TIME INC = 662089.
 *** RESPONSE EIGENVALUE = .1409E-07 OSCILLATION LIMIT = .9327E-02
 *** AUTO TIME STEP: NEXT TIME INC = .19863E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 326.3 CRITERION= .3298
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5477
 HT FLOW CONVERGENCE VALUE= 1.277 CRITERION= .3297
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5896E-01
 HT FLOW CONVERGENCE VALUE= .1238 CRITERION= .3297 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 136
 *** TIME = .348681E+08 TIME INC = .198627E+07
 *** RESPONSE EIGENVALUE = .1334E-07 OSCILLATION LIMIT = .2649E-01
 *** AUTO TIME STEP: NEXT TIME INC = .59588E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 326.9 CRITERION= .3297
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.491
 HT FLOW CONVERGENCE VALUE= 3.454 CRITERION= .3300
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1869
 HT FLOW CONVERGENCE VALUE= .3969 CRITERION= .3300
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1387E-01
 HT FLOW CONVERGENCE VALUE= .3411E-01 CRITERION= .3300 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 139
 *** TIME = .408269E+08 TIME INC = .595880E+07
 *** RESPONSE EIGENVALUE = .1180E-07 OSCILLATION LIMIT = .7030E-01
 *** AUTO STEP TIME: NEXT TIME INC = .59588E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 329.0 CRITERION= .3286
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.300
 HT FLOW CONVERGENCE VALUE= 2.909 CRITERION= .3290
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1588
 HT FLOW CONVERGENCE VALUE= .3368 CRITERION= .3290
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1151E-01
 HT FLOW CONVERGENCE VALUE= .2816E-01 CRITERION= .3290 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 142
 *** TIME = .467857E+08 TIME INC = .595880E+07
 *** RESPONSE EIGENVALUE = .9883E-08 OSCILLATION LIMIT = .5889E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3240)

HT FLOW CONVERGENCE VALUE= 331.1 CRITERION= .3286
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.499
 HT FLOW CONVERGENCE VALUE= 3.261 CRITERION= .3293
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1859
 HT FLOW CONVERGENCE VALUE= .3944 CRITERION= .3292
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1387E-01
 HT FLOW CONVERGENCE VALUE= .3395E-01 CRITERION= .3292 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 145
 *** TIME = .546751E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .8175E-08 OSCILLATION LIMIT = .6449E-01
 *** AUTO TIME STEP: NEXT TIME INC = .42201E+07 DECREASED (FACTOR = .5349)

HT FLOW CONVERGENCE VALUE= 334.1 CRITERION= .3280
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7167
 HT FLOW CONVERGENCE VALUE= 1.499 CRITERION= .3284
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8006E-01
 HT FLOW CONVERGENCE VALUE= .1689 CRITERION= .3283 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 147
 *** TIME = .588951E+08 TIME INC = .422008E+07
 *** RESPONSE EIGENVALUE = .6966E-08 OSCILLATION LIMIT = .2940E-01

*** AUTO STEP TIME: NEXT TIME INC = .42201E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 335.7 CRITERION= .3284
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6689
 HT FLOW CONVERGENCE VALUE= 1.369 CRITERION= .3288
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7381E-01
 HT FLOW CONVERGENCE VALUE= .1557 CRITERION= .3287 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 149
 *** TIME = .631152E+08 TIME INC = .422008E+07
 *** RESPONSE EIGENVALUE = .6280E-08 OSCILLATION LIMIT = .2650E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:15:28 JAN 18, 1995 CP= 53929.680
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 337.3 CRITERION= .3276
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6260
 HT FLOW CONVERGENCE VALUE= 1.258 CRITERION= .3280
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6773E-01
 HT FLOW CONVERGENCE VALUE= .1425 CRITERION= .3279 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** NOTE *** CP= 54573.510 TIME= 07:43:35

Page file used.

*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 151
 *** TIME = .673353E+08 TIME INC = .422008E+07
 *** RESPONSE EIGENVALUE = .5681E-08 OSCILLATION LIMIT = .2397E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42201E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 338.9 CRITERION= .3280
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5881
 HT FLOW CONVERGENCE VALUE= 1.172 CRITERION= .3284
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6354E-01
 HT FLOW CONVERGENCE VALUE= .1336 CRITERION= .3284 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 153
 *** TIME = .715554E+08 TIME INC = .422008E+07
 *** RESPONSE EIGENVALUE = .5150E-08 OSCILLATION LIMIT = .2173E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8695)

HT FLOW CONVERGENCE VALUE= 340.4 CRITERION= .3267
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.013
 HT FLOW CONVERGENCE VALUE= 1.989 CRITERION= .3274
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1174
 HT FLOW CONVERGENCE VALUE= .2479 CRITERION= .3273 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 155
 *** TIME = .794448E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .4552E-08 OSCILLATION LIMIT = .3592E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 343.1 CRITERION= .3269
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9161
 HT FLOW CONVERGENCE VALUE= 1.747 CRITERION= .3276
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1046
 HT FLOW CONVERGENCE VALUE= .2207 CRITERION= .3275 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 157
 *** TIME = .873342E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .3917E-08 OSCILLATION LIMIT = .3090E-01
 *** AUTO TIME STEP: NEXT TIME INC = .73386E+07 DECREASED (FACTOR = .9302)

HT FLOW CONVERGENCE VALUE= 345.5 CRITERION= .3259

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7801
HT FLOW CONVERGENCE VALUE= 1.437 CRITERION= .3264
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8634E-01
HT FLOW CONVERGENCE VALUE= .1821 CRITERION= .3264 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 159
*** TIME = .946728E+08 TIME INC = .733864E+07
*** RESPONSE EIGENVALUE = .3465E-08 OSCILLATION LIMIT = .2543E-01

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***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 09:46:04 JAN 18, 1995 CP= 57275.280
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 347.4 CRITERION= .3261
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7226
HT FLOW CONVERGENCE VALUE= 1.312 CRITERION= .3265
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7933E-01
HT FLOW CONVERGENCE VALUE= .1667 CRITERION= .3265 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 161
*** TIME = .102011E+09 TIME INC = .733864E+07
*** RESPONSE EIGENVALUE = .3073E-08 OSCILLATION LIMIT = .2255E-01
*** AUTO STEP TIME: NEXT TIME INC = .73386E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 349.0 CRITERION= .3249
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6751
HT FLOW CONVERGENCE VALUE= 1.197 CRITERION= .3253
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7281E-01
HT FLOW CONVERGENCE VALUE= .1528 CRITERION= .3253 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 163
*** TIME = .109350E+09 TIME INC = .733864E+07
*** RESPONSE EIGENVALUE = .2801E-08 OSCILLATION LIMIT = .2056E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.0750)

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HT FLOW CONVERGENCE VALUE= 350.5 CRITERION= .3249
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6804
HT FLOW CONVERGENCE VALUE= 1.175 CRITERION= .3253
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7335E-01
HT FLOW CONVERGENCE VALUE= .1541 CRITERION= .3252 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 165
*** TIME = .117240E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2572E-08 OSCILLATION LIMIT = .2029E-01
*** AUTO TIME STEP: NEXT TIME INC = .44955E+07 DECREASED (FACTOR = .5698)

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HT FLOW CONVERGENCE VALUE= 351.7 CRITERION= .3240
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3692
HT FLOW CONVERGENCE VALUE= .6139 CRITERION= .3242
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3565E-01
HT FLOW CONVERGENCE VALUE= .7438E-01 CRITERION= .3242 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 167
*** TIME = .121735E+09 TIME INC = .449546E+07
*** RESPONSE EIGENVALUE = .2446E-08 OSCILLATION LIMIT = .1100E-01
*** AUTO STEP TIME: NEXT TIME INC = .44955E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 352.4 CRITERION= .3242
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3569
HT FLOW CONVERGENCE VALUE= .5857 CRITERION= .3244
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3458E-01
HT FLOW CONVERGENCE VALUE= .7224E-01 CRITERION= .3244 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 169

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*** TIME = .126230E+09 TIME INC = .449546E+07
 *** RESPONSE EIGENVALUE = .2343E-08 OSCILLATION LIMIT = .1053E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 12:11:57 JAN 18, 1995 CP= 60612.190
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 352.9 CRITERION= .3232
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3461
 HT FLOW CONVERGENCE VALUE= .5656 CRITERION= .3234
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3298E-01
 HT FLOW CONVERGENCE VALUE= .6851E-01 CRITERION= .3233 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 171
 *** TIME = .130726E+09 TIME INC = .449546E+07
 *** RESPONSE EIGENVALUE = .2237E-08 OSCILLATION LIMIT = .1006E-01
 *** AUTO STEP TIME: NEXT TIME INC = .44955E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 353.4 CRITERION= .3234
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3364
 HT FLOW CONVERGENCE VALUE= .5458 CRITERION= .3235
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3213E-01
 HT FLOW CONVERGENCE VALUE= .6669E-01 CRITERION= .3235 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 173
 *** TIME = .135221E+09 TIME INC = .449546E+07
 *** RESPONSE EIGENVALUE = .2142E-08 OSCILLATION LIMIT = .9631E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.7550)

HT FLOW CONVERGENCE VALUE= 353.8 CRITERION= .3220
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5692
 HT FLOW CONVERGENCE VALUE= .9114 CRITERION= .3222
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5816E-01
 HT FLOW CONVERGENCE VALUE= .1213 CRITERION= .3221 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 175
 *** TIME = .143111E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2060E-08 OSCILLATION LIMIT = .1625E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 354.4 CRITERION= .3218
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5453
 HT FLOW CONVERGENCE VALUE= .8482 CRITERION= .3220
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5489E-01
 HT FLOW CONVERGENCE VALUE= .1145 CRITERION= .3219 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 177
 *** TIME = .151000E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1960E-08 OSCILLATION LIMIT = .1546E-01
 *** AUTO TIME STEP: NEXT TIME INC = .67879E+07 DECREASED (FACTOR = .8604)

HT FLOW CONVERGENCE VALUE= 354.9 CRITERION= .3205
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4527
 HT FLOW CONVERGENCE VALUE= .6790 CRITERION= .3206
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4335E-01
 HT FLOW CONVERGENCE VALUE= .9025E-01 CRITERION= .3206 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 179
 *** TIME = .157788E+09 TIME INC = .678787E+07
 *** RESPONSE EIGENVALUE = .1906E-08 OSCILLATION LIMIT = .1294E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 14:40:31 JAN 18, 1995 CP= 63953.480
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 355.1 CRITERION= .3204
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4393
 HT FLOW CONVERGENCE VALUE= .6495 CRITERION= .3205
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4170E-01
 HT FLOW CONVERGENCE VALUE= .8656E-01 CRITERION= .3204 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 181
 *** TIME = .164576E+09 TIME INC = .678787E+07
 *** RESPONSE EIGENVALUE = .1813E-08 OSCILLATION LIMIT = .1230E-01
 *** AUTO STEP TIME: NEXT TIME INC = .67879E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 355.3 CRITERION= .3190
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4277
 HT FLOW CONVERGENCE VALUE= .6180 CRITERION= .3191
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3970E-01
 HT FLOW CONVERGENCE VALUE= .8223E-01 CRITERION= .3190 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 183
 *** TIME = .171364E+09 TIME INC = .678787E+07
 *** RESPONSE EIGENVALUE = .1769E-08 OSCILLATION LIMIT = .1201E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1623)

HT FLOW CONVERGENCE VALUE= 355.4 CRITERION= .3187
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4844
 HT FLOW CONVERGENCE VALUE= .6821 CRITERION= .3188
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4543E-01
 HT FLOW CONVERGENCE VALUE= .9430E-01 CRITERION= .3187 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 185
 *** TIME = .179253E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1712E-08 OSCILLATION LIMIT = .1351E-01
 *** AUTO TIME STEP: NEXT TIME INC = .50462E+07 DECREASED (FACTOR = .6396)

HT FLOW CONVERGENCE VALUE= 355.3 CRITERION= .3175
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3034
 HT FLOW CONVERGENCE VALUE= .4110 CRITERION= .3176
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2566E-01
 HT FLOW CONVERGENCE VALUE= .5292E-01 CRITERION= .3175 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 187
 *** TIME = .184299E+09 TIME INC = .504623E+07
 *** RESPONSE EIGENVALUE = .1698E-08 OSCILLATION LIMIT = .8570E-02
 *** AUTO STEP TIME: NEXT TIME INC = .50462E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 355.3 CRITERION= .3175
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2993
 HT FLOW CONVERGENCE VALUE= .3975 CRITERION= .3175
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2523E-01
 HT FLOW CONVERGENCE VALUE= .5210E-01 CRITERION= .3175 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 189
 *** TIME = .189346E+09 TIME INC = .504623E+07
 *** RESPONSE EIGENVALUE = .1660E-08 OSCILLATION LIMIT = .8376E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:07:00 JAN 18, 1995 CP= 67297.650
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 355.2 CRITERION= .3164
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2955
 HT FLOW CONVERGENCE VALUE= .3887 CRITERION= .3164
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2434E-01
 HT FLOW CONVERGENCE VALUE= .4988E-01 CRITERION= .3163 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 191
 *** TIME = .194392E+09 TIME INC = .504623E+07
 *** RESPONSE EIGENVALUE = .1615E-08 OSCILLATION LIMIT = .8150E-02
 *** AUTO STEP TIME: NEXT TIME INC = .50462E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 355.0 CRITERION= .3164
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2917
 HT FLOW CONVERGENCE VALUE= .3804 CRITERION= .3163
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2404E-01
 HT FLOW CONVERGENCE VALUE= .4921E-01 CRITERION= .3163 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 193
 *** TIME = .199438E+09 TIME INC = .504623E+07
 *** RESPONSE EIGENVALUE = .1568E-08 OSCILLATION LIMIT = .7914E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.5634)

HT FLOW CONVERGENCE VALUE= 354.8 CRITERION= .3149
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4486
 HT FLOW CONVERGENCE VALUE= .5747 CRITERION= .3148
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3894E-01
 HT FLOW CONVERGENCE VALUE= .7991E-01 CRITERION= .3148 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 195
 *** TIME = .207327E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1548E-08 OSCILLATION LIMIT = .1221E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 354.5 CRITERION= .3145
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4396
 HT FLOW CONVERGENCE VALUE= .5485 CRITERION= .3144
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3752E-01
 HT FLOW CONVERGENCE VALUE= .7704E-01 CRITERION= .3144 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 197
 *** TIME = .215217E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1508E-08 OSCILLATION LIMIT = .1190E-01
 *** AUTO TIME STEP: NEXT TIME INC = .56863E+07 DECREASED (FACTOR = .7208)

HT FLOW CONVERGENCE VALUE= 354.1 CRITERION= .3132
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3113
 HT FLOW CONVERGENCE VALUE= .3746 CRITERION= .3131
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2449E-01
 HT FLOW CONVERGENCE VALUE= .4999E-01 CRITERION= .3131 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 199
 *** TIME = .220903E+09 TIME INC = .568635E+07
 *** RESPONSE EIGENVALUE = .1510E-08 OSCILLATION LIMIT = .8585E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 19:34:28 JAN 18, 1995 CP= 70637.310
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 353.7 CRITERION= .3132
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3068
 HT FLOW CONVERGENCE VALUE= .3834 CRITERION= .3131
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2424E-01
 HT FLOW CONVERGENCE VALUE= .4856E-01 CRITERION= .3131 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 201
*** TIME = .226590E+09 TIME INC = .568635E+07
*** RESPONSE EIGENVALUE = .1361E-08 OSCILLATION LIMIT = .7739E-02
*** AUTO STEP TIME: NEXT TIME INC = .56863E+07 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 353.3 CRITERION= .3120
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3024
HT FLOW CONVERGENCE VALUE= .3859 CRITERION= .3119
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2398E-01
HT FLOW CONVERGENCE VALUE= .4755E-01 CRITERION= .3119 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 203
*** TIME = .232276E+09 TIME INC = .568635E+07
*** RESPONSE EIGENVALUE = .1321E-08 OSCILLATION LIMIT = .7511E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3874)
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HT FLOW CONVERGENCE VALUE= 353.0 CRITERION= .3118
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4124
HT FLOW CONVERGENCE VALUE= .5232 CRITERION= .3116
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3448E-01
HT FLOW CONVERGENCE VALUE= .6879E-01 CRITERION= .3116 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 205
*** TIME = .240165E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1288E-08 OSCILLATION LIMIT = .1016E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 352.4 CRITERION= .3103
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4043
HT FLOW CONVERGENCE VALUE= .5070 CRITERION= .3102
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3322E-01
HT FLOW CONVERGENCE VALUE= .6597E-01 CRITERION= .3101 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 207
*** TIME = .248055E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1265E-08 OSCILLATION LIMIT = .9980E-02
*** AUTO STEP TIME: NEXT TIME INC = .44061E+07 DECREASED (FACTOR = .5585)
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```
HT FLOW CONVERGENCE VALUE= 351.8 CRITERION= .3103
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2223
HT FLOW CONVERGENCE VALUE= .2720 CRITERION= .3103 <<< CONVERGED
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```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 208
*** TIME = .252461E+09 TIME INC = .440611E+07
*** RESPONSE EIGENVALUE = .1242E-08 OSCILLATION LIMIT = .5474E-02
```

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:48:55 JAN 18, 1995 CP= 73714.370
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 351.5 CRITERION= .3089
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3011
HT FLOW CONVERGENCE VALUE= .2352 CRITERION= .3088 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 209
*** TIME = .256867E+09 TIME INC = .440611E+07
*** RESPONSE EIGENVALUE = .1844E-08 OSCILLATION LIMIT = .8125E-02
*** AUTO STEP TIME: NEXT TIME INC = .44061E+07 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 351.1 CRITERION= .3086
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3767
HT FLOW CONVERGENCE VALUE= .2226 CRITERION= .3085 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
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*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 210
 *** TIME = .261273E+09 TIME INC = .440611E+07
 *** RESPONSE EIGENVALUE = .2162E-08 OSCILLATION LIMIT = .9524E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.7906)

HT FLOW CONVERGENCE VALUE= 350.7 CRITERION= .3065
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6188
 HT FLOW CONVERGENCE VALUE= .3550 CRITERION= .3064
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2600E-01
 HT FLOW CONVERGENCE VALUE= .6002E-01 CRITERION= .3063 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 212
 *** TIME = .269162E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2145E-08 OSCILLATION LIMIT = .1692E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 349.8 CRITERION= .3055
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6630
 HT FLOW CONVERGENCE VALUE= .3427 CRITERION= .3053
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2457E-01
 HT FLOW CONVERGENCE VALUE= .5638E-01 CRITERION= .3052 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 214
 *** TIME = .277052E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2257E-08 OSCILLATION LIMIT = .1780E-01
 *** AUTO TIME STEP: NEXT TIME INC = .69666E+07 DECREASED (FACTOR = .8830)

HT FLOW CONVERGENCE VALUE= 348.8 CRITERION= .3034
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5630
 HT FLOW CONVERGENCE VALUE= .2822 CRITERION= .3032 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 215
 *** TIME = .284018E+09 TIME INC = .696659E+07
 *** RESPONSE EIGENVALUE = .2156E-08 OSCILLATION LIMIT = .1502E-01
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09
 TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 769.132473 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 16407 STEP 1

14289 ELEMENTS (OF 14289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 76274.640 TIME= 23:40:21
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:40:21 JAN 18, 1995 CP= 76274.640
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
 TIME AT END OF THE LOAD STEP.31558E+09
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
 CONVERGENCE CONTROLS. USE DEFAULTS
 PRINT OUTPUT CONTROLS NO PRINTOUT
 DATABASE OUTPUT CONTROLS. ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 347.9 CRITERION= .3028
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4237
 HT FLOW CONVERGENCE VALUE= .2597 CRITERION= .3026 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 216
 *** TIME = .290985E+09 TIME INC = .696659E+07
 *** RESPONSE EIGENVALUE = .1742E-08 OSCILLATION LIMIT = .1214E-01
 *** AUTO STEP TIME: NEXT TIME INC = .69666E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 346.9 CRITERION= .3011
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3774
 HT FLOW CONVERGENCE VALUE= .2497 CRITERION= .3008 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 217
 *** TIME = .297952E+09 TIME INC = .696659E+07
 *** RESPONSE EIGENVALUE = .1626E-08 OSCILLATION LIMIT = .1133E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1325)

HT FLOW CONVERGENCE VALUE= 345.8 CRITERION= .3004
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4675
 HT FLOW CONVERGENCE VALUE= .2872 CRITERION= .3001 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 218
 *** TIME = .305841E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1658E-08 OSCILLATION LIMIT = .1308E-01
 *** AUTO TIME STEP: NEXT TIME INC = .48675E+07 DECREASED (FACTOR = .6170)

HT FLOW CONVERGENCE VALUE= 344.6 CRITERION= .2989
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2729
 HT FLOW CONVERGENCE VALUE= .1694 CRITERION= .2986 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 219
 *** TIME = .310709E+09 TIME INC = .486751E+07
 *** RESPONSE EIGENVALUE = .1640E-08 OSCILLATION LIMIT = .7984E-02
 *** AUTO STEP TIME: NEXT TIME INC = .48675E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 343.8 CRITERION= .2986
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2984
 HT FLOW CONVERGENCE VALUE= .1721 CRITERION= .2984 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 220
*** TIME = .315576E+09 TIME INC = .486751E+07
*** RESPONSE EIGENVALUE = .1696E-08 OSCILLATION LIMIT = .8255E-02
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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:08:09 JAN 19, 1995 CP= 78310.610
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 343.0 CRITERION= .2973
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2079
HT FLOW CONVERGENCE VALUE= .1560 CRITERION= .2971 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 221
*** TIME = .320444E+09 TIME INC = .486751E+07
*** RESPONSE EIGENVALUE = .1402E-08 OSCILLATION LIMIT = .6823E-02
*** AUTO STEP TIME: NEXT TIME INC = .48675E+07 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 342.2 CRITERION= .2972
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2053
HT FLOW CONVERGENCE VALUE= .1653 CRITERION= .2970 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 222
*** TIME = .325311E+09 TIME INC = .486751E+07
*** RESPONSE EIGENVALUE = .1339E-08 OSCILLATION LIMIT = .6517E-02
*** AUTO TIME STEP: NEXT TIME INC = .14603E+08 INCREASED (FACTOR = 3.0000)
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HT FLOW CONVERGENCE VALUE= 341.4 CRITERION= .2949
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6014
HT FLOW CONVERGENCE VALUE= .4985 CRITERION= .2943
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4153E-01
HT FLOW CONVERGENCE VALUE= .8512E-01 CRITERION= .2942 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 224
*** TIME = .339914E+09 TIME INC = .146025E+08
*** RESPONSE EIGENVALUE = .1307E-08 OSCILLATION LIMIT = .1908E-01
*** AUTO TIME STEP: NEXT TIME INC = .14603E+08 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 339.0 CRITERION= .2934
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5801
HT FLOW CONVERGENCE VALUE= .4838 CRITERION= .2928
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4013E-01
HT FLOW CONVERGENCE VALUE= .8165E-01 CRITERION= .2927 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 226
*** TIME = .354516E+09 TIME INC = .146025E+08
*** RESPONSE EIGENVALUE = .1272E-08 OSCILLATION LIMIT = .1858E-01
*** AUTO TIME STEP: NEXT TIME INC = .43808E+08 INCREASED (FACTOR = 3.0000)
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HT FLOW CONVERGENCE VALUE= 336.8 CRITERION= .2878
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.732
HT FLOW CONVERGENCE VALUE= 1.341 CRITERION= .2861
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1338
HT FLOW CONVERGENCE VALUE= .2702 CRITERION= .2858 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 228
*** TIME = .398324E+09 TIME INC = .438076E+08
*** RESPONSE EIGENVALUE = .1246E-08 OSCILLATION LIMIT = .5459E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8009)
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HT FLOW CONVERGENCE VALUE= 329.8 CRITERION= .2787
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.368
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HT FLOW CONVERGENCE VALUE= 1.962 CRITERION= .2754
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2232
HT FLOW CONVERGENCE VALUE= .4481 CRITERION= .2750
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1133E-01
HT FLOW CONVERGENCE VALUE= .2121E-01 CRITERION= .2750 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 231
*** TIME = .477218E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1265E-08 OSCILLATION LIMIT = .9976E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 317.1 CRITERION= .2667
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.688
HT FLOW CONVERGENCE VALUE= 1.619 CRITERION= .2632
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1859
HT FLOW CONVERGENCE VALUE= .3622 CRITERION= .2629
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8713E-02
HT FLOW CONVERGENCE VALUE= .1628E-01 CRITERION= .2629 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 234
*** TIME = .556112E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1342E-08 OSCILLATION LIMIT = .1059
*** AUTO TIME STEP: NEXT TIME INC = .75040E+08 DECREASED (FACTOR = .9512)

HT FLOW CONVERGENCE VALUE= 303.7 CRITERION= .2561
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.769
HT FLOW CONVERGENCE VALUE= 1.453 CRITERION= .2527
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1522
HT FLOW CONVERGENCE VALUE= .2820 CRITERION= .2524
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9077E-02
HT FLOW CONVERGENCE VALUE= .1337E-01 CRITERION= .2524 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 237
*** TIME = .631152E+09 TIME INC = .750403E+08
*** RESPONSE EIGENVALUE = .1462E-08 OSCILLATION LIMIT = .1097

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 05:10:14 JAN 19, 1995 CP= 83899.530
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 290.9 CRITERION= .2463
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.764
HT FLOW CONVERGENCE VALUE= 1.070 CRITERION= .2430
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1170
HT FLOW CONVERGENCE VALUE= .2099 CRITERION= .2427 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 239
*** TIME = .706192E+09 TIME INC = .750403E+08
*** RESPONSE EIGENVALUE = .1119E-08 OSCILLATION LIMIT = .8395E-01
*** AUTO STEP TIME: NEXT TIME INC = .75040E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 278.7 CRITERION= .2378
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.803
HT FLOW CONVERGENCE VALUE= 1.013 CRITERION= .2348
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1081
HT FLOW CONVERGENCE VALUE= .1874 CRITERION= .2346 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 241
*** TIME = .781233E+09 TIME INC = .750403E+08
*** RESPONSE EIGENVALUE = .1116E-08 OSCILLATION LIMIT = .8374E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0514)

HT FLOW CONVERGENCE VALUE= 267.7 CRITERION= .2281
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.134

HT FLOW CONVERGENCE VALUE= 1.099 CRITERION= .2252
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1018
 HT FLOW CONVERGENCE VALUE= .1685 CRITERION= .2250 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 243
 *** TIME = .860127E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1238E-08 OSCILLATION LIMIT = .9770E-01
 *** AUTO TIME STEP: NEXT TIME INC = .43301E+08 DECREASED (FACTOR = .5488)

HT FLOW CONVERGENCE VALUE= 256.5 CRITERION= .2223
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.763
 HT FLOW CONVERGENCE VALUE= .6256 CRITERION= .2207
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4472E-01
 HT FLOW CONVERGENCE VALUE= .7195E-01 CRITERION= .2206 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 245
 *** TIME = .903427E+09 TIME INC = .433007E+08
 *** RESPONSE EIGENVALUE = .1302E-08 OSCILLATION LIMIT = .5639E-01
 *** AUTO STEP TIME: NEXT TIME INC = .43301E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 250.6 CRITERION= .2168
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.830
 HT FLOW CONVERGENCE VALUE= .6664 CRITERION= .2153
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4177E-01
 HT FLOW CONVERGENCE VALUE= .6529E-01 CRITERION= .2152 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 247
 *** TIME = .946728E+09 TIME INC = .433007E+08
 *** RESPONSE EIGENVALUE = .1406E-08 OSCILLATION LIMIT = .6087E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:35:50 JAN 19, 1995 CP= 87241.470
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 244.7 CRITERION= .2129
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.584
 HT FLOW CONVERGENCE VALUE= .5669 CRITERION= .2114
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3680E-01
 HT FLOW CONVERGENCE VALUE= .5659E-01 CRITERION= .2113 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 249
 *** TIME = .990029E+09 TIME INC = .433007E+08
 *** RESPONSE EIGENVALUE = .1222E-08 OSCILLATION LIMIT = .5291E-01
 *** AUTO STEP TIME: NEXT TIME INC = .43301E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 239.1 CRITERION= .2079
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.601
 HT FLOW CONVERGENCE VALUE= .5642 CRITERION= .2065
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3514E-01
 HT FLOW CONVERGENCE VALUE= .5280E-01 CRITERION= .2064 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 251
 *** TIME = .103333E+10 TIME INC = .433007E+08
 *** RESPONSE EIGENVALUE = .1251E-08 OSCILLATION LIMIT = .5419E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8220)

HT FLOW CONVERGENCE VALUE= 233.7 CRITERION= .2018
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.981
 HT FLOW CONVERGENCE VALUE= 1.058 CRITERION= .1993
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7093E-01
 HT FLOW CONVERGENCE VALUE= .1035 CRITERION= .1992 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 253
 *** TIME = .111222E+10 TIME INC = .788940E+08

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*** RESPONSE EIGENVALUE = .1332E-08 OSCILLATION LIMIT = .1051
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 224.3 CRITERION= .1934
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.076
HT FLOW CONVERGENCE VALUE= 1.107 CRITERION= .1910
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6500E-01
HT FLOW CONVERGENCE VALUE= .8998E-01 CRITERION= .1909 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 255
*** TIME = .119112E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1466E-08 OSCILLATION LIMIT = .1157
*** AUTO TIME STEP: NEXT TIME INC = .71187E+08 DECREASED (FACTOR = .9023)

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HT FLOW CONVERGENCE VALUE= 215.2 CRITERION= .1868
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.858
HT FLOW CONVERGENCE VALUE= 1.060 CRITERION= .1847
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5436E-01
HT FLOW CONVERGENCE VALUE= .7097E-01 CRITERION= .1846 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 257
*** TIME = .126230E+10 TIME INC = .711866E+08
*** RESPONSE EIGENVALUE = .1610E-08 OSCILLATION LIMIT = .1146

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 10:01:55 JAN 19, 1995 CP= 90591.320
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 207.4 CRITERION= .1806
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.099
HT FLOW CONVERGENCE VALUE= .7483 CRITERION= .1786
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3878E-01
HT FLOW CONVERGENCE VALUE= .4999E-01 CRITERION= .1785 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 259
*** TIME = .133349E+10 TIME INC = .711866E+08
*** RESPONSE EIGENVALUE = .1159E-08 OSCILLATION LIMIT = .8252E-01
*** AUTO STEP TIME: NEXT TIME INC = .71187E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 200.0 CRITERION= .1756
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.066
HT FLOW CONVERGENCE VALUE= .7038 CRITERION= .1739
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3853E-01
HT FLOW CONVERGENCE VALUE= .4840E-01 CRITERION= .1738 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 261
*** TIME = .140468E+10 TIME INC = .711866E+08
*** RESPONSE EIGENVALUE = .1128E-08 OSCILLATION LIMIT = .8027E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1083)

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HT FLOW CONVERGENCE VALUE= 193.3 CRITERION= .1694
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.368
HT FLOW CONVERGENCE VALUE= .8198 CRITERION= .1675
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4115E-01
HT FLOW CONVERGENCE VALUE= .4985E-01 CRITERION= .1674 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 263
*** TIME = .148357E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1234E-08 OSCILLATION LIMIT = .9736E-01
*** AUTO TIME STEP: NEXT TIME INC = .47154E+08 DECREASED (FACTOR = .5977)

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HT FLOW CONVERGENCE VALUE= 186.4 CRITERION= .1657
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.423
HT FLOW CONVERGENCE VALUE= .5018 CRITERION= .1647

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2050E-01
 HT FLOW CONVERGENCE VALUE= .2410E-01 CRITERION= .1647 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 265
 *** TIME = .153073E+10 TIME INC = .471544E+08
 *** RESPONSE EIGENVALUE = .1278E-08 OSCILLATION LIMIT = .6026E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47154E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 182.4 CRITERION= .1618
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.464
 HT FLOW CONVERGENCE VALUE= .5219 CRITERION= .1608
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1959E-01
 HT FLOW CONVERGENCE VALUE= .2266E-01 CRITERION= .1607 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 267
 *** TIME = .157788E+10 TIME INC = .471544E+08
 *** RESPONSE EIGENVALUE = .1375E-08 OSCILLATION LIMIT = .6484E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 12:05:39 JAN 19, 1995 CP= 93864.040
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 178.6 CRITERION= .1595
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.111
 HT FLOW CONVERGENCE VALUE= .3917 CRITERION= .1586
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1521E-01
 HT FLOW CONVERGENCE VALUE= .1729E-01 CRITERION= .1585 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 269
 *** TIME = .162503E+10 TIME INC = .471544E+08
 *** RESPONSE EIGENVALUE = .1012E-08 OSCILLATION LIMIT = .4773E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47154E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 174.9 CRITERION= .1562
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.100
 HT FLOW CONVERGENCE VALUE= .3670 CRITERION= .1553
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1515E-01
 HT FLOW CONVERGENCE VALUE= .1692E-01 CRITERION= .1552 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 271
 *** TIME = .167219E+10 TIME INC = .471544E+08
 *** RESPONSE EIGENVALUE = .9898E-09 OSCILLATION LIMIT = .4667E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6731)

HT FLOW CONVERGENCE VALUE= 171.5 CRITERION= .1529
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.856
 HT FLOW CONVERGENCE VALUE= .6162 CRITERION= .1514
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2846E-01
 HT FLOW CONVERGENCE VALUE= .3116E-01 CRITERION= .1514 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 273
 *** TIME = .175108E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1022E-08 OSCILLATION LIMIT = .8061E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 166.1 CRITERION= .1478
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.886
 HT FLOW CONVERGENCE VALUE= .6209 CRITERION= .1465
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2689E-01
 HT FLOW CONVERGENCE VALUE= .2864E-01 CRITERION= .1465 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 275
 *** TIME = .182998E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1081E-08 OSCILLATION LIMIT = .8532E-01

*** AUTO TIME STEP: NEXT TIME INC = .63479E+08 DECREASED (FACTOR = .8046)

HT FLOW CONVERGENCE VALUE= 161.0 CRITERION= .1447
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.540
 HT FLOW CONVERGENCE VALUE= .5164 CRITERION= .1437
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1973E-01
 HT FLOW CONVERGENCE VALUE= .2047E-01 CRITERION= .1436 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 277
 *** TIME = .189346E+10 TIME INC = .634792E+08
 *** RESPONSE EIGENVALUE = .1139E-08 OSCILLATION LIMIT = .7230E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:21:52 JAN 19, 1995 CP= 96990.220
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 157.2 CRITERION= .1411
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.235
 HT FLOW CONVERGENCE VALUE= .4076 CRITERION= .1402
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1534E-01
 HT FLOW CONVERGENCE VALUE= .1561E-01 CRITERION= .1401 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 279
 *** TIME = .195694E+10 TIME INC = .634792E+08
 *** RESPONSE EIGENVALUE = .9055E-09 OSCILLATION LIMIT = .5748E-01
 *** AUTO STEP TIME: NEXT TIME INC = .63479E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 153.5 CRITERION= .1388
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.212
 HT FLOW CONVERGENCE VALUE= .3868 CRITERION= .1379
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1542E-01
 HT FLOW CONVERGENCE VALUE= .1542E-01 CRITERION= .1379 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 281
 *** TIME = .202041E+10 TIME INC = .634792E+08
 *** RESPONSE EIGENVALUE = .8777E-09 OSCILLATION LIMIT = .5572E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2428)

HT FLOW CONVERGENCE VALUE= 150.1 CRITERION= .1349
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.539
 HT FLOW CONVERGENCE VALUE= .4869 CRITERION= .1339
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1954E-01
 HT FLOW CONVERGENCE VALUE= .1907E-01 CRITERION= .1339 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 283
 *** TIME = .209931E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9299E-09 OSCILLATION LIMIT = .7336E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 146.0 CRITERION= .1321
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.545
 HT FLOW CONVERGENCE VALUE= .4884 CRITERION= .1311
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1898E-01
 HT FLOW CONVERGENCE VALUE= .1804E-01 CRITERION= .1311 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 285
 *** TIME = .217820E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9599E-09 OSCILLATION LIMIT = .7573E-01
 *** AUTO TIME STEP: NEXT TIME INC = .30830E+08 DECREASED (FACTOR = .3908)

HT FLOW CONVERGENCE VALUE= 142.3 CRITERION= .1295
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6187
 HT FLOW CONVERGENCE VALUE= .1990 CRITERION= .1292
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5448E-02

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HT FLOW CONVERGENCE VALUE= .5227E-02 CRITERION= .1292 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 287
*** TIME = .220903E+10 TIME INC = .308296E+08
*** RESPONSE EIGENVALUE = .1026E-08 OSCILLATION LIMIT = .3163E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:40:20 JAN 19, 1995 CP= 100126.460
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 140.8 CRITERION= .1289
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5671
HT FLOW CONVERGENCE VALUE= .1851 CRITERION= .1285
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5112E-02
HT FLOW CONVERGENCE VALUE= .4846E-02 CRITERION= .1285 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 289
*** TIME = .223986E+10 TIME INC = .308296E+08
*** RESPONSE EIGENVALUE = .9284E-09 OSCILLATION LIMIT = .2862E-01
*** AUTO STEP TIME: NEXT TIME INC = .30830E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 139.4 CRITERION= .1271
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5744
HT FLOW CONVERGENCE VALUE= .1828 CRITERION= .1267
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4953E-02
HT FLOW CONVERGENCE VALUE= .4678E-02 CRITERION= .1267 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 291
*** TIME = .227069E+10 TIME INC = .308296E+08
*** RESPONSE EIGENVALUE = .9561E-09 OSCILLATION LIMIT = .2948E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.5590)

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HT FLOW CONVERGENCE VALUE= 138.0 CRITERION= .1251
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.465
HT FLOW CONVERGENCE VALUE= .4579 CRITERION= .1242
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1647E-01
HT FLOW CONVERGENCE VALUE= .1483E-01 CRITERION= .1242 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 293
*** TIME = .234959E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .9621E-09 OSCILLATION LIMIT = .7590E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 134.7 CRITERION= .1214
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.489
HT FLOW CONVERGENCE VALUE= .4601 CRITERION= .1206
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1576E-01
HT FLOW CONVERGENCE VALUE= .1389E-01 CRITERION= .1205 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 295
*** TIME = .242848E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1019E-08 OSCILLATION LIMIT = .8040E-01
*** AUTO TIME STEP: NEXT TIME INC = .48064E+08 DECREASED (FACTOR = .6092)

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HT FLOW CONVERGENCE VALUE= 131.4 CRITERION= .1198
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9117
HT FLOW CONVERGENCE VALUE= .2871 CRITERION= .1193
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8223E-02
HT FLOW CONVERGENCE VALUE= .7254E-02 CRITERION= .1193 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 297
*** TIME = .247654E+10 TIME INC = .480644E+08
*** RESPONSE EIGENVALUE = .1051E-08 OSCILLATION LIMIT = .5051E-01
*** AUTO STEP TIME: NEXT TIME INC = .48064E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 129.5    CRITERION= .1174
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9266
HT FLOW CONVERGENCE VALUE= .2887    CRITERION= .1169
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7999E-02
HT FLOW CONVERGENCE VALUE= .6983E-02 CRITERION= .1169    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 6 COMPLETED. CUM ITER = 299
*** TIME = .252461E+10 TIME INC = .480644E+08
*** RESPONSE EIGENVALUE = .1104E-08 OSCILLATION LIMIT = .5305E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:21:49 JAN 19, 1995 CP= 103895.180
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 127.6    CRITERION= .1165
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6736
HT FLOW CONVERGENCE VALUE= .2175    CRITERION= .1160
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5745E-02
HT FLOW CONVERGENCE VALUE= .5011E-02 CRITERION= .1160    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 301
*** TIME = .257267E+10 TIME INC = .480644E+08
*** RESPONSE EIGENVALUE = .7777E-09 OSCILLATION LIMIT = .3738E-01
*** AUTO STEP TIME: NEXT TIME INC = .48064E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 125.8    CRITERION= .1145
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6549
HT FLOW CONVERGENCE VALUE= .1962    CRITERION= .1140
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5599E-02
HT FLOW CONVERGENCE VALUE= .4761E-02 CRITERION= .1140    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 303
*** TIME = .262074E+10 TIME INC = .480644E+08
*** RESPONSE EIGENVALUE = .7371E-09 OSCILLATION LIMIT = .3543E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6414)

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HT FLOW CONVERGENCE VALUE= 124.1    CRITERION= .1130
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.080
HT FLOW CONVERGENCE VALUE= .3205    CRITERION= .1123
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1069E-01
HT FLOW CONVERGENCE VALUE= .8758E-02 CRITERION= .1123    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 305
*** TIME = .269963E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7431E-09 OSCILLATION LIMIT = .5862E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 121.4    CRITERION= .1101
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.082
HT FLOW CONVERGENCE VALUE= .3125    CRITERION= .1095
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1031E-01
HT FLOW CONVERGENCE VALUE= .8279E-02 CRITERION= .1095    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 307
*** TIME = .277852E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7606E-09 OSCILLATION LIMIT = .6001E-01
*** AUTO TIME STEP: NEXT TIME INC = .61659E+08 DECREASED (FACTOR = .7815)

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HT FLOW CONVERGENCE VALUE= 118.9    CRITERION= .1088
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8534
HT FLOW CONVERGENCE VALUE= .2491    CRITERION= .1083
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7523E-02
HT FLOW CONVERGENCE VALUE= .6013E-02 CRITERION= .1083    <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 309
*** TIME = .284018E+10 TIME INC = .616591E+08
*** RESPONSE EIGENVALUE = .7812E-09 OSCILLATION LIMIT = .4817E-01
    Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
265.631169 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16407 STEP 1

14289 ELEMENTS (OF 14289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 107048.770 TIME= 17:44:24
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:44:25 JAN 19, 1995 CP= 107048.770
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 31
TIME AT END OF THE LOAD STEP. . . . . .31558E+10
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 10
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
  MINIMUM NUMBER OF SUBSTEPS . . . . . 4
  START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
  THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS
  THETA. . . . . .50000
  OSCILLATION LIMIT CRITERION. . . . . .50000
  TOLERANCE. . . . . .20000
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP
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HT FLOW CONVERGENCE VALUE= 117.0 CRITERION= .1067
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7227
 HT FLOW CONVERGENCE VALUE= .2090 CRITERION= .1062
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6089E-02
 HT FLOW CONVERGENCE VALUE= .4829E-02 CRITERION= .1062 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 311
 *** TIME = .290184E+10 TIME INC = .616591E+08
 *** RESPONSE EIGENVALUE = .6668E-09 OSCILLATION LIMIT = .4111E-01
 *** AUTO STEP TIME: NEXT TIME INC = .61659E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 115.2 CRITERION= .1058
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7125
 HT FLOW CONVERGENCE VALUE= .2013 CRITERION= .1053
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6174E-02
 HT FLOW CONVERGENCE VALUE= .4804E-02 CRITERION= .1053 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 313
 *** TIME = .296350E+10 TIME INC = .616591E+08
 *** RESPONSE EIGENVALUE = .6484E-09 OSCILLATION LIMIT = .3998E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2795)

HT FLOW CONVERGENCE VALUE= 113.5 CRITERION= .1034
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9202
 HT FLOW CONVERGENCE VALUE= .2536 CRITERION= .1029
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8199E-02
 HT FLOW CONVERGENCE VALUE= .6216E-02 CRITERION= .1029 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 315
 *** TIME = .304240E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6687E-09 OSCILLATION LIMIT = .5275E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 111.4 CRITERION= .1021
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9214
 HT FLOW CONVERGENCE VALUE= .2514 CRITERION= .1016
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8162E-02
 HT FLOW CONVERGENCE VALUE= .6088E-02 CRITERION= .1016 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 317
 *** TIME = .312129E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6775E-09 OSCILLATION LIMIT = .5345E-01
 *** AUTO TIME STEP: NEXT TIME INC = .34470E+08 DECREASED (FACTOR = .4369)

HT FLOW CONVERGENCE VALUE= 109.4 CRITERION= .1004
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4078
 HT FLOW CONVERGENCE VALUE= .1105 CRITERION= .1002
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2705E-02
 HT FLOW CONVERGENCE VALUE= .2167E-02 CRITERION= .1002 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 319
 *** TIME = .315576E+10 TIME INC = .344698E+08
 *** RESPONSE EIGENVALUE = .7134E-09 OSCILLATION LIMIT = .2459E-01

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:59:49 JAN 19, 1995 CP= 110177.710
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 108.6 CRITERION= .1004
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2532
 HT FLOW CONVERGENCE VALUE= .7533E-01 CRITERION= .1002 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 320
*** TIME = .319521E+10 TIME INC = .394470E+08
*** RESPONSE EIGENVALUE = .4213E-09 OSCILLATION LIMIT = .1662E-01
*** AUTO STEP TIME: NEXT TIME INC = .39447E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 107.6 CRITERION= .9927E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2286
HT FLOW CONVERGENCE VALUE= .5795E-01 CRITERION= .9903E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 321
*** TIME = .323465E+10 TIME INC = .394470E+08
*** RESPONSE EIGENVALUE = .3740E-09 OSCILLATION LIMIT = .1475E-01
*** AUTO TIME STEP: NEXT TIME INC = .11834E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 106.7 CRITERION= .9859E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6837
HT FLOW CONVERGENCE VALUE= .1676 CRITERION= .9795E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7260E-02
HT FLOW CONVERGENCE VALUE= .5152E-02 CRITERION= .9793E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 323
*** TIME = .335300E+10 TIME INC = .118341E+09
*** RESPONSE EIGENVALUE = .3491E-09 OSCILLATION LIMIT = .4131E-01
*** AUTO STEP TIME: NEXT TIME INC = .11834E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 104.2 CRITERION= .9631E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6643
HT FLOW CONVERGENCE VALUE= .1508 CRITERION= .9573E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7291E-02
HT FLOW CONVERGENCE VALUE= .5074E-02 CRITERION= .9572E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 325
*** TIME = .347134E+10 TIME INC = .118341E+09
*** RESPONSE EIGENVALUE = .3305E-09 OSCILLATION LIMIT = .3912E-01
*** AUTO TIME STEP: NEXT TIME INC = .35502E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 102.1 CRITERION= .9324E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.986
HT FLOW CONVERGENCE VALUE= .4190 CRITERION= .9175E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2906E-01
HT FLOW CONVERGENCE VALUE= .1954E-01 CRITERION= .9170E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 327
*** TIME = .382636E+10 TIME INC = .355023E+09
*** RESPONSE EIGENVALUE = .3221E-09 OSCILLATION LIMIT = .1144
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 96.65 CRITERION= .8435E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.528
HT FLOW CONVERGENCE VALUE= .8431 CRITERION= .8162E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7442E-01
HT FLOW CONVERGENCE VALUE= .4538E-01 CRITERION= .8152E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 329
*** TIME = .461530E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .3430E-09 OSCILLATION LIMIT = .2706
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 86.17 CRITERION= .7536E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.864
HT FLOW CONVERGENCE VALUE= .8761 CRITERION= .7308E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6383E-01
HT FLOW CONVERGENCE VALUE= .3420E-01 CRITERION= .7301E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 331
*** TIME = .540424E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .4180E-09 OSCILLATION LIMIT = .3298
*** AUTO TIME STEP: NEXT TIME INC = .45364E+09 DECREASED (FACTOR = .5750)

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HT FLOW CONVERGENCE VALUE= 77.33 CRITERION= .6855E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.980
 HT FLOW CONVERGENCE VALUE= .5635 CRITERION= .6738E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2729E-01
 HT FLOW CONVERGENCE VALUE= .1312E-01 CRITERION= .6735E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 333
 *** TIME = .585788E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .5092E-09 OSCILLATION LIMIT = .2310
 *** AUTO STEP TIME: NEXT TIME INC = .45364E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 72.75 CRITERION= .6409E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.118
 HT FLOW CONVERGENCE VALUE= .5712 CRITERION= .6301E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2546E-01
 HT FLOW CONVERGENCE VALUE= .1114E-01 CRITERION= .6298E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 9 COMPLETED. CUM ITER = 335
 *** TIME = .631152E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .5902E-09 OSCILLATION LIMIT = .2677

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:03:00 JAN 19, 1995 CP= 115305.660
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 68.52 CRITERION= .6111E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.190
 HT FLOW CONVERGENCE VALUE= .2574 CRITERION= .6018E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8388E-02
 HT FLOW CONVERGENCE VALUE= .3719E-02 CRITERION= .6016E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 337
 *** TIME = .676516E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .2456E-09 OSCILLATION LIMIT = .1114
 *** AUTO STEP TIME: NEXT TIME INC = .45364E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 64.80 CRITERION= .5943E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.024
 HT FLOW CONVERGENCE VALUE= .1808 CRITERION= .5872E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7881E-02
 HT FLOW CONVERGENCE VALUE= .3275E-02 CRITERION= .5870E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 339
 *** TIME = .721880E+10 TIME INC = .453641E+09
 *** RESPONSE EIGENVALUE = .1906E-09 OSCILLATION LIMIT = .8646E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7391)

HT FLOW CONVERGENCE VALUE= 61.86 CRITERION= .5586E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.802
 HT FLOW CONVERGENCE VALUE= .2940 CRITERION= .5487E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1556E-01
 HT FLOW CONVERGENCE VALUE= .6058E-02 CRITERION= .5484E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 341
 *** TIME = .800774E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1896E-09 OSCILLATION LIMIT = .1496
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 57.30 CRITERION= .5316E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.775
 HT FLOW CONVERGENCE VALUE= .2672 CRITERION= .5241E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1478E-01
 HT FLOW CONVERGENCE VALUE= .5467E-02 CRITERION= .5239E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 343
 *** TIME = .879668E+10 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .67060E+09 DECREASED (FACTOR = .8500)

HT FLOW CONVERGENCE VALUE= 53.47 CRITERION= .4990E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.580
 HT FLOW CONVERGENCE VALUE= .2379 CRITERION= .4942E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1132E-01
 HT FLOW CONVERGENCE VALUE= .3902E-02 CRITERION= .4941E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 345
 *** TIME = .946728E+10 TIME INC = .670599E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:18:29 JAN 19, 1995 CP= 118440.280
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 50.44 CRITERION= .4887E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9218
 HT FLOW CONVERGENCE VALUE= .1406 CRITERION= .4853E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6244E-02
 HT FLOW CONVERGENCE VALUE= .2081E-02 CRITERION= .4852E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 347
 *** TIME = .101379E+11 TIME INC = .670599E+09
 *** AUTO STEP TIME: NEXT TIME INC = .67060E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 47.83 CRITERION= .4686E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8936
 HT FLOW CONVERGENCE VALUE= .1249 CRITERION= .4665E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6076E-02
 HT FLOW CONVERGENCE VALUE= .1975E-02 CRITERION= .4664E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 349
 *** TIME = .108085E+11 TIME INC = .670599E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1765)

HT FLOW CONVERGENCE VALUE= 45.46 CRITERION= .4592E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.048
 HT FLOW CONVERGENCE VALUE= .1397 CRITERION= .4581E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7255E-02
 HT FLOW CONVERGENCE VALUE= .2267E-02 CRITERION= .4581E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 351
 *** TIME = .115974E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .51281E+09 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 42.99 CRITERION= .4443E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6977
 HT FLOW CONVERGENCE VALUE= .9329E-01 CRITERION= .4442E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4015E-02
 HT FLOW CONVERGENCE VALUE= .1221E-02 CRITERION= .4442E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 353
 *** TIME = .121102E+11 TIME INC = .51281E+09
 *** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 41.47 CRITERION= .4415E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7010
 HT FLOW CONVERGENCE VALUE= .9260E-01 CRITERION= .4419E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3921E-02
 HT FLOW CONVERGENCE VALUE= .1159E-02 CRITERION= .4419E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 355

*** TIME = .126230E+11 TIME INC = .512811E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 23:34:02 JAN 19, 1995 CP= 121575.230
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 40.08 CRITERION= .4308E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5091
HT FLOW CONVERGENCE VALUE= .6889E-01 CRITERION= .4316E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2664E-02
HT FLOW CONVERGENCE VALUE= .7744E-03 CRITERION= .4316E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 357
*** TIME = .131359E+11 TIME INC = .512811E+09
*** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 38.73 CRITERION= .4314E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4849
HT FLOW CONVERGENCE VALUE= .6154E-01 CRITERION= .4326E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2620E-02
HT FLOW CONVERGENCE VALUE= .7445E-03 CRITERION= .4326E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 359
*** TIME = .136487E+11 TIME INC = .512811E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5385)

HT FLOW CONVERGENCE VALUE= 37.54 CRITERION= .4188E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7630
HT FLOW CONVERGENCE VALUE= .9341E-01 CRITERION= .4213E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4440E-02
HT FLOW CONVERGENCE VALUE= .1198E-02 CRITERION= .4213E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 361
*** TIME = .144376E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 35.74 CRITERION= .4182E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7619
HT FLOW CONVERGENCE VALUE= .9085E-01 CRITERION= .4213E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4298E-02
HT FLOW CONVERGENCE VALUE= .1122E-02 CRITERION= .4212E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 363
*** TIME = .152265E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .55226E+09 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 34.16 CRITERION= .4105E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5520
HT FLOW CONVERGENCE VALUE= .6637E-01 CRITERION= .4129E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2640E-02
HT FLOW CONVERGENCE VALUE= .6819E-03 CRITERION= .4129E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 365
*** TIME = .157788E+11 TIME INC = .552258E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:49:48 JAN 20, 1995 CP= 124711.150
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 33.08 CRITERION= .4130E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4865
HT FLOW CONVERGENCE VALUE= .5863E-01 CRITERION= .4156E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2277E-02
HT FLOW CONVERGENCE VALUE= .5764E-03 CRITERION= .4156E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 367
*** TIME = .163311E+11 TIME INC = .552258E+09
*** AUTO STEP TIME: NEXT TIME INC = .55226E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 32.11 CRITERION= .4059E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4963
HT FLOW CONVERGENCE VALUE= .5859E-01 CRITERION= .4086E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2231E-02
HT FLOW CONVERGENCE VALUE= .5531E-03 CRITERION= .4086E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 369
*** TIME = .168833E+11 TIME INC = .552258E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 31.15 CRITERION= .4067E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7112
HT FLOW CONVERGENCE VALUE= .8175E-01 CRITERION= .4108E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3443E-02
HT FLOW CONVERGENCE VALUE= .8032E-03 CRITERION= .4107E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 371
*** TIME = .176723E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 29.94 CRITERION= .3996E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7345
HT FLOW CONVERGENCE VALUE= .8306E-01 CRITERION= .4039E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3361E-02
HT FLOW CONVERGENCE VALUE= .7587E-03 CRITERION= .4038E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 373
*** TIME = .184612E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 28.73 CRITERION= .4045E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4440
HT FLOW CONVERGENCE VALUE= .5102E-01 CRITERION= .4071E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1715E-02
HT FLOW CONVERGENCE VALUE= .4059E-03 CRITERION= .4071E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 375
*** TIME = .189346E+11 TIME INC = .473364E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:05:23 JAN 20, 1995 CP= 127848.970
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 28.10 CRITERION= .3999E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3532
HT FLOW CONVERGENCE VALUE= .4232E-01 CRITERION= .4025E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1298E-02
HT FLOW CONVERGENCE VALUE= .3221E-03 CRITERION= .4025E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 377
*** TIME = .194079E+11 TIME INC = .473364E+09
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 27.45 CRITERION= .4041E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3388
HT FLOW CONVERGENCE VALUE= .3932E-01 CRITERION= .4067E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 378
*** TIME = .198813E+11 TIME INC = .473364E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 26.89 CRITERION= .3980E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5765
HT FLOW CONVERGENCE VALUE= .6435E-01 CRITERION= .4023E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2330E-02
HT FLOW CONVERGENCE VALUE= .4986E-03 CRITERION= .4023E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 380
*** TIME = .206702E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.92 CRITERION= .4022E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5758
HT FLOW CONVERGENCE VALUE= .6302E-01 CRITERION= .4064E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2295E-02
HT FLOW CONVERGENCE VALUE= .4749E-03 CRITERION= .4064E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 382
*** TIME = .214592E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 25.10 CRITERION= .3990E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4741
HT FLOW CONVERGENCE VALUE= .5135E-01 CRITERION= .4023E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1713E-02
HT FLOW CONVERGENCE VALUE= .3652E-03 CRITERION= .4023E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 384
*** TIME = .220903E+11 TIME INC = .631152E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 03:15:10 JAN 20, 1995 CP= 130741.080
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 24.44 CRITERION= .4037E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3891
HT FLOW CONVERGENCE VALUE= .4384E-01 CRITERION= .4069E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1375E-02
HT FLOW CONVERGENCE VALUE= .3014E-03 CRITERION= .4069E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 386
*** TIME = .227215E+11 TIME INC = .631152E+09
*** AUTO TIME STEP: NEXT TIME INC = .63115E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.87 CRITERION= .4005E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3913
HT FLOW CONVERGENCE VALUE= .4242E-01 CRITERION= .4037E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1342E-02
HT FLOW CONVERGENCE VALUE= .2879E-03 CRITERION= .4036E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 388
*** TIME = .233526E+11 TIME INC = .631152E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 23.28 CRITERION= .4043E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4852
HT FLOW CONVERGENCE VALUE= .5165E-01 CRITERION= .4081E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1740E-02
 HT FLOW CONVERGENCE VALUE= .3460E-03 CRITERION= .4081E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 390
 *** TIME = .241416E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.67 CRITERION= .4014E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4961
 HT FLOW CONVERGENCE VALUE= .5139E-01 CRITERION= .4051E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1717E-02
 HT FLOW CONVERGENCE VALUE= .3372E-03 CRITERION= .4051E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 392
 *** TIME = .249305E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+09 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 22.05 CRITERION= .4075E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1963
 HT FLOW CONVERGENCE VALUE= .2086E-01 CRITERION= .4089E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 393
 *** TIME = .252461E+11 TIME INC = .315576E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 04:24:36 JAN 20, 1995 CP= 133635.060
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 21.84 CRITERION= .4044E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1703
 HT FLOW CONVERGENCE VALUE= .1872E-01 CRITERION= .4058E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 394
 *** TIME = .255617E+11 TIME INC = .315576E+09
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 21.61 CRITERION= .4084E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1626
 HT FLOW CONVERGENCE VALUE= .1773E-01 CRITERION= .4097E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 395
 *** TIME = .258772E+11 TIME INC = .315576E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 21.43 CRITERION= .4040E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4158
 HT FLOW CONVERGENCE VALUE= .4325E-01 CRITERION= .4073E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1387E-02
 HT FLOW CONVERGENCE VALUE= .2717E-03 CRITERION= .4073E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 397
 *** TIME = .266662E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 20.90 CRITERION= .4084E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4112
 HT FLOW CONVERGENCE VALUE= .4222E-01 CRITERION= .4115E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1321E-02
 HT FLOW CONVERGENCE VALUE= .2576E-03 CRITERION= .4115E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 399
 *** TIME = .274551E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 20.46 CRITERION= .4069E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2533
HT FLOW CONVERGENCE VALUE= .2571E-01 CRITERION= .4086E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 400
*** TIME = .279285E+11 TIME INC = .473364E+09
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 20.19 CRITERION= .4106E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2475
HT FLOW CONVERGENCE VALUE= .2527E-01 CRITERION= .4123E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 6 COMPLETED. CUM ITER = 401
*** TIME = .284018E+11 TIME INC = .473364E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 05:31:00 JAN 20, 1995 CP= 136422.140
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 19.96 CRITERION= .4081E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2119
HT FLOW CONVERGENCE VALUE= .2250E-01 CRITERION= .4097E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 402
*** TIME = .288752E+11 TIME INC = .473364E+09
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 19.71 CRITERION= .4119E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2019
HT FLOW CONVERGENCE VALUE= .2127E-01 CRITERION= .4134E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 403
*** TIME = .293486E+11 TIME INC = .473364E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 19.50 CRITERION= .4088E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3449
HT FLOW CONVERGENCE VALUE= .3479E-01 CRITERION= .4112E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 404
*** TIME = .301375E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 19.12 CRITERION= .4127E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3377
HT FLOW CONVERGENCE VALUE= .3384E-01 CRITERION= .4149E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 405
*** TIME = .309264E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 18.82 CRITERION= .4108E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2771
HT FLOW CONVERGENCE VALUE= .2719E-01 CRITERION= .4124E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 406
*** TIME = .315576E+11 TIME INC = .631152E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 138335.900

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21w5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 06:16:40 JAN 20, 1995 CP= 138354.320
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 68.76841

PARAMETER WPSID(JINC) = 68.82121

PARAMETER WPBOT(JINC) = 68.86387

PARAMETER DFTOP(JINC) = 26.14005

PARAMETER DFSID(JINC) = 26.14005

PARAMETER DFEDG(JINC) = 26.14005

PARAMETER DFBOT(JINC) = 26.16329

PARAMETER WPTOP(JINC,0) = 31.55760

PARAMETER WPSID(JINC,0) = 31.55760

PARAMETER WPBOT(JINC,0) = 31.55760

PARAMETER DFTOP(JINC,0) = 31.55760

PARAMETER DFSID(JINC,0) = 31.55760

PARAMETER DFEDG(JINC,0) = 31.55760

PARAMETER DFBOT(JINC,0) = 31.55760

PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 130

TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 107.4680

PARAMETER WPSID(JINC) = 108.6018

PARAMETER WPBOT(JINC) = 111.2412

PARAMETER DFTOP(JINC) = 46.86124

PARAMETER DFSID(JINC) = 46.65267

PARAMETER DFEDG(JINC) = 46.02128

PARAMETER DFBOT(JINC) = 43.15715

PARAMETER WPTOP(JINC,0) = .3155763E+08

PARAMETER WPSID(JINC,0) = .3155763E+08

PARAMETER WPBOT(JINC,0) = .3155763E+08

PARAMETER DFTOP(JINC,0) = .3155763E+08

PARAMETER DFSID(JINC,0) = .3155763E+08

PARAMETER DFEDG(JINC,0) = .3155763E+08

PARAMETER DFBOT(JINC,0) = .3155763E+08

PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 220
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 115.6315

PARAMETER WPSID(JINC) = 116.5831

PARAMETER WPBOT(JINC) = 118.8045

PARAMETER DFTOP(JINC) = 68.78455

PARAMETER DFSID(JINC) = 68.64600

PARAMETER DFEDG(JINC) = 68.08395

PARAMETER DFBOT(JINC) = 65.32199

PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09

PARAMETER WPBOT(JINC,0) = .3155760E+09

PARAMETER DFTOP(JINC,0) = .3155760E+09

PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 319
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 92.92296

PARAMETER WPSID(JINC) = 93.29204

PARAMETER WPBOT(JINC) = 94.11280

PARAMETER DFTOP(JINC) = 75.68961

PARAMETER DFSID(JINC) = 75.68487

PARAMETER DFEDG(JINC) = 75.48513

PARAMETER DFBOT(JINC) = 74.51056

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10

PARAMETER DFTOP(JINC,0) = .3155760E+10

PARAMETER DFSID(JINC,0) = .3155760E+10

PARAMETER DFEDG(JINC,0) = .3155760E+10

PARAMETER DFBOT(JINC,0) = .3155760E+10

PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 141836.550

*** NOTE *** CP= 141836.560 TIME= 07:16:57
Write parameters to file= c21w5a.parm.

*** NOTE *** CP= 141836.620 TIME= 07:16:57
Parameters written. Lines= 770.

*** WARNING *** CP= 141836.620 TIME= 07:16:57
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c21w5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 07:16:57 JAN 20, 1995 CP= 141836.720

FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 50.00

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .00000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

7144 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 35.00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .00000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

7144 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

7144 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 141877.250 TIME= 07:17:54
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 80
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 141911.430 TIME= 07:18:31
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 130
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 141945.380 TIME= 07:19:08
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 179
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 141979.370 TIME= 07:19:45
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 220
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142013.420 TIME= 07:20:22
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 267
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142047.370 TIME= 07:20:59
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 319
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142081.420 TIME= 07:21:36
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 365
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142115.500 TIME= 07:22:14
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 406
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142149.580 TIME= 07:22:51
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00

KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .000000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

3572 ELEMENTS (OF 14289 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142184.620 TIME= 07:23:31
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 80
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142213.600 TIME= 07:24:03
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 130
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142242.510 TIME= 07:24:35
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 179
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142271.350 TIME= 07:25:07
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 220
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142300.090 TIME= 07:25:38
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 267
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142328.870 TIME= 07:26:10
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 319
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142357.590 TIME= 07:26:43
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 365
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142386.370 TIME= 07:27:15
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 406
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 142415.170 TIME= 07:27:47
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 142423.080

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 07:27:55 JAN 20, 1995 CP= 142423.080
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2	IS AT NODE	123	ITEM= TEMP COMP=	NAME= wmidside
VARIABLE 3	IS AT NODE	1882	ITEM= TEMP COMP=	NAME= wwpeside
VARIABLE 4	IS AT NODE	129	ITEM= TEMP COMP=	NAME= wmidtop
VARIABLE 5	IS AT NODE	1888	ITEM= TEMP COMP=	NAME= wwpetop
VARIABLE 6	IS AT NODE	*22	ITEM= TEMP COMP=	NAME= wmidbot

VARIABLE 7 IS AT NODE 1881 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	123 TEMP	wmidside	26.14	.1000E-05	117.1	.2525E+09
3 NSOL	1882 TEMP	wwpeside	26.14	.1000E-05	101.7	.6312E+09
4 NSOL	129 TEMP	wmidtop	26.13	.1000E-05	116.1	.2525E+09
5 NSOL	1888 TEMP	wwpetop	26.14	.1000E-05	101.3	.6312E+09
6 NSOL	122 TEMP	wmidbot	26.14	.1000E-05	119.4	.2525E+09
7 NSOL	1881 TEMP	wwpebot	26.14	.1000E-05	102.5	.3156E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:02 JAN 20, 1995 CP= 142426.260
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST25 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1882 TEMP wwpeside	129 TEMP wmidtop	1888 TEMP wwpetop	122 TEMP wmidbot	1881 TEMP wwpebot
.10000E-05	26.1402	26.1399	26.1348	26.1364	26.1448	26.1425
.20000E-05	68.8212	55.5080	68.7684	55.4230	68.8639	55.7125
31.558	68.8212	55.5080	68.7684	55.4230	68.8639	55.7125
.31558E+07	94.3626	75.5601	93.2213	75.0250	97.0071	76.7412
.63116E+07	98.7758	79.8658	97.6189	79.3222	101.458	81.0629
.94673E+07	101.311	82.4504	100.153	81.9067	103.995	83.6461
.12623E+08	103.102	84.3182	101.947	83.7764	105.779	85.5079
.15779E+08	104.478	85.7807	103.326	85.2406	107.152	86.9692
.18935E+08	105.582	86.9713	104.433	86.4337	108.247	88.1534
.22090E+08	106.508	87.9821	105.363	87.4465	109.169	89.1619
.25246E+08	107.302	88.8555	106.161	88.3223	109.955	90.0292
.28402E+08	107.992	89.6225	106.854	89.0915	110.639	90.7937
.31558E+08	108.602	90.3046	107.468	89.7758	111.241	91.4706
.63115E+08	112.317	94.6221	111.214	94.1108	114.894	95.7552
.94673E+08	114.127	96.8900	113.048	96.3917	116.652	97.9976
.12623E+09	115.185	98.3300	114.128	97.8425	117.662	99.4129
.15779E+09	115.885	99.3653	114.846	98.8871	118.319	100.428
.18935E+09	116.361	100.149	115.340	99.6790	118.753	101.191
.22090E+09	116.716	100.786	115.710	100.324	119.070	101.811
.25246E+09	117.113	101.418	116.121	100.962	119.434	102.426
.28402E+09	116.773	101.463	115.804	101.019	119.038	102.447
.31558E+09	116.583	101.566	115.631	101.130	118.804	102.529
.63115E+09	114.491	101.702	113.674	101.330	116.382	102.516
.94673E+09	111.462	100.312	110.748	99.9884	113.107	101.019
.12623E+10	107.593	97.8563	106.969	97.5737	109.020	98.4682
.15779E+10	104.297	95.6171	103.740	95.3652	105.563	96.1606
.18935E+10	101.517	93.6611	101.012	93.4332	102.657	94.1496
.22090E+10	99.1383	91.9490	98.6760	91.7402	100.178	92.3956
.25246E+10	96.7030	90.1353	96.2805	89.9443	97.6490	90.5419
.28402E+10	94.8669	88.7507	94.4733	88.5729	95.7441	89.1273
.31558E+10	93.2920	87.5600	92.9230	87.3931	94.1128	87.9133
.63115E+10	84.7879	81.1355	84.5512	81.0282	85.3037	81.3575
.94673E+10	81.1135	78.1941	80.9238	78.1078	81.5242	78.3720
.12623E+11	78.9878	76.5030	78.8261	76.4293	79.3355	76.6530
.15779E+11	77.4147	75.2393	77.2728	75.1746	77.7193	75.3716
.18935E+11	75.8555	73.9519	75.7310	73.8951	76.1206	74.0664
.22090E+11	74.5137	72.8140	74.4023	72.7629	74.7509	72.9173
.25246E+11	73.3251	71.7858	73.2239	71.7394	73.5389	71.8784
.28402E+11	72.2738	70.8625	72.1806	70.8196	72.4697	70.9473
.31558E+11	71.3676	70.0559	71.2806	70.0157	71.5504	70.1359

```
*      Waste Package Inside Shell Temperatures      *
*****
smidside = midlength side inside shell
swpeside = end of WP side inside shell
smidtop  = midlength top inside shell
swpetop  = end of WP top inside shell
smidbot  = midlength bottom inside shell
swpebot  = end of WP bottom inside shell
```

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 142426.750 TIME= 07:28:03
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1070 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1220 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 1035 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	117.8	.2525E+09
3	NSOL	1070 TEMP	swpeside	26.14	.1000E-05	102.4	.6312E+09
4	NSOL	38 TEMP	smidtop	26.13	.1000E-05	116.8	.2525E+09
5	NSOL	1220 TEMP	swpetop	26.14	.1000E-05	102.0	.6312E+09
6	NSOL	2 TEMP	smidbot	26.14	.1000E-05	120.1	.2525E+09
7	NSOL	1035 TEMP	swpebot	26.14	.1000E-05	103.3	.3156E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:06 JAN 20, 1995 CP= 142429.390
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1070 TEMP swpeside	38 TEMP smidtop	1220 TEMP swpetop	2 TEMP smidbot	1035 TEMP swpebot
.10000E-05	26.1402	26.1399	26.1349	26.1365	26.1448	26.1425
.20000E-05	69.6280	56.3872	69.5764	56.3193	69.6713	56.5636
31.558	69.6280	56.3872	69.5764	56.3194	69.6713	56.5636
.31558E+07	95.1565	76.5401	94.0182	76.0266	97.7399	77.6574
.63116E+07	99.5711	80.8497	98.4174	80.3290	102.191	81.9813
.94673E+07	102.106	83.4331	100.951	82.9129	104.727	84.5629
.12623E+08	103.896	85.2987	102.743	84.7806	106.511	86.4227
.15779E+08	105.270	86.7586	104.121	86.2424	107.882	87.8811
.18935E+08	106.373	87.9464	105.227	87.4327	108.977	89.0629
.22090E+08	107.297	88.9544	106.156	88.4428	109.896	90.0685
.25246E+08	108.091	89.8252	106.952	89.3159	110.682	90.9335
.28402E+08	108.778	90.5894	107.644	90.0823	111.364	91.6952
.31558E+08	109.387	91.2690	108.256	90.7641	111.966	92.3701
.63115E+08	113.087	95.5633	111.987	95.0752	115.606	96.6333
.94673E+08	114.883	97.8115	113.808	97.3360	117.350	98.8571
.12623E+09	115.929	99.2339	114.874	98.7688	118.348	100.256
.15779E+09	116.616	100.253	115.580	99.7967	118.993	101.256
.18935E+09	117.081	101.021	116.062	100.573	119.417	102.005
.22090E+09	117.424	101.644	116.421	101.204	119.723	102.612

.25246E+09	117.811	102.264	116.822	101.830	120.079	103.216
.28402E+09	117.453	102.287	116.487	101.864	119.666	103.216
.31558E+09	117.250	102.374	116.301	101.958	119.420	103.284
.63115E+09	115.054	102.386	114.240	102.031	116.901	103.155
.94673E+09	111.947	100.903	111.234	100.594	113.553	101.571
.12623E+10	108.009	98.3663	107.386	98.0965	109.404	98.9444
.15779E+10	104.662	96.0672	104.107	95.8266	105.899	96.5805
.18935E+10	101.843	94.0651	101.340	93.8473	102.957	94.5267
.22090E+10	99.4339	92.3161	98.9731	92.1166	100.449	92.7379
.25246E+10	96.9701	90.4683	96.5489	90.2858	97.8939	90.8524
.28402E+10	95.1135	89.0592	94.7212	88.8893	95.9709	89.4153
.31558E+10	93.5214	87.8478	93.1536	87.6882	94.3231	88.1816
.63115E+10	84.9288	81.3144	84.6929	81.2116	85.4332	81.5245
.94673E+10	81.2243	78.3355	81.0353	78.2529	81.6254	78.5037
.12623E+11	79.0812	76.6226	78.9201	76.5521	79.4215	76.7647
.15779E+11	77.4960	75.3435	77.3546	75.2815	77.7933	75.4686
.18935E+11	75.9261	74.0427	75.8021	73.9882	76.1856	74.1513
.22090E+11	74.5764	72.8947	74.4654	72.8458	74.8079	72.9924
.25246E+11	73.3816	71.8588	73.2808	71.8142	73.5909	71.9465
.28402E+11	72.3253	70.9291	72.2325	70.8880	72.5171	71.0096
.31558E+11	71.4153	70.1176	71.3287	70.0791	71.5937	70.1933

 * Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 142429.870 TIME= 07:28:06
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 1040 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1761 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2788 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2776 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
 VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2	NSOL	1 TEMP	wmidcent	26.14	.1000E-05	207.0	.9467E+08
3	NSOL	1040 TEMP	shellcnt	26.14	.1000E-05	104.8	.2525E+09
4	NSOL	1761 TEMP	wwpecent	26.14	.1000E-05	104.1	.3156E+09
5	NSOL	147 TEMP	imidbot	26.16	.2000E-05	91.41	.6312E+09
6	NSOL	2788 TEMP	iwpebot	26.16	.2000E-05	87.71	.9467E+09
7	NSOL	2776 TEMP	idfebot	26.16	.2000E-05	75.67	.1893E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:09 JAN 20, 1995 CP= 142432.510
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	1040 TEMP shellcnt	1761 TEMP wwpecent	147 TEMP imidbot	2788 TEMP iwpebot	2776 TEMP idfefbot
.10000E-05	26.1400	26.1397	26.1397	26.1711	26.1701	26.1705
.20000E-05	167.329	61.4889	60.7275	26.1633	26.1633	26.1633
31.558	167.329	61.4890	60.7275	26.1633	26.1633	26.1633
.31558E+07	192.022	79.8728	79.0366	53.3282	47.0421	29.0048
.63116E+07	196.509	84.0178	83.1786	59.9904	53.3788	31.7323
.94673E+07	198.932	86.5286	85.6880	63.6926	57.0312	33.9307
.12623E+08	200.588	88.3562	87.5127	66.2524	59.6000	35.7797
.15779E+08	201.789	89.7784	88.9385	68.1968	61.5725	37.3781
.18935E+08	202.714	90.9471	90.1057	69.7570	63.1676	38.7857
.22090E+08	203.450	91.9307	91.0931	71.0565	64.5037	40.0425
.25246E+08	204.074	92.7899	91.9512	72.1698	65.6531	41.1769
.28402E+08	204.570	93.5356	92.7008	73.1398	66.6587	42.2100
.31558E+08	205.006	94.2071	93.3713	73.9989	67.5519	43.1572
.63115E+08	206.898	98.4153	97.5943	79.4002	73.2325	49.7582
.94673E+08	206.980	100.596	99.7920	82.2851	76.3207	53.7044
.12623E+09	206.409	101.966	101.173	84.1851	78.3838	56.4722
.15779E+09	205.573	102.930	102.153	85.5949	79.9329	58.6172
.18935E+09	204.578	103.653	102.886	86.7095	81.1721	60.3847
.22090E+09	203.536	104.227	103.475	87.6390	82.2148	61.9026
.25246E+09	202.799	104.814	104.069	88.5091	83.1790	63.2637
.28402E+09	200.230	104.764	104.040	88.9167	83.7288	64.3741
.31558E+09	198.390	104.803	104.091	89.2913	84.2151	65.3220
.63115E+09	183.575	104.424	103.822	91.4134	87.1590	71.5582
.94673E+09	170.930	102.650	102.133	91.3889	87.7147	74.3648
.12623E+10	158.668	99.8669	99.4211	90.0655	86.8776	75.3738
.15779E+10	149.173	97.3816	96.9917	88.6551	85.8263	75.6684
.18935E+10	141.643	95.2427	94.8919	87.3489	84.7972	75.6687
.22090E+10	135.476	93.3792	93.0634	86.1558	83.8267	75.5178
.25246E+10	129.541	91.4291	91.1436	84.8280	82.7051	75.1495
.28402E+10	125.200	89.9502	89.6843	83.7994	81.8260	74.8164
.31558E+10	121.518	88.6741	88.4285	82.9084	81.0614	74.5106
.63115E+10	102.099	81.8244	81.6716	78.1474	76.9801	72.8731
.94673E+10	94.7234	78.7342	78.6158	75.7882	74.8573	71.5917
.12623E+11	90.4587	76.9616	76.8597	74.4520	73.6608	70.8885
.15779E+11	87.3879	75.6355	75.5489	73.4358	72.7437	70.3218
.18935E+11	84.5184	74.2993	74.2220	72.3729	71.7678	69.6516
.22090E+11	82.2042	73.1198	73.0531	71.3973	70.8571	68.9691
.25246E+11	80.2508	72.0644	72.0023	70.5039	70.0148	68.3060
.28402E+11	78.5935	71.1170	71.0602	69.6856	69.2371	67.6709
.31558E+11	77.2201	70.2888	70.2382	68.9579	68.5408	67.0848

* Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 142433.000 TIME= 07:28:09
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2802 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2780 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2873 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2863 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	104.2	.3156E+09
3	NSOL	2802 TEMP	iwpecent	26.14	.2000E-05	95.57	.6312E+09
4	NSOL	2780 TEMP	idfecent	26.14	.2000E-05	77.82	.1262E+10
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	97.68	.6312E+09
6	NSOL	2873 TEMP	iwpeedge	26.14	.2000E-05	91.88	.6312E+09
7	NSOL	2863 TEMP	idfeedge	26.14	.2000E-05	77.24	.1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:12 JAN 20, 1995 CP= 142435.640
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2802 TEMP iwpecent	2780 TEMP idfecent	157 TEMP imidedge	2873 TEMP iwpeedge	2863 TEMP idfeedge
.10000E-05	26.1497	26.1474	26.1463	26.1530	26.1527	26.1552
.20000E-05	26.1400	26.1400	26.1400	26.1400	26.1400	26.1400
31.558	26.1548	26.1482	26.1401	26.1444	26.1426	26.1400
.31558E+07	75.1972	62.0700	31.3736	64.0555	55.0483	30.6380
.63116E+07	80.6224	67.4778	34.8042	69.9729	60.8218	33.8315
.94673E+07	83.7189	70.6582	37.3714	73.3486	64.2177	36.2792
.12623E+08	85.8943	72.9289	39.4517	75.7185	66.6374	38.2879
.15779E+08	87.5556	74.6865	41.2066	77.5332	68.5094	39.9966
.18935E+08	88.8976	76.1181	42.7246	78.9983	70.0321	41.4837
.22090E+08	90.0175	77.3224	44.0616	80.2234	71.3127	42.7996
.25246E+08	90.9835	78.3651	45.2560	81.2785	72.4196	43.9791
.28402E+08	91.8209	79.2760	46.3340	82.1967	73.3880	45.0469
.31558E+08	92.5664	80.0891	47.3154	83.0134	74.2513	46.0213
.63115E+08	97.1870	85.2383	54.0148	88.1295	79.7394	52.7184
.94673E+08	99.5536	87.9805	57.9366	90.8155	82.6940	56.6675
.12623E+09	101.033	89.7623	60.6594	92.5439	84.6396	59.4201
.15779E+09	102.080	91.0677	62.7565	93.7999	86.0821	61.5454
.18935E+09	102.863	92.0837	64.4741	94.7694	87.2194	63.2897
.22090E+09	103.488	92.9215	65.9428	95.5630	88.1660	64.7832
.25246E+09	104.113	93.7222	67.2627	96.3259	89.0554	66.1239
.28402E+09	104.100	93.9827	68.2876	96.5236	89.4494	67.1802
.31558E+09	104.157	94.2511	69.1646	96.7417	89.8201	68.0840
.63115E+09	103.905	95.5671	74.8457	97.6770	91.8799	73.9557
.94673E+09	102.166	94.9467	77.2066	96.7686	91.7693	76.4501
.12623E+10	99.3815	93.1075	77.8151	94.6791	90.3504	77.1697
.15779E+10	96.8953	91.3205	77.8090	92.7068	88.8713	77.2446
.18935E+10	94.7580	89.7251	77.5776	90.9684	87.5139	77.0748
.22090E+10	92.8998	88.3027	77.2413	89.4318	86.2821	76.7872
.25246E+10	90.9554	86.7629	76.7018	87.7863	84.9190	76.2924
.28402E+10	89.4820	85.5830	76.2448	86.5297	83.8670	75.8676
.31558E+10	88.2149	84.5645	75.8353	85.4474	82.9572	75.4851
.63115E+10	81.4574	79.1460	73.6662	79.6931	78.1268	73.4557
.94673E+10	78.4118	76.5676	72.2059	76.9994	75.7527	72.0419
.12623E+11	76.6728	75.1050	71.4020	75.4699	74.4118	71.2645
.15779E+11	75.3730	74.0015	70.7649	74.3194	73.3946	70.6460
.18935E+11	74.0610	72.8616	70.0334	73.1383	72.3307	69.9307
.22090E+11	72.9000	71.8292	69.3048	72.0754	71.3548	69.2143
.25246E+11	71.8602	70.8907	68.6056	71.1127	70.4610	68.5248
.28402E+11	70.9253	70.0363	67.9413	70.2394	69.6423	67.8683
.31558E+11	70.1070	69.2804	67.3322	69.4691	68.9141	67.2653

 * Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 142436.130 TIME= 07:28:12
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2976 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2940 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3223 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 3201 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	98.50	.6312E+09
3	NSOL	2976 TEMP	dwpeside	26.14	.2000E-05	92.63	.6312E+09
4	NSOL	2940 TEMP	ddfeside	26.14	.2000E-05	77.57	.1578E+10
5	NSOL	229 TEMP	dmidtop	26.13	.1000E-05	97.22	.6312E+09
6	NSOL	3223 TEMP	dwpetop	26.13	.1000E-05	92.11	.6312E+09
7	NSOL	3201 TEMP	ddfetop	26.12	.1000E-05	77.60	.1578E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:15 JAN 20, 1995 CP= 142438.770
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2976 TEMP dwpeside	2940 TEMP ddfeside	229 TEMP dmidtop	3223 TEMP dwpetop	3201 TEMP ddfetop
.10000E-05	26.1400	26.1405	26.1421	26.1269	26.1264	26.1202
.20000E-05	26.1400	26.1400	26.1400	26.1400	26.1400	26.1400
31.558	26.1460	26.1435	26.1401	26.1456	26.1433	26.1400
.31558E+07	65.8396	56.5854	31.0062	63.7618	55.6796	31.0723
.63116E+07	71.5682	62.2208	34.3171	69.5092	61.3428	34.4286
.94673E+07	74.8499	65.5416	36.8224	72.8208	64.6894	36.9622
.12623E+08	77.1612	67.9132	38.8645	75.1577	67.0806	39.0242
.15779E+08	78.9348	69.7511	40.5940	76.9528	68.9340	40.7682
.18935E+08	80.3691	71.2483	42.0944	78.4059	70.4436	42.2794
.22090E+08	81.5699	72.5088	43.4191	79.6230	71.7146	43.6123
.25246E+08	82.6054	73.5995	44.6044	80.6730	72.8142	44.8040
.28402E+08	83.5068	74.5540	45.6760	81.5876	73.7765	45.8806
.31558E+08	84.3093	75.4057	46.6527	82.4021	74.6351	46.8612
.63115E+08	89.3391	80.8231	53.3458	87.5197	80.0985	53.5680
.94673E+08	91.9766	83.7376	57.2834	90.2154	83.0395	57.5009
.12623E+09	93.6695	85.6535	60.0269	91.9531	84.9734	60.2334
.15779E+09	94.8966	87.0719	62.1452	93.2177	86.4056	62.3386
.18935E+09	95.8409	88.1878	63.8832	94.1954	87.5334	64.0637
.22090E+09	96.6096	89.1152	65.3706	94.9971	88.4715	65.5394
.25246E+09	97.3539	89.9893	66.7064	95.7675	89.3541	66.8651

.28402E+09	97.5254	90.3578	67.7515	95.9769	89.7378	67.8995
.31558E+09	97.7227	90.7093	68.6460	96.2048	90.1006	68.7845
.63115E+09	98.5015	92.6256	74.4406	97.2181	92.1061	74.5256
.94673E+09	97.4840	92.4129	76.8711	96.3701	91.9599	76.9301
.12623E+10	95.3033	90.9083	77.5337	94.3336	90.5119	77.5748
.15779E+10	93.2631	89.3658	77.5652	92.4007	89.0117	77.5951
.18935E+10	91.4716	87.9589	77.3615	90.6922	87.6378	77.3837
.22090E+10	89.8923	86.6874	77.0466	89.1793	86.3926	77.0630
.25246E+10	88.2067	85.2875	76.5266	87.5555	85.0170	76.5376
.28402E+10	86.9208	84.2086	76.0831	86.3144	83.9559	76.0906
.31558E+10	85.8136	83.2759	75.6849	85.2451	83.0384	75.6896
.63115E+10	79.9225	78.3232	73.5740	79.5581	78.1669	73.5653
.94673E+10	77.1814	75.9071	72.1323	76.8891	75.7806	72.1220
.12623E+11	75.6236	74.5417	71.3395	75.3743	74.4330	71.3288
.15779E+11	74.4535	73.5074	70.7103	74.2346	73.4113	70.6993
.18935E+11	73.2547	72.4283	69.9857	73.0625	72.3433	69.9742
.22090E+11	72.1789	71.4412	69.2623	72.0063	71.3643	69.2503
.25246E+11	71.2055	70.5383	68.5671	71.0485	70.4677	68.5546
.28402E+11	70.3237	69.7123	67.9059	70.1788	69.6464	67.8928
.31558E+11	69.5468	68.9782	67.2992	69.4112	68.9160	67.2852

 * 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 142439.250 TIME= 07:28:15
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2930 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 3191 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2928 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	167 TEMP	1midside	26.14	.2000E-05	87.22	.9467E+09
3 NSOL	2930 TEMP	1dfeside	26.14	.2000E-05	75.09	.1893E+10
4 NSOL	219 TEMP	1midtop	26.10	.1000E-05	86.63	.9467E+09
5 NSOL	3191 TEMP	1dfetop	26.10	.1000E-05	75.02	.1893E+10
6 NSOL	165 TEMP	1midbot	26.19	.2000E-05	83.87	.9467E+09
7 NSOL	2928 TEMP	1dfebot	26.19	.2000E-05	74.00	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:18 JAN 20, 1995 CP= 142441.910
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2930 TEMP 1dfside	219 TEMP 1midtop	3191 TEMP 1dfetop	165 TEMP 1midbot	2928 TEMP 1dfbot
.10000E-05	26.1415	26.1425	26.1000	26.0963	26.1918	26.1920
.20000E-05	26.1414	26.1414	26.1097	26.1097	26.1854	26.1854
31.558	26.1414	26.1414	26.1097	26.1097	26.1854	26.1854
.31558E+07	45.8706	28.4293	44.9834	28.4328	39.9027	27.5757
.63116E+07	52.3608	30.8724	51.4402	30.9200	46.5141	29.5785
.94673E+07	56.0848	32.9069	55.1874	32.9886	50.3652	31.3734
.12623E+08	58.6842	34.6459	57.8121	34.7545	53.0577	32.9614
.15779E+08	60.6712	36.1652	59.8201	36.2950	55.1143	34.3781
.18935E+08	62.2731	37.5135	61.4392	37.6601	56.7698	35.6534
.22090E+08	63.6119	38.7247	62.7925	38.8847	58.1516	36.8109
.25246E+08	64.7615	39.8232	63.9543	39.9941	59.3360	37.8691
.28402E+08	65.7663	40.8276	64.9697	41.0073	60.3710	38.8426
.31558E+08	66.6577	41.7514	65.8704	41.9385	61.2881	39.7424
.63115E+08	72.3190	48.2574	71.5888	48.4752	67.1183	46.1640
.94673E+08	75.4067	52.1976	74.7002	52.4119	70.3173	50.0932
.12623E+09	77.4844	54.9865	76.7853	55.1829	72.4844	52.8798
.15779E+09	79.0548	57.1617	78.3560	57.3352	74.1309	55.0538
.18935E+09	80.3175	58.9623	79.6170	59.1127	75.4649	56.8558
.22090E+09	81.3827	60.5126	80.6809	60.6416	76.5974	58.4097
.25246E+09	82.3655	61.9023	81.6623	62.0126	77.6339	59.8020
.28402E+09	82.9453	63.0523	82.2470	63.1448	78.3238	60.9784
.31558E+09	83.4556	64.0357	82.7601	64.1122	78.9179	61.9851
.63115E+09	86.5606	70.5147	85.9156	70.5072	82.6883	68.6865
.94673E+09	87.2179	73.4845	86.6323	73.4447	83.8671	71.8759
.12623E+10	86.4614	74.6287	85.9342	74.5711	83.5709	73.2316
.15779E+10	85.4661	75.0193	84.9860	74.9534	82.9206	73.7886
.18935E+10	84.4768	75.0906	84.0347	75.0203	82.1994	73.9916
.22090E+10	83.5369	74.9948	83.1260	74.9217	81.4751	74.0031
.25246E+10	82.4430	74.6770	82.0607	74.6012	80.5803	73.7845
.28402E+10	81.5821	74.3789	81.2216	74.3023	79.8650	73.5608
.31558E+10	80.8327	74.1018	80.4906	74.0246	79.2379	73.3459
.63115E+10	76.8287	72.6127	76.5878	72.5355	75.8708	72.1755
.94673E+10	74.7316	71.3809	74.5327	71.3115	73.9895	71.0522
.12623E+11	73.5514	70.7076	73.3781	70.6438	72.9318	70.4375
.15779E+11	72.6462	70.1625	72.4912	70.1028	72.1114	69.9329
.18935E+11	71.6806	69.5109	71.5410	69.4542	71.2203	69.3164
.22090E+11	70.7773	68.8421	70.6492	68.7874	70.3727	68.6743
.25246E+11	69.9403	68.1893	69.8208	68.1358	69.5803	68.0431
.28402E+11	69.1665	67.5620	69.0532	67.5088	68.8424	67.4336
.31558E+11	68.4729	66.9814	68.3637	66.9278	68.1773	66.8677

```

*****
*      3 meter Rock Temperatures      *
*****
3midside = midlength 3 meter from drift side
3dfside  = end of drift 3 meter from drift side
3midtop  = midlength 3 meter above drift top
3dfetop  = end of drift 3 meter above drift top
3midbot  = midlength 3 meter below drift cut
3dfbot   = end of drift 3 meter below drift cut

```

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 142442.390 TIME= 07:28:19
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 3963 ITEM= TEMP COMP= NAME= 3dfside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 4311 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3960 ITEM= TEMP COMP= NAME= 3dfbot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	279 TEMP	3midside	26.14	.1000E-05	77.00	.1578E+10
3 NSOL	3963 TEMP	3dfeside	26.14	.2000E-05	72.24	.2209E+10
4 NSOL	309 TEMP	3midtop	26.06	.1000E-05	76.47	.1578E+10
5 NSOL	4311 TEMP	3dfetop	26.05	.1000E-05	71.88	.2209E+10
6 NSOL	276 TEMP	3midbot	26.23	.2000E-05	75.60	.1893E+10
7 NSOL	3960 TEMP	3dfebot	26.23	.2000E-05	71.49	.2525E+10

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:21 JAN 20, 1995 CP= 142445.040
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3963 TEMP 3dfeside	309 TEMP 3midtop	4311 TEMP 3dfetop	276 TEMP 3midbot	3960 TEMP 3dfebot
.10000E-05	26.1425	26.1428	26.0561	26.0545	26.2322	26.2326
.20000E-05	26.1428	26.1428	26.0627	26.0627	26.2278	26.2278
31.558	26.1428	26.1428	26.0627	26.0627	26.2278	26.2278
.31558E+07	29.9353	26.5422	29.5917	26.4550	28.5998	26.4539
.63116E+07	34.5891	27.6231	34.1640	27.5440	32.6589	27.2774
.94673E+07	37.8136	28.8193	37.4062	28.7617	35.7218	28.2982
.12623E+08	40.2177	29.9855	39.8393	29.9515	38.0671	29.3439
.15779E+08	42.1205	31.0889	41.7681	31.0769	39.9443	30.3611
.18935E+08	43.6889	32.1236	43.3582	32.1310	41.5007	31.3322
.22090E+08	45.0202	33.0918	44.7075	33.1160	42.8261	32.2522
.25246E+08	46.1752	33.9980	45.8775	34.0366	43.9783	33.1210
.28402E+08	47.1948	34.8474	46.9098	34.8984	44.9967	33.9410
.31558E+08	48.1061	35.6450	47.8321	35.7067	45.9080	34.7150
.63115E+08	54.0712	41.6030	53.8514	41.7145	51.8866	40.5717
.94673E+08	57.5103	45.4379	57.2878	45.5393	55.3294	44.3614
.12623E+09	59.9440	48.2416	59.6883	48.3018	57.7514	47.1183
.15779E+09	61.8555	50.4738	61.5552	50.4816	59.6440	49.3023
.18935E+09	63.4469	52.3499	63.1014	52.3051	61.2176	51.1342
.22090E+09	64.8221	53.9816	64.4354	53.8887	62.5786	52.7279
.25246E+09	66.0649	55.4443	65.6421	55.3093	63.8081	54.1576
.28402E+09	67.0643	56.7234	66.6126	56.5516	64.8201	55.4188
.31558E+09	67.9167	57.8292	67.4391	57.6248	65.6827	56.5122
.63115E+09	73.5547	65.2350	72.9713	64.8773	71.4930	63.9252
.94673E+09	76.0460	68.9335	75.4601	68.5406	74.2014	67.7288
.12623E+10	76.8491	70.7242	76.2870	70.3283	75.2243	69.6478
.15779E+10	77.0021	71.5990	76.4710	71.2142	75.5583	70.6375
.18935E+10	76.8923	72.0410	76.3903	71.6703	75.5964	71.1773
.22090E+10	76.6529	72.2396	76.1765	71.8826	75.4798	71.4591
.25246E+10	76.2043	72.1926	75.7511	71.8476	75.1447	71.4889
.28402E+10	75.8099	72.0910	75.3771	71.7583	74.8388	71.4495
.31558E+10	75.4506	71.9765	75.0350	71.6543	74.5539	71.3875
.63115E+10	73.4961	71.3215	73.1777	71.0606	72.9841	71.0005
.94673E+10	72.0983	70.3726	71.8310	70.1508	71.7205	70.1465
.12623E+11	71.3249	69.8592	71.0890	69.6617	71.0181	69.6808
.15779E+11	70.7060	69.4270	70.4925	69.2468	70.4476	69.2806
.18935E+11	69.9912	68.8733	69.7956	68.7066	69.7747	68.7544
.22090E+11	69.2741	68.2776	69.0919	68.1210	69.0899	68.1804
.25246E+11	68.5839	67.6819	68.4111	67.5322	68.4262	67.6028
.28402E+11	67.9264	67.0999	67.7600	66.9544	67.7911	67.0366
.31558E+11	67.3225	66.5543	67.1596	66.4108	67.2059	66.5047

 * Upper Rock Layer Interface Temperatures *

surfTCw = center ground surface
 TCwPTn = center TCw and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 849 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 142445.530 TIME= 07:28:22
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 828 ITEM= TEMP COMP= NAME= TCwPTn

VARIABLE 4 IS AT NODE 771 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 645 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 469 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 405 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	849 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	828 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	771 TEMP	PTnTSw1	21.24	.1000E-05	33.91	.3156E+11
5	NSOL	645 TEMP	TSw1TSw2	24.25	.1000E-05	53.61	.3156E+11
6	NSOL	469 TEMP	upmodel	25.74	.1000E-05	65.14	.1578E+11
7	NSOL	405 TEMP	middrift	26.14	.1000E-05	68.12	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:25 JAN 20, 1995 CP= 142448.160
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	849 TEMP surfTCw	828 TEMP TCwPTn	771 TEMP PTnTSw1	645 TEMP TSw1TSw2	469 TEMP upmodel	405 TEMP middrift
.10000E-05	18.7000	19.5282	21.2399	24.2509	25.7389	26.1432
.20000E-05	18.7000	19.5285	21.2409	24.2531	25.7419	26.1438
31.558	18.7000	19.5285	21.2409	24.2531	25.7419	26.1438
.31558E+07	18.7000	19.5285	21.2409	24.2531	25.7419	26.1438
.63116E+07	18.7000	19.5285	21.2409	24.2531	25.7419	26.1438
.94673E+07	18.7000	19.5285	21.2409	24.2531	25.7419	26.1438
.12623E+08	18.7000	19.5285	21.2409	24.2531	25.7421	26.1444
.15779E+08	18.7000	19.5285	21.2409	24.2531	25.7429	26.1473
.18935E+08	18.7000	19.5285	21.2409	24.2531	25.7454	26.1554
.22090E+08	18.7000	19.5285	21.2409	24.2531	25.7508	26.1718
.25246E+08	18.7000	19.5285	21.2409	24.2531	25.7604	26.1994
.28402E+08	18.7000	19.5285	21.2409	24.2531	25.7752	26.2406
.31558E+08	18.7000	19.5285	21.2409	24.2531	25.7961	26.2965
.63115E+08	18.7000	19.5285	21.2409	24.2531	25.8236	26.3676
.94673E+08	18.7000	19.5285	21.2409	24.2531	26.4463	27.7716
.12623E+09	18.7000	19.5285	21.2409	24.2531	27.4516	29.8126
.15779E+09	18.7000	19.5285	21.2409	24.2531	28.5721	31.9598
.18935E+09	18.7000	19.5285	21.2409	24.2531	29.7051	34.0233
.22090E+09	18.7000	19.5285	21.2409	24.2532	30.8188	35.9472
.25246E+09	18.7000	19.5285	21.2409	24.2532	31.9042	37.7242
.28402E+09	18.7000	19.5285	21.2409	24.2533	32.9584	39.3635
				24.2536	33.9809	40.8804

.31558E+09	18.7000	19.5285	21.2409	24.2542	34.9696	42.2840
.63115E+09	18.7000	19.5285	21.2409	24.3299	43.0209	52.0717
.94673E+09	18.7000	19.5285	21.2409	24.6954	48.5103	57.6204
.12623E+10	18.7000	19.5285	21.2410	25.4182	52.3161	61.0164
.15779E+10	18.7000	19.5285	21.2415	26.4131	54.9664	63.1108
.18935E+10	18.7000	19.5285	21.2436	27.5691	56.8765	64.4831
.22090E+10	18.7000	19.5287	21.2494	28.7963	58.2953	65.4170
.25246E+10	18.7000	19.5292	21.2620	30.0339	59.3580	66.0353
.28402E+10	18.7000	19.5305	21.2847	31.2442	60.1525	66.4293
.31558E+10	18.7000	19.5330	21.3207	32.4051	60.7810	66.7191
.63115E+10	18.7000	19.7631	22.6169	40.8731	64.0157	68.1219
.94673E+10	18.7000	20.4178	24.9575	45.4710	64.6202	67.8806
.12623E+11	18.7000	21.1952	27.2964	48.2781	64.9690	67.7609
.15779E+11	18.7000	21.8861	29.2489	50.1929	65.1361	67.6064
.18935E+11	18.7000	22.4412	30.7812	51.5426	65.0875	67.2944
.22090E+11	18.7000	22.8699	31.9511	52.4625	64.8735	66.8781
.25246E+11	18.7000	23.1933	32.8246	53.0619	64.5740	66.4238
.28402E+11	18.7000	23.4316	33.4608	53.4228	64.2212	65.9535
.31558E+11	18.7000	23.6024	33.9108	53.6070	63.8475	65.4938

 * Lower Rock Layer Interface Temperatures *

dwnmodel = center Tsw2 1/2 drift spacing below WP
 Tsw2Tsw3 = center Tsw2 and Tsw3 interface
 Tsw3CHnv = center Tsw3 and CHn1v interface
 CHnvCHnz = center CHn1v and CHn1z interface
 CHnzCHn2 = center CHn1z and CHn2 interface
 CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 142448.650 TIME= 07:28:25
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 5 IS AT NODE 708 ITEM= TEMP COMP= NAME= Tsw2Tsw3

VARIABLE 6 IS AT NODE 870 ITEM= TEMP COMP= NAME= Tsw3CHnv

VARIABLE 7 IS AT NODE 890 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 909 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 966 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.55	.2000E-05	65.98	.1578E+11
3	NSOL	828 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	771 TEMP	PTnTsw1	21.24	.1000E-05	33.91	.3156E+11
5	NSOL	708 TEMP	Tsw2Tsw3	27.68	.3156E+08	59.36	.3156E+11
6	NSOL	870 TEMP	Tsw3CHnv	28.15	.2000E-05	57.19	.3156E+11
7	NSOL	966 TEMP	CHn2bot	31.87	.2000E-05	43.35	.3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:28:28 JAN 20, 1995 CP= 142451.280
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP	828 TEMP	771 TEMP	708 TEMP	870 TEMP	966 TEMP
------	----------	----------	----------	----------	----------	----------

	dwnmodel	TCwPTn	PTnTSw1	TSw2TSw3	TSw3CHnv	CHn2bot
.10000E-05	26.5476	19.5282	21.2399	27.6846	28.1559	31.8687
.20000E-05	26.5460	19.5285	21.2409	27.6831	28.1546	31.8675
.31558	26.5460	19.5285	21.2409	27.6831	28.1546	31.8675
.31558E+07	26.5460	19.5285	21.2409	27.6831	28.1546	31.8675
.63116E+07	26.5460	19.5285	21.2409	27.6831	28.1546	31.8675
.94673E+07	26.5461	19.5285	21.2409	27.6831	28.1546	31.8675
.12623E+08	26.5469	19.5285	21.2409	27.6831	28.1546	31.8675
.15779E+08	26.5492	19.5285	21.2409	27.6831	28.1546	31.8675
.18935E+08	26.5543	19.5285	21.2409	27.6831	28.1546	31.8675
.22090E+08	26.5635	19.5285	21.2409	27.6831	28.1546	31.8675
.25246E+08	26.5779	19.5285	21.2409	27.6831	28.1546	31.8675
.28402E+08	26.5982	19.5285	21.2409	27.6831	28.1546	31.8675
.31558E+08	26.6252	19.5285	21.2409	27.6831	28.1546	31.8675
.63115E+08	27.2355	19.5285	21.2409	27.6831	28.1546	31.8675
.94673E+08	28.2133	19.5285	21.2409	27.6831	28.1546	31.8675
.12623E+09	29.3006	19.5285	21.2409	27.6832	28.1546	31.8675
.15779E+09	30.4023	19.5285	21.2409	27.6832	28.1546	31.8675
.18935E+09	31.4889	19.5285	21.2409	27.6836	28.1546	31.8675
.22090E+09	32.5509	19.5285	21.2409	27.6845	28.1546	31.8675
.25246E+09	33.5849	19.5285	21.2409	27.6866	28.1547	31.8675
.28402E+09	34.5898	19.5285	21.2409	27.6907	28.1549	31.8675
.31558E+09	35.5632	19.5285	21.2409	27.6977	28.1554	31.8675
.63115E+09	43.5336	19.5285	21.2409	28.0895	28.2265	31.8675
.94673E+09	49.0074	19.5285	21.2409	29.1942	28.5752	31.8675
.12623E+10	52.8277	19.5285	21.2410	30.7834	29.2696	31.8675
.15779E+10	55.5111	19.5285	21.2415	32.5780	30.2315	31.8675
.18935E+10	57.4644	19.5285	21.2436	34.3977	31.3551	31.8677
.22090E+10	58.9306	19.5287	21.2494	36.1454	32.5528	31.8685
.25246E+10	60.0411	19.5292	21.2620	37.7771	33.7645	31.8704
.28402E+10	60.8811	19.5305	21.2847	39.2774	34.9524	31.8745
.31558E+10	61.5502	19.5330	21.3207	40.6442	36.0942	31.8820
.63115E+10	64.9534	19.7631	22.6169	49.3043	44.4360	32.3586
.94673E+10	65.5464	20.4178	24.9575	53.2197	48.9221	33.6217
.12623E+11	65.8534	21.1952	27.2964	55.4254	51.6163	35.2470
.15779E+11	65.9824	21.8861	29.2489	56.8684	53.4432	36.9067
.18935E+11	65.9070	22.4412	30.7812	57.8577	54.7523	38.4695
.22090E+11	65.6784	22.8699	31.9511	58.5116	55.6893	39.8960
.25246E+11	65.3776	23.1933	32.8246	58.9382	56.3615	41.1793
.28402E+11	65.0358	23.4316	33.4608	59.2065	56.8439	42.3254
.31558E+11	64.6834	23.6024	33.9108	59.3644	57.1883	43.3455

***** ROUTINE COMPLETED ***** CP = 142451.290

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21w5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 46
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 973
MAXIMUM RECORD NUMBER = 579
RECORD SIZE (I*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 36.188

-----*
| ANSYS RUN COMPLETED |
-----*

REV. 5.0 A

HP 9000/7XX

CP TIME (sec) = 142464.090
ELAPSED TIME (sec) = 310094.000

TIME = 07:28:48
DATE = 01/20/95

WELCOME TO THE ANSYS PROGRAM

***** ANSYS COMMAND LINE ARGUMENTS *****
 JOB NAME = c21j5a
 MEMORY REQUESTED (MB) = 64.0
 BATCH MODE REQUESTED
 start.ans FILE

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
 WORK SPACE REQUESTED = 16777216 64.000 MB COMMAND LINE
 MINIMUM WORK SPACE REQUIRED = 4718592 18.000 MB
 MINIMUM WORK SPACE RECOMMENDED = 6702496 25.568 MB
 WORK SPACE OBTAINED = 16777214 64.000 MB
 BYTES PER WORD = 4

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 ERRORS ENCOUNTERED IN EITHER THE DOCUMENTATION OR THE
 RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
 ENTER /MENU,ON TO START THE ANSYS MENU SYSTEM
 ENTER HELP FOR GENERAL ANSYS HELP INFORMATION
 1 /COM, *****
 2 /COM, ANSYS REVISION 5.0A 1/16/1995
 3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
 4 /COM, *****
 5 /COM, *
 6 /COM, * File name: c21j5a.inp
 7 /COM, *
 8 /COM, * 21 PWR WP/MPC (10 cm overpack)
 9 /COM, * Average SNF: 22 years old, 42.2 GWd/MTU burnup
 10 /COM, * 5.0 m Diameter Drift with Concrete Invert
 11 /COM, * 25 MTU/acre (6.18 kgU/m^2) AML (Low Thermal Loading)
 12 /COM, * Drift spacing = 67.5 m (33.75 m model half width)
 13 /COM, * WP c/c spacing = 21.554 m
 14 /COM, *
 15 /COM, * Material Properties file: Proprep.dat
 16 /COM, * SNF Heat Loads file: snf2242.dat
 17 /COM, *
 18 /COM, *****

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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,21 PWR MPC, 5 m Tunnel
24 /UNITS,S1,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.9008,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.682,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,21.554,
42 *SET,WPNUM,21.0,
43 *SET,MODEL,33.75,
44 *SET,OFFST,0.137,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM,
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 7,4.0,
378 /COM,
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM,
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM,
386 /COM,
387 LESIZE, 58,,, 6,7.0,
388 LESIZE, 59,,, 6,7.0,
389 /COM,
390 /COM,
391 /COM,
392 LESIZE, 24,,, 3,
393 /COM,
394 LESIZE, 27,,, 3,
395 /COM,
396 LESIZE, 30,,, 9,
397 /COM,
398 /COM,
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,, 7,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,, 7,
403 LSEL,ALL,
404 /COM,
405 LESIZE, 43,,, 3,
406 /COM,
407 LESIZE, 46,,, 2,
408 /COM,
409 LESIZE, 49,,, 7,
410 /COM,
411 /COM,
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM,
416 /COM,
417 /COM,
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM,
425 /COM,
426 /COM,
427 /COM,
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM,
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM,

```

Model is 6 elements wide
(3+7=10 divisions)

Extrude WP 5 elements

1 element thick steel

Extrude drift 5 elements with smallest
elements at WP mid-length

Set element sizes in rock layers

3 element thick TCw

3 element thick PTn

9 element thick TSw1

12 elements above and below near field
with smaller elements near drift

3 element thick TSw3

2 element thick CHn1v

7 element thick CHn1z

12 element thick CHN2 with smaller elements
near the top

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)

Waste package

Invert

Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCW areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatanated lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,      Rock around drift
513 /COM,      (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,58,
527 VMESH,41,
528 /COM,      Mid-drift rock
529 /COM,      (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,58,
535 /COM,      Concatenate to mesh volume 45
536 /COM,      (L's 311,312 used and freed up)
537 /COM,      (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,      Extrude rest of TSw2
546 /COM,      (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,      Extrude TSw1
549 /COM,      (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,      Extrude PTn
553 /COM,      (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,      Extrude TCw
557 /COM,      (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,      Extrude TSw3
561 /COM,      (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,      Extrude CHn1v
565 /COM,      (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,      Extrude CHn1z
569 /COM,      (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,      Extrude CHn2
573 /COM,      (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,      *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TM100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM, *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TM10,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0)))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0)))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0)))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0)))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TM11,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0)))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0)))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0)))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0)))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TM110,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0)))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0)))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0)))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0)))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO, TM, TME100, TME1000, TMI100,
940      SET, NEAR, , , TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0, (DFCENT+DFRAD), (WPSPC/2.0)))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT, (WPSPC/2.0)))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY, (WPSPC/2.0)))
947      DFBOT(JINC)=TEMP(NODE( 0.0, (DFCENT-DFRAD), (WPSPC/2.0)))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAB, ALL, , parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE, VECT, OFF,
965 /NUM, 1,
966 /TRIAD, OFF,
967 /PNUM, MAT, 1,
968 /TYPE, 1, HIDE,
969 /SHADE, , GOUR,
970 /GLINE, , 0,
971 /TITLE,
972 /SHOW, meshfar, grph, 0, 8,
973 EPLT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE, VECT, OFF,
977 /NUM, 1,
978 /TRIAD, OFF,
979 /PNUM, MAT, 1,
980 /WIND, 1, -1.0000, 1.0000, -1.0000, 1.0000,
981 /VIEW, 1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST, 1, 75.0,
984 /VCON, 1, 25.000,
985 /TYPE, 1, HIDE,
986 /SHADE, , GOUR,
987 /GLINE, , 0,
988 /TITLE,
989 VSEL, S, LOC, 2, 0, 100
990 ESLV, S
991 /SHOW, meshdrift, grph, 0, 8,
992 EPLT
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1, +90, YS, 1
995 /DIST, 1, 23.3,
996 VSEL, S, LOC, X, -100, 0
997 ESLV, S
998 /SHOW, meshside, grph, 0, 8,

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999  EPLOT
1000 /COM, *****
1001 /COM,          Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM,          Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT, 1,
1009 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1010 /VIEW,1, -.36934, .15899, -.91559,
1011 /FOC, 1, 2.7776, -.97308, 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088, ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM,          Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM,          Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0, 100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05, 100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1, 100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5, 100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10, 100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50, 100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100, 100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500, 100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k, 100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM,          View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPLOT
1065 /COM, *****
1066 /COM,          Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM,          Set view settings

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1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT, 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC, 1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG, 1, -.52088,ZS,
1079 /VCON,1, 25.000,
1080 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM, Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM, Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM, View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLT
1131 FINISH
1132 /COM, *****
1133 /COM, Print time/temperature output at specific locations
1134 /POST26,
1135 /COM, *****
1136 /COM, *****
1137 /COM, * Waste Package Surface Temperatures *
1138 /COM, *****

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1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpeside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE( WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE( WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpeside,
1147 NSOL,4,(NODE( 0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE( 0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE( 0.0,(0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE( 0.0,(0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpeside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWL), 0.0,      0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWL), 0.0,(WPLEN/2.0-WPWL))),TEMP,,swpeside,
1164 NSOL,4,(NODE(0.0,      (WPRAD-WPWL), 0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0,      (WPRAD-WPWL),(WPLEN/2.0-WPWL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0,(0.0-WPRAD+WPWL), 0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0,(0.0-WPRAD+WPWL),(WPLEN/2.0-WPWL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE( 0.0,      0.0,      0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE( 0.0,      0.0,(WPLEN/2.0-WPWL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE( 0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE( 0.0,(DFCENT-DFRAD), 0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD), (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD), (WPSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfecent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE( 0.0,      YYY,      0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE( 0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE( 0.0,      YYY,      (WPSPC/2.0))),TEMP,,idfecent,
1199 NSOL,5,(NODE( XXX,      YYY,      0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE( XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE( XXX,      YYY,      (WPSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpeside = end of WP drift wall side surface

```

```

1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddftetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmidside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WSPSP/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,, dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,, dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WSPSP/2.0))),TEMP,, ddftetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *          1 meter Rock Temperatures          *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dfetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WSPSP/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,, 1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WSPSP/2.0))),TEMP,, 1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,, 1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WSPSP/2.0))),TEMP,, 1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *          3 meter Rock Temperatures          *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WSPSP/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,, 3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WSPSP/2.0))),TEMP,, 3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,, 3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WSPSP/2.0))),TEMP,, 3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *          Upper Rock Layer Interface Temperatures          *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *          Lower Rock Layer Interface Temperatures          *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHnvCHnz = center CHn1v and CHn1z interface

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1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1282 NSOL,5,(NODE( 0.0,(GSURF-393.5), 0.0)),TEMP,,TSw2TSw3,
1283 NSOL,6,(NODE( 0.0,(GSURF-409.3), 0.0)),TEMP,,TSw3CHnv,
1284 NSOL,7,(NODE( 0.0,(GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1285 NSOL,7,(NODE( 0.0,(GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2), 0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM, *****
1291 /COM,          End of batch input file
1292 /COM, *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,,1,

```

ABBREVIATION= RAS /show,,,0,
 ABBREVIATION= ON /menu,on,
 ABBREVIATION= OFF /menu,off,
 ABBREVIATION= NVP /config,nvpag,512,
 ABBREVIATION= QUIT /exit,nosav,
 XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

 END start.ans

To start ANSYS menu:

type: x3d for console
 x11 for X-term

type: on

 ANSYS REVISION 5.0A 1/16/1995
 3-D Model of Waste Package Drift Emplacement R.Bahney III

* *
 * File name: c21j5a.inp *
 * *
 * 21 PWR WP/MPC (10 cm overpack) *
 * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
 * 5.0 m Diameter Drift with Concrete Invert *
 * 25 MTU/acre (6.18 kgU/m²) AML (Low Thermal Loading) *
 * Drift spacing = 67.5 m (33.75 m model half width) *
 * WP c/c spacing = 21.554 m *
 * *
 * Material Properties file: Proprep.dat *
 * SNF Heat Loads file: snf2242.dat *
 * *

 Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

TITLE=

21 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
 MASS = KILOGRAMS(KG)
 TIME = SECONDS(SEC)
 TEMPERATURE = CENTIGRADE
 CURRENT = AMPS

Define emplacement parameters

WPRAD = radius of waste package (m)
 DFRAD = radius of drift (m)
 INVRT = height of invert backfill floor (m)
 WPLEN = length of waste package (m)
 WPWLL = thickness of outer barrier (m)
 WPSPC = waste package c/c spacing (m)
 WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .9008000
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.682000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 21.55400
 PARAMETER WPNUM = 21.00000
 PARAMETER MODEL = 33.75000
 PARAMETER OFFST = .1370000

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON	ASSY	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	WPHOT	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	WPTOP	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	WPSID	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	WPBOT	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	DFTOP	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	DFSID	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	DFEDG	TYPE=TABL	DIMENSIONS=	47	1	1
SET PARAMETER DIMENSIONS ON	DFBOT	TYPE=TABL	DIMENSIONS=	47	1	1
PARAMETER GSURF	=	308.6370				
PARAMETER DFCENT	=	.1370000				
PARAMETER XXX	=	1.734935				

```

PARAMETER YYY      =   -1.663000
PARAMETER WPVOL     =    11.04426
PARAMETER TM_START  =    31.55760
PARAMETER TM10      =    3155760.
PARAMETER TM11      =    .3155760E+08
PARAMETER TM110     =    .3155760E+09
PARAMETER TM1100    =    .3155760E+10
PARAMETER TM11000   =    .3155760E+11
PARAMETER TME0      =    .2840187E+08
PARAMETER TME1      =    .3155763E+08
PARAMETER TME9      =    .2840184E+09
PARAMETER TME10     =    .3155760E+09
PARAMETER TME90     =    .2840184E+10
PARAMETER TME100    =    .3155760E+10
PARAMETER TME1000   =    .3155760E+11
*****
          Define different element types
1

```

```

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT  VERSION=HP 9000/7XX  01:19:49  JAN 26, 1995 CP=      .860
FOR SUPPORT CALL BOB BAHNEY          PHONE (702) 794-5337  FAX

```

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

```

ELEMENT TYPE  1 IS PLANE55      2-D THERMAL SOLID
KEYOPT(1-12)=  0 0 0  0 0 0  0 0 0  0 0 0

```

CURRENT NODAL DOF SET IS TEMP
TWO-DIMENSIONAL MODEL

```

ELEMENT TYPE  2 IS SOLID70      3-D THERMAL SOLID
KEYOPT(1-12)=  0 0 0  0 0 0  0 0 0  0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE 16 IS SHELL57      THERMAL SHELL
KEYOPT(1-12)=  0 0 0  0 0 0  0 0 0  0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE 17 IS LINK32      2-D CONDUCTING BAR
KEYOPT(1-12)=  0 0 0  0 0 0  0 0 0  0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE 18 IS MATRIX50     SUBSTRUCTURE MATRIX
KEYOPT(1-12)=  1 0 0  0 0 0  0 0 0  0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCw	Top Rock Layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smeared Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **

** Emissivity EMIS **

** Conductivity: KXX (W/m/K) **

** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***

SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C MAT= 4 NUM. POINTS= 8
SLOC= 5 .1046900E+08 .1019840E+08 2006500. 2111400.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 11
SLOC= 9 2191200. 2269200. 2341000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 4
SLOC= 1 1844300. 2031500. 2283100. 4559000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 8
SLOC= 5 4518800. 4480000. 2295300. 2448900.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 11
SLOC= 9 2574000. 2679200. 2770200.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 4
SLOC= 1 2443600. 2555700. 2696000. .3660130E+08

PROPERTY TABLE C MAT= 6 NUM. POINTS= 8
SLOC= 5 .3532630E+08 .3417640E+08 1501300. 1601800.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 11
SLOC= 9 1683600. 1752500. 1812000.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 4
SLOC= 1 2603200. 2664700. 2744700. .3660690E+08

PROPERTY TABLE C MAT= 7 NUM. POINTS= 8
SLOC= 5 .3534400E+08 .3420530E+08 2791400. 2741900.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 11
SLOC= 9 2670700. 1581400. 1632000.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 4
SLOC= 1 2430900. 2538500. 2680250. .2798690E+08

PROPERTY TABLE C MAT= 8 NUM. POINTS= 8
SLOC= 5 .2705530E+08 .2621460E+08 2564400. 2593500.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 11
SLOC= 9 2598500. 1981950. 2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
SLOC= 1 21.11000 37.78000 65.56000
93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
SLOC= 7 176.6700 204.4400 232.2200
260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
SLOC= 13 343.3300 371.1100 398.8900
426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
SLOC= 19 510.0000 537.7800 565.5600

593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
 477.0000 467.8000

PARAMETER ASSY(13,1) = 459.2000 451.1000 443.5000 436.2000
429.3000 423.7000

PARAMETER ASSY(19,1) = 412.6000 404.5000 341.6000 294.1000
252.6000 222.0000

PARAMETER ASSY(25,1) = 198.5000 179.8000 162.5000 150.1000
139.7000 85.70000

PARAMETER ASSY(31,1) = 67.40000 56.80000 49.40000 42.90000
38.10000 34.30000

PARAMETER ASSY(37,1) = 31.30000 29.00000 15.50000 12.80000
11.10000 10.00000

PARAMETER ASSY(43,1) = 9.200000 8.600000 8.000000 7.600000
7.200000

PARAMETER ASSY(1,0) = .1000000E-05 .1000000 .2000000 .3000000
.4000000 .5000000

PARAMETER ASSY(7,0) = .6000000 .7000000 .8000000 .9000000
1.000000 2.000000

PARAMETER ASSY(13,0) = 3.000000 4.000000 5.000000 6.000000
7.000000 8.000000

PARAMETER ASSY(19,0) = 9.000000 10.00000 20.00000 30.00000
40.00000 50.00000

PARAMETER ASSY(25,0) = 60.00000 70.00000 80.00000 90.00000
100.0000 200.0000

PARAMETER ASSY(31,0) = 300.0000 400.0000 500.0000 600.0000
700.0000 800.0000

PARAMETER ASSY(37,0) = 900.0000 1000.000 2000.000 3000.000
4000.000 5000.000

PARAMETER ASSY(43,0) = 6000.000 7000.000 8000.000 9000.000
10000.00

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.9014
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
WPHOT(1) = COPY ASSY(1)
SCALE FACTORS RESULT= 1.9014 INPUT= 1.0000
VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000
PARAMETER WPTOP(0,1) = 1.000000
PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-33.7500	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	33.7500	308.637	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	-33.7500	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	33.7500	272.637	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	-33.7500	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	9	X,Y,Z=	33.7500	234.537	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	-33.7500	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	33.7500	104.437	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	-33.7500	33.8870	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.000000E+00	33.8870	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	33.7500	33.8870	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	-33.7500	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	33.7500	.137000	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	-33.7500	-33.6130	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.000000E+00	-33.6130	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	33.7500	-33.6130	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	-33.7500	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	23	X,Y,Z=	33.7500	-84.8630	.000000E+00	IN CSYS= 0
KEYPOINT	24	X,Y,Z=	-33.7500	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	26	X,Y,Z=	33.7500	-100.663	.000000E+00	IN CSYS= 0
KEYPOINT	27	X,Y,Z=	-33.7500	-105.863	.000000E+00	IN CSYS= 0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.863	.000000E+00	IN CSYS= 0

KEYPOINT 29 X,Y,Z= 33.7500 -105.863 .000000E+00 IN CSYS= 0
 KEYPOINT 30 X,Y,Z= -33.7500 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 31 X,Y,Z= .000000E+00 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 32 X,Y,Z= 33.7500 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 33 X,Y,Z= -33.7500 -991.363 .000000E+00 IN CSYS= 0
 KEYPOINT 34 X,Y,Z= .000000E+00 -991.363 .000000E+00 IN CSYS= 0
 KEYPOINT 35 X,Y,Z= 33.7500 -991.363 .000000E+00 IN CSYS= 0

Define lines connecting rock layers
 (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS 1 2
 LINE NO.= 1 KP1= 1 TAN1= -1.0000 .0000 .0000
 KP2= 2 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 2 3
 LINE NO.= 2 KP1= 2 TAN1= -1.0000 .0000 .0000
 KP2= 3 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 4 5
 LINE NO.= 3 KP1= 4 TAN1= -1.0000 .0000 .0000
 KP2= 5 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 5 6
 LINE NO.= 4 KP1= 5 TAN1= -1.0000 .0000 .0000
 KP2= 6 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 7 8
 LINE NO.= 5 KP1= 7 TAN1= -1.0000 .0000 .0000
 KP2= 8 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 8 9
 LINE NO.= 6 KP1= 8 TAN1= -1.0000 .0000 .0000
 KP2= 9 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 10 11
 LINE NO.= 7 KP1= 10 TAN1= -1.0000 .0000 .0000
 KP2= 11 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 11 12
 LINE NO.= 8 KP1= 11 TAN1= -1.0000 .0000 .0000
 KP2= 12 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 13 14
 LINE NO.= 9 KP1= 13 TAN1= -1.0000 .0000 .0000
 KP2= 14 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 14 15
 LINE NO.= 10 KP1= 14 TAN1= -1.0000 .0000 .0000
 KP2= 15 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 18 19
 LINE NO.= 11 KP1= 18 TAN1= -1.0000 .0000 .0000
 KP2= 19 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 19 20
 LINE NO.= 12 KP1= 19 TAN1= -1.0000 .0000 .0000
 KP2= 20 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 21 22
 LINE NO.= 13 KP1= 21 TAN1= -1.0000 .0000 .0000
 KP2= 22 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.=	31	KP1=	9	TAN1=	.0000	1.0000	.0000
		KP2=	12	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13							
LINE NO.=	32	KP1=	10	TAN1=	.0000	1.0000	.0000
		KP2=	13	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14							
LINE NO.=	33	KP1=	11	TAN1=	.0000	1.0000	.0000
		KP2=	14	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15							
LINE NO.=	34	KP1=	12	TAN1=	.0000	1.0000	.0000
		KP2=	15	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16							
LINE NO.=	35	KP1=	13	TAN1=	.0000	1.0000	.0000
		KP2=	16	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17							
LINE NO.=	36	KP1=	15	TAN1=	.0000	1.0000	.0000
		KP2=	17	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18							
LINE NO.=	37	KP1=	16	TAN1=	.0000	1.0000	.0000
		KP2=	18	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20							
LINE NO.=	38	KP1=	17	TAN1=	.0000	1.0000	.0000
		KP2=	20	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21							
LINE NO.=	39	KP1=	18	TAN1=	.0000	1.0000	.0000
		KP2=	21	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22							
LINE NO.=	40	KP1=	19	TAN1=	.0000	1.0000	.0000
		KP2=	22	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23							
LINE NO.=	41	KP1=	20	TAN1=	.0000	1.0000	.0000
		KP2=	23	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24							
LINE NO.=	42	KP1=	21	TAN1=	.0000	1.0000	.0000
		KP2=	24	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25							
LINE NO.=	43	KP1=	22	TAN1=	.0000	1.0000	.0000
		KP2=	25	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26							
LINE NO.=	44	KP1=	23	TAN1=	.0000	1.0000	.0000
		KP2=	26	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27							
LINE NO.=	45	KP1=	24	TAN1=	.0000	1.0000	.0000
		KP2=	27	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28							
LINE NO.=	46	KP1=	25	TAN1=	.0000	1.0000	.0000
		KP2=	28	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29							
LINE NO.=	47	KP1=	26	TAN1=	.0000	1.0000	.0000
		KP2=	29	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30							
LINE NO.=	48	KP1=	27	TAN1=	.0000	1.0000	.0000
		KP2=	30	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES

LINE LIST = 39 13 40 11
(TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES

LINE LIST = 40 14 41 12
(TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES

LINE LIST = 42 15 43 13
(TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES

LINE LIST = 43 16 44 14
(TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES

LINE LIST = 45 17 46 15
(TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES

LINE LIST = 46 18 47 16
(TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES

LINE LIST = 48 19 49 17
(TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES

LINE LIST = 49 20 50 18
(TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES

LINE LIST = 51 21 52 19
(TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES

LINE LIST = 52 22 53 20
(TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
(K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS= 0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.74100	IN CSYS= 0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.84100	IN CSYS= 0

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.74100 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.84100 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .137000 10.7770 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .137000 -10.7770 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .8008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .9008
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.36300 .000000E+00 IN CSYS= 0
 KEYPOINT 53 X,Y,Z= 1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .137000 .000000E+00 IN CSYS= 0

KEYPOINT 55 X,Y,Z= .000000E+00 2.63700 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.66300 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS		36	45			
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		36	46			
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000
		KP2=	46	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		36	47			
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		44	48			
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000
		KP2=	48	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		45	49			
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		46	50			
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000
		KP2=	50	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		47	51			
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		50	55			
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000
		KP2=	55	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		48	58			
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000
		KP2=	58	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		58	52			
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000
		KP2=	52	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		57	58			
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		58	53			
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		52	59			
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000
		KP2=	59	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		54	60			
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		55	61			
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000
		KP2=	61	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		56	62			
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		59	63			
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000
		KP2=	63	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		60	64			
LINE NO.=	100	KP1=	60	TAN1=	-1.0000	.0000

KP2= 64 TAN2= 1.0000 .0000 .0000
 LINE CONNECTS KEYPOINTS 61 65
 LINE NO.= 101 KP1= 61 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= .0000 1.0000 .0000
 LINE CONNECTS KEYPOINTS 62 66
 LINE NO.= 102 KP1= 62 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= -1.0000 .0000 .0000
 LINE CONNECTS KEYPOINTS 63 19
 LINE NO.= 103 KP1= 63 TAN1= .0000 1.0000 .0000
 KP2= 19 TAN2= .0000 -1.0000 .0000
 LINE CONNECTS KEYPOINTS 64 17
 LINE NO.= 104 KP1= 64 TAN1= -1.0000 .0000 .0000
 KP2= 17 TAN2= 1.0000 .0000 .0000
 LINE CONNECTS KEYPOINTS 65 14
 LINE NO.= 105 KP1= 65 TAN1= .0000 -1.0000 .0000
 KP2= 14 TAN2= .0000 1.0000 .0000
 LINE CONNECTS KEYPOINTS 66 16
 LINE NO.= 106 KP1= 66 TAN1= 1.0000 .0000 .0000
 KP2= 16 TAN2= -1.0000 .0000 .0000

Define areas around drift
 (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
 (35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 82 60 83
 (TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
 LINE LIST = 83 61 84
 (TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
 LINE LIST = 85 84 62
 (TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
 LINE LIST = 63 82 85
 (TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
 LINE LIST = 86 64 87 60
 (TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
 LINE LIST = 61 87 65 88
 (TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
 LINE LIST = 89 62 88 66
 (TRAVERSED IN SAME DIRECTION AS LINE 89)

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES
LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

```
ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    68 TO      68 STEP      1

      3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    73 TO      73 STEP      1

      4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 4, SPACING RATIO = 1.000

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    69 TO      69 STEP      1

      1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    72 TO      72 STEP      1

      2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 6, SPACING RATIO = 1.000

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    70 TO      71 STEP      1

      2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE    74 TO      81 STEP      1

     10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 10, SPACING RATIO = 1.000
      2 element deep invert

ALL SELECT  FOR ITEM=LINE COMPONENT=
IN RANGE    1 TO      106 STEP      1

    106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
  TO NDIV = 2, SPACING RATIO = 1.000
      2 elements in 1st meter of rock

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    95 TO      98 STEP      1

      4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 2, SPACING RATIO = 1.000
      3 elements in next 2 meters

SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    99 TO     102 STEP      1

      4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 3, SPACING RATIO = 1.000
      Model is 6 elements wide
      (3+7=10 divisions)

SELECT      FOR ITEM=LINE COMPONENT=
```

IN RANGE 9 TO 12 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 4.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 6, SPACING RATIO = 7.000

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 6, SPACING RATIO = 7.000

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift


```
SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    32 TO      34 STEP      1

      3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
```

```
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000
```

```
SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    39 TO      41 STEP      1

      3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
```

```
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000
```

```
ALL SELECT  FOR ITEM=LINE COMPONENT=
IN RANGE    1 TO      106 STEP      1

      106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
      3 element thick TS3
```

```
SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
      2 element thick CHn1v
```

```
SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
      7 element thick CHn1z
```

```
SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
      12 element thick CHN2 with smaller elements
      near the top
```

```
SELECT      FOR ITEM=LINE COMPONENT=
IN RANGE    51 TO      53 STEP      1

      3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
```

```
SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000
```

```
ALL SELECT  FOR ITEM=LINE COMPONENT=
IN RANGE    1 TO      106 STEP      1

      106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
      *****
      Concatenate lines for mapped meshing
      (L's 107,108,109,110,111,112)
```

```
CONCATENATE LINES
      LINES = 68 69
```

```
COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54
```

```
CONCATENATE LINES
      LINES = 72 73
```

```
COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52
```

```
CONCATENATE LINES
      LINES = 12 38
```

```
COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17
```

```
CONCATENATE LINES
      LINES = 36 10
```

```
COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14
```

CONCATENATE LINES

LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES

LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)
Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132
Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS
IN AREAS 27 TO 28 IN STEPS OF 1
** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144
Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS
IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

```

NUMBER OF AREAS MESHED      =      2
MAXIMUM NODE NUMBER        =     275
MAXIMUM ELEMENT NUMBER     =     224

GENERATE NODES AND ELEMENTS
  IN AREAS      33 TO      36 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      4
MAXIMUM NODE NUMBER        =     395
MAXIMUM ELEMENT NUMBER     =     344

GENERATE NODES AND ELEMENTS
  IN AREAS      37 TO      40 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      4
MAXIMUM NODE NUMBER        =     675
MAXIMUM ELEMENT NUMBER     =     624

GENERATE NODES AND ELEMENTS
  IN AREAS       7 TO      10 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      4
MAXIMUM NODE NUMBER        =     773
MAXIMUM ELEMENT NUMBER     =     708
      TSw1 areas

MATERIAL NUMBER SET TO      3

GENERATE NODES AND ELEMENTS
  IN AREAS       5 TO      6 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      2
MAXIMUM NODE NUMBER        =     836
MAXIMUM ELEMENT NUMBER     =     762
      PTn areas

MATERIAL NUMBER SET TO      2

GENERATE NODES AND ELEMENTS
  IN AREAS       3 TO      4 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      2
MAXIMUM NODE NUMBER        =     857
MAXIMUM ELEMENT NUMBER     =     780
      TCw areas

MATERIAL NUMBER SET TO      1

GENERATE NODES AND ELEMENTS
  IN AREAS       1 TO      2 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      2
MAXIMUM NODE NUMBER        =     878
MAXIMUM ELEMENT NUMBER     =     798
      TSw3 areas

MATERIAL NUMBER SET TO      5

GENERATE NODES AND ELEMENTS
  IN AREAS      11 TO      12 IN STEPS OF      1

NUMBER OF AREAS MESHED      =      2
MAXIMUM NODE NUMBER        =     899
MAXIMUM ELEMENT NUMBER     =     816
      CHn1v areas

MATERIAL NUMBER SET TO      6

GENERATE NODES AND ELEMENTS
  IN AREAS      13 TO      14 IN STEPS OF      1

```

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 913
 MAXIMUM ELEMENT NUMBER = 828
 CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
 IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 962
 MAXIMUM ELEMENT NUMBER = 870
 CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
 IN AREAS 17 TO 18 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 1046
 MAXIMUM ELEMENT NUMBER = 942

Delete concatenated lines
 (L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
 (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 54,

DRAG AREAS
 23, 24, 25, 26,
 ALONG LINES
 54,

DRAG AREAS
 19, 20, 21, 22,

ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,

ALONG LINES
56,
(plot area numbers before next drag commands)

DRAG AREAS
44, 47, 50, 52,
ALONG LINES
55,

DRAG AREAS
57, 61, 65, 68,
ALONG LINES
55,

DRAG AREAS
72, 75, 78, 80,
ALONG LINES
57,

DRAG AREAS
85, 89, 93, 96,
ALONG LINES
57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172

LINE 175 USED FOR LINE(S) 187
 LINE 176 USED FOR LINE(S) 193
 LINE 177 USED FOR LINE(S) 192
 LINE 179 USED FOR LINE(S) 194
 LINE 180 USED FOR LINE(S) 195
 LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1651
 MAXIMUM ELEMENT NUMBER = 1482

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1771
 MAXIMUM ELEMENT NUMBER = 1602

GENERATE NODES AND ELEMENTS
 IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 1916
 MAXIMUM ELEMENT NUMBER = 1734

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
 IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4

MAXIMUM NODE NUMBER = 2521
MAXIMUM ELEMENT NUMBER = 2274

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2641
MAXIMUM ELEMENT NUMBER = 2394

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2786
MAXIMUM ELEMENT NUMBER = 2526

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2900
MAXIMUM ELEMENT NUMBER = 2598
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3278
MAXIMUM ELEMENT NUMBER = 2838

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3476
MAXIMUM ELEMENT NUMBER = 2958

GENERATE NODES AND ELEMENTS

IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 3674
 MAXIMUM ELEMENT NUMBER = 3078

DRAG AREAS
 33, 34,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 4178
 MAXIMUM ELEMENT NUMBER = 3438

ELEMENT TYPE SET TO 1

DRAG AREAS
 35,
 ALONG LINES
 58,

ELEMENT TYPE SET TO 2

DRAG AREAS
 36,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 4442
 MAXIMUM ELEMENT NUMBER = 3618

GENERATE NODES AND ELEMENTS
 IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 4706
 MAXIMUM ELEMENT NUMBER = 3798
 Mid-drift rock
 (V's 43,44,45,46)

DRAG AREAS
 37, 38,
 ALONG LINES
 58,

*** WARNING *** CP= 27.870 TIME= 01:20:21
 Meshing of volume 43 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
 3913 3914 3915 3916 3917 3918 3919 3920
 3921 3922 3923 3924

*** WARNING *** CP= 28.880 TIME= 01:20:22
 Meshing of volume 44 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
 4543 4544 4545 4546 4547 4548 4549 4550
 4551 4552 4553 4554

MAXIMUM NODE NUMBER = 5714
 MAXIMUM ELEMENT NUMBER = 4638

ELEMENT TYPE SET TO 1

DRAG AREAS
 39,
 ALONG LINES
 58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 30.070 TIME= 01:20:23
Meshing of volume 46 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
4681 4682 4683 4684 4685 4686 4741 4742
4743 4744 4745 4746

MAXIMUM NODE NUMBER = 6242
MAXIMUM ELEMENT NUMBER = 5058
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 30.260 TIME= 01:20:23
Meshing of area 197 produced 3 poorly shaped faces.

*** NOTE *** CP= 30.260 TIME= 01:20:23
Worst aspect ratio is 20.4717763 : 1.

*** WARNING *** CP= 31.540 TIME= 01:20:25
Meshing of volume 45 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
5358 5359 5365 5366 5372 5373 5379 5380
5386 5387 5393 5394

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 6770
MAXIMUM ELEMENT NUMBER = 5478

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS

Extrude rest of TSw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7442
MAXIMUM ELEMENT NUMBER = 5982
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7862
MAXIMUM ELEMENT NUMBER = 6306
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8030
MAXIMUM ELEMENT NUMBER = 6414
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8198
MAXIMUM ELEMENT NUMBER = 6522
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8366
MAXIMUM ELEMENT NUMBER = 6630
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8492
MAXIMUM ELEMENT NUMBER = 6702

Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8828
MAXIMUM ELEMENT NUMBER = 6954
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 36.820 TIME= 01:20:30
Meshing of volume 63 produced 30 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

7003	7009	7010	7015	7016	7017	7021	7022
7023	7024	7075	7081	7082	7087	7088	7089
7093	7094	7095	7096	7147	7153	7154	7159
7160	7161	7165	7166	7167	7168		

*** WARNING *** CP= 37.360 TIME= 01:20:31
Meshing of volume 64 produced 30 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

7219	7225	7226	7231	7232	7233	7237	7238
7239	7240	7291	7297	7298	7303	7304	7305
7309	7310	7311	7312	7363	7369	7370	7375
7376	7377	7381	7382	7383	7384		

MAXIMUM NODE NUMBER = 9374
MAXIMUM ELEMENT NUMBER = 7386

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 5810	USED FOR NODES	7141
NODE 5811	USED FOR NODES	7142
NODE 5812	USED FOR NODES	7143
NODE 8535	USED FOR NODES	8881
NODE 8536	USED FOR NODES	8882
NODE 8537	USED FOR NODES	8883
NODE 8538	USED FOR NODES	8884
NODE 8539	USED FOR NODES	8885
NODE 7149	USED FOR NODES	8215
NODE 7150	USED FOR NODES	8216
NODE 6292	USED FOR NODES	6813
NODE 6293	USED FOR NODES	6814
NODE 6294	USED FOR NODES	6815
NODE 6295	USED FOR NODES	6816
NODE 6296	USED FOR NODES	6817
NODE 5803	USED FOR NODES	6244
NODE 5804	USED FOR NODES	6245
NODE 5805	USED FOR NODES	6246
NODE 5806	USED FOR NODES	6247
NODE 5807	USED FOR NODES	6248
NODE 5808	USED FOR NODES	7139
NODE 5809	USED FOR NODES	7140

NODE	5716	USED FOR NODES	7107
NODE	7108	USED FOR NODES	8199
NODE	7151	USED FOR NODES	8217
NODE	7152	USED FOR NODES	8218
NODE	7153	USED FOR NODES	8219
NODE	6771	USED FOR NODES	7444
NODE	6291	USED FOR NODES	6772
NODE	8200	USED FOR NODES	8367
NODE	8368	USED FOR NODES	8493
NODE	7863	USED FOR NODES	8032
NODE	8225	USED FOR NODES	8379
NODE	8226	USED FOR NODES	8380
NODE	8227	USED FOR NODES	8381
NODE	8228	USED FOR NODES	8382
NODE	8229	USED FOR NODES	8383
NODE	7483	USED FOR NODES	7889
NODE	8389	USED FOR NODES	8525
NODE	8390	USED FOR NODES	8526
NODE	8391	USED FOR NODES	8527
NODE	8392	USED FOR NODES	8528
NODE	8393	USED FOR NODES	8529
NODE	7484	USED FOR NODES	7890
NODE	7485	USED FOR NODES	7891
NODE	7486	USED FOR NODES	7892
NODE	7487	USED FOR NODES	7893
NODE	8494	USED FOR NODES	8829
NODE	6803	USED FOR NODES	7493
NODE	6804	USED FOR NODES	7494
NODE	6805	USED FOR NODES	7495
NODE	6806	USED FOR NODES	7496
NODE	6807	USED FOR NODES	7497
NODE	7879	USED FOR NODES	8057
NODE	7880	USED FOR NODES	8058
NODE	7881	USED FOR NODES	8059
NODE	7882	USED FOR NODES	8060
NODE	5715	USED FOR NODES	6243
NODE	7443	USED FOR NODES	7864
NODE	7883	USED FOR NODES	8061
NODE	5969	USED FOR NODES	6287
NODE	5971	USED FOR NODES	6289
NODE	5972	USED FOR NODES	6290
NODE	5970	USED FOR NODES	6288
NODE	5748	USED FOR NODES	6255
NODE	5968	USED FOR NODES	6286
NODE	8502	USED FOR NODES	8857
NODE	6823	USED FOR NODES	7513
NODE	6824	USED FOR NODES	7514
NODE	6825	USED FOR NODES	7515
NODE	6826	USED FOR NODES	7516
NODE	6827	USED FOR NODES	7517
NODE	6341	USED FOR NODES	6833
NODE	6342	USED FOR NODES	6834
NODE	6343	USED FOR NODES	6835
NODE	6344	USED FOR NODES	6836
NODE	6345	USED FOR NODES	6837
NODE	8555	USED FOR NODES	8901
NODE	8556	USED FOR NODES	8902
NODE	8557	USED FOR NODES	8903
NODE	8558	USED FOR NODES	8904
NODE	5828	USED FOR NODES	7159
NODE	5829	USED FOR NODES	7160
NODE	8559	USED FOR NODES	8905
NODE	5830	USED FOR NODES	7161
NODE	5831	USED FOR NODES	7162
NODE	5832	USED FOR NODES	7163
NODE	7116	USED FOR NODES	8209
NODE	6339	USED FOR NODES	6780
NODE	8371	USED FOR NODES	8511
NODE	8204	USED FOR NODES	8375
NODE	6789	USED FOR NODES	7454

NODE 7169	USED FOR NODES	8235
NODE 7899	USED FOR NODES	8077
NODE 7172	USED FOR NODES	8238
NODE 7173	USED FOR NODES	8239
NODE 8245	USED FOR NODES	8399
NODE 8246	USED FOR NODES	8400
NODE 8247	USED FOR NODES	8401
NODE 8248	USED FOR NODES	8402
NODE 8249	USED FOR NODES	8403
NODE 7900	USED FOR NODES	8078
NODE 7901	USED FOR NODES	8079
NODE 8409	USED FOR NODES	8545
NODE 8410	USED FOR NODES	8546
NODE 8411	USED FOR NODES	8547
NODE 8412	USED FOR NODES	8548
NODE 8413	USED FOR NODES	8549
NODE 7170	USED FOR NODES	8236
NODE 7171	USED FOR NODES	8237
NODE 7902	USED FOR NODES	8080
NODE 7903	USED FOR NODES	8081
NODE 5724	USED FOR NODES	7125
NODE 7465	USED FOR NODES	7868
NODE 7503	USED FOR NODES	7909
NODE 7873	USED FOR NODES	8036
NODE 7504	USED FOR NODES	7910
NODE 7505	USED FOR NODES	7911
NODE 7506	USED FOR NODES	7912
NODE 7507	USED FOR NODES	7913
NODE 5965	USED FOR NODES	6283
NODE 5964	USED FOR NODES	6282
NODE 5966	USED FOR NODES	6284
NODE 5963	USED FOR NODES	6281
NODE 5747	USED FOR NODES	6254
NODE 5967	USED FOR NODES	6285
NODE 5962	USED FOR NODES	6280
NODE 5746	USED FOR NODES	6253
NODE 5958	USED FOR NODES	6276
NODE 5959	USED FOR NODES	6277
NODE 5960	USED FOR NODES	6278
NODE 5961	USED FOR NODES	6279
NODE 5954	USED FOR NODES	6272
NODE 5955	USED FOR NODES	6273
NODE 5957	USED FOR NODES	6275
NODE 5953	USED FOR NODES	6271
NODE 5745	USED FOR NODES	6252
NODE 5956	USED FOR NODES	6274
NODE 8503	USED FOR NODES	8858
NODE 6348	USED FOR NODES	6840
NODE 6349	USED FOR NODES	6841
NODE 6350	USED FOR NODES	6842
NODE 6828	USED FOR NODES	7518
NODE 6829	USED FOR NODES	7519
NODE 6830	USED FOR NODES	7520
NODE 6831	USED FOR NODES	7521
NODE 6832	USED FOR NODES	7522
NODE 6346	USED FOR NODES	6838
NODE 6347	USED FOR NODES	6839
NODE 8560	USED FOR NODES	8906
NODE 8561	USED FOR NODES	8907
NODE 8562	USED FOR NODES	8908
NODE 8563	USED FOR NODES	8909
NODE 8564	USED FOR NODES	8910
NODE 5833	USED FOR NODES	7164
NODE 5834	USED FOR NODES	7165
NODE 5835	USED FOR NODES	7166
NODE 5836	USED FOR NODES	7167
NODE 5837	USED FOR NODES	7168
NODE 7117	USED FOR NODES	8210
NODE 6340	USED FOR NODES	6781
NODE 8372	USED FOR NODES	8512

NODE 8205	USED FOR NODES	8376		
NODE 6790	USED FOR NODES	7455		
NODE 8250	USED FOR NODES	8404		
NODE 8251	USED FOR NODES	8405		
NODE 8252	USED FOR NODES	8406		
NODE 8253	USED FOR NODES	8407		
NODE 8254	USED FOR NODES	8408		
NODE 8414	USED FOR NODES	8550		
NODE 8415	USED FOR NODES	8551		
NODE 8416	USED FOR NODES	8552		
NODE 8417	USED FOR NODES	8553		
NODE 8418	USED FOR NODES	8554		
NODE 7174	USED FOR NODES	8240		
NODE 7175	USED FOR NODES	8241		
NODE 7176	USED FOR NODES	8242		
NODE 7177	USED FOR NODES	8243		
NODE 7178	USED FOR NODES	8244		
NODE 7904	USED FOR NODES	8082		
NODE 5725	USED FOR NODES	7126		
NODE 7466	USED FOR NODES	7869		
NODE 7874	USED FOR NODES	8037		
NODE 7508	USED FOR NODES	7914		
NODE 7905	USED FOR NODES	8083		
NODE 7906	USED FOR NODES	8084		
NODE 7907	USED FOR NODES	8085		
NODE 7908	USED FOR NODES	8086		
NODE 7509	USED FOR NODES	7915		
NODE 7510	USED FOR NODES	7916		
NODE 7511	USED FOR NODES	7917		
NODE 7512	USED FOR NODES	7918		
NODE 5952	USED FOR NODES	6270		
NODE 5949	USED FOR NODES	6267		
NODE 5951	USED FOR NODES	6269		
NODE 5950	USED FOR NODES	6268		
NODE 5744	USED FOR NODES	6251		
NODE 5948	USED FOR NODES	6266		
NODE 5945	USED FOR NODES	6263		
NODE 5743	USED FOR NODES	6250		
NODE 5946	USED FOR NODES	6264		
NODE 5947	USED FOR NODES	6265		
NODE 5943	USED FOR NODES	6261		
NODE 5944	USED FOR NODES	6262		
NODE 4242	USED FOR NODES	4448	5827	6260
NODE 4179	USED FOR NODES	4443	5733	6249
NODE 4241	USED FOR NODES	4447	5826	6259
NODE 4238	USED FOR NODES	4444	5823	6256
NODE 4239	USED FOR NODES	4445	5824	6257
NODE 4240	USED FOR NODES	4446	5825	6258
NODE 4482	USED FOR NODES	6442		
NODE 4483	USED FOR NODES	6443		
NODE 4484	USED FOR NODES	6444		
NODE 4485	USED FOR NODES	6445		
NODE 4486	USED FOR NODES	6446		
NODE 4473	USED FOR NODES	6401		
NODE 4291	USED FOR NODES	5871		
NODE 4181	USED FOR NODES	5734		
NODE 4290	USED FOR NODES	5870		
NODE 4288	USED FOR NODES	5868		
NODE 4289	USED FOR NODES	5869		
NODE 4292	USED FOR NODES	5872		
NODE 4487	USED FOR NODES	6437		
NODE 4488	USED FOR NODES	6438		
NODE 4489	USED FOR NODES	6439		
NODE 4490	USED FOR NODES	6440		
NODE 4491	USED FOR NODES	6441		
NODE 4474	USED FOR NODES	6400		
NODE 4297	USED FOR NODES	5877		
NODE 4295	USED FOR NODES	5875		
NODE 4182	USED FOR NODES	5735		
NODE 4296	USED FOR NODES	5876		

NODE 4294	USED FOR NODES	5874		
NODE 4293	USED FOR NODES	5873		
NODE 4492	USED FOR NODES	6432		
NODE 4493	USED FOR NODES	6433		
NODE 4494	USED FOR NODES	6434		
NODE 4495	USED FOR NODES	6435		
NODE 4496	USED FOR NODES	6436		
NODE 4475	USED FOR NODES	6399		
NODE 4300	USED FOR NODES	5880		
NODE 4183	USED FOR NODES	5736		
NODE 4302	USED FOR NODES	5882		
NODE 4298	USED FOR NODES	5878		
NODE 4299	USED FOR NODES	5879		
NODE 4301	USED FOR NODES	5881		
NODE 4349	USED FOR NODES	4463		
NODE 4204	USED FOR NODES	4451		
NODE 4352	USED FOR NODES	4466		
NODE 4348	USED FOR NODES	4462		
NODE 4351	USED FOR NODES	4465		
NODE 4350	USED FOR NODES	4464		
NODE 4497	USED FOR NODES	6427		
NODE 4498	USED FOR NODES	6428		
NODE 4499	USED FOR NODES	6429		
NODE 4500	USED FOR NODES	6430		
NODE 4501	USED FOR NODES	6431		
NODE 4476	USED FOR NODES	6398		
NODE 4307	USED FOR NODES	5887		
NODE 4184	USED FOR NODES	5737		
NODE 4306	USED FOR NODES	5886		
NODE 4303	USED FOR NODES	5883		
NODE 4305	USED FOR NODES	5885		
NODE 4304	USED FOR NODES	5884		
NODE 4344	USED FOR NODES	4458		
NODE 4203	USED FOR NODES	4450		
NODE 4345	USED FOR NODES	4459		
NODE 4346	USED FOR NODES	4460		
NODE 4347	USED FOR NODES	4461		
NODE 4343	USED FOR NODES	4457		
NODE 4502	USED FOR NODES	6422		
NODE 4503	USED FOR NODES	6423		
NODE 4504	USED FOR NODES	6424		
NODE 4505	USED FOR NODES	6425		
NODE 4506	USED FOR NODES	6426		
NODE 4477	USED FOR NODES	6397		
NODE 4308	USED FOR NODES	5888		
NODE 4310	USED FOR NODES	5890		
NODE 4185	USED FOR NODES	5738		
NODE 4309	USED FOR NODES	5889		
NODE 4311	USED FOR NODES	5891		
NODE 4312	USED FOR NODES	5892		
NODE 3332	USED FOR NODES	3478	4228	4452
NODE 3279	USED FOR NODES	3477	4193	4449
NODE 3333	USED FOR NODES	3479	4229	4453
NODE 3334	USED FOR NODES	3480	4230	4454
NODE 3335	USED FOR NODES	3481	4231	4455
NODE 3336	USED FOR NODES	3482	4232	4456
NODE 3510	USED FOR NODES	4594		
NODE 3511	USED FOR NODES	4595		
NODE 3512	USED FOR NODES	4596		
NODE 3513	USED FOR NODES	4597		
NODE 3514	USED FOR NODES	4598		
NODE 3501	USED FOR NODES	4553		
NODE 3379	USED FOR NODES	4245		
NODE 3378	USED FOR NODES	4244		
NODE 3377	USED FOR NODES	4243		
NODE 3381	USED FOR NODES	4247		
NODE 3281	USED FOR NODES	4194		
NODE 3380	USED FOR NODES	4246		
NODE 3515	USED FOR NODES	4589		
NODE 3516	USED FOR NODES	4590		

NODE	3517	USED FOR NODES	4591
NODE	3518	USED FOR NODES	4592
NODE	3519	USED FOR NODES	4593
NODE	3502	USED FOR NODES	4552
NODE	3384	USED FOR NODES	4250
NODE	3385	USED FOR NODES	4251
NODE	3386	USED FOR NODES	4252
NODE	3382	USED FOR NODES	4248
NODE	3383	USED FOR NODES	4249
NODE	3282	USED FOR NODES	4195
NODE	4507	USED FOR NODES	6417
NODE	4508	USED FOR NODES	6418
NODE	4509	USED FOR NODES	6419
NODE	4510	USED FOR NODES	6420
NODE	4511	USED FOR NODES	6421
NODE	4478	USED FOR NODES	6396
NODE	4315	USED FOR NODES	5895
NODE	4186	USED FOR NODES	5739
NODE	4317	USED FOR NODES	5897
NODE	4313	USED FOR NODES	5893
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NODE	3945	USED	FOR	NODES	5257
NODE	4060	USED	FOR	NODES	5396
NODE	4061	USED	FOR	NODES	5397
NODE	4063	USED	FOR	NODES	5399
NODE	3799	USED	FOR	NODES	4875
NODE	3683	USED	FOR	NODES	4735
NODE	3800	USED	FOR	NODES	4876
NODE	3801	USED	FOR	NODES	4877
NODE	3802	USED	FOR	NODES	4878
NODE	3803	USED	FOR	NODES	4879
NODE	3193	USED	FOR	NODES	3998
NODE	3192	USED	FOR	NODES	3997
NODE	3189	USED	FOR	NODES	3994
NODE	3190	USED	FOR	NODES	3995
NODE	3191	USED	FOR	NODES	3996
NODE	3101	USED	FOR	NODES	3953
NODE	3038	USED	FOR	NODES	3778
NODE	3034	USED	FOR	NODES	3774
NODE	3035	USED	FOR	NODES	3775
NODE	2912	USED	FOR	NODES	3699
NODE	3036	USED	FOR	NODES	3776
NODE	3037	USED	FOR	NODES	3777
NODE	3185	USED	FOR	NODES	3990
NODE	3186	USED	FOR	NODES	3991
NODE	3100	USED	FOR	NODES	3952
NODE	3188	USED	FOR	NODES	3993
NODE	3184	USED	FOR	NODES	3989
NODE	3187	USED	FOR	NODES	3992
NODE	2913	USED	FOR	NODES	3700
NODE	3043	USED	FOR	NODES	3783
NODE	3039	USED	FOR	NODES	3779
NODE	3041	USED	FOR	NODES	3781
NODE	3040	USED	FOR	NODES	3780
NODE	3042	USED	FOR	NODES	3782
NODE	2904	USED	FOR	NODES	3689
NODE	2954	USED	FOR	NODES	3724
NODE	2955	USED	FOR	NODES	3725
NODE	2956	USED	FOR	NODES	3726

NODE	2957	USED	FOR	NODES	3727
NODE	2958	USED	FOR	NODES	3728
NODE	4057	USED	FOR	NODES	5393
NODE	4056	USED	FOR	NODES	5392
NODE	4058	USED	FOR	NODES	5394
NODE	4054	USED	FOR	NODES	5390
NODE	4055	USED	FOR	NODES	5391
NODE	3944	USED	FOR	NODES	5256
NODE	3808	USED	FOR	NODES	4884
NODE	3807	USED	FOR	NODES	4883
NODE	3684	USED	FOR	NODES	4736
NODE	3805	USED	FOR	NODES	4881
NODE	3806	USED	FOR	NODES	4882
NODE	3804	USED	FOR	NODES	4880
NODE	4049	USED	FOR	NODES	5385
NODE	3943	USED	FOR	NODES	5255
NODE	4050	USED	FOR	NODES	5386
NODE	4051	USED	FOR	NODES	5387
NODE	4052	USED	FOR	NODES	5388
NODE	4053	USED	FOR	NODES	5389
NODE	3813	USED	FOR	NODES	4889
NODE	3812	USED	FOR	NODES	4888
NODE	3810	USED	FOR	NODES	4886
NODE	3809	USED	FOR	NODES	4885
NODE	3811	USED	FOR	NODES	4887
NODE	3685	USED	FOR	NODES	4737
NODE	4045	USED	FOR	NODES	5381
NODE	4044	USED	FOR	NODES	5380
NODE	4046	USED	FOR	NODES	5382
NODE	4047	USED	FOR	NODES	5383
NODE	4048	USED	FOR	NODES	5384
NODE	3942	USED	FOR	NODES	5254
NODE	3815	USED	FOR	NODES	4891
NODE	3817	USED	FOR	NODES	4893
NODE	3818	USED	FOR	NODES	4894
NODE	3816	USED	FOR	NODES	4892
NODE	3686	USED	FOR	NODES	4738
NODE	3814	USED	FOR	NODES	4890
NODE	4039	USED	FOR	NODES	5375
NODE	4043	USED	FOR	NODES	5379
NODE	3941	USED	FOR	NODES	5253
NODE	4040	USED	FOR	NODES	5376
NODE	4041	USED	FOR	NODES	5377
NODE	4042	USED	FOR	NODES	5378
NODE	3820	USED	FOR	NODES	4896
NODE	3823	USED	FOR	NODES	4899
NODE	3819	USED	FOR	NODES	4895
NODE	3687	USED	FOR	NODES	4739
NODE	3821	USED	FOR	NODES	4897
NODE	3822	USED	FOR	NODES	4898
NODE	4036	USED	FOR	NODES	5372
NODE	4037	USED	FOR	NODES	5373
NODE	4038	USED	FOR	NODES	5374
NODE	3940	USED	FOR	NODES	5252
NODE	4034	USED	FOR	NODES	5370
NODE	4035	USED	FOR	NODES	5371
NODE	3825	USED	FOR	NODES	4901
NODE	3827	USED	FOR	NODES	4903
NODE	3828	USED	FOR	NODES	4904
NODE	3826	USED	FOR	NODES	4902
NODE	3688	USED	FOR	NODES	4740
NODE	3824	USED	FOR	NODES	4900
NODE	3734	USED	FOR	NODES	4815
NODE	3735	USED	FOR	NODES	4816
NODE	3736	USED	FOR	NODES	4817
NODE	3737	USED	FOR	NODES	4818
NODE	3738	USED	FOR	NODES	4819
NODE	3679	USED	FOR	NODES	4725
NODE	7300	USED	FOR	NODES	8301
NODE	6973	USED	FOR	NODES	7684

NODE	7343	USED FOR NODES	8317
NODE	7344	USED FOR NODES	8318
NODE	7345	USED FOR NODES	8319
NODE	7346	USED FOR NODES	8320
NODE	7347	USED FOR NODES	8321
NODE	8327	USED FOR NODES	8458
NODE	8328	USED FOR NODES	8459
NODE	8329	USED FOR NODES	8460
NODE	8330	USED FOR NODES	8461
NODE	8331	USED FOR NODES	8462
NODE	6997	USED FOR NODES	7733
NODE	4716	USED FOR NODES	7309
NODE	6998	USED FOR NODES	7734
NODE	4820	USED FOR NODES	7333
NODE	4821	USED FOR NODES	7334
NODE	7723	USED FOR NODES	7991
NODE	7981	USED FOR NODES	8159
NODE	4822	USED FOR NODES	7335
NODE	4823	USED FOR NODES	7336
NODE	4824	USED FOR NODES	7337
NODE	6999	USED FOR NODES	7735
NODE	7000	USED FOR NODES	7736
NODE	7001	USED FOR NODES	7737
NODE	7982	USED FOR NODES	8160
NODE	7983	USED FOR NODES	8161
NODE	7984	USED FOR NODES	8162
NODE	7985	USED FOR NODES	8163
NODE	5330	USED FOR NODES	7007
NODE	5331	USED FOR NODES	7008
NODE	5332	USED FOR NODES	7009
NODE	5333	USED FOR NODES	7010
NODE	5334	USED FOR NODES	7011
NODE	8440	USED FOR NODES	8695
NODE	8296	USED FOR NODES	8444
NODE	7695	USED FOR NODES	7960
NODE	8468	USED FOR NODES	8719
NODE	8469	USED FOR NODES	8720
NODE	8470	USED FOR NODES	8721
NODE	8471	USED FOR NODES	8722
NODE	8472	USED FOR NODES	8723
NODE	7724	USED FOR NODES	7992
NODE	7725	USED FOR NODES	7993
NODE	7726	USED FOR NODES	7994
NODE	7727	USED FOR NODES	7995
NODE	8686	USED FOR NODES	9156
NODE	7965	USED FOR NODES	8128
NODE	8729	USED FOR NODES	9190
NODE	8730	USED FOR NODES	9191
NODE	8731	USED FOR NODES	9192
NODE	8732	USED FOR NODES	9193
NODE	8733	USED FOR NODES	9194
NODE	5243	USED FOR NODES	6964
NODE	5337	USED FOR NODES	7014
NODE	5338	USED FOR NODES	7015
NODE	7301	USED FOR NODES	8302
NODE	5339	USED FOR NODES	7016
NODE	6974	USED FOR NODES	7685
NODE	7351	USED FOR NODES	8325
NODE	7352	USED FOR NODES	8326
NODE	7348	USED FOR NODES	8322
NODE	7349	USED FOR NODES	8323
NODE	7350	USED FOR NODES	8324
NODE	8332	USED FOR NODES	8463
NODE	8333	USED FOR NODES	8464
NODE	8334	USED FOR NODES	8465
NODE	8335	USED FOR NODES	8466
NODE	8336	USED FOR NODES	8467
NODE	7732	USED FOR NODES	8000
NODE	7986	USED FOR NODES	8164
NODE	7987	USED FOR NODES	8165

NODE	7988	USED	FOR	NODES	8166
NODE	7989	USED	FOR	NODES	8167
NODE	7990	USED	FOR	NODES	8168
NODE	4717	USED	FOR	NODES	7310
NODE	4825	USED	FOR	NODES	7338
NODE	4826	USED	FOR	NODES	7339
NODE	4827	USED	FOR	NODES	7340
NODE	4828	USED	FOR	NODES	7341
NODE	4829	USED	FOR	NODES	7342
NODE	7002	USED	FOR	NODES	7738
NODE	7003	USED	FOR	NODES	7739
NODE	7004	USED	FOR	NODES	7740
NODE	7005	USED	FOR	NODES	7741
NODE	7006	USED	FOR	NODES	7742
NODE	5335	USED	FOR	NODES	7012
NODE	8441	USED	FOR	NODES	8696
NODE	8297	USED	FOR	NODES	8445
NODE	5336	USED	FOR	NODES	7013
NODE	7696	USED	FOR	NODES	7961
NODE	8473	USED	FOR	NODES	8724
NODE	8474	USED	FOR	NODES	8725
NODE	8475	USED	FOR	NODES	8726
NODE	8476	USED	FOR	NODES	8727
NODE	8477	USED	FOR	NODES	8728
NODE	7728	USED	FOR	NODES	7996
NODE	7729	USED	FOR	NODES	7997
NODE	7730	USED	FOR	NODES	7998
NODE	7731	USED	FOR	NODES	7999
NODE	8687	USED	FOR	NODES	9157
NODE	7966	USED	FOR	NODES	8129
NODE	8734	USED	FOR	NODES	9195
NODE	8735	USED	FOR	NODES	9196
NODE	8736	USED	FOR	NODES	9197
NODE	8737	USED	FOR	NODES	9198
NODE	8738	USED	FOR	NODES	9199
NODE	5244	USED	FOR	NODES	6965
NODE	7328	USED	FOR	NODES	8307
NODE	7329	USED	FOR	NODES	8308
NODE	7330	USED	FOR	NODES	8309
NODE	7331	USED	FOR	NODES	8310
NODE	7332	USED	FOR	NODES	8311
NODE	8312	USED	FOR	NODES	8448
NODE	8313	USED	FOR	NODES	8449
NODE	8314	USED	FOR	NODES	8450
NODE	8315	USED	FOR	NODES	8451
NODE	8316	USED	FOR	NODES	8452
NODE	4805	USED	FOR	NODES	7323
NODE	4806	USED	FOR	NODES	7324
NODE	4807	USED	FOR	NODES	7325
NODE	4808	USED	FOR	NODES	7326
NODE	4809	USED	FOR	NODES	7327
NODE	7299	USED	FOR	NODES	8298
NODE	6987	USED	FOR	NODES	7718
NODE	6988	USED	FOR	NODES	7719
NODE	6989	USED	FOR	NODES	7720
NODE	6990	USED	FOR	NODES	7721
NODE	6991	USED	FOR	NODES	7722
NODE	5320	USED	FOR	NODES	6992
NODE	5321	USED	FOR	NODES	6993
NODE	5322	USED	FOR	NODES	6994
NODE	5323	USED	FOR	NODES	6995
NODE	5324	USED	FOR	NODES	6996
NODE	4715	USED	FOR	NODES	7302
NODE	7974	USED	FOR	NODES	8147
NODE	7975	USED	FOR	NODES	8148
NODE	8439	USED	FOR	NODES	8688
NODE	8295	USED	FOR	NODES	8442
NODE	6966	USED	FOR	NODES	7683
NODE	7686	USED	FOR	NODES	7959
NODE	8453	USED	FOR	NODES	8709

NODE 8454 USED FOR NODES 8710
 NODE 8455 USED FOR NODES 8711
 NODE 8456 USED FOR NODES 8712
 NODE 8457 USED FOR NODES 8713
 NODE 7713 USED FOR NODES 7976
 NODE 7714 USED FOR NODES 7977
 NODE 7715 USED FOR NODES 7978
 NODE 7716 USED FOR NODES 7979
 NODE 7717 USED FOR NODES 7980
 NODE 8685 USED FOR NODES 9144
 NODE 7962 USED FOR NODES 8127
 NODE 8714 USED FOR NODES 9180
 NODE 8715 USED FOR NODES 9181
 NODE 8716 USED FOR NODES 9182
 NODE 8717 USED FOR NODES 9183
 NODE 8718 USED FOR NODES 9184
 NODE 5235 USED FOR NODES 6963
 NODE 7971 USED FOR NODES 8144
 NODE 7972 USED FOR NODES 8145
 NODE 7973 USED FOR NODES 8146

*** WARNING *** CP= 58.270 TIME= 01:20:52
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	67 USED FOR KEYPOINT(S)	115		
KEYPOINT	72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT	76 USED FOR KEYPOINT(S)	89		
KEYPOINT	80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85 USED FOR KEYPOINT(S)	122		
KEYPOINT	91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93 USED FOR KEYPOINT(S)	104		
KEYPOINT	98 USED FOR KEYPOINT(S)	117		
KEYPOINT	101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121 USED FOR KEYPOINT(S)	137		
KEYPOINT	123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT	134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT	135 USED FOR KEYPOINT(S)	162		
KEYPOINT	138 USED FOR KEYPOINT(S)	155		
KEYPOINT	139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT	142 USED FOR KEYPOINT(S)	146		
KEYPOINT	143 USED FOR KEYPOINT(S)	152		
KEYPOINT	147 USED FOR KEYPOINT(S)	157		
KEYPOINT	151 USED FOR KEYPOINT(S)	164		
KEYPOINT	154 USED FOR KEYPOINT(S)	165		
KEYPOINT	156 USED FOR KEYPOINT(S)	167		
KEYPOINT	158 USED FOR KEYPOINT(S)	181		
KEYPOINT	159 USED FOR KEYPOINT(S)	184		
KEYPOINT	161 USED FOR KEYPOINT(S)	186		
KEYPOINT	163 USED FOR KEYPOINT(S)	170		
KEYPOINT	166 USED FOR KEYPOINT(S)	171		
KEYPOINT	168 USED FOR KEYPOINT(S)	173		
KEYPOINT	169 USED FOR KEYPOINT(S)	176		
KEYPOINT	172 USED FOR KEYPOINT(S)	177		
KEYPOINT	174 USED FOR KEYPOINT(S)	179		
KEYPOINT	182 USED FOR KEYPOINT(S)	187		
KEYPOINT	183 USED FOR KEYPOINT(S)	190		
KEYPOINT	185 USED FOR KEYPOINT(S)	192		
KEYPOINT	188 USED FOR KEYPOINT(S)	193		
KEYPOINT	189 USED FOR KEYPOINT(S)	196		
KEYPOINT	191 USED FOR KEYPOINT(S)	198		
KEYPOINT	194 USED FOR KEYPOINT(S)	199		
KEYPOINT	195 USED FOR KEYPOINT(S)	202		
KEYPOINT	197 USED FOR KEYPOINT(S)	204		
LINE	108 USED FOR LINE(S)	240		
LINE	121 USED FOR LINE(S)	241		

LINE	126	USED FOR LINE(S)	154	239
LINE	134	USED FOR LINE(S)	174	
LINE	137	USED FOR LINE(S)	172	
LINE	141	USED FOR LINE(S)	238	
LINE	159	USED FOR LINE(S)	236	246 270
LINE	160	USED FOR LINE(S)	252	
LINE	161	USED FOR LINE(S)	251	
LINE	187	USED FOR LINE(S)	257	
LINE	192	USED FOR LINE(S)	220	256 264
LINE	193	USED FOR LINE(S)	225	
LINE	194	USED FOR LINE(S)	226	
LINE	200	USED FOR LINE(S)	244	
LINE	203	USED FOR LINE(S)	243	
LINE	205	USED FOR LINE(S)	233	259 272
LINE	207	USED FOR LINE(S)	265	
LINE	228	USED FOR LINE(S)	271	
LINE	245	USED FOR LINE(S)	269	
LINE	247	USED FOR LINE(S)	268	275 307
LINE	248	USED FOR LINE(S)	283	
LINE	249	USED FOR LINE(S)	282	
LINE	253	USED FOR LINE(S)	290	
LINE	254	USED FOR LINE(S)	262	289 299
LINE	255	USED FOR LINE(S)	263	
LINE	258	USED FOR LINE(S)	273	
LINE	260	USED FOR LINE(S)	267	292 309
LINE	261	USED FOR LINE(S)	300	
LINE	266	USED FOR LINE(S)	308	
LINE	274	USED FOR LINE(S)	306	
LINE	276	USED FOR LINE(S)	305	330
LINE	277	USED FOR LINE(S)	336	
LINE	278	USED FOR LINE(S)	335	
LINE	285	USED FOR LINE(S)	320	
LINE	286	USED FOR LINE(S)	319	
LINE	287	USED FOR LINE(S)	297	315
LINE	288	USED FOR LINE(S)	298	
LINE	291	USED FOR LINE(S)	310	
LINE	293	USED FOR LINE(S)	302	
LINE	295	USED FOR LINE(S)	313	
LINE	296	USED FOR LINE(S)	314	
LINE	303	USED FOR LINE(S)	325	
LINE	304	USED FOR LINE(S)	331	
LINE	312	USED FOR LINE(S)	339	
LINE	317	USED FOR LINE(S)	341	
LINE	318	USED FOR LINE(S)	340	
LINE	322	USED FOR LINE(S)	346	
LINE	323	USED FOR LINE(S)	345	
LINE	326	USED FOR LINE(S)	377	
LINE	327	USED FOR LINE(S)	383	
LINE	328	USED FOR LINE(S)	382	
LINE	332	USED FOR LINE(S)	388	
LINE	333	USED FOR LINE(S)	387	
LINE	338	USED FOR LINE(S)	352	
LINE	343	USED FOR LINE(S)	354	
LINE	344	USED FOR LINE(S)	353	
LINE	348	USED FOR LINE(S)	359	
LINE	349	USED FOR LINE(S)	358	
LINE	351	USED FOR LINE(S)	365	
LINE	356	USED FOR LINE(S)	367	
LINE	357	USED FOR LINE(S)	366	
LINE	361	USED FOR LINE(S)	372	
LINE	362	USED FOR LINE(S)	371	
LINE	378	USED FOR LINE(S)	390	
LINE	379	USED FOR LINE(S)	396	
LINE	380	USED FOR LINE(S)	395	
LINE	384	USED FOR LINE(S)	401	
LINE	385	USED FOR LINE(S)	400	
LINE	391	USED FOR LINE(S)	403	
LINE	392	USED FOR LINE(S)	409	
LINE	393	USED FOR LINE(S)	408	
LINE	397	USED FOR LINE(S)	414	

LINE 398 USED FOR LINE(S) 413
LINE 404 USED FOR LINE(S) 416
LINE 405 USED FOR LINE(S) 422
LINE 406 USED FOR LINE(S) 421
LINE 410 USED FOR LINE(S) 427
LINE 411 USED FOR LINE(S) 426
AREA 56 USED FOR AREA(S) 161
AREA 84 USED FOR AREA(S) 123
AREA 95 USED FOR AREA(S) 160
AREA 112 USED FOR AREA(S) 168
AREA 142 USED FOR AREA(S) 172
AREA 148 USED FOR AREA(S) 156
AREA 154 USED FOR AREA(S) 163
AREA 155 USED FOR AREA(S) 177
AREA 159 USED FOR AREA(S) 181
AREA 165 USED FOR AREA(S) 180
AREA 166 USED FOR AREA(S) 188
AREA 170 USED FOR AREA(S) 193
AREA 171 USED FOR AREA(S) 176
AREA 174 USED FOR AREA(S) 182
AREA 175 USED FOR AREA(S) 199
AREA 179 USED FOR AREA(S) 204
AREA 184 USED FOR AREA(S) 203
AREA 185 USED FOR AREA(S) 223
AREA 191 USED FOR AREA(S) 212
AREA 192 USED FOR AREA(S) 198
AREA 195 USED FOR AREA(S) 205
AREA 197 USED FOR AREA(S) 208
AREA 202 USED FOR AREA(S) 219
AREA 210 USED FOR AREA(S) 226
AREA 214 USED FOR AREA(S) 230
AREA 217 USED FOR AREA(S) 255
AREA 221 USED FOR AREA(S) 259
AREA 228 USED FOR AREA(S) 235
AREA 232 USED FOR AREA(S) 239
AREA 237 USED FOR AREA(S) 244
AREA 241 USED FOR AREA(S) 248
AREA 253 USED FOR AREA(S) 264
AREA 257 USED FOR AREA(S) 268
AREA 262 USED FOR AREA(S) 273
AREA 266 USED FOR AREA(S) 277
AREA 271 USED FOR AREA(S) 282
AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
Invert
(V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9488
MAXIMUM ELEMENT NUMBER = 7458
Rock around drift
(V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS

29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9866
MAXIMUM ELEMENT NUMBER = 7698

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10064
MAXIMUM ELEMENT NUMBER = 7818

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 10262
MAXIMUM ELEMENT NUMBER = 7938

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10766
MAXIMUM ELEMENT NUMBER = 8298

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11030
MAXIMUM ELEMENT NUMBER = 8478

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 11294
MAXIMUM ELEMENT NUMBER = 8658
Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 68.140 TIME= 01:21:02
 Meshing of volume 75 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
 8773 8774 8775 8776 8777 8778 8779 8780
 8781 8782 8783 8784

*** WARNING *** CP= 69.180 TIME= 01:21:03
 Meshing of volume 76 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
 9403 9404 9405 9406 9407 9408 9409 9410
 9411 9412 9413 9414

MAXIMUM NODE NUMBER = 12302
 MAXIMUM ELEMENT NUMBER = 9498

ELEMENT TYPE SET TO 1

DRAG AREAS
 39,
 ALONG LINES
 59,

ELEMENT TYPE SET TO 2

DRAG AREAS
 40,
 ALONG LINES
 59,

*** WARNING *** CP= 70.390 TIME= 01:21:04
 Meshing of volume 78 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
 9541 9542 9543 9544 9545 9546 9601 9602
 9603 9604 9605 9606

MAXIMUM NODE NUMBER = 12830
 MAXIMUM ELEMENT NUMBER = 9918
 Concatenate to mesh volume 77
 (L's 443,444 used and freed up)
 (A's 321 used and freed up)

CONCATENATE AREAS
 AREAS = 311 310

COMPOSITE AREA NO.= 321
 LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
 LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
 LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
 IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 70.570 TIME= 01:21:04
 Meshing of area 311 produced 3 poorly shaped faces.

*** NOTE *** CP= 70.570 TIME= 01:21:04

Worst aspect ratio is 20.4717763 : 1.

*** WARNING *** CP= 71.860 TIME= 01:21:05
 Meshing of volume 77 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
 10243 10244 10245 10246 10247 10248 10249 10250
 10251 10252 10253 10254

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 13358
 MAXIMUM ELEMENT NUMBER = 10338

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
 Extrude rest of Tsw2
 (V's 79,80,81,82)

DRAG AREAS
 7, 8, 9, 10,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 14030
 MAXIMUM ELEMENT NUMBER = 10842
 Extrude Tsw1
 (V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
 5, 6,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 14450
 MAXIMUM ELEMENT NUMBER = 11166
 Extrude PTn
 (V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
 3, 4,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 14618
 MAXIMUM ELEMENT NUMBER = 11274
 Extrude TCw
 (V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
 1, 2,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 14786

MAXIMUM ELEMENT NUMBER = 11382
Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 14954
MAXIMUM ELEMENT NUMBER = 11490
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 15080
MAXIMUM ELEMENT NUMBER = 11562
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 15416
MAXIMUM ELEMENT NUMBER = 11814
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 77.270 TIME= 01:21:11
Meshing of volume 95 produced 30 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

11863	11869	11870	11875	11876	11877	11881	11882
11883	11884	11935	11941	11942	11947	11948	11949
11953	11954	11955	11956	12007	12013	12014	12019
12020	12021	12025	12026	12027	12028		

*** WARNING *** CP= 77.820 TIME= 01:21:11
Meshing of volume 96 produced 30 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

12079	12085	12086	12091	12092	12093	12097	12098
12099	12100	12151	12157	12158	12163	12164	12165
12169	12170	12171	12172	12223	12229	12230	12235
12236	12237	12241	12242	12243	12244		

MAXIMUM NODE NUMBER = 15962

MAXIMUM ELEMENT NUMBER = 12246

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 14071 USED FOR NODES 14477
NODE 14072 USED FOR NODES 14478
NODE 14073 USED FOR NODES 14479
NODE 14074 USED FOR NODES 14480
NODE 14075 USED FOR NODES 14481
NODE 13391 USED FOR NODES 14081
NODE 13392 USED FOR NODES 14082
NODE 13393 USED FOR NODES 14083
NODE 13394 USED FOR NODES 14084
NODE 13395 USED FOR NODES 14085
NODE 14956 USED FOR NODES 15081
NODE 15082 USED FOR NODES 15417
NODE 12395 USED FOR NODES 12836
NODE 12396 USED FOR NODES 13727
NODE 12397 USED FOR NODES 13728
NODE 14977 USED FOR NODES 15113
NODE 14978 USED FOR NODES 15114
NODE 14979 USED FOR NODES 15115
NODE 12398 USED FOR NODES 13729
NODE 12399 USED FOR NODES 13730
NODE 12400 USED FOR NODES 13731
NODE 14980 USED FOR NODES 15116
NODE 14981 USED FOR NODES 15117
NODE 15123 USED FOR NODES 15469
NODE 15124 USED FOR NODES 15470
NODE 15125 USED FOR NODES 15471
NODE 15126 USED FOR NODES 15472
NODE 15127 USED FOR NODES 15473
NODE 12303 USED FOR NODES 12831
NODE 12391 USED FOR NODES 12832
NODE 12392 USED FOR NODES 12833
NODE 12393 USED FOR NODES 12834
NODE 12394 USED FOR NODES 12835
NODE 13737 USED FOR NODES 14803
NODE 13738 USED FOR NODES 14804
NODE 12879 USED FOR NODES 13360
NODE 12880 USED FOR NODES 13401
NODE 12881 USED FOR NODES 13402
NODE 12882 USED FOR NODES 13403
NODE 12883 USED FOR NODES 13404
NODE 12884 USED FOR NODES 13405
NODE 13739 USED FOR NODES 14805
NODE 12304 USED FOR NODES 13695
NODE 13740 USED FOR NODES 14806
NODE 13741 USED FOR NODES 14807
NODE 14788 USED FOR NODES 14955
NODE 14451 USED FOR NODES 14620
NODE 14031 USED FOR NODES 14452
NODE 14467 USED FOR NODES 14645
NODE 14468 USED FOR NODES 14646
NODE 14469 USED FOR NODES 14647
NODE 14470 USED FOR NODES 14648
NODE 14471 USED FOR NODES 14649
NODE 13359 USED FOR NODES 14032
NODE 14813 USED FOR NODES 14967
NODE 14814 USED FOR NODES 14968
NODE 14815 USED FOR NODES 14969
NODE 14816 USED FOR NODES 14970
NODE 14817 USED FOR NODES 14971
NODE 13696 USED FOR NODES 14787
NODE 12559 USED FOR NODES 12877
NODE 12560 USED FOR NODES 12878
NODE 12557 USED FOR NODES 12875
NODE 12556 USED FOR NODES 12874
NODE 12336 USED FOR NODES 12843
NODE 12558 USED FOR NODES 12876
NODE 14833 USED FOR NODES 14987

NODE 14834	USED FOR NODES	14988
NODE 12418	USED FOR NODES	13749
NODE 12419	USED FOR NODES	13750
NODE 12420	USED FOR NODES	13751
NODE 14835	USED FOR NODES	14989
NODE 14836	USED FOR NODES	14990
NODE 15090	USED FOR NODES	15445
NODE 14837	USED FOR NODES	14991
NODE 14091	USED FOR NODES	14497
NODE 14092	USED FOR NODES	14498
NODE 14959	USED FOR NODES	15099
NODE 14093	USED FOR NODES	14499
NODE 14094	USED FOR NODES	14500
NODE 14095	USED FOR NODES	14501
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NODE 13412	USED FOR NODES	14102
NODE 13413	USED FOR NODES	14103
NODE 13414	USED FOR NODES	14104
NODE 13415	USED FOR NODES	14105
NODE 14997	USED FOR NODES	15133
NODE 14998	USED FOR NODES	15134
NODE 14999	USED FOR NODES	15135
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NODE 15001	USED FOR NODES	15137
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NODE 15145	USED FOR NODES	15491
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NODE 15147	USED FOR NODES	15493
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NODE 13760	USED FOR NODES	14826
NODE 13761	USED FOR NODES	14827
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NODE 12927	USED FOR NODES	13368
NODE 12929	USED FOR NODES	13421
NODE 12930	USED FOR NODES	13422
NODE 12931	USED FOR NODES	13423
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NODE 12933	USED FOR NODES	13425
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NODE 14461	USED FOR NODES	14624
NODE 14487	USED FOR NODES	14665
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NODE 14489	USED FOR NODES	14667
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NODE 14491	USED FOR NODES	14669
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NODE 12553	USED FOR NODES	12871
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NODE 12551	USED FOR NODES	12869
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NODE 12555	USED FOR NODES	12873
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NODE 12546	USED FOR NODES	12864
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NODE 12549	USED FOR NODES	12867
NODE 12334	USED FOR NODES	12841
NODE 12543	USED FOR NODES	12861
NODE 12542	USED FOR NODES	12860
NODE 12541	USED FOR NODES	12859
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NODE 12544	USED FOR NODES	12862

NODE 12545	USED FOR NODES	12863	
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NODE 13766	USED FOR NODES	14832	
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NODE 10127	USED FOR NODES	11161
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NODE 13744	USED FOR NODES	14810
NODE 13703	USED FOR NODES	14794
NODE 13745	USED FOR NODES	14811
NODE 13743	USED FOR NODES	14809
NODE 13742	USED FOR NODES	14808
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NODE 11392	USED FOR NODES	12405 13736
NODE 11390	USED FOR NODES	12403 13734
NODE 11904	USED FOR NODES	12923 13407
NODE 11905	USED FOR NODES	12924 13408
NODE 11391	USED FOR NODES	12404 13735
NODE 11296	USED FOR NODES	12311 13706
NODE 11907	USED FOR NODES	12926 13410
NODE 11389	USED FOR NODES	12402 13733
NODE 11906	USED FOR NODES	12925 13409
NODE 11388	USED FOR NODES	12401 13732
NODE 11839	USED FOR NODES	12945
NODE 12032	USED FOR NODES	12955
NODE 12029	USED FOR NODES	12952
NODE 12028	USED FOR NODES	12951
NODE 12031	USED FOR NODES	12954
NODE 12030	USED FOR NODES	12953
NODE 12026	USED FOR NODES	12959
NODE 12024	USED FOR NODES	12957
NODE 12023	USED FOR NODES	12956
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NODE 12025	USED FOR NODES	12958
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NODE 12018	USED FOR NODES	12961
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NODE 12013	USED FOR NODES	12966

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NODE 10317	USED FOR NODES	10821	11398	12406
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NODE 9726	USED FOR NODES	10088	10571	11120
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NODE 9723	USED FOR NODES	10085	10568	11117
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NODE 10397	USED FOR NODES	11473
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NODE 11304	USED FOR NODES	13897
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NODE 14315	USED FOR NODES	14583
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NODE 11414	USED FOR NODES	13927
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NODE 11416	USED FOR NODES	13929
NODE 11417	USED FOR NODES	13930
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NODE 11911	USED FOR NODES	13583
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NODE 14901	USED FOR NODES	15037
NODE 14902	USED FOR NODES	15038
NODE 14903	USED FOR NODES	15039

NODE 14904 USED FOR NODES 15040
 NODE 15041 USED FOR NODES 15297
 NODE 15042 USED FOR NODES 15298
 NODE 15043 USED FOR NODES 15299
 NODE 15044 USED FOR NODES 15300
 NODE 15045 USED FOR NODES 15301
 NODE 13554 USED FOR NODES 14271
 NODE 13918 USED FOR NODES 14897
 NODE 11910 USED FOR NODES 13582
 NODE 11912 USED FOR NODES 13584
 NODE 13919 USED FOR NODES 14898
 NODE 15273 USED FOR NODES 15732
 NODE 14274 USED FOR NODES 14547
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 NODE 15304 USED FOR NODES 15770
 NODE 15305 USED FOR NODES 15771
 NODE 15306 USED FOR NODES 15772
 NODE 14301 USED FOR NODES 14564
 NODE 14302 USED FOR NODES 14565
 NODE 14303 USED FOR NODES 14566
 NODE 14304 USED FOR NODES 14567
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 NODE 13575 USED FOR NODES 14306
 NODE 13576 USED FOR NODES 14307
 NODE 13577 USED FOR NODES 14308
 NODE 13578 USED FOR NODES 14309
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 NODE 13920 USED FOR NODES 14899
 NODE 11393 USED FOR NODES 13911
 NODE 11394 USED FOR NODES 13912
 NODE 13887 USED FOR NODES 14886
 NODE 11395 USED FOR NODES 13913
 NODE 11396 USED FOR NODES 13914
 NODE 11303 USED FOR NODES 13890
 NODE 11397 USED FOR NODES 13915
 NODE 14550 USED FOR NODES 14715
 NODE 14559 USED FOR NODES 14732
 NODE 14560 USED FOR NODES 14733
 NODE 14561 USED FOR NODES 14734
 NODE 14562 USED FOR NODES 14735
 NODE 14563 USED FOR NODES 14736
 NODE 11823 USED FOR NODES 13551
 NODE 13916 USED FOR NODES 14895
 NODE 13917 USED FOR NODES 14896

*** WARNING ***

CP= 138.930 TIME= 01:22:12

Same node numbers associated with more than one solid model entity.

Future mesh clearing operations could produce unexpected results.

NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78 USED FOR KEYPOINT(S)	132		
KEYPOINT	89 USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104 USED FOR KEYPOINT(S)	117		
KEYPOINT	111 USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114 USED FOR KEYPOINT(S)	144		
KEYPOINT	119 USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122 USED FOR KEYPOINT(S)	128		
KEYPOINT	124 USED FOR KEYPOINT(S)	133		
KEYPOINT	125 USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140 USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141 USED FOR KEYPOINT(S)	170		
KEYPOINT	145 USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149 USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164 USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165 USED FOR KEYPOINT(S)	212		
KEYPOINT	171 USED FOR KEYPOINT(S)	205		
KEYPOINT	173 USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179 USED FOR KEYPOINT(S)	187		

KEYPOINT	181	USED FOR KEYPOINT(S)	199	
KEYPOINT	190	USED FOR KEYPOINT(S)	207	
KEYPOINT	198	USED FOR KEYPOINT(S)	214	
KEYPOINT	204	USED FOR KEYPOINT(S)	215	
KEYPOINT	206	USED FOR KEYPOINT(S)	217	
KEYPOINT	208	USED FOR KEYPOINT(S)	231	
KEYPOINT	209	USED FOR KEYPOINT(S)	234	
KEYPOINT	211	USED FOR KEYPOINT(S)	236	
KEYPOINT	213	USED FOR KEYPOINT(S)	220	
KEYPOINT	216	USED FOR KEYPOINT(S)	221	
KEYPOINT	218	USED FOR KEYPOINT(S)	223	
KEYPOINT	219	USED FOR KEYPOINT(S)	226	
KEYPOINT	222	USED FOR KEYPOINT(S)	227	
KEYPOINT	224	USED FOR KEYPOINT(S)	229	
KEYPOINT	232	USED FOR KEYPOINT(S)	237	
KEYPOINT	233	USED FOR KEYPOINT(S)	240	
KEYPOINT	235	USED FOR KEYPOINT(S)	242	
KEYPOINT	238	USED FOR KEYPOINT(S)	243	
KEYPOINT	239	USED FOR KEYPOINT(S)	246	
KEYPOINT	241	USED FOR KEYPOINT(S)	248	
KEYPOINT	244	USED FOR KEYPOINT(S)	249	
KEYPOINT	245	USED FOR KEYPOINT(S)	252	
KEYPOINT	247	USED FOR KEYPOINT(S)	254	
LINE	154	USED FOR LINE(S)	297	
LINE	172	USED FOR LINE(S)	298	
LINE	174	USED FOR LINE(S)	240	292
LINE	233	USED FOR LINE(S)	257	
LINE	236	USED FOR LINE(S)	256	
LINE	239	USED FOR LINE(S)	290	
LINE	241	USED FOR LINE(S)	289	306 359
LINE	243	USED FOR LINE(S)	314	
LINE	244	USED FOR LINE(S)	313	
LINE	259	USED FOR LINE(S)	330	
LINE	262	USED FOR LINE(S)	271	325 345
LINE	263	USED FOR LINE(S)	272	
LINE	264	USED FOR LINE(S)	273	
LINE	267	USED FOR LINE(S)	302	
LINE	268	USED FOR LINE(S)	300	
LINE	269	USED FOR LINE(S)	283	335 366
LINE	270	USED FOR LINE(S)	346	
LINE	282	USED FOR LINE(S)	365	
LINE	305	USED FOR LINE(S)	358	
LINE	307	USED FOR LINE(S)	354	372 439
LINE	308	USED FOR LINE(S)	396	
LINE	309	USED FOR LINE(S)	395	
LINE	315	USED FOR LINE(S)	414	
LINE	319	USED FOR LINE(S)	340	413 431
LINE	320	USED FOR LINE(S)	341	
LINE	331	USED FOR LINE(S)	367	
LINE	336	USED FOR LINE(S)	353	421 441
LINE	339	USED FOR LINE(S)	432	
LINE	352	USED FOR LINE(S)	440	
LINE	371	USED FOR LINE(S)	438	
LINE	377	USED FOR LINE(S)	437	462
LINE	382	USED FOR LINE(S)	468	
LINE	383	USED FOR LINE(S)	467	
LINE	401	USED FOR LINE(S)	452	
LINE	403	USED FOR LINE(S)	451	
LINE	408	USED FOR LINE(S)	429	447
LINE	409	USED FOR LINE(S)	430	
LINE	416	USED FOR LINE(S)	442	
LINE	422	USED FOR LINE(S)	434	
LINE	427	USED FOR LINE(S)	445	
LINE	428	USED FOR LINE(S)	446	
LINE	435	USED FOR LINE(S)	457	
LINE	436	USED FOR LINE(S)	463	
LINE	444	USED FOR LINE(S)	471	
LINE	449	USED FOR LINE(S)	473	
LINE	450	USED FOR LINE(S)	472	
LINE	454	USED FOR LINE(S)	478	

LINE	455	USED FOR LINE(S)	477
LINE	458	USED FOR LINE(S)	509
LINE	459	USED FOR LINE(S)	515
LINE	460	USED FOR LINE(S)	514
LINE	464	USED FOR LINE(S)	520
LINE	465	USED FOR LINE(S)	519
LINE	470	USED FOR LINE(S)	484
LINE	475	USED FOR LINE(S)	486
LINE	476	USED FOR LINE(S)	485
LINE	480	USED FOR LINE(S)	491
LINE	481	USED FOR LINE(S)	490
LINE	483	USED FOR LINE(S)	497
LINE	488	USED FOR LINE(S)	499
LINE	489	USED FOR LINE(S)	498
LINE	493	USED FOR LINE(S)	504
LINE	494	USED FOR LINE(S)	503
LINE	510	USED FOR LINE(S)	522
LINE	511	USED FOR LINE(S)	528
LINE	512	USED FOR LINE(S)	527
LINE	516	USED FOR LINE(S)	533
LINE	517	USED FOR LINE(S)	532
LINE	523	USED FOR LINE(S)	535
LINE	524	USED FOR LINE(S)	541
LINE	525	USED FOR LINE(S)	540
LINE	529	USED FOR LINE(S)	546
LINE	530	USED FOR LINE(S)	545
LINE	536	USED FOR LINE(S)	548
LINE	537	USED FOR LINE(S)	554
LINE	538	USED FOR LINE(S)	553
LINE	542	USED FOR LINE(S)	559
LINE	543	USED FOR LINE(S)	558
AREA	123	USED FOR AREA(S)	230
AREA	163	USED FOR AREA(S)	182
AREA	176	USED FOR AREA(S)	226
AREA	177	USED FOR AREA(S)	264
AREA	193	USED FOR AREA(S)	282
AREA	198	USED FOR AREA(S)	208
AREA	204	USED FOR AREA(S)	239
AREA	205	USED FOR AREA(S)	291
AREA	223	USED FOR AREA(S)	295
AREA	248	USED FOR AREA(S)	294
AREA	255	USED FOR AREA(S)	302
AREA	273	USED FOR AREA(S)	307
AREA	277	USED FOR AREA(S)	290
AREA	288	USED FOR AREA(S)	296
AREA	289	USED FOR AREA(S)	313
AREA	293	USED FOR AREA(S)	318
AREA	298	USED FOR AREA(S)	317
AREA	299	USED FOR AREA(S)	337
AREA	305	USED FOR AREA(S)	326
AREA	306	USED FOR AREA(S)	312
AREA	309	USED FOR AREA(S)	319
AREA	311	USED FOR AREA(S)	322
AREA	316	USED FOR AREA(S)	333
AREA	324	USED FOR AREA(S)	340
AREA	328	USED FOR AREA(S)	344
AREA	331	USED FOR AREA(S)	369
AREA	335	USED FOR AREA(S)	373
AREA	342	USED FOR AREA(S)	349
AREA	346	USED FOR AREA(S)	353
AREA	351	USED FOR AREA(S)	358
AREA	355	USED FOR AREA(S)	362
AREA	367	USED FOR AREA(S)	378
AREA	371	USED FOR AREA(S)	382
AREA	376	USED FOR AREA(S)	387
AREA	380	USED FOR AREA(S)	391
AREA	385	USED FOR AREA(S)	396
AREA	389	USED FOR AREA(S)	400

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 143.110 TIME= 01:22:17
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.120 TIME= 01:22:17
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.130 TIME= 01:22:17
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.130 TIME= 01:22:17
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.140 TIME= 01:22:17
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.150 TIME= 01:22:17
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.160 TIME= 01:22:17
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.170 TIME= 01:22:17
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.180 TIME= 01:22:17
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.190 TIME= 01:22:17
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.200 TIME= 01:22:17
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.210 TIME= 01:22:17
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.210 TIME= 01:22:17
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.220 TIME= 01:22:17
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.220 TIME= 01:22:17
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.230 TIME= 01:22:17
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only elements are deleted.

elements are deleted.

*** NOTE *** CP= 143.240 TIME= 01:22:17
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.260 TIME= 01:22:17
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.270 TIME= 01:22:17
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.280 TIME= 01:22:17
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.300 TIME= 01:22:17
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.310 TIME= 01:22:17
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.320 TIME= 01:22:17
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.330 TIME= 01:22:17
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.330 TIME= 01:22:17
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.330 TIME= 01:22:17
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.340 TIME= 01:22:17
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.340 TIME= 01:22:17
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.350 TIME= 01:22:17
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.360 TIME= 01:22:17
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.370 TIME= 01:22:17
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.380 TIME= 01:22:17
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.390 TIME= 01:22:17
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only
elements are deleted.

*** NOTE *** CP= 143.400 TIME= 01:22:17
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.410 TIME= 01:22:17
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.430 TIME= 01:22:17
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.440 TIME= 01:22:17
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.470 TIME= 01:22:17
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.500 TIME= 01:22:17
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only elements are deleted.

*** NOTE *** CP= 143.530 TIME= 01:22:17
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 13598 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 13598 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

117 NODES (OF 13598 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 96
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

429 NODES (OF 13598 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 384

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15962 STEP 1

13598 NODES (OF 13598 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE *** CP= 210.560 TIME= 01:23:24
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 211.090

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:23:25 JAN 26, 1995 CP= 211.090
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=

IN RANGE 16 TO 16 STEP 1

1032 ELEMENTS (OF 12336 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

1074 NODES (OF 13598 DEFINED) SELECTED FROM
1032 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c21j5a.sub

*** WARNING *** CP= 211.720 TIME= 01:23:25
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 1032 NUMBER OF NODES= 1074
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13278 STEP 1

12336 ELEMENTS (OF 12336 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15962 STEP 1

13598 NODES (OF 13598 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2476.640

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:01:31 JAN 26, 1995 CP= 2476.650
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 13279 c21j5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 13279

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 13279
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

1032 ELEMENTS (OF 12337 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13279 STEP 1

11305 ELEMENTS (OF 11305 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2477.750

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 2477.760 TIME= 02:01:33
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.64 AND 308.64
KABS= 0. TOLERANCE= 1.54319

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

91 NODES (OF 13598 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 15962 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.36 AND -991.36
KABS= 0. TOLERANCE= 4.95682

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

91 NODES (OF 13598 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 15962 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15962 STEP 1

13598 NODES (OF 13598 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2480.860 TIME= 02:01:36
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:01:36 JAN 26, 1995 CP= 2480.860
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 2483.420 TIME= 02:01:38
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2483.440 TIME= 02:01:38
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER.1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPINGON
INITIAL NUMBER OF SUBSTEPS0
MAXIMUM NUMBER OF SUBSTEPS0
MINIMUM NUMBER OF SUBSTEPS1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS.25
STEP CHANGE BOUNDARY CONDITIONSNO
TRANSIENT (INERTIA) EFFECTSOFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .20496E+07

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.59098E-09	IXX = .4858E+12	IXX = .2823E+12
YC = -315.08	IYY = .7738E+09	IYY = .7738E+09
ZC = .26225E-15	IZZ = .4864E+12	IZZ = .2829E+12
	IXY = -.9053	IXY = -.5236
	IYZ = .6915E-07	IYZ = -.1002E-06
	IZX = -.1125E-07	IZX = -.1125E-07

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
2 .204962E+07

Range of element maximum matrix coefficients in global coordinates
Maximum= 505.429046 at element 11881.
Minimum= 7.50548194E-08 at element 13279.

*** WARNING *** CP= 2547.870 TIME= 02:02:48
Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

2	11304	SOLID70	46.460	.004
18	1	MATRIX50	1.270	1.270

Time at end of element matrix formulation CP= 2547.87.

HT FLOW CONVERGENCE VALUE= 467.0 CRITERION= .4670

Estimated number of active DOF= 13416.

Maximum wavefront= 1433.

Time at end of matrix triangularization CP= 3272.44.

Equation solver maximum pivot= 1846.62363 at node 1010 TEMP.

Equation solver minimum pivot= 0.957157138 at node 1188 TEMP.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05

HT FLOW CONVERGENCE VALUE= .2165 CRITERION= .9601E-02

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3761E-02

HT FLOW CONVERGENCE VALUE= .1099E-04 CRITERION= .9601E-02 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

2	11304	SOLID70	30.810	.003
18	1	MATRIX50	1.780	1.780

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

2	11304	SOLID70	2.750	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2

*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 13416

R.M.S. WAVEFRONT SIZE = 555.9

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096

18.203 MB WRITTEN ON ELEMENT MATRIX FILE: c21j5a.emat

10.172 MB WRITTEN ON ELEMENT SAVED DATA FILE: c21j5a.esav

47.188 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c21j5a.tri
.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c21j5a.dsub
8.828 MB WRITTEN ON RESULTS FILE: c21j5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 4176.270

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:31:57 JAN 26, 1995 CP= 4176.360
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.14091

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 4191.010

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

520 NODES (OF 13598 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 15962 BY 1
REAL= 26.1409103 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15962 STEP 1

13598 NODES (OF 13598 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13279 STEP 1

11305 ELEMENTS (OF 11305 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:32:19 JAN 26, 1995 CP= 4192.020
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 4194.600 TIME= 02:32:22
This load step will be a static (steady-state) step.

*** NOTE *** CP= 4195.500 TIME= 02:32:23
The step data was checked and warning messages were found.
Please review output or errors file (c21j5a.err) for these warning
messages.

*** NOTE *** CP= 4195.510 TIME= 02:32:23
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:32:25 JAN 26, 1995 CP= 4196.050
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER.2
TIME AT END OF THE LOAD STEP.20000E-05
AUTOMATIC TIME STEPPINGON
INITIAL NUMBER OF SUBSTEPS0
MAXIMUM NUMBER OF SUBSTEPS0
MINIMUM NUMBER OF SUBSTEPS1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONSNO
TRANSIENT (INERTIA) EFFECTSOFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS

PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 293.1 CRITERION= .2932
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 150.7
 HT FLOW CONVERGENCE VALUE= 141.6 CRITERION= .2932
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -9.116
 HT FLOW CONVERGENCE VALUE= 6.965 CRITERION= .2932
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3440
 HT FLOW CONVERGENCE VALUE= .8735E-01 CRITERION= .2932 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
 *** TIME = .200000E-05 TIME INC = .100000E-05
 Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 64 TO 64 STEP 1
 1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 86 TO 86 STEP 1
 2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 120 TO 120 STEP 1
 3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 151 TO 151 STEP 1
 4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 157 TO 157 STEP 1
 5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 162 TO 162 STEP 1
 6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 160 TO 160 STEP 1
 7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 168 TO 168 STEP 1
 8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 181 TO 181 STEP 1
 9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 199 TO 199 STEP 1
 10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

520 NODES (OF 13598 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 15962 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 520

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15962 STEP 1

13598 NODES (OF 13598 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE 80 SUBSTEPS AS A MAXIMUM
USE 4 SUBSTEPS AS A MINIMUM
USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.
Begin Transient
Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07
TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13279 STEP 1

11305 ELEMENTS (OF 11305 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 4713.570 TIME= 02:43:34
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:43:35 JAN 26, 1995 CP= 4713.570
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 31.558
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 530.7 CRITERION= .2933
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9314E-04
HT FLOW CONVERGENCE VALUE= .9688E-04 CRITERION= .6063 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
*** TIME = .394472 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9731E-05 OSCILLATION LIMIT = .3839E-05
*** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1061. CRITERION= .6064
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1863E-03
HT FLOW CONVERGENCE VALUE= .1938E-03 CRITERION= .6063 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
*** TIME = .788942 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9731E-05 OSCILLATION LIMIT = .3838E-05
*** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1061. CRITERION= .6064
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5588E-03
HT FLOW CONVERGENCE VALUE= .5813E-03 CRITERION= .6063 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
*** TIME = 1.97235 TIME INC = 1.18341
*** RESPONSE EIGENVALUE = .9730E-05 OSCILLATION LIMIT = .1151E-04
*** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1061. CRITERION= .6064
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1676E-02
HT FLOW CONVERGENCE VALUE= .1744E-02 CRITERION= .6063 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

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*** LOAD STEP      3  SUBSTEP      4  COMPLETED.    CUM ITER =    10
*** TIME = 5.52258      TIME INC = 3.55023
*** RESPONSE EIGENVALUE = .9727E-05  OSCILLATION LIMIT = .3453E-04
*** AUTO TIME STEP: NEXT TIME INC = 7.8894      INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 1061.      CRITERION= .6064
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3725E-02
HT FLOW CONVERGENCE VALUE= .3874E-02 CRITERION= .6063 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      5  COMPLETED.    CUM ITER =    11
*** TIME = 13.4120      TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9720E-05  OSCILLATION LIMIT = .7669E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894      UNCHANGED

HT FLOW CONVERGENCE VALUE= 1061.      CRITERION= .6063
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3724E-02
HT FLOW CONVERGENCE VALUE= .3873E-02 CRITERION= .6062 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      6  COMPLETED.    CUM ITER =    12
*** TIME = 21.3014      TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9712E-05  OSCILLATION LIMIT = .7662E-04
*** AUTO TIME STEP: NEXT TIME INC = 5.1281      DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 1061.      CRITERION= .6063
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2420E-02
HT FLOW CONVERGENCE VALUE= .2517E-02 CRITERION= .6062 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      7  COMPLETED.    CUM ITER =    13
*** TIME = 26.4295      TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9705E-05  OSCILLATION LIMIT = .4977E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281      UNCHANGED

HT FLOW CONVERGENCE VALUE= 1061.      CRITERION= .6062
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2420E-02
HT FLOW CONVERGENCE VALUE= .2517E-02 CRITERION= .6061 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      8  COMPLETED.    CUM ITER =    14
*** TIME = 31.5576      TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9700E-05  OSCILLATION LIMIT = .4975E-04

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 03:28:01 JAN 26, 1995 CP= 6711.720
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 1061.      CRITERION= .6062
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 12.82
HT FLOW CONVERGENCE VALUE= 12.92      CRITERION= .4490
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2779
HT FLOW CONVERGENCE VALUE= .3648      CRITERION= .4485 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      4  SUBSTEP      1  COMPLETED.    CUM ITER =    16
*** TIME = 39478.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .7928E-05  OSCILLATION LIMIT = .3128
*** AUTO STEP TIME: NEXT TIME INC = 39447.      UNCHANGED

HT FLOW CONVERGENCE VALUE= 702.4      CRITERION= .4667
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.307
HT FLOW CONVERGENCE VALUE= 7.277      CRITERION= .3994
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1251
HT FLOW CONVERGENCE VALUE= .1921      CRITERION= .4010 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      4  SUBSTEP      2  COMPLETED.    CUM ITER =    18

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*** TIME = 78925.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4736E-05  OSCILLATION LIMIT = .1868
*** AUTO TIME STEP: NEXT TIME INC = .10557E+06  INCREASED (FACTOR = 2.6763)

  HT FLOW CONVERGENCE VALUE= 590.0      CRITERION= .4306
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.469
  HT FLOW CONVERGENCE VALUE= 12.55      CRITERION= .3673
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2986
  HT FLOW CONVERGENCE VALUE= .5068      CRITERION= .3698
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1024E-01
  HT FLOW CONVERGENCE VALUE= .1280E-01  CRITERION= .3696    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 21
*** TIME = 184497.      TIME INC = 105571.
*** RESPONSE EIGENVALUE = .2425E-05  OSCILLATION LIMIT = .2560
*** AUTO STEP TIME: NEXT TIME INC = .10557E+06  UNCHANGED

  HT FLOW CONVERGENCE VALUE= 503.2      CRITERION= .4024
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.111
  HT FLOW CONVERGENCE VALUE= 8.090      CRITERION= .3583
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1582
  HT FLOW CONVERGENCE VALUE= .2952      CRITERION= .3600    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
*** TIME = 290068.      TIME INC = 105571.
*** RESPONSE EIGENVALUE = .1203E-05  OSCILLATION LIMIT = .1270
*** AUTO TIME STEP: NEXT TIME INC = .31671E+06  INCREASED (FACTOR = 3.0000)

  HT FLOW CONVERGENCE VALUE= 468.4      CRITERION= .3900
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.722
  HT FLOW CONVERGENCE VALUE= 16.50      CRITERION= .3499
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4655
  HT FLOW CONVERGENCE VALUE= .9044      CRITERION= .3521
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2737E-01
  HT FLOW CONVERGENCE VALUE= .4866E-01  CRITERION= .3519    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 26
*** TIME = 606782.      TIME INC = 316714.
*** RESPONSE EIGENVALUE = .7351E-06  OSCILLATION LIMIT = .2328
*** AUTO STEP TIME: NEXT TIME INC = .31671E+06  UNCHANGED

  HT FLOW CONVERGENCE VALUE= 421.8      CRITERION= .3701
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.865
  HT FLOW CONVERGENCE VALUE= 10.15      CRITERION= .3453
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2787
  HT FLOW CONVERGENCE VALUE= .5622      CRITERION= .3465
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1599E-01
  HT FLOW CONVERGENCE VALUE= .2964E-01  CRITERION= .3465    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 29
*** TIME = 923496.      TIME INC = 316714.
*** RESPONSE EIGENVALUE = .4689E-06  OSCILLATION LIMIT = .1485
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06  INCREASED (FACTOR = 2.4910)

  HT FLOW CONVERGENCE VALUE= 394.0      CRITERION= .3596
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.944
  HT FLOW CONVERGENCE VALUE= 16.80      CRITERION= .3421
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5909
  HT FLOW CONVERGENCE VALUE= 1.223      CRITERION= .3433
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4332E-01
  HT FLOW CONVERGENCE VALUE= .9224E-01  CRITERION= .3432    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 32
*** TIME = .171244E+07  TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3096E-06  OSCILLATION LIMIT = .2443
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06  UNCHANGED

  HT FLOW CONVERGENCE VALUE= 367.8      CRITERION= .3485
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.195
  HT FLOW CONVERGENCE VALUE= 10.20      CRITERION= .3417

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3646
HT FLOW CONVERGENCE VALUE= .7737 CRITERION= .3423
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2492E-01
HT FLOW CONVERGENCE VALUE= .5429E-01 CRITERION= .3422 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 35
*** TIME = .250138E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1945E-06 OSCILLATION LIMIT = .1534
*** AUTO TIME STEP: NEXT TIME INC = .65442E+06 DECREASED (FACTOR = .8295)

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HT FLOW CONVERGENCE VALUE= 364.2 CRITERION= .3473
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.550
HT FLOW CONVERGENCE VALUE= 6.488 CRITERION= .3434
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2204
HT FLOW CONVERGENCE VALUE= .4713 CRITERION= .3438
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1374E-01
HT FLOW CONVERGENCE VALUE= .2988E-01 CRITERION= .3437 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 38
*** TIME = .315579E+07 TIME INC = 654415.
*** RESPONSE EIGENVALUE = .1409E-06 OSCILLATION LIMIT = .9222E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 05:18:31 JAN 26, 1995 CP= 11720.320
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 366.0 CRITERION= .3465
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.065
HT FLOW CONVERGENCE VALUE= 5.335 CRITERION= .3436
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1804
HT FLOW CONVERGENCE VALUE= .3876 CRITERION= .3439
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1097E-01
HT FLOW CONVERGENCE VALUE= .2407E-01 CRITERION= .3439 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 41
*** TIME = .381021E+07 TIME INC = 654415.
*** RESPONSE EIGENVALUE = .1149E-06 OSCILLATION LIMIT = .7518E-01
*** AUTO STEP TIME: NEXT TIME INC = .65442E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 368.5 CRITERION= .3475
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.727
HT FLOW CONVERGENCE VALUE= 4.577 CRITERION= .3452
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1546
HT FLOW CONVERGENCE VALUE= .3336 CRITERION= .3454 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 43
*** TIME = .446462E+07 TIME INC = 654415.
*** RESPONSE EIGENVALUE = .9717E-07 OSCILLATION LIMIT = .6359E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.2056)

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HT FLOW CONVERGENCE VALUE= 371.2 CRITERION= .3472
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.783
HT FLOW CONVERGENCE VALUE= 4.779 CRITERION= .3454
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1676
HT FLOW CONVERGENCE VALUE= .3633 CRITERION= .3456
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1040E-01
HT FLOW CONVERGENCE VALUE= .2348E-01 CRITERION= .3456 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 46
*** TIME = .525356E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8376E-07 OSCILLATION LIMIT = .6608E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 374.3 CRITERION= .3484

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.542
 HT FLOW CONVERGENCE VALUE= 4.166 CRITERION= .3469
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1463
 HT FLOW CONVERGENCE VALUE= .3181 CRITERION= .3471 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 48
 *** TIME = .604250E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7258E-07 OSCILLATION LIMIT = .5726E-01
 *** AUTO TIME STEP: NEXT TIME INC = .26905E+06 DECREASED (FACTOR = .3410)

HT FLOW CONVERGENCE VALUE= 377.1 CRITERION= .3483
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4800
 HT FLOW CONVERGENCE VALUE= 1.290 CRITERION= .3465
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3378E-01
 HT FLOW CONVERGENCE VALUE= .7150E-01 CRITERION= .3466 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 50
 *** TIME = .631155E+07 TIME INC = 269050.
 *** RESPONSE EIGENVALUE = .6713E-07 OSCILLATION LIMIT = .1806E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 06:15:06 JAN 26, 1995 CP= 14294.620
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 378.0 CRITERION= .3491
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4614
 HT FLOW CONVERGENCE VALUE= 1.235 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3250E-01
 HT FLOW CONVERGENCE VALUE= .6906E-01 CRITERION= .3475 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 52
 *** TIME = .658060E+07 TIME INC = 269050.
 *** RESPONSE EIGENVALUE = .6447E-07 OSCILLATION LIMIT = .1734E-01
 *** AUTO STEP TIME: NEXT TIME INC = .26905E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 378.8 CRITERION= .3486
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4441
 HT FLOW CONVERGENCE VALUE= 1.200 CRITERION= .3469
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3138E-01
 HT FLOW CONVERGENCE VALUE= .6646E-01 CRITERION= .3470 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 54
 *** TIME = .684965E+07 TIME INC = 269050.
 *** RESPONSE EIGENVALUE = .6203E-07 OSCILLATION LIMIT = .1669E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.9323)

HT FLOW CONVERGENCE VALUE= 379.6 CRITERION= .3493
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.221
 HT FLOW CONVERGENCE VALUE= 3.356 CRITERION= .3482
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1170
 HT FLOW CONVERGENCE VALUE= .2546 CRITERION= .3483 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 56
 *** TIME = .763859E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .5743E-07 OSCILLATION LIMIT = .4531E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 381.8 CRITERION= .3490
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.110
 HT FLOW CONVERGENCE VALUE= 3.062 CRITERION= .3480
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1063
 HT FLOW CONVERGENCE VALUE= .2312 CRITERION= .3481 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 58

*** TIME = .842753E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .5213E-07 OSCILLATION LIMIT = .4112E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51989E+06 DECREASED (FACTOR = .6590)

HT FLOW CONVERGENCE VALUE= 383.7 CRITERION= .3501
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6786
 HT FLOW CONVERGENCE VALUE= 1.859 CRITERION= .3489
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5860E-01
 HT FLOW CONVERGENCE VALUE= .1265 CRITERION= .3490 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 60
 *** TIME = .894742E+07 TIME INC = 519890.
 *** RESPONSE EIGENVALUE = .4846E-07 OSCILLATION LIMIT = .2520E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51989E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 384.8 CRITERION= .3496
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6454
 HT FLOW CONVERGENCE VALUE= 1.768 CRITERION= .3485
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5553E-01
 HT FLOW CONVERGENCE VALUE= .1197 CRITERION= .3485 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 6 COMPLETED. CUM ITER = 62
 *** TIME = .946731E+07 TIME INC = 519890.
 *** RESPONSE EIGENVALUE = .4587E-07 OSCILLATION LIMIT = .2385E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:14:16 JAN 26, 1995 CP= 16977.620
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 385.8 CRITERION= .3504
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6190
 HT FLOW CONVERGENCE VALUE= 1.685 CRITERION= .3493
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5300E-01
 HT FLOW CONVERGENCE VALUE= .1144 CRITERION= .3494 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 64
 *** TIME = .998720E+07 TIME INC = 519890.
 *** RESPONSE EIGENVALUE = .4353E-07 OSCILLATION LIMIT = .2263E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51989E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 386.6 CRITERION= .3499
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5955
 HT FLOW CONVERGENCE VALUE= 1.611 CRITERION= .3488
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5042E-01
 HT FLOW CONVERGENCE VALUE= .1086 CRITERION= .3489 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 66
 *** TIME = .105071E+08 TIME INC = 519890.
 *** RESPONSE EIGENVALUE = .4145E-07 OSCILLATION LIMIT = .2155E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5175)

HT FLOW CONVERGENCE VALUE= 387.4 CRITERION= .3506
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8620
 HT FLOW CONVERGENCE VALUE= 2.332 CRITERION= .3497
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8060E-01
 HT FLOW CONVERGENCE VALUE= .1752 CRITERION= .3498 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 68
 *** TIME = .112960E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3901E-07 OSCILLATION LIMIT = .3077E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 388.4 CRITERION= .3501
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8178

HT FLOW CONVERGENCE VALUE= 2.192 CRITERION= .3492
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7537E-01
 HT FLOW CONVERGENCE VALUE= .1635 CRITERION= .3493 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 70
 *** TIME = .120850E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3652E-07 OSCILLATION LIMIT = .2881E-01
 *** AUTO TIME STEP: NEXT TIME INC = .53810E+06 DECREASED (FACTOR = .6821)

HT FLOW CONVERGENCE VALUE= 389.3 CRITERION= .3509
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5351
 HT FLOW CONVERGENCE VALUE= 1.409 CRITERION= .3500
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4437E-01
 HT FLOW CONVERGENCE VALUE= .9558E-01 CRITERION= .3500 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 72
 *** TIME = .126231E+08 TIME INC = 538100.
 *** RESPONSE EIGENVALUE = .3473E-07 OSCILLATION LIMIT = .1869E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:05:19 JAN 26, 1995 CP= 19213.120
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 389.7 CRITERION= .3503
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5174
 HT FLOW CONVERGENCE VALUE= 1.358 CRITERION= .3493
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4255E-01
 HT FLOW CONVERGENCE VALUE= .9150E-01 CRITERION= .3494 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 74
 *** TIME = .131612E+08 TIME INC = 538100.
 *** RESPONSE EIGENVALUE = .3337E-07 OSCILLATION LIMIT = .1796E-01
 *** AUTO STEP TIME: NEXT TIME INC = .53810E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 390.2 CRITERION= .3509
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5012
 HT FLOW CONVERGENCE VALUE= 1.308 CRITERION= .3500
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4110E-01
 HT FLOW CONVERGENCE VALUE= .8843E-01 CRITERION= .3501 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 76
 *** TIME = .136993E+08 TIME INC = 538100.
 *** RESPONSE EIGENVALUE = .3209E-07 OSCILLATION LIMIT = .1727E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4662)

HT FLOW CONVERGENCE VALUE= 390.5 CRITERION= .3502
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7064
 HT FLOW CONVERGENCE VALUE= 1.849 CRITERION= .3494
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6323E-01
 HT FLOW CONVERGENCE VALUE= .1369 CRITERION= .3495 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 78
 *** TIME = .144882E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3058E-07 OSCILLATION LIMIT = .2413E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 391.0 CRITERION= .3509
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6765
 HT FLOW CONVERGENCE VALUE= 1.757 CRITERION= .3501
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6018E-01
 HT FLOW CONVERGENCE VALUE= .1302 CRITERION= .3501 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 80
 *** TIME = .152772E+08 TIME INC = 788940.

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*** RESPONSE EIGENVALUE = .2903E-07  OSCILLATION LIMIT = .2291E-01
*** AUTO TIME STEP: NEXT TIME INC = .50168E+06  DECREASED (FACTOR = .6359)

  HT FLOW CONVERGENCE VALUE= 391.4  CRITERION= .3502
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4163
  HT FLOW CONVERGENCE VALUE= 1.065  CRITERION= .3494
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3256E-01
  HT FLOW CONVERGENCE VALUE= .6968E-01  CRITERION= .3494  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 82
*** TIME = .157788E+08  TIME INC = 501681.
*** RESPONSE EIGENVALUE = .2803E-07  OSCILLATION LIMIT = .1406E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:54:19 JAN 26, 1995 CP= 21450.070
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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  HT FLOW CONVERGENCE VALUE= 391.6  CRITERION= .3508
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4055
  HT FLOW CONVERGENCE VALUE= 1.033  CRITERION= .3500
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3172E-01
  HT FLOW CONVERGENCE VALUE= .6793E-01  CRITERION= .3501  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 84
*** TIME = .162805E+08  TIME INC = 501681.
*** RESPONSE EIGENVALUE = .2717E-07  OSCILLATION LIMIT = .1363E-01
*** AUTO STEP TIME: NEXT TIME INC = .50168E+06  UNCHANGED

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  HT FLOW CONVERGENCE VALUE= 391.7  CRITERION= .3501
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3955
  HT FLOW CONVERGENCE VALUE= 1.007  CRITERION= .3494
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3073E-01
  HT FLOW CONVERGENCE VALUE= .6567E-01  CRITERION= .3494  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 86
*** TIME = .167822E+08  TIME INC = 501681.
*** RESPONSE EIGENVALUE = .2640E-07  OSCILLATION LIMIT = .1325E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06  INCREASED (FACTOR = 1.5726)

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  HT FLOW CONVERGENCE VALUE= 391.8  CRITERION= .3507
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6018
  HT FLOW CONVERGENCE VALUE= 1.537  CRITERION= .3499
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5246E-01
  HT FLOW CONVERGENCE VALUE= .1132  CRITERION= .3500  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 88
*** TIME = .175711E+08  TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2533E-07  OSCILLATION LIMIT = .1998E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06  UNCHANGED

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  HT FLOW CONVERGENCE VALUE= 392.0  CRITERION= .3499
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5799
  HT FLOW CONVERGENCE VALUE= 1.475  CRITERION= .3492
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5007E-01
  HT FLOW CONVERGENCE VALUE= .1078  CRITERION= .3492  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 90
*** TIME = .183601E+08  TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2429E-07  OSCILLATION LIMIT = .1916E-01
*** AUTO TIME STEP: NEXT TIME INC = .57452E+06  DECREASED (FACTOR = .7282)

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  HT FLOW CONVERGENCE VALUE= 392.1  CRITERION= .3505
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4096
  HT FLOW CONVERGENCE VALUE= 1.029  CRITERION= .3498

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3253E-01
 HT FLOW CONVERGENCE VALUE= .6962E-01 CRITERION= .3498 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 92
 *** TIME = .189346E+08 TIME INC = 574518.
 *** RESPONSE EIGENVALUE = .2350E-07 OSCILLATION LIMIT = .1350E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:43:47 JAN 26, 1995 CP= 23690.630
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 392.1 CRITERION= .3498
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3991
 HT FLOW CONVERGENCE VALUE= 1.001 CRITERION= .3491
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3150E-01
 HT FLOW CONVERGENCE VALUE= .6727E-01 CRITERION= .3491 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 94
 *** TIME = .195091E+08 TIME INC = 574518.
 *** RESPONSE EIGENVALUE = .2286E-07 OSCILLATION LIMIT = .1313E-01
 *** AUTO STEP TIME: NEXT TIME INC = .57452E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 392.2 CRITERION= .3503
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3893
 HT FLOW CONVERGENCE VALUE= .9729 CRITERION= .3496
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3073E-01
 HT FLOW CONVERGENCE VALUE= .6565E-01 CRITERION= .3497 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 96
 *** TIME = .200836E+08 TIME INC = 574518.
 *** RESPONSE EIGENVALUE = .2221E-07 OSCILLATION LIMIT = .1276E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3732)

HT FLOW CONVERGENCE VALUE= 392.1 CRITERION= .3495
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5188
 HT FLOW CONVERGENCE VALUE= 1.302 CRITERION= .3489
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4404E-01
 HT FLOW CONVERGENCE VALUE= .9451E-01 CRITERION= .3489 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 98
 *** TIME = .208726E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2144E-07 OSCILLATION LIMIT = .1692E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 392.1 CRITERION= .3500
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5023
 HT FLOW CONVERGENCE VALUE= 1.254 CRITERION= .3494
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4254E-01
 HT FLOW CONVERGENCE VALUE= .9128E-01 CRITERION= .3494 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 100
 *** TIME = .216615E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2068E-07 OSCILLATION LIMIT = .1631E-01
 *** AUTO TIME STEP: NEXT TIME INC = .42884E+06 DECREASED (FACTOR = .5436)

HT FLOW CONVERGENCE VALUE= 392.1 CRITERION= .3493
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2669
 HT FLOW CONVERGENCE VALUE= .6570 CRITERION= .3487
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1904E-01
 HT FLOW CONVERGENCE VALUE= .4022E-01 CRITERION= .3487 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 102
 *** TIME = .220904E+08 TIME INC = 428843.
 *** RESPONSE EIGENVALUE = .2037E-07 OSCILLATION LIMIT = .8737E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 10:33:46 JAN 26, 1995 CP= 25928.240
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 392.0 CRITERION= .3499
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2623
 HT FLOW CONVERGENCE VALUE= .6440 CRITERION= .3492
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1878E-01
 HT FLOW CONVERGENCE VALUE= .3970E-01 CRITERION= .3493 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 104
 *** TIME = .225192E+08 TIME INC = 428843.
 *** RESPONSE EIGENVALUE = .1996E-07 OSCILLATION LIMIT = .8561E-02
 *** AUTO STEP TIME: NEXT TIME INC = .42884E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 392.0 CRITERION= .3491
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2581
 HT FLOW CONVERGENCE VALUE= .6359 CRITERION= .3485
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1839E-01
 HT FLOW CONVERGENCE VALUE= .3878E-01 CRITERION= .3486 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 106
 *** TIME = .229480E+08 TIME INC = 428843.
 *** RESPONSE EIGENVALUE = .1962E-07 OSCILLATION LIMIT = .8415E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.8397)

HT FLOW CONVERGENCE VALUE= 391.9 CRITERION= .3496
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4632
 HT FLOW CONVERGENCE VALUE= 1.150 CRITERION= .3490
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3884E-01
 HT FLOW CONVERGENCE VALUE= .8307E-01 CRITERION= .3490 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 108
 *** TIME = .237370E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1891E-07 OSCILLATION LIMIT = .1492E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 391.8 CRITERION= .3489
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4501
 HT FLOW CONVERGENCE VALUE= 1.116 CRITERION= .3483
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3745E-01
 HT FLOW CONVERGENCE VALUE= .7993E-01 CRITERION= .3483 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 110
 *** TIME = .245259E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1834E-07 OSCILLATION LIMIT = .1447E-01
 *** AUTO TIME STEP: NEXT TIME INC = .72019E+06 DECREASED (FACTOR = .9129)

HT FLOW CONVERGENCE VALUE= 391.6 CRITERION= .3493
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4000
 HT FLOW CONVERGENCE VALUE= .9848 CRITERION= .3487
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3251E-01
 HT FLOW CONVERGENCE VALUE= .6926E-01 CRITERION= .3488 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 112
 *** TIME = .252461E+08 TIME INC = 720193.
 *** RESPONSE EIGENVALUE = .1782E-07 OSCILLATION LIMIT = .1283E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 11:24:19 JAN 26, 1995 CP= 28173.170

FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 391.5 CRITERION= .3485
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3900
 HT FLOW CONVERGENCE VALUE= .9580 CRITERION= .3480
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3149E-01
 HT FLOW CONVERGENCE VALUE= .6697E-01 CRITERION= .3480 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 114
 *** TIME = .259663E+08 TIME INC = 720193.
 *** RESPONSE EIGENVALUE = .1737E-07 OSCILLATION LIMIT = .1251E-01
 *** AUTO STEP TIME: NEXT TIME INC = .72019E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 391.3 CRITERION= .3490
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3805
 HT FLOW CONVERGENCE VALUE= .9289 CRITERION= .3484
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3070E-01
 HT FLOW CONVERGENCE VALUE= .6532E-01 CRITERION= .3485 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 116
 *** TIME = .266865E+08 TIME INC = 720193.
 *** RESPONSE EIGENVALUE = .1691E-07 OSCILLATION LIMIT = .1218E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0955)

HT FLOW CONVERGENCE VALUE= 391.2 CRITERION= .3482
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4062
 HT FLOW CONVERGENCE VALUE= .9919 CRITERION= .3477
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3326E-01
 HT FLOW CONVERGENCE VALUE= .7075E-01 CRITERION= .3477 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 118
 *** TIME = .274754E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1646E-07 OSCILLATION LIMIT = .1299E-01
 *** AUTO TIME STEP: NEXT TIME INC = .46322E+06 DECREASED (FACTOR = .5871)

HT FLOW CONVERGENCE VALUE= 391.0 CRITERION= .3487
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2340
 HT FLOW CONVERGENCE VALUE= .5628 CRITERION= .3482
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1667E-01
 HT FLOW CONVERGENCE VALUE= .3506E-01 CRITERION= .3482 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 120
 *** TIME = .279387E+08 TIME INC = 463217.
 *** RESPONSE EIGENVALUE = .1627E-07 OSCILLATION LIMIT = .7537E-02
 *** AUTO STEP TIME: NEXT TIME INC = .46322E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 390.9 CRITERION= .3480
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2304
 HT FLOW CONVERGENCE VALUE= .5547 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1630E-01
 HT FLOW CONVERGENCE VALUE= .3422E-01 CRITERION= .3475 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 122
 *** TIME = .284019E+08 TIME INC = 463217.
 *** RESPONSE EIGENVALUE = .1605E-07 OSCILLATION LIMIT = .7433E-02
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
906.986869 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13279 STEP 1

11305 ELEMENTS (OF 11305 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 30438.740 TIME= 12:16:12
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:16:12 JAN 26, 1995 CP= 30438.740
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
TIME AT END OF THE LOAD STEP.31558E+08
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 390.7 CRITERION= .3485
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2270
HT FLOW CONVERGENCE VALUE= .5459 CRITERION= .3480
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1614E-01
HT FLOW CONVERGENCE VALUE= .3390E-01 CRITERION= .3480 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 124
*** TIME = .288651E+08 TIME INC = 463217.
*** RESPONSE EIGENVALUE = .1576E-07 OSCILLATION LIMIT = .7300E-02
*** AUTO STEP TIME: NEXT TIME INC = .46322E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 390.6 CRITERION= .3478
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2238
HT FLOW CONVERGENCE VALUE= .5395 CRITERION= .3473
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1580E-01

HT FLOW CONVERGENCE VALUE= .3310E-01 CRITERION= .3473 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 126
 *** TIME = .293283E+08 TIME INC = 463217.
 *** RESPONSE EIGENVALUE = .1554E-07 OSCILLATION LIMIT = .7199E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.7032)

HT FLOW CONVERGENCE VALUE= 390.5 CRITERION= .3482
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3733
 HT FLOW CONVERGENCE VALUE= .9064 CRITERION= .3477
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3039E-01
 HT FLOW CONVERGENCE VALUE= .6445E-01 CRITERION= .3477 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 128
 *** TIME = .301172E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1503E-07 OSCILLATION LIMIT = .1186E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 390.3 CRITERION= .3474
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3647
 HT FLOW CONVERGENCE VALUE= .8845 CRITERION= .3469
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2946E-01
 HT FLOW CONVERGENCE VALUE= .6234E-01 CRITERION= .3469 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 130
 *** TIME = .309062E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1468E-07 OSCILLATION LIMIT = .1158E-01
 *** AUTO TIME STEP: NEXT TIME INC = .65145E+06 DECREASED (FACTOR = .8257)

HT FLOW CONVERGENCE VALUE= 390.0 CRITERION= .3479
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2949
 HT FLOW CONVERGENCE VALUE= .7093 CRITERION= .3474
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2274E-01
 HT FLOW CONVERGENCE VALUE= .4795E-01 CRITERION= .3474 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 132
 *** TIME = .315576E+08 TIME INC = 651446.
 *** RESPONSE EIGENVALUE = .1439E-07 OSCILLATION LIMIT = .9375E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:07:37 JAN 26, 1995 CP= 32711.820
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 389.8 CRITERION= .3471
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2893
 HT FLOW CONVERGENCE VALUE= .6959 CRITERION= .3466
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2216E-01
 HT FLOW CONVERGENCE VALUE= .4665E-01 CRITERION= .3466 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 134
 *** TIME = .322091E+08 TIME INC = 651446.
 *** RESPONSE EIGENVALUE = .1414E-07 OSCILLATION LIMIT = .9209E-02
 *** AUTO STEP TIME: NEXT TIME INC = .65145E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 389.6 CRITERION= .3476
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2839
 HT FLOW CONVERGENCE VALUE= .6804 CRITERION= .3471
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2181E-01
 HT FLOW CONVERGENCE VALUE= .4592E-01 CRITERION= .3471 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 136
 *** TIME = .328605E+08 TIME INC = 651446.

*** RESPONSE EIGENVALUE = .1385E-07 OSCILLATION LIMIT = .9022E-02
 *** AUTO TIME STEP: NEXT TIME INC = .19543E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 389.4 CRITERION= .3466
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8190
 HT FLOW CONVERGENCE VALUE= 1.998 CRITERION= .3461
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7859E-01
 HT FLOW CONVERGENCE VALUE= .1675 CRITERION= .3461 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 138
 *** TIME = .348149E+08 TIME INC = .195434E+07
 *** RESPONSE EIGENVALUE = .1324E-07 OSCILLATION LIMIT = .2587E-01
 *** AUTO TIME STEP: NEXT TIME INC = .58630E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 388.8 CRITERION= .3462
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.224
 HT FLOW CONVERGENCE VALUE= 5.433 CRITERION= .3455
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2443
 HT FLOW CONVERGENCE VALUE= .5177 CRITERION= .3454
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2091E-01
 HT FLOW CONVERGENCE VALUE= .5189E-01 CRITERION= .3454 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 141
 *** TIME = .406779E+08 TIME INC = .586302E+07
 *** RESPONSE EIGENVALUE = .1195E-07 OSCILLATION LIMIT = .7008E-01
 *** AUTO STEP TIME: NEXT TIME INC = .58630E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 387.1 CRITERION= .3442
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.929
 HT FLOW CONVERGENCE VALUE= 4.634 CRITERION= .3435
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2115
 HT FLOW CONVERGENCE VALUE= .4403 CRITERION= .3434
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1663E-01
 HT FLOW CONVERGENCE VALUE= .4116E-01 CRITERION= .3434 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 144
 *** TIME = .465409E+08 TIME INC = .586302E+07
 *** RESPONSE EIGENVALUE = .1040E-07 OSCILLATION LIMIT = .6095E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3456)

HT FLOW CONVERGENCE VALUE= 385.2 CRITERION= .3431
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.248
 HT FLOW CONVERGENCE VALUE= 5.305 CRITERION= .3424
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2702
 HT FLOW CONVERGENCE VALUE= .5601 CRITERION= .3422
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2008E-01
 HT FLOW CONVERGENCE VALUE= .4806E-01 CRITERION= .3422 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 147
 *** TIME = .544303E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .9031E-08 OSCILLATION LIMIT = .7125E-01
 *** AUTO TIME STEP: NEXT TIME INC = .43425E+07 DECREASED (FACTOR = .5504)

HT FLOW CONVERGENCE VALUE= 382.8 CRITERION= .3412
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.092
 HT FLOW CONVERGENCE VALUE= 2.509 CRITERION= .3407
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1188
 HT FLOW CONVERGENCE VALUE= .2413 CRITERION= .3406 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 149
 *** TIME = .587728E+08 TIME INC = .434247E+07
 *** RESPONSE EIGENVALUE = .8062E-08 OSCILLATION LIMIT = .3501E-01
 *** AUTO STEP TIME: NEXT TIME INC = .43425E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 381.5 CRITERION= .3408
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.012
 HT FLOW CONVERGENCE VALUE= 2.297 CRITERION= .3403
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1037
 HT FLOW CONVERGENCE VALUE= .2138 CRITERION= .3403 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 151
 *** TIME = .631152E+08 TIME INC = .434247E+07
 *** RESPONSE EIGENVALUE = .7481E-08 OSCILLATION LIMIT = .3249E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 14:44:12 JAN 26, 1995 CP= 36865.660
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 380.3 CRITERION= .3392
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9412
 HT FLOW CONVERGENCE VALUE= 2.109 CRITERION= .3388
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9514E-01
 HT FLOW CONVERGENCE VALUE= .1939 CRITERION= .3388 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 153
 *** TIME = .674577E+08 TIME INC = .434247E+07
 *** RESPONSE EIGENVALUE = .6988E-08 OSCILLATION LIMIT = .3035E-01
 *** AUTO STEP TIME: NEXT TIME INC = .43425E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 379.2 CRITERION= .3389
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8790
 HT FLOW CONVERGENCE VALUE= 1.963 CRITERION= .3385
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8860E-01
 HT FLOW CONVERGENCE VALUE= .1810 CRITERION= .3385 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 155
 *** TIME = .718002E+08 TIME INC = .434247E+07
 *** RESPONSE EIGENVALUE = .6534E-08 OSCILLATION LIMIT = .2837E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8168)

HT FLOW CONVERGENCE VALUE= 378.1 CRITERION= .3370
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.463
 HT FLOW CONVERGENCE VALUE= 3.249 CRITERION= .3365
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1523
 HT FLOW CONVERGENCE VALUE= .3126 CRITERION= .3364 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 157
 *** TIME = .796896E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .6002E-08 OSCILLATION LIMIT = .4735E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 376.5 CRITERION= .3360
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.316
 HT FLOW CONVERGENCE VALUE= 2.903 CRITERION= .3356
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1405
 HT FLOW CONVERGENCE VALUE= .2849 CRITERION= .3355 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 159
 *** TIME = .875790E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .5407E-08 OSCILLATION LIMIT = .4266E-01
 *** AUTO TIME STEP: NEXT TIME INC = .70939E+07 DECREASED (FACTOR = .8992)

HT FLOW CONVERGENCE VALUE= 375.2 CRITERION= .3341
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.074
 HT FLOW CONVERGENCE VALUE= 2.279 CRITERION= .3337
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1129
 HT FLOW CONVERGENCE VALUE= .2311 CRITERION= .3337 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 161
 *** TIME = .946728E+08 TIME INC = .709386E+07
 *** RESPONSE EIGENVALUE = .4950E-08 OSCILLATION LIMIT = .3511E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:35:06 JAN 26, 1995 CP= 39130.370
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 374.1 CRITERION= .3334
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9851
HT FLOW CONVERGENCE VALUE= 2.068 CRITERION= .3332
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9712E-01
HT FLOW CONVERGENCE VALUE= .1963 CRITERION= .3331 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 163
*** TIME = .101767E+09 TIME INC = .709386E+07
*** RESPONSE EIGENVALUE = .4508E-08 OSCILLATION LIMIT = .3198E-01
*** AUTO STEP TIME: NEXT TIME INC = .70939E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 373.1 CRITERION= .3317
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9113
HT FLOW CONVERGENCE VALUE= 1.896 CRITERION= .3314
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8952E-01
HT FLOW CONVERGENCE VALUE= .1771 CRITERION= .3314 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 165
*** TIME = .108861E+09 TIME INC = .709386E+07
*** RESPONSE EIGENVALUE = .4152E-08 OSCILLATION LIMIT = .2945E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1121)

HT FLOW CONVERGENCE VALUE= 372.3 CRITERION= .3310
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9393
HT FLOW CONVERGENCE VALUE= 1.904 CRITERION= .3308
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9761E-01
HT FLOW CONVERGENCE VALUE= .1950 CRITERION= .3308 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 167
*** TIME = .116750E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .3830E-08 OSCILLATION LIMIT = .3021E-01
*** AUTO TIME STEP: NEXT TIME INC = .47402E+07 DECREASED (FACTOR = .6008)

HT FLOW CONVERGENCE VALUE= 371.6 CRITERION= .3296
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5289
HT FLOW CONVERGENCE VALUE= 1.039 CRITERION= .3295
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4745E-01
HT FLOW CONVERGENCE VALUE= .9471E-01 CRITERION= .3294 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 169
*** TIME = .121490E+09 TIME INC = .474024E+07
*** RESPONSE EIGENVALUE = .3603E-08 OSCILLATION LIMIT = .1708E-01
*** AUTO STEP TIME: NEXT TIME INC = .47402E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 371.2 CRITERION= .3295
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5054
HT FLOW CONVERGENCE VALUE= .9861 CRITERION= .3294
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4420E-01
HT FLOW CONVERGENCE VALUE= .8750E-01 CRITERION= .3293 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 171
*** TIME = .126230E+09 TIME INC = .474024E+07
*** RESPONSE EIGENVALUE = .3416E-08 OSCILLATION LIMIT = .1619E-01
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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:32:01 JAN 26, 1995 CP= 41422.300
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 370.8 CRITERION= .3282
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4841
 HT FLOW CONVERGENCE VALUE= .9394 CRITERION= .3281
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4168E-01
 HT FLOW CONVERGENCE VALUE= .8211E-01 CRITERION= .3281 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 173
 *** TIME = .130971E+09 TIME INC = .474024E+07
 *** RESPONSE EIGENVALUE = .3234E-08 OSCILLATION LIMIT = .1533E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47402E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 370.4 CRITERION= .3281
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4646
 HT FLOW CONVERGENCE VALUE= .8966 CRITERION= .3280
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4019E-01
 HT FLOW CONVERGENCE VALUE= .7925E-01 CRITERION= .3280 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 175
 *** TIME = .135711E+09 TIME INC = .474024E+07
 *** RESPONSE EIGENVALUE = .3068E-08 OSCILLATION LIMIT = .1454E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6643)

HT FLOW CONVERGENCE VALUE= 370.1 CRITERION= .3265
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7338
 HT FLOW CONVERGENCE VALUE= 1.396 CRITERION= .3264
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6734E-01
 HT FLOW CONVERGENCE VALUE= .1332 CRITERION= .3263 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 177
 *** TIME = .143600E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2892E-08 OSCILLATION LIMIT = .2282E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 369.6 CRITERION= .3260
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6885
 HT FLOW CONVERGENCE VALUE= 1.275 CRITERION= .3259
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6133E-01
 HT FLOW CONVERGENCE VALUE= .1199 CRITERION= .3259 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 179
 *** TIME = .151490E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2684E-08 OSCILLATION LIMIT = .2118E-01
 *** AUTO TIME STEP: NEXT TIME INC = .62983E+07 DECREASED (FACTOR = .7983)

HT FLOW CONVERGENCE VALUE= 369.2 CRITERION= .3245
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5208
 HT FLOW CONVERGENCE VALUE= .9207 CRITERION= .3245
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4456E-01
 HT FLOW CONVERGENCE VALUE= .8605E-01 CRITERION= .3244 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 181
 *** TIME = .157788E+09 TIME INC = .629832E+07
 *** RESPONSE EIGENVALUE = .2547E-08 OSCILLATION LIMIT = .1604E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:01 JAN 26, 1995 CP= 43676.000
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 368.8 CRITERION= .3243
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4978
 HT FLOW CONVERGENCE VALUE= .8680 CRITERION= .3242
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4247E-01

HT FLOW CONVERGENCE VALUE= .8191E-01 CRITERION= .3242 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 183
 *** TIME = .164086E+09 TIME INC = .629832E+07
 *** RESPONSE EIGENVALUE = .2394E-08 OSCILLATION LIMIT = .1508E-01
 *** AUTO STEP TIME: NEXT TIME INC = .62983E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 368.5 CRITERION= .3229
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4764
 HT FLOW CONVERGENCE VALUE= .8175 CRITERION= .3228
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3924E-01
 HT FLOW CONVERGENCE VALUE= .7612E-01 CRITERION= .3228 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 185
 *** TIME = .170385E+09 TIME INC = .629832E+07
 *** RESPONSE EIGENVALUE = .2285E-08 OSCILLATION LIMIT = .1439E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2526)

HT FLOW CONVERGENCE VALUE= 368.1 CRITERION= .3225
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5694
 HT FLOW CONVERGENCE VALUE= .9641 CRITERION= .3224
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4777E-01
 HT FLOW CONVERGENCE VALUE= .9286E-01 CRITERION= .3223 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 187
 *** TIME = .178274E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2157E-08 OSCILLATION LIMIT = .1702E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 367.7 CRITERION= .3209
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5415
 HT FLOW CONVERGENCE VALUE= .8917 CRITERION= .3208
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4435E-01
 HT FLOW CONVERGENCE VALUE= .8620E-01 CRITERION= .3207 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 189
 *** TIME = .186163E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2056E-08 OSCILLATION LIMIT = .1622E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31822E+07 DECREASED (FACTOR = .4033)

HT FLOW CONVERGENCE VALUE= 367.3 CRITERION= .3210
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2116
 HT FLOW CONVERGENCE VALUE= .3326 CRITERION= .3209
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1429E-01
 HT FLOW CONVERGENCE VALUE= .2737E-01 CRITERION= .3209 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 191
 *** TIME = .189346E+09 TIME INC = .318215E+07
 *** RESPONSE EIGENVALUE = .2008E-08 OSCILLATION LIMIT = .6390E-02

***** ANSYS SOLVE COMMAND *****
 1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:12:06 JAN 26, 1995 CP= 45918.670
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 367.1 CRITERION= .3200
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2079
 HT FLOW CONVERGENCE VALUE= .3215 CRITERION= .3199
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1380E-01
 HT FLOW CONVERGENCE VALUE= .2622E-01 CRITERION= .3199 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 193
 *** TIME = .192528E+09 TIME INC = .318215E+07
 *** RESPONSE EIGENVALUE = .1964E-08 OSCILLATION LIMIT = .6250E-02
 *** AUTO STEP TIME: NEXT TIME INC = .31822E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 366.9 CRITERION= .3202
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2043
HT FLOW CONVERGENCE VALUE= .3127 CRITERION= .3201 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 194
*** TIME = .195710E+09 TIME INC = .318215E+07
*** RESPONSE EIGENVALUE = .1884E-08 OSCILLATION LIMIT = .5995E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.4793)

HT FLOW CONVERGENCE VALUE= 366.7 CRITERION= .3187
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4921
HT FLOW CONVERGENCE VALUE= .7448 CRITERION= .3186
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3936E-01
HT FLOW CONVERGENCE VALUE= .7535E-01 CRITERION= .3185 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 196
*** TIME = .203599E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1816E-08 OSCILLATION LIMIT = .1432E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 366.2 CRITERION= .3183
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4724
HT FLOW CONVERGENCE VALUE= .6836 CRITERION= .3182
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3642E-01
HT FLOW CONVERGENCE VALUE= .6987E-01 CRITERION= .3181 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 198
*** TIME = .211489E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1759E-08 OSCILLATION LIMIT = .1388E-01
*** AUTO TIME STEP: NEXT TIME INC = .47072E+07 DECREASED (FACTOR = .5967)

HT FLOW CONVERGENCE VALUE= 365.7 CRITERION= .3170
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2730
HT FLOW CONVERGENCE VALUE= .3921 CRITERION= .3170
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1833E-01
HT FLOW CONVERGENCE VALUE= .3486E-01 CRITERION= .3169 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 200
*** TIME = .216196E+09 TIME INC = .470725E+07
*** RESPONSE EIGENVALUE = .1715E-08 OSCILLATION LIMIT = .8071E-02
*** AUTO STEP TIME: NEXT TIME INC = .47072E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 365.4 CRITERION= .3170
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2667
HT FLOW CONVERGENCE VALUE= .3743 CRITERION= .3170
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1783E-01
HT FLOW CONVERGENCE VALUE= .3411E-01 CRITERION= .3169 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 6 COMPLETED. CUM ITER = 202
*** TIME = .220903E+09 TIME INC = .470725E+07
*** RESPONSE EIGENVALUE = .1679E-08 OSCILLATION LIMIT = .7904E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:06:32 JAN 26, 1995 CP= 48441.760
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 365.0 CRITERION= .3159
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2607
HT FLOW CONVERGENCE VALUE= .3771 CRITERION= .3159
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1705E-01
HT FLOW CONVERGENCE VALUE= .3211E-01 CRITERION= .3158 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 204

*** TIME = .225610E+09 TIME INC = .470725E+07
*** RESPONSE EIGENVALUE = .1547E-08 OSCILLATION LIMIT = .7283E-02
*** AUTO STEP TIME: NEXT TIME INC = .47072E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 364.7 CRITERION= .3160
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2557
HT FLOW CONVERGENCE VALUE= .3735 CRITERION= .3159
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1707E-01
HT FLOW CONVERGENCE VALUE= .3202E-01 CRITERION= .3159 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 206
*** TIME = .230318E+09 TIME INC = .470725E+07
*** RESPONSE EIGENVALUE = .1470E-08 OSCILLATION LIMIT = .6919E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6760)

HT FLOW CONVERGENCE VALUE= 364.4 CRITERION= .3146
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4183
HT FLOW CONVERGENCE VALUE= .6074 CRITERION= .3145
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2986E-01
HT FLOW CONVERGENCE VALUE= .5608E-01 CRITERION= .3145 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 208
*** TIME = .238207E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1427E-08 OSCILLATION LIMIT = .1126E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 363.8 CRITERION= .3144
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4061
HT FLOW CONVERGENCE VALUE= .5753 CRITERION= .3143
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2838E-01
HT FLOW CONVERGENCE VALUE= .5305E-01 CRITERION= .3142 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 210
*** TIME = .246097E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1362E-08 OSCILLATION LIMIT = .1075E-01
*** AUTO TIME STEP: NEXT TIME INC = .63643E+07 DECREASED (FACTOR = .8067)

HT FLOW CONVERGENCE VALUE= 363.3 CRITERION= .3131
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3193
HT FLOW CONVERGENCE VALUE= .4430 CRITERION= .3130
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2096E-01
HT FLOW CONVERGENCE VALUE= .3902E-01 CRITERION= .3129 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 212
*** TIME = .252461E+09 TIME INC = .636430E+07
*** RESPONSE EIGENVALUE = .1344E-08 OSCILLATION LIMIT = .8555E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:55:10 JAN 26, 1995 CP= 50689.960
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 362.8 CRITERION= .3124
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4030
HT FLOW CONVERGENCE VALUE= .3416 CRITERION= .3124
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1997E-01
HT FLOW CONVERGENCE VALUE= .3978E-01 CRITERION= .3123 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 214
*** TIME = .258825E+09 TIME INC = .636430E+07
*** RESPONSE EIGENVALUE = .1951E-08 OSCILLATION LIMIT = .1241E-01
*** AUTO STEP TIME: NEXT TIME INC = .63643E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 362.3 CRITERION= .3106
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4890

HT FLOW CONVERGENCE VALUE= .2612 CRITERION= .3105 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 215
 *** TIME = .265189E+09 TIME INC = .636430E+07
 *** RESPONSE EIGENVALUE = .2217E-08 OSCILLATION LIMIT = .1411E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2396)

HT FLOW CONVERGENCE VALUE= 361.8 CRITERION= .3097
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5949
 HT FLOW CONVERGENCE VALUE= .2966 CRITERION= .3095 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 216
 *** TIME = .273079E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2146E-08 OSCILLATION LIMIT = .1693E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 361.0 CRITERION= .3075
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6645
 HT FLOW CONVERGENCE VALUE= .2772 CRITERION= .3073 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 217
 *** TIME = .280968E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2350E-08 OSCILLATION LIMIT = .1854E-01
 *** AUTO TIME STEP: NEXT TIME INC = .30502E+07 DECREASED (FACTOR = .3866)

HT FLOW CONVERGENCE VALUE= 360.2 CRITERION= .3073
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2481
 HT FLOW CONVERGENCE VALUE= .1097 CRITERION= .3073 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 218
 *** TIME = .284018E+09 TIME INC = .305020E+07
 *** RESPONSE EIGENVALUE = .2334E-08 OSCILLATION LIMIT = .7120E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09
 TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 769.132473 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 13279 STEP 1

11305 ELEMENTS (OF 11305 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 52256.530 TIME= 20:29:10
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 20:29:10 JAN 26, 1995 CP= 52256.540

FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
TIME AT END OF THE LOAD STEP.31558E+09
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 359.8 CRITERION= .3062
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2056
HT FLOW CONVERGENCE VALUE= .8658E-01 CRITERION= .3062 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 219
*** TIME = .287069E+09 TIME INC = .305020E+07
*** RESPONSE EIGENVALUE = .2128E-08 OSCILLATION LIMIT = .6492E-02
*** AUTO STEP TIME: NEXT TIME INC = .30502E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 359.4 CRITERION= .3063
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1617
HT FLOW CONVERGENCE VALUE= .8323E-01 CRITERION= .3063 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 220
*** TIME = .290119E+09 TIME INC = .305020E+07
*** RESPONSE EIGENVALUE = .1812E-08 OSCILLATION LIMIT = .5528E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.5865)

HT FLOW CONVERGENCE VALUE= 359.0 CRITERION= .3046
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4613
HT FLOW CONVERGENCE VALUE= .2173 CRITERION= .3044 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 221
*** TIME = .298008E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1810E-08 OSCILLATION LIMIT = .1428E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 358.1 CRITERION= .3040
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4428
HT FLOW CONVERGENCE VALUE= .2157 CRITERION= .3037 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 222
*** TIME = .305898E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1711E-08 OSCILLATION LIMIT = .1350E-01
*** AUTO TIME STEP: NEXT TIME INC = .48392E+07 DECREASED (FACTOR = .6134)

HT FLOW CONVERGENCE VALUE= 357.1 CRITERION= .3025
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2967
HT FLOW CONVERGENCE VALUE= .1305 CRITERION= .3023 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 223

*** TIME = .310737E+09 TIME INC = .483920E+07
*** RESPONSE EIGENVALUE = .1816E-08 OSCILLATION LIMIT = .8790E-02
*** AUTO STEP TIME: NEXT TIME INC = .48392E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 356.4 CRITERION= .3023
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2807
HT FLOW CONVERGENCE VALUE= .1257 CRITERION= .3021 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 6 COMPLETED. CUM ITER = 224
*** TIME = .315576E+09 TIME INC = .483920E+07
*** RESPONSE EIGENVALUE = .1738E-08 OSCILLATION LIMIT = .8410E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 21:04:53 JAN 26, 1995 CP= 53931.640
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 355.7 CRITERION= .3010
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2244
HT FLOW CONVERGENCE VALUE= .1138 CRITERION= .3009 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 225
*** TIME = .320415E+09 TIME INC = .483920E+07
*** RESPONSE EIGENVALUE = .1559E-08 OSCILLATION LIMIT = .7543E-02
*** AUTO STEP TIME: NEXT TIME INC = .48392E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 355.1 CRITERION= .3010
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1972
HT FLOW CONVERGENCE VALUE= .1179 CRITERION= .3008 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 226
*** TIME = .325254E+09 TIME INC = .483920E+07
*** RESPONSE EIGENVALUE = .1423E-08 OSCILLATION LIMIT = .6884E-02
*** AUTO TIME STEP: NEXT TIME INC = .14518E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 354.4 CRITERION= .2988
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6139
HT FLOW CONVERGENCE VALUE= .3502 CRITERION= .2983
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2571E-01
HT FLOW CONVERGENCE VALUE= .5234E-01 CRITERION= .2982 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 228
*** TIME = .339772E+09 TIME INC = .145176E+08
*** RESPONSE EIGENVALUE = .1416E-08 OSCILLATION LIMIT = .2056E-01
*** AUTO STEP TIME: NEXT TIME INC = .14518E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 352.4 CRITERION= .2973
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6006
HT FLOW CONVERGENCE VALUE= .3311 CRITERION= .2969
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2424E-01
HT FLOW CONVERGENCE VALUE= .4888E-01 CRITERION= .2968 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 230
*** TIME = .354290E+09 TIME INC = .145176E+08
*** RESPONSE EIGENVALUE = .1361E-08 OSCILLATION LIMIT = .1975E-01
*** AUTO TIME STEP: NEXT TIME INC = .43553E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 350.5 CRITERION= .2920
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.887
HT FLOW CONVERGENCE VALUE= .8888 CRITERION= .2905
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8776E-01
HT FLOW CONVERGENCE VALUE= .1809 CRITERION= .2902 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 232
 *** TIME = .397842E+09 TIME INC = .435528E+08
 *** RESPONSE EIGENVALUE = .1355E-08 OSCILLATION LIMIT = .5900E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8115)

HT FLOW CONVERGENCE VALUE= 344.6 CRITERION= .2832
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.699
 HT FLOW CONVERGENCE VALUE= 1.352 CRITERION= .2804
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1553
 HT FLOW CONVERGENCE VALUE= .3130 CRITERION= .2800
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7954E-02
 HT FLOW CONVERGENCE VALUE= .1283E-01 CRITERION= .2800 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 235
 *** TIME = .476736E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1393E-08 OSCILLATION LIMIT = .1099
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 333.7 CRITERION= .2718
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.100
 HT FLOW CONVERGENCE VALUE= 1.473 CRITERION= .2687
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1258
 HT FLOW CONVERGENCE VALUE= .2414 CRITERION= .2684 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 237
 *** TIME = .555630E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1522E-08 OSCILLATION LIMIT = .1201
 *** AUTO TIME STEP: NEXT TIME INC = .75522E+08 DECREASED (FACTOR = .9573)

HT FLOW CONVERGENCE VALUE= 322.2 CRITERION= .2617
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.197
 HT FLOW CONVERGENCE VALUE= 1.696 CRITERION= .2586
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1003
 HT FLOW CONVERGENCE VALUE= .1824 CRITERION= .2583 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 239
 *** TIME = .631152E+09 TIME INC = .755216E+08
 *** RESPONSE EIGENVALUE = .1684E-08 OSCILLATION LIMIT = .1272

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:18:56 JAN 26, 1995 CP= 57347.330
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 310.8 CRITERION= .2522
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.231
 HT FLOW CONVERGENCE VALUE= 1.322 CRITERION= .2491
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7300E-01
 HT FLOW CONVERGENCE VALUE= .1278 CRITERION= .2489 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 241
 *** TIME = .706674E+09 TIME INC = .755216E+08
 *** RESPONSE EIGENVALUE = .1370E-08 OSCILLATION LIMIT = .1035
 *** AUTO STEP TIME: NEXT TIME INC = .75522E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 299.6 CRITERION= .2440
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.197
 HT FLOW CONVERGENCE VALUE= 1.253 CRITERION= .2411
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7046E-01
 HT FLOW CONVERGENCE VALUE= .1194 CRITERION= .2409 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 243
 *** TIME = .782195E+09 TIME INC = .755216E+08
 *** RESPONSE EIGENVALUE = .1332E-08 OSCILLATION LIMIT = .1006
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0447)

HT FLOW CONVERGENCE VALUE= 289.2 CRITERION= .2346
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.530
 HT FLOW CONVERGENCE VALUE= 1.488 CRITERION= .2316
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6980E-01
 HT FLOW CONVERGENCE VALUE= .1120 CRITERION= .2314 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 245
 *** TIME = .861089E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1474E-08 OSCILLATION LIMIT = .1163
 *** AUTO TIME STEP: NEXT TIME INC = .42819E+08 DECREASED (FACTOR = .5427)

HT FLOW CONVERGENCE VALUE= 278.7 CRITERION= .2289
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.947
 HT FLOW CONVERGENCE VALUE= .8752 CRITERION= .2273
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2842E-01
 HT FLOW CONVERGENCE VALUE= .4317E-01 CRITERION= .2273 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 247
 *** TIME = .903909E+09 TIME INC = .428194E+08
 *** RESPONSE EIGENVALUE = .1546E-08 OSCILLATION LIMIT = .6621E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42819E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 273.2 CRITERION= .2236
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.025
 HT FLOW CONVERGENCE VALUE= .9377 CRITERION= .2220
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2872E-01
 HT FLOW CONVERGENCE VALUE= .4208E-01 CRITERION= .2219 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 249
 *** TIME = .946728E+09 TIME INC = .428194E+08
 *** RESPONSE EIGENVALUE = .1672E-08 OSCILLATION LIMIT = .7160E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:07:38 JAN 26, 1995 CP= 59600.580
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 267.7 CRITERION= .2198
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.775
 HT FLOW CONVERGENCE VALUE= .8462 CRITERION= .2183
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2479E-01
 HT FLOW CONVERGENCE VALUE= .3521E-01 CRITERION= .2182 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 251
 *** TIME = .989547E+09 TIME INC = .428194E+08
 *** RESPONSE EIGENVALUE = .1495E-08 OSCILLATION LIMIT = .6401E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42819E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 262.3 CRITERION= .2149
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.792
 HT FLOW CONVERGENCE VALUE= .8257 CRITERION= .2134
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2465E-01
 HT FLOW CONVERGENCE VALUE= .3452E-01 CRITERION= .2133 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 253
 *** TIME = .103237E+10 TIME INC = .428194E+08
 *** RESPONSE EIGENVALUE = .1520E-08 OSCILLATION LIMIT = .6510E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8425)

HT FLOW CONVERGENCE VALUE= 257.1 CRITERION= .2089
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.331
 HT FLOW CONVERGENCE VALUE= 1.530 CRITERION= .2063
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5789E-01
 HT FLOW CONVERGENCE VALUE= .7928E-01 CRITERION= .2061 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 255
*** TIME = .111126E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1602E-08 OSCILLATION LIMIT = .1264
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 247.8 CRITERION= .2006
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.438
HT FLOW CONVERGENCE VALUE= 1.598 CRITERION= .1980
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5844E-01
HT FLOW CONVERGENCE VALUE= .7688E-01 CRITERION= .1979 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 257
*** TIME = .119015E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1765E-08 OSCILLATION LIMIT = .1392
*** AUTO TIME STEP: NEXT TIME INC = .72149E+08 DECREASED (FACTOR = .9145)

HT FLOW CONVERGENCE VALUE= 238.8 CRITERION= .1939
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.213
HT FLOW CONVERGENCE VALUE= 1.532 CRITERION= .1916
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5371E-01
HT FLOW CONVERGENCE VALUE= .6558E-01 CRITERION= .1915 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 259
*** TIME = .126230E+10 TIME INC = .721492E+08
*** RESPONSE EIGENVALUE = .1930E-08 OSCILLATION LIMIT = .1392
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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:56:39 JAN 26, 1995 CP= 61852.790
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 230.9 CRITERION= .1876
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.460
HT FLOW CONVERGENCE VALUE= 1.199 CRITERION= .1853
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3784E-01
HT FLOW CONVERGENCE VALUE= .4295E-01 CRITERION= .1853 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 261
*** TIME = .133445E+10 TIME INC = .721492E+08
*** RESPONSE EIGENVALUE = .1478E-08 OSCILLATION LIMIT = .1067
*** AUTO STEP TIME: NEXT TIME INC = .72149E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 223.2 CRITERION= .1825
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.355
HT FLOW CONVERGENCE VALUE= 1.058 CRITERION= .1804
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3608E-01
HT FLOW CONVERGENCE VALUE= .4166E-01 CRITERION= .1804 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 263
*** TIME = .140660E+10 TIME INC = .721492E+08
*** RESPONSE EIGENVALUE = .1383E-08 OSCILLATION LIMIT = .9975E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0935)

HT FLOW CONVERGENCE VALUE= 216.2 CRITERION= .1761
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.661
HT FLOW CONVERGENCE VALUE= 1.198 CRITERION= .1740
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4183E-01
HT FLOW CONVERGENCE VALUE= .4636E-01 CRITERION= .1739 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 265
*** TIME = .148550E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1509E-08 OSCILLATION LIMIT = .1190
*** AUTO TIME STEP: NEXT TIME INC = .46192E+08 DECREASED (FACTOR = .5855)
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HT FLOW CONVERGENCE VALUE= 208.9    CRITERION= .1724
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.550
HT FLOW CONVERGENCE VALUE= .7113    CRITERION= .1712
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2016E-01
HT FLOW CONVERGENCE VALUE= .2178E-01 CRITERION= .1712    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 267
*** TIME = .153169E+10 TIME INC = .461918E+08
*** RESPONSE EIGENVALUE = .1545E-08 OSCILLATION LIMIT = .7137E-01
*** AUTO STEP TIME: NEXT TIME INC = .46192E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 204.9    CRITERION= .1684
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.604
HT FLOW CONVERGENCE VALUE= .7305    CRITERION= .1673
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2041E-01
HT FLOW CONVERGENCE VALUE= .2158E-01 CRITERION= .1673    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 269
*** TIME = .157788E+10 TIME INC = .461918E+08
*** RESPONSE EIGENVALUE = .1668E-08 OSCILLATION LIMIT = .7705E-01

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***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:45:28 JAN 27, 1995 CP= 64110.140
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 201.0    CRITERION= .1662
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.243
HT FLOW CONVERGENCE VALUE= .5928    CRITERION= .1651
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1570E-01
HT FLOW CONVERGENCE VALUE= .1617E-01 CRITERION= .1650    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 271
*** TIME = .162407E+10 TIME INC = .461918E+08
*** RESPONSE EIGENVALUE = .1274E-08 OSCILLATION LIMIT = .5884E-01
*** AUTO STEP TIME: NEXT TIME INC = .46192E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 197.2    CRITERION= .1628
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.224
HT FLOW CONVERGENCE VALUE= .5387    CRITERION= .1618
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1506E-01
HT FLOW CONVERGENCE VALUE= .1548E-01 CRITERION= .1617    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 273
*** TIME = .167026E+10 TIME INC = .461918E+08
*** RESPONSE EIGENVALUE = .1222E-08 OSCILLATION LIMIT = .5646E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7080)

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HT FLOW CONVERGENCE VALUE= 193.6    CRITERION= .1595
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.077
HT FLOW CONVERGENCE VALUE= .8949    CRITERION= .1578
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2991E-01
HT FLOW CONVERGENCE VALUE= .2973E-01 CRITERION= .1577    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 275
*** TIME = .174916E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1242E-08 OSCILLATION LIMIT = .9796E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 187.8    CRITERION= .1543
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.110
HT FLOW CONVERGENCE VALUE= .8871    CRITERION= .1527
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2976E-01
HT FLOW CONVERGENCE VALUE= .2884E-01 CRITERION= .1527    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 277
*** TIME = .182805E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1310E-08 OSCILLATION LIMIT = .1034
*** AUTO TIME STEP: NEXT TIME INC = .65404E+08 DECREASED (FACTOR = .8290)

HT FLOW CONVERGENCE VALUE= 182.3 CRITERION= .1509
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.758
HT FLOW CONVERGENCE VALUE= .7534 CRITERION= .1497
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2346E-01
HT FLOW CONVERGENCE VALUE= .2213E-01 CRITERION= .1496 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 279
*** TIME = .189346E+10 TIME INC = .654044E+08
*** RESPONSE EIGENVALUE = .1370E-08 OSCILLATION LIMIT = .8962E-01

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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:34:18 JAN 27, 1995 CP= 66368.120
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 178.0 CRITERION= .1472
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.449
HT FLOW CONVERGENCE VALUE= .6248 CRITERION= .1460
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1851E-01
HT FLOW CONVERGENCE VALUE= .1690E-01 CRITERION= .1460 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 281
*** TIME = .195886E+10 TIME INC = .654044E+08
*** RESPONSE EIGENVALUE = .1122E-08 OSCILLATION LIMIT = .7338E-01
*** AUTO STEP TIME: NEXT TIME INC = .65404E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 173.9 CRITERION= .1447
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.394
HT FLOW CONVERGENCE VALUE= .5746 CRITERION= .1436
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1767E-01
HT FLOW CONVERGENCE VALUE= .1606E-01 CRITERION= .1435 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 283
*** TIME = .202426E+10 TIME INC = .654044E+08
*** RESPONSE EIGENVALUE = .1061E-08 OSCILLATION LIMIT = .6941E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2062)

HT FLOW CONVERGENCE VALUE= 170.0 CRITERION= .1407
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.724
HT FLOW CONVERGENCE VALUE= .6944 CRITERION= .1394
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2256E-01
HT FLOW CONVERGENCE VALUE= .1996E-01 CRITERION= .1394 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 285
*** TIME = .210316E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1128E-08 OSCILLATION LIMIT = .8896E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 165.6 CRITERION= .1377
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.713
HT FLOW CONVERGENCE VALUE= .6860 CRITERION= .1365
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2190E-01
HT FLOW CONVERGENCE VALUE= .1880E-01 CRITERION= .1365 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 287
*** TIME = .218205E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1153E-08 OSCILLATION LIMIT = .9098E-01
*** AUTO TIME STEP: NEXT TIME INC = .26979E+08 DECREASED (FACTOR = .3420)

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HT FLOW CONVERGENCE VALUE= 161.4 CRITERION= .1351

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6079
HT FLOW CONVERGENCE VALUE= .2454 CRITERION= .1347
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5416E-02
HT FLOW CONVERGENCE VALUE= .5050E-02 CRITERION= .1347 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 289
*** TIME = .220903E+10 TIME INC = .269792E+08
*** RESPONSE EIGENVALUE = .1244E-08 OSCILLATION LIMIT = .3357E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:23:26 JAN 27, 1995 CP= 68624.030
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 160.0 CRITERION= .1345
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5489
HT FLOW CONVERGENCE VALUE= .2301 CRITERION= .1342
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5009E-02
HT FLOW CONVERGENCE VALUE= .4656E-02 CRITERION= .1342 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 291
*** TIME = .223601E+10 TIME INC = .269792E+08
*** RESPONSE EIGENVALUE = .1113E-08 OSCILLATION LIMIT = .3003E-01
*** AUTO STEP TIME: NEXT TIME INC = .26979E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 158.7 CRITERION= .1328
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5658
HT FLOW CONVERGENCE VALUE= .2277 CRITERION= .1325
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4999E-02
HT FLOW CONVERGENCE VALUE= .4598E-02 CRITERION= .1325 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 293
*** TIME = .226299E+10 TIME INC = .269792E+08
*** RESPONSE EIGENVALUE = .1159E-08 OSCILLATION LIMIT = .3127E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.9243)

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HT FLOW CONVERGENCE VALUE= 157.3 CRITERION= .1310
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.622
HT FLOW CONVERGENCE VALUE= .6427 CRITERION= .1299
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1992E-01
HT FLOW CONVERGENCE VALUE= .1617E-01 CRITERION= .1298 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 295
*** TIME = .234188E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1149E-08 OSCILLATION LIMIT = .9066E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 153.6 CRITERION= .1272
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.654
HT FLOW CONVERGENCE VALUE= .6404 CRITERION= .1261
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1976E-01
HT FLOW CONVERGENCE VALUE= .1566E-01 CRITERION= .1261 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 297
*** TIME = .242078E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1219E-08 OSCILLATION LIMIT = .9619E-01
*** AUTO TIME STEP: NEXT TIME INC = .51915E+08 DECREASED (FACTOR = .6580)

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HT FLOW CONVERGENCE VALUE= 149.9 CRITERION= .1253
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.085
HT FLOW CONVERGENCE VALUE= .4275 CRITERION= .1246
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1143E-01
HT FLOW CONVERGENCE VALUE= .9179E-02 CRITERION= .1246 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 299

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*** TIME = .247269E+10 TIME INC = .519148E+08
 *** RESPONSE EIGENVALUE = .1251E-08 OSCILLATION LIMIT = .6492E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51915E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 147.6 CRITERION= .1227
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.111
 HT FLOW CONVERGENCE VALUE= .4270 CRITERION= .1220
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1120E-01
 HT FLOW CONVERGENCE VALUE= .8890E-02 CRITERION= .1220 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 6 COMPLETED. CUM ITER = 301
 *** TIME = .252461E+10 TIME INC = .519148E+08
 *** RESPONSE EIGENVALUE = .1322E-08 OSCILLATION LIMIT = .6863E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 03:22:28 JAN 27, 1995 CP= 71326.890
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 145.4 CRITERION= .1216
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8189
 HT FLOW CONVERGENCE VALUE= .3357 CRITERION= .1210
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8139E-02
 HT FLOW CONVERGENCE VALUE= .6607E-02 CRITERION= .1209 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 303
 *** TIME = .257652E+10 TIME INC = .519148E+08
 *** RESPONSE EIGENVALUE = .9466E-09 OSCILLATION LIMIT = .4914E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51915E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 143.2 CRITERION= .1194
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7968
 HT FLOW CONVERGENCE VALUE= .3000 CRITERION= .1188
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7712E-02
 HT FLOW CONVERGENCE VALUE= .6026E-02 CRITERION= .1188 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 305
 *** TIME = .262844E+10 TIME INC = .519148E+08
 *** RESPONSE EIGENVALUE = .8857E-09 OSCILLATION LIMIT = .4598E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5197)

HT FLOW CONVERGENCE VALUE= 141.1 CRITERION= .1178
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.200
 HT FLOW CONVERGENCE VALUE= .4469 CRITERION= .1170
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1305E-01
 HT FLOW CONVERGENCE VALUE= .9608E-02 CRITERION= .1169 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 307
 *** TIME = .270733E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8850E-09 OSCILLATION LIMIT = .6982E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 138.1 CRITERION= .1149
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.206
 HT FLOW CONVERGENCE VALUE= .4335 CRITERION= .1141
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1275E-01
 HT FLOW CONVERGENCE VALUE= .9228E-02 CRITERION= .1140 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 309
 *** TIME = .278623E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9056E-09 OSCILLATION LIMIT = .7144E-01
 *** AUTO TIME STEP: NEXT TIME INC = .53958E+08 DECREASED (FACTOR = .6839)

HT FLOW CONVERGENCE VALUE= 135.2 CRITERION= .1136
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8231

HT FLOW CONVERGENCE VALUE= .3007 CRITERION= .1130
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7822E-02
 HT FLOW CONVERGENCE VALUE= .5808E-02 CRITERION= .1130 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 311
 *** TIME = .284018E+10 TIME INC = .539584E+08
 *** RESPONSE EIGENVALUE = .9225E-09 OSCILLATION LIMIT = .4978E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 265.631169 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 13279 STEP 1

11305 ELEMENTS (OF 11305 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 73583.330 TIME= 04:11:16
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 04:11:16 JAN 27, 1995 CP= 73583.340
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
 TIME AT END OF THE LOAD STEP.31558E+10
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT

DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 133.3 CRITERION= .1116
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7134
HT FLOW CONVERGENCE VALUE= .2605 CRITERION= .1111
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6583E-02
HT FLOW CONVERGENCE VALUE= .4893E-02 CRITERION= .1111 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 313
*** TIME = .289414E+10 TIME INC = .539584E+08
*** RESPONSE EIGENVALUE = .7997E-09 OSCILLATION LIMIT = .4315E-01
*** AUTO STEP TIME: NEXT TIME INC = .53958E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 131.5 CRITERION= .1108
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6899
HT FLOW CONVERGENCE VALUE= .2480 CRITERION= .1103
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6430E-02
HT FLOW CONVERGENCE VALUE= .4682E-02 CRITERION= .1103 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 315
*** TIME = .294810E+10 TIME INC = .539584E+08
*** RESPONSE EIGENVALUE = .7616E-09 OSCILLATION LIMIT = .4110E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.4621)

HT FLOW CONVERGENCE VALUE= 129.8 CRITERION= .1084
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.024
HT FLOW CONVERGENCE VALUE= .3543 CRITERION= .1077
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1031E-01
HT FLOW CONVERGENCE VALUE= .7106E-02 CRITERION= .1077 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 317
*** TIME = .302699E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7861E-09 OSCILLATION LIMIT = .6201E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 127.4 CRITERION= .1070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.015
HT FLOW CONVERGENCE VALUE= .3502 CRITERION= .1064
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1016E-01
HT FLOW CONVERGENCE VALUE= .6894E-02 CRITERION= .1064 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 319
*** TIME = .310589E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7901E-09 OSCILLATION LIMIT = .6233E-01
*** AUTO STEP TIME: NEXT TIME INC = .49871E+08 DECREASED (FACTOR = .6321)

HT FLOW CONVERGENCE VALUE= 125.1 CRITERION= .1050
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6547
HT FLOW CONVERGENCE VALUE= .2227 CRITERION= .1046
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5614E-02
HT FLOW CONVERGENCE VALUE= .3975E-02 CRITERION= .1046 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 321
*** TIME = .315576E+10 TIME INC = .498712E+08
*** RESPONSE EIGENVALUE = .8291E-09 OSCILLATION LIMIT = .4135E-01

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 05:00:25 JAN 27, 1995 CP= 75845.340
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 123.6 CRITERION= .1047
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3656
 HT FLOW CONVERGENCE VALUE= .1433 CRITERION= .1043
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3188E-02
 HT FLOW CONVERGENCE VALUE= .2467E-02 CRITERION= .1043 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 323
 *** TIME = .320563E+10 TIME INC = .498712E+08
 *** RESPONSE EIGENVALUE = .4949E-09 OSCILLATION LIMIT = .2468E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49871E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 122.3 CRITERION= .1033
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3340
 HT FLOW CONVERGENCE VALUE= .1107 CRITERION= .1030
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2804E-02
 HT FLOW CONVERGENCE VALUE= .1955E-02 CRITERION= .1029 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 325
 *** TIME = .325550E+10 TIME INC = .498712E+08
 *** RESPONSE EIGENVALUE = .4224E-09 OSCILLATION LIMIT = .2106E-01
 *** AUTO TIME STEP: NEXT TIME INC = .14961E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 120.9 CRITERION= .1023
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9631
 HT FLOW CONVERGENCE VALUE= .3024 CRITERION= .1013
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1119E-01
 HT FLOW CONVERGENCE VALUE= .7322E-02 CRITERION= .1012 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 327
 *** TIME = .340512E+10 TIME INC = .149613E+09
 *** RESPONSE EIGENVALUE = .3875E-09 OSCILLATION LIMIT = .5797E-01
 *** AUTO TIME STEP: NEXT TIME INC = .44884E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 117.5 CRITERION= .9697E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.799
 HT FLOW CONVERGENCE VALUE= .7490 CRITERION= .9449E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4206E-01
 HT FLOW CONVERGENCE VALUE= .2797E-01 CRITERION= .9442E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 329
 *** TIME = .385396E+10 TIME INC = .448840E+09
 *** RESPONSE EIGENVALUE = .3667E-09 OSCILLATION LIMIT = .1646
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7577)

HT FLOW CONVERGENCE VALUE= 109.0 CRITERION= .8850E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.037
 HT FLOW CONVERGENCE VALUE= 1.188 CRITERION= .8512E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8006E-01
 HT FLOW CONVERGENCE VALUE= .4848E-01 CRITERION= .8501E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 331
 *** TIME = .464290E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .3979E-09 OSCILLATION LIMIT = .3139
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 97.26 CRITERION= .7798E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.386
 HT FLOW CONVERGENCE VALUE= 1.176 CRITERION= .7513E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7344E-01
 HT FLOW CONVERGENCE VALUE= .3693E-01 CRITERION= .7505E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 333
 *** TIME = .543184E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .4941E-09 OSCILLATION LIMIT = .3898
 *** AUTO TIME STEP: NEXT TIME INC = .43984E+09 DECREASED (FACTOR = .5575)

HT FLOW CONVERGENCE VALUE= 87.02 CRITERION= .7201E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.182
 HT FLOW CONVERGENCE VALUE= .7243 CRITERION= .7062E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3339E-01

HT FLOW CONVERGENCE VALUE= .1448E-01 CRITERION= .7059E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 335
 *** TIME = .587168E+10 TIME INC = .439842E+09
 *** RESPONSE EIGENVALUE = .6013E-09 OSCILLATION LIMIT = .2645
 *** AUTO STEP TIME: NEXT TIME INC = .43984E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 82.13 CRITERION= .6645E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.313
 HT FLOW CONVERGENCE VALUE= .7175 CRITERION= .6514E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3192E-01
 HT FLOW CONVERGENCE VALUE= .1260E-01 CRITERION= .6512E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 337
 *** TIME = .631152E+10 TIME INC = .439842E+09
 *** RESPONSE EIGENVALUE = .6954E-09 OSCILLATION LIMIT = .3059

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 06:18:42 JAN 27, 1995 CP= 79452.680
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 77.33 CRITERION= .6446E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.302
 HT FLOW CONVERGENCE VALUE= .3388 CRITERION= .6334E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1120E-01
 HT FLOW CONVERGENCE VALUE= .4546E-02 CRITERION= .6332E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 339
 *** TIME = .675136E+10 TIME INC = .439842E+09
 *** RESPONSE EIGENVALUE = .2742E-09 OSCILLATION LIMIT = .1206
 *** AUTO STEP TIME: NEXT TIME INC = .43984E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 73.21 CRITERION= .6155E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.074
 HT FLOW CONVERGENCE VALUE= .2207 CRITERION= .6066E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9782E-02
 HT FLOW CONVERGENCE VALUE= .3708E-02 CRITERION= .6064E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 341
 *** TIME = .719120E+10 TIME INC = .439842E+09
 *** RESPONSE EIGENVALUE = .2033E-09 OSCILLATION LIMIT = .8944E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7937)

HT FLOW CONVERGENCE VALUE= 69.79 CRITERION= .5902E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.988
 HT FLOW CONVERGENCE VALUE= .3913 CRITERION= .5779E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1968E-01
 HT FLOW CONVERGENCE VALUE= .7002E-02 CRITERION= .5776E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 343
 *** TIME = .798014E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .2100E-09 OSCILLATION LIMIT = .1657
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 64.69 CRITERION= .5503E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.945
 HT FLOW CONVERGENCE VALUE= .3469 CRITERION= .5409E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1846E-01
 HT FLOW CONVERGENCE VALUE= .6314E-02 CRITERION= .5407E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 345
 *** TIME = .876908E+10 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .69820E+09 DECREASED (FACTOR = .8850)

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HT FLOW CONVERGENCE VALUE= 60.19 CRITERION= .5271E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.804
HT FLOW CONVERGENCE VALUE= .3233 CRITERION= .5209E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1539E-01
HT FLOW CONVERGENCE VALUE= .4834E-02 CRITERION= .5207E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 347
*** TIME = .946728E+10 TIME INC = .698196E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 07:08:20 JAN 27, 1995 CP= 81719.350
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 56.71 CRITERION= .5042E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.060
HT FLOW CONVERGENCE VALUE= .1898 CRITERION= .4998E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8586E-02
HT FLOW CONVERGENCE VALUE= .2585E-02 CRITERION= .4996E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 349
*** TIME = .101655E+11 TIME INC = .698196E+09
*** AUTO STEP TIME: NEXT TIME INC = .69820E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 53.55 CRITERION= .4942E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.016
HT FLOW CONVERGENCE VALUE= .1689 CRITERION= .4916E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8190E-02
HT FLOW CONVERGENCE VALUE= .2436E-02 CRITERION= .4915E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 351
*** TIME = .108637E+11 TIME INC = .698196E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1300)

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HT FLOW CONVERGENCE VALUE= 50.86 CRITERION= .4738E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.155
HT FLOW CONVERGENCE VALUE= .1818 CRITERION= .4725E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9184E-02
HT FLOW CONVERGENCE VALUE= .2621E-02 CRITERION= .4724E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 353
*** TIME = .116526E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .48521E+09 DECREASED (FACTOR = .6150)

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HT FLOW CONVERGENCE VALUE= 48.02 CRITERION= .4703E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7228
HT FLOW CONVERGENCE VALUE= .1161 CRITERION= .4703E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4964E-02
HT FLOW CONVERGENCE VALUE= .1371E-02 CRITERION= .4702E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 355
*** TIME = .121378E+11 TIME INC = .485214E+09
*** AUTO STEP TIME: NEXT TIME INC = .48521E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 46.46 CRITERION= .4576E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7287
HT FLOW CONVERGENCE VALUE= .1128 CRITERION= .4580E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4831E-02
HT FLOW CONVERGENCE VALUE= .1296E-02 CRITERION= .4580E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 357
*** TIME = .126230E+11 TIME INC = .485214E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 07:57:24 JAN 27, 1995 CP= 83985.430
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 44.93 CRITERION= .4581E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5302
HT FLOW CONVERGENCE VALUE= .8657E-01 CRITERION= .4590E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3403E-02
HT FLOW CONVERGENCE VALUE= .8958E-03 CRITERION= .4589E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 359
*** TIME = .131083E+11 TIME INC = .485214E+09
*** AUTO STEP TIME: NEXT TIME INC = .48521E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 43.53 CRITERION= .4487E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5028
HT FLOW CONVERGENCE VALUE= .7432E-01 CRITERION= .4500E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3209E-02
HT FLOW CONVERGENCE VALUE= .8316E-03 CRITERION= .4500E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 361
*** TIME = .135935E+11 TIME INC = .485214E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6260)

HT FLOW CONVERGENCE VALUE= 42.19 CRITERION= .4471E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8350
HT FLOW CONVERGENCE VALUE= .1225 CRITERION= .4499E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5781E-02
HT FLOW CONVERGENCE VALUE= .1431E-02 CRITERION= .4498E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 363
*** TIME = .143824E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 40.24 CRITERION= .4370E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8346
HT FLOW CONVERGENCE VALUE= .1162 CRITERION= .4406E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5579E-02
HT FLOW CONVERGENCE VALUE= .1336E-02 CRITERION= .4405E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 365
*** TIME = .151713E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .60745E+09 DECREASED (FACTOR = .7700)

HT FLOW CONVERGENCE VALUE= 38.37 CRITERION= .4395E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6611
HT FLOW CONVERGENCE VALUE= .9429E-01 CRITERION= .4426E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4008E-02
HT FLOW CONVERGENCE VALUE= .9316E-03 CRITERION= .4425E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 367
*** TIME = .157788E+11 TIME INC = .607452E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:46:24 JAN 27, 1995 CP= 86254.240
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 37.09 CRITERION= .4327E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5876
HT FLOW CONVERGENCE VALUE= .8145E-01 CRITERION= .4361E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3436E-02
 HT FLOW CONVERGENCE VALUE= .7781E-03 CRITERION= .4361E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 369
 *** TIME = .163863E+11 TIME INC = .607452E+09
 *** AUTO STEP TIME: NEXT TIME INC = .60745E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 35.83 CRITERION= .4358E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5935
 HT FLOW CONVERGENCE VALUE= .8246E-01 CRITERION= .4393E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3393E-02
 HT FLOW CONVERGENCE VALUE= .7508E-03 CRITERION= .4393E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 371
 *** TIME = .169937E+11 TIME INC = .607452E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2988)

HT FLOW CONVERGENCE VALUE= 34.72 CRITERION= .4285E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7797
 HT FLOW CONVERGENCE VALUE= .1030 CRITERION= .4333E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4548E-02
 HT FLOW CONVERGENCE VALUE= .9600E-03 CRITERION= .4333E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 373
 *** TIME = .177826E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 33.29 CRITERION= .4316E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7992
 HT FLOW CONVERGENCE VALUE= .1057 CRITERION= .4365E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4458E-02
 HT FLOW CONVERGENCE VALUE= .9099E-03 CRITERION= .4365E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 375
 *** TIME = .185716E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .36298E+09 DECREASED (FACTOR = .4601)

HT FLOW CONVERGENCE VALUE= 32.01 CRITERION= .4295E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3723
 HT FLOW CONVERGENCE VALUE= .4880E-01 CRITERION= .4319E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1701E-02
 HT FLOW CONVERGENCE VALUE= .3668E-03 CRITERION= .4318E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 377
 *** TIME = .189346E+11 TIME INC = .362975E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:35:46 JAN 27, 1995 CP= 88520.630
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 31.43 CRITERION= .4340E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2942
 HT FLOW CONVERGENCE VALUE= .4189E-01 CRITERION= .4363E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 378
 *** TIME = .192975E+11 TIME INC = .362975E+09
 *** AUTO STEP TIME: NEXT TIME INC = .36298E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 30.90 CRITERION= .4303E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2818
 HT FLOW CONVERGENCE VALUE= .3715E-01 CRITERION= .4326E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 379
 *** TIME = .196605E+11 TIME INC = .362975E+09

*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.1735)

HT FLOW CONVERGENCE VALUE= 30.35 CRITERION= .4325E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6219
HT FLOW CONVERGENCE VALUE= .8125E-01 CRITERION= .4374E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3119E-02
HT FLOW CONVERGENCE VALUE= .6082E-03 CRITERION= .4374E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 381
*** TIME = .204495E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 29.32 CRITERION= .4295E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6238
HT FLOW CONVERGENCE VALUE= .7757E-01 CRITERION= .4344E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3077E-02
HT FLOW CONVERGENCE VALUE= .5770E-03 CRITERION= .4344E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 383
*** TIME = .212384E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .42596E+09 DECREASED (FACTOR = .5399)

HT FLOW CONVERGENCE VALUE= 28.30 CRITERION= .4361E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3423
HT FLOW CONVERGENCE VALUE= .4407E-01 CRITERION= .4387E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1454E-02
HT FLOW CONVERGENCE VALUE= .2961E-03 CRITERION= .4387E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 385
*** TIME = .216644E+11 TIME INC = .425965E+09
*** AUTO STEP TIME: NEXT TIME INC = .42596E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 27.82 CRITERION= .4329E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3431
HT FLOW CONVERGENCE VALUE= .4222E-01 CRITERION= .4355E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 37 SUBSTEP 6 COMPLETED. CUM ITER = 386
*** TIME = .220903E+11 TIME INC = .425965E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 10:23:35 JAN 27, 1995 CP= 90722.220
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 27.33 CRITERION= .4375E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2872
HT FLOW CONVERGENCE VALUE= .3803E-01 CRITERION= .4400E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 387
*** TIME = .225163E+11 TIME INC = .425965E+09
*** AUTO STEP TIME: NEXT TIME INC = .42596E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 26.89 CRITERION= .4348E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2803
HT FLOW CONVERGENCE VALUE= .3474E-01 CRITERION= .4373E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 388
*** TIME = .229422E+11 TIME INC = .425965E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.8521)

HT FLOW CONVERGENCE VALUE= 26.43 CRITERION= .4380E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5247
HT FLOW CONVERGENCE VALUE= .6467E-01 CRITERION= .4424E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2289E-02
HT FLOW CONVERGENCE VALUE= .4193E-03 CRITERION= .4424E-01 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 390
*** TIME = .237312E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.70 CRITERION= .4361E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5276
HT FLOW CONVERGENCE VALUE= .6205E-01 CRITERION= .4404E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2275E-02
HT FLOW CONVERGENCE VALUE= .3986E-03 CRITERION= .4404E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 392
*** TIME = .245201E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .72595E+09 DECREASED (FACTOR = .9202)

HT FLOW CONVERGENCE VALUE= 24.97 CRITERION= .4413E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4921
HT FLOW CONVERGENCE VALUE= .5833E-01 CRITERION= .4450E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2024E-02
HT FLOW CONVERGENCE VALUE= .3584E-03 CRITERION= .4450E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 394
*** TIME = .252461E+11 TIME INC = .725951E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 11:05:13 JAN 27, 1995 CP= 92647.540
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 24.41 CRITERION= .4398E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4128
HT FLOW CONVERGENCE VALUE= .4922E-01 CRITERION= .4434E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1619E-02
HT FLOW CONVERGENCE VALUE= .2964E-03 CRITERION= .4434E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 396
*** TIME = .259720E+11 TIME INC = .725951E+09
*** AUTO STEP TIME: NEXT TIME INC = .72595E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.83 CRITERION= .4447E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4062
HT FLOW CONVERGENCE VALUE= .4810E-01 CRITERION= .4481E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1576E-02
HT FLOW CONVERGENCE VALUE= .2826E-03 CRITERION= .4480E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 398
*** TIME = .266980E+11 TIME INC = .725951E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.0868)

HT FLOW CONVERGENCE VALUE= 23.35 CRITERION= .4430E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4453
HT FLOW CONVERGENCE VALUE= .5049E-01 CRITERION= .4464E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1718E-02
HT FLOW CONVERGENCE VALUE= .2937E-03 CRITERION= .4464E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 400
*** TIME = .274869E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .45746E+09 DECREASED (FACTOR = .5798)

HT FLOW CONVERGENCE VALUE= 22.81 CRITERION= .4483E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2585
HT FLOW CONVERGENCE VALUE= .3011E-01 CRITERION= .4502E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 401
*** TIME = .279444E+11 TIME INC = .457459E+09

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*** AUTO STEP TIME: NEXT TIME INC = .45746E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.55 CRITERION= .4461E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2602
HT FLOW CONVERGENCE VALUE= .2909E-01 CRITERION= .4480E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 402
*** TIME = .284018E+11 TIME INC = .457459E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 11:46:41 JAN 27, 1995 CP= 94575.520
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 22.27 CRITERION= .4501E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2158
HT FLOW CONVERGENCE VALUE= .2624E-01 CRITERION= .4518E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 403
*** TIME = .288593E+11 TIME INC = .457459E+09
*** AUTO STEP TIME: NEXT TIME INC = .45746E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.03 CRITERION= .4481E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2116
HT FLOW CONVERGENCE VALUE= .2412E-01 CRITERION= .4498E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 404
*** TIME = .293168E+11 TIME INC = .457459E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7246)

HT FLOW CONVERGENCE VALUE= 21.76 CRITERION= .4512E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3646
HT FLOW CONVERGENCE VALUE= .4176E-01 CRITERION= .4540E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 405
*** TIME = .301057E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 21.39 CRITERION= .4498E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3643
HT FLOW CONVERGENCE VALUE= .3989E-01 CRITERION= .4523E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 406
*** TIME = .308946E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .66296E+09 DECREASED (FACTOR = .8403)

HT FLOW CONVERGENCE VALUE= 21.00 CRITERION= .4539E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3068
HT FLOW CONVERGENCE VALUE= .3421E-01 CRITERION= .4559E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 407
*** TIME = .315576E+11 TIME INC = .662961E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 95984.980

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21j5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary

conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:16:51 JAN 27, 1995 CP= 96000.150
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 68.96051

PARAMETER WPSID(JINC) = 68.99052

PARAMETER WPBOT(JINC) = 69.05913

PARAMETER DFTOP(JINC) = 26.14103

PARAMETER DFSID(JINC) = 26.14102

PARAMETER DFEDG(JINC) = 26.14099

PARAMETER DFBOT(JINC) = 26.16428

PARAMETER WPTOP(JINC,0) = 31.55760

PARAMETER WPSID(JINC,0) = 31.55760

PARAMETER WPBOT(JINC,0) = 31.55760

PARAMETER DFTOP(JINC,0) = 31.55760

PARAMETER DFSID(JINC,0) = 31.55760

PARAMETER DFEDG(JINC,0) = 31.55760

PARAMETER DFBOT(JINC,0) = 31.55760

PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 132
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 114.1621

PARAMETER WPSID(JINC) = 115.2321

PARAMETER WPBOT(JINC) = 117.8857
PARAMETER DFTOP(JINC) = 65.10045
PARAMETER DFSID(JINC) = 64.83591
PARAMETER DFEDG(JINC) = 63.60000
PARAMETER DFBOT(JINC) = 58.38027
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08
PARAMETER DFSID(JINC,0) = .3155763E+08
PARAMETER DFEDG(JINC,0) = .3155763E+08
PARAMETER DFBOT(JINC,0) = .3155763E+08
PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 224
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 129.2732
PARAMETER WPSID(JINC) = 130.1395
PARAMETER WPBOT(JINC) = 132.3369
PARAMETER DFTOP(JINC) = 93.38902
PARAMETER DFSID(JINC) = 93.16709
PARAMETER DFEDG(JINC) = 92.19400
PARAMETER DFBOT(JINC) = 87.36269
PARAMETER WPTOP(JINC,0) = .3155760E+09
PARAMETER WPSID(JINC,0) = .3155760E+09
PARAMETER WPBOT(JINC,0) = .3155760E+09
PARAMETER DFTOP(JINC,0) = .3155760E+09
PARAMETER DFSID(JINC,0) = .3155760E+09
PARAMETER DFEDG(JINC,0) = .3155760E+09
PARAMETER DFBOT(JINC,0) = .3155760E+09
PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 321
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 98.41400

PARAMETER WPSID(JINC) = 98.76098

PARAMETER WPBOT(JINC) = 99.58726

PARAMETER DFTOP(JINC) = 84.07387

PARAMETER DFSID(JINC) = 84.02868

PARAMETER DFEDG(JINC) = 83.67973

PARAMETER DFBOT(JINC) = 82.06240

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10

PARAMETER DFTOP(JINC,0) = .3155760E+10

PARAMETER DFSID(JINC,0) = .3155760E+10

PARAMETER DFEDG(JINC,0) = .3155760E+10

PARAMETER DFBOT(JINC,0) = .3155760E+10

PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 98812.940

*** NOTE *** CP= 98812.940 TIME= 13:06:02
Write parameters to file= c21j5a.parm.

*** NOTE *** CP= 98813.020 TIME= 13:06:03
Parameters written. Lines= 770.

*** WARNING *** CP= 98813.020 TIME= 13:06:03
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c21j5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:06:03 JAN 27, 1995 CP= 98813.110
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 75.00

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5652 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 23.30

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5652 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00

Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5652 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 98847.480 TIME= 13:06:51
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 82
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 98876.560 TIME= 13:07:23
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 132
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 98905.590 TIME= 13:07:54
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 181
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 98934.620 TIME= 13:08:26
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 224
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 98963.720 TIME= 13:08:58
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 269
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 98992.800 TIME= 13:09:29
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 321
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99022.070 TIME= 13:10:01
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 367
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99051.220 TIME= 13:10:33
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 407
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99080.330 TIME= 13:11:05
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2826 ELEMENTS (OF 11305 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99108.970 TIME= 13:11:36
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 82
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99131.740 TIME= 13:12:01
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 132
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99154.520 TIME= 13:12:26
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 181
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99177.190 TIME= 13:12:52
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 224
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99199.890 TIME= 13:13:17
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 269
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.

DISPLAY TITLE=

*** WARNING *** CP= 99222.610 TIME= 13:13:42
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 321
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99245.350 TIME= 13:14:07
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 367
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99268.160 TIME= 13:14:33
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 407
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 99290.840 TIME= 13:14:58
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 99297.380

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:06 JAN 27, 1995 CP= 99297.400
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
VARIABLE 3 IS AT NODE 1894 ITEM= TEMP COMP= NAME= wwpeside
VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
VARIABLE 5 IS AT NODE 1900 ITEM= TEMP COMP= NAME= wwpetop
VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
VARIABLE 7 IS AT NODE 1893 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2 NSOL	123 TEMP	wmidside	26.14	.1000E-05	130.5	.2525E+09
3 NSOL	1894 TEMP	wwpeside	26.14	.1000E-05	116.7	.3156E+09
4 NSOL	129 TEMP	wmidtop	26.14	.1000E-05	129.6	.2525E+09
5 NSOL	1900 TEMP	wwpetop	26.14	.1000E-05	116.3	.3156E+09
6 NSOL	122 TEMP	wmidbot	26.15	.1000E-05	132.8	.2525E+09
7 NSOL	1893 TEMP	wwpebot	26.14	.1000E-05	117.8	.3156E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:12 JAN 27, 1995 CP= 99300.020
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1894 TEMP wwpeside	129 TEMP wmidtop	1900 TEMP wwpetop	122 TEMP wmidbot	1893 TEMP wwpebot
.10000E-05	26.1411	26.1408	26.1354	26.1370	26.1459	26.1436
.20000E-05	68.9905	55.7811	68.9605	55.6882	69.0591	56.1474
31.558	68.9905	55.7811	68.9605	55.6882	69.0591	56.1474
.31558E+07	95.7828	77.6256	94.6653	77.0646	98.4833	79.0347
.63116E+07	101.148	83.0752	100.024	82.5138	103.878	84.4957
.94673E+07	104.468	86.5676	103.350	86.0123	107.192	87.9818
.12623E+08	106.933	89.2014	105.823	88.6528	109.644	90.6047
.15779E+08	108.900	91.3278	107.798	90.7851	111.605	92.7257
.18935E+08	110.533	93.1052	109.438	92.5681	113.224	94.4934
.22090E+08	111.936	94.6417	110.848	94.1093	114.619	96.0246
.25246E+08	113.165	95.9914	112.083	95.4635	115.837	97.3662
.28402E+08	114.253	97.1939	113.178	96.6698	116.917	98.5637
.31558E+08	115.232	98.2769	114.162	97.7566	117.886	99.6394
.63115E+08	121.541	105.391	120.512	104.898	124.121	106.705
.94673E+08	124.909	109.305	123.911	108.829	127.430	110.585
.12623E+09	126.989	111.808	126.015	111.346	129.454	113.056
.15779E+09	128.384	113.554	127.430	113.103	130.801	114.776
.18935E+09	129.324	114.801	128.390	114.360	131.696	115.997
.22090E+09	129.972	115.721	129.053	115.289	132.302	116.895
.25246E+09	130.533	116.507	129.628	116.082	132.832	117.664
.28402E+09	130.341	116.659	129.459	116.245	132.580	117.785
.31558E+09	130.139	116.720	129.273	116.314	132.337	117.824
.63115E+09	126.913	115.427	126.168	115.080	128.787	116.364
.94673E+09	122.473	112.392	121.818	112.087	124.108	113.209
.12623E+10	117.278	108.418	116.702	108.149	118.701	109.128
.15779E+10	112.857	104.918	112.340	104.677	114.122	105.551
.18935E+10	109.200	101.986	108.730	101.766	110.341	102.557
.22090E+10	106.118	99.4956	105.686	99.2934	107.161	100.018
.25246E+10	103.053	96.9861	102.657	96.8005	104.003	97.4627
.28402E+10	100.731	95.0688	100.362	94.8953	101.614	95.5112
.31558E+10	98.7610	93.4451	98.4140	93.2819	99.5873	93.8601
.63115E+10	88.2193	84.7992	87.9947	84.6925	88.7413	85.0628
.94673E+10	83.8047	81.0603	83.6240	80.9741	84.2199	81.2698
.12623E+11	81.2685	78.9287	81.1141	78.8549	81.6215	79.1077
.15779E+11	79.3991	77.3466	79.2634	77.2816	79.7072	77.5024
.18935E+11	77.5872	75.7901	77.4681	75.7329	77.8568	75.9272
.22090E+11	76.0534	74.4468	75.9466	74.3953	76.2940	74.5693
.25246E+11	74.7102	73.2539	74.6130	73.2070	74.9273	73.3641
.28402E+11	73.5401	72.2049	73.4506	72.1616	73.7396	72.3067
.31558E+11	72.5389	71.2957	72.4551	71.2550	72.7240	71.3897

* Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell

smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 99300.430 TIME= 13:15:12
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 1082 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1232 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 1047 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	131.2 .2525E+09
3	NSOL	1082 TEMP	swpeside	26.14	.1000E-05	117.5 .3156E+09
4	NSOL	38 TEMP	smidtop	26.14	.1000E-05	130.3 .2525E+09
5	NSOL	1232 TEMP	swpetop	26.14	.1000E-05	117.1 .3156E+09
6	NSOL	2 TEMP	smidbot	26.15	.1000E-05	133.5 .2525E+09
7	NSOL	1047 TEMP	swpebot	26.14	.1000E-05	118.6 .3156E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:14 JAN 27, 1995 CP= 99302.560
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1082 TEMP swpeside	38 TEMP smidtop	1232 TEMP swpetop	2 TEMP smidbot	1047 TEMP swpebot
.10000E-05	26.1411	26.1408	26.1354	26.1371	26.1459	26.1436
.20000E-05	69.7989	56.6663	69.7681	56.5765	69.8619	56.9916
31.558	69.7989	56.6663	69.7681	56.5765	69.8619	56.9916
.31558E+07	96.5781	78.6024	95.4612	78.0411	99.2095	79.9466
.63116E+07	101.945	84.0523	100.822	83.4904	104.604	85.4073
.94673E+07	105.265	87.5410	104.147	86.9851	107.918	88.8899
.12623E+08	107.729	90.1707	106.619	89.6214	110.370	91.5094
.15779E+08	109.695	92.2929	108.593	91.7493	112.329	93.6263
.18935E+08	111.326	94.0663	110.232	93.5282	113.948	95.3910
.22090E+08	112.728	95.5993	111.640	95.0656	115.341	96.9188
.25246E+08	113.956	96.9458	112.874	96.4166	116.559	98.2578
.28402E+08	115.043	98.1450	113.967	97.6196	117.637	99.4520
.31558E+08	116.020	99.2250	114.950	98.7033	118.605	100.525
.63115E+08	122.315	106.313	121.286	105.817	124.828	107.567
.94673E+08	125.670	110.205	124.671	109.727	128.123	111.426
.12623E+09	127.736	112.689	126.762	112.225	130.136	113.881
.15779E+09	129.118	114.419	128.165	113.966	131.471	115.585
.18935E+09	130.047	115.650	129.112	115.207	132.356	116.792
.22090E+09	130.683	116.556	129.765	116.121	132.953	117.677
.25246E+09	131.235	117.330	130.330	116.902	133.473	118.435
.28402E+09	131.025	117.461	130.142	117.045	133.205	118.536
.31558E+09	130.810	117.506	129.943	117.098	132.950	118.560
.63115E+09	127.478	116.094	126.734	115.745	129.304	116.989
.94673E+09	122.960	112.969	122.305	112.662	124.551	113.749
.12623E+10	117.696	108.917	117.120	108.647	119.082	109.595

.15779E+10	113.224	105.359	112.707	105.117	114.456	105.963
.18935E+10	109.528	102.382	109.058	102.162	110.640	102.927
.22090E+10	106.415	99.8559	105.983	99.6531	107.431	100.355
.25246E+10	103.321	97.3131	102.926	97.1270	104.247	97.7681
.28402E+10	100.979	95.3719	100.610	95.1979	101.839	95.7945
.31558E+10	98.9914	93.7278	98.6448	93.5642	99.7962	94.1240
.63115E+10	88.3606	84.9755	88.1363	84.8687	88.8691	85.2271
.94673E+10	83.9159	81.2000	83.7355	81.1137	84.3210	81.4002
.12623E+11	81.3622	79.0468	81.2081	78.9730	81.7060	79.2176
.15779E+11	79.4807	77.4497	79.3452	77.3847	79.7814	77.5987
.18935E+11	77.6580	75.8798	77.5391	75.8226	77.9205	76.0106
.22090E+11	76.1163	74.5266	76.0097	74.4752	76.3505	74.6435
.25246E+11	74.7669	73.3261	74.6699	73.2792	74.9790	73.4314
.28402E+11	73.5918	72.2707	73.5025	72.2274	73.7860	72.3679
.31558E+11	72.5868	71.3569	72.5032	71.3163	72.7677	71.4469

* Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 99302.960 TIME= 13:15:15

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1052 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1773 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2800 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2788 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
 VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2 NSOL	1 TEMP	wmidcent	26.14	.1000E-05	218.3	.1262E+09
3 NSOL	1052 TEMP	shellcnt	26.14	.1000E-05	120.3	.2840E+09
4 NSOL	1773 TEMP	wwpecent	26.14	.1000E-05	119.6	.3156E+09
5 NSOL	147 TEMP	imidbot	26.16	.2000E-05	104.1	.6312E+09
6 NSOL	2800 TEMP	iwpebot	26.16	.2000E-05	99.66	.6312E+09
7 NSOL	2788 TEMP	idfebot	26.16	.2000E-05	90.73	.9467E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:17 JAN 27, 1995 CP= 99305.100
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	1052 TEMP shellcnt	1773 TEMP wwpecent	147 TEMP imidbot	2800 TEMP iwpebot	2788 TEMP idfebot
.10000E-05	26.1409	26.1406	26.1406	26.1725	26.1713	26.1713
.20000E-05	167.508	61.7689	61.0146	26.1643	26.1643	26.1643

31.558	167.508	61.7690	61.0146	26.1643	26.1643	26.1643
.31558E+07	193.377	82.1688	81.3529	54.2443	46.9621	33.4779
.63116E+07	198.842	87.5040	86.6876	61.7715	54.2326	38.9645
.94673E+07	202.066	90.9458	90.1292	66.2515	58.7392	43.0283
.12623E+08	204.407	93.5532	92.7346	69.5097	62.0732	46.2955
.15779E+08	206.208	95.6493	94.8344	72.0836	64.7323	49.0314
.18935E+08	207.668	97.4126	96.5962	74.2151	66.9472	51.3807
.22090E+08	208.886	98.9276	98.1150	76.0364	68.8471	53.4359
.25246E+08	209.950	100.268	99.4538	77.6295	70.5125	55.2600
.28402E+08	210.849	101.452	100.642	79.0432	71.9937	56.8974
.31558E+08	211.657	102.526	101.715	80.3145	73.3273	58.3803
.63115E+08	216.164	109.534	108.738	88.6735	82.1429	68.3235
.94673E+08	217.815	113.355	112.576	93.3400	87.1006	73.9910
.12623E+09	218.269	115.782	115.013	96.3605	90.3700	77.7794
.15779E+09	218.130	117.451	116.697	98.5424	92.7217	80.5374
.18935E+09	217.600	118.631	117.888	100.157	94.4809	82.6384
.22090E+09	216.853	119.487	118.755	101.403	95.8417	84.2953
.25246E+09	216.279	120.217	119.496	102.441	96.9771	85.6782
.28402E+09	213.861	120.271	119.567	103.001	97.6686	86.6590
.31558E+09	212.012	120.260	119.570	103.340	98.1198	87.3627
.63115E+09	196.050	118.413	117.830	104.089	99.6640	90.6167
.94673E+09	181.980	114.962	114.462	102.465	98.6010	90.7301
.12623E+10	168.390	110.632	110.200	99.6947	96.3073	89.4302
.15779E+10	157.759	106.864	106.487	97.0811	94.0527	87.9248
.18935E+10	149.353	103.733	103.393	94.8471	92.1049	86.5557
.22090E+10	142.476	101.076	100.771	92.9257	90.4128	85.3295
.25246E+10	135.909	98.4166	98.1405	90.9534	88.6536	84.0046
.28402E+10	131.084	96.3950	96.1378	89.4286	87.2839	82.9509
.31558E+10	127.002	94.6767	94.4395	88.1395	86.1271	82.0624
.63115E+10	105.537	85.5587	85.4132	81.3605	80.0715	77.4740
.94673E+10	97.4244	81.6626	81.5460	78.2888	77.2563	75.1772
.12623E+11	92.7422	79.4338	79.3374	76.5592	75.6790	73.9064
.15779E+11	89.3800	77.7898	77.7039	75.2645	74.4934	72.9414
.18935E+11	86.2513	76.1720	76.0994	73.9626	73.2871	71.9269
.22090E+11	83.7475	74.7860	74.7217	72.8103	72.2063	70.9902
.25246E+11	81.6392	73.5631	73.5031	71.7695	71.2225	70.1215
.28402E+11	79.8599	72.4838	72.4310	70.8417	70.3396	69.3282
.31558E+11	78.3969	71.5577	71.5067	70.0273	69.5601	68.6193

 * Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfcent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 99305.500 TIME= 13:15:17
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2810 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2792 ITEM= TEMP COMP= NAME= idfcent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2863 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2853 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
 VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2 NSOL	151 TEMP	imidcent	26.14	.2000E-05	119.1	.3156E+09
3 NSOL	2810 TEMP	iwpecent	26.14	.2000E-05	108.8	.3156E+09
4 NSOL	2792 TEMP	idfecent	26.14	.2000E-05	96.31	.6312E+09
5 NSOL	157 TEMP	imidedge	26.14	.2000E-05	112.1	.3156E+09
6 NSOL	2863 TEMP	iwpeedge	26.14	.2000E-05	105.2	.6312E+09
7 NSOL	2853 TEMP	idfeedge	26.14	.2000E-05	94.74	.6312E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:19 JAN 27, 1995 CP= 99307.630
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2810 TEMP iwpecent	2792 TEMP idfecent	157 TEMP imidedge	2863 TEMP iwpeedge	2853 TEMP idfeedge
.10000E-05	26.1510	26.1480	26.1470	26.1542	26.1541	26.1561
.20000E-05	26.1409	26.1409	26.1409	26.1409	26.1409	26.1409
31.558	26.1557	26.1479	26.1410	26.1453	26.1431	26.1410
.31558E+07	76.9545	61.7756	39.2406	65.7119	55.0136	37.3095
.63116E+07	83.4536	68.4603	45.6649	72.7261	61.9850	43.4281
.94673E+07	87.4318	72.6741	50.1301	77.0123	66.3884	47.7842
.12623E+08	90.3638	75.8216	53.6101	80.1672	69.6752	51.2173
.15779E+08	92.6890	78.3419	56.4678	82.6724	72.3073	54.0556
.18935E+08	94.6222	80.4477	58.8905	84.7536	74.5056	56.4725
.22090E+08	96.2747	82.2557	60.9911	86.5345	76.3936	58.5747
.25246E+08	97.7254	83.8445	62.8447	88.0959	78.0517	60.4335
.28402E+08	99.0066	85.2538	64.5002	89.4783	79.5242	62.0967
.31558E+08	100.162	86.5250	65.9948	90.7236	80.8517	63.6000
.63115E+08	107.648	94.8541	75.9103	98.8161	89.5776	73.6122
.94673E+08	111.709	99.4526	81.4855	103.272	94.4244	79.2680
.12623E+09	114.277	102.426	85.1675	106.138	97.5745	83.0166
.15779E+09	116.053	104.525	87.8218	108.149	99.8163	85.7265
.18935E+09	117.311	106.058	89.8181	109.609	101.473	87.7720
.22090E+09	118.228	107.214	91.3725	110.699	102.738	89.3706
.25246E+09	119.007	108.189	92.6711	111.618	103.800	90.7057
.28402E+09	119.115	108.581	93.4969	111.934	104.321	91.5823
.31558E+09	119.128	108.810	94.0650	112.092	104.641	92.1940
.63115E+09	117.431	108.678	96.3053	111.463	105.169	94.7412
.94673E+09	114.036	106.385	95.6270	108.807	103.327	94.2801
.12623E+10	109.737	103.028	93.6254	105.136	100.349	92.4628
.15779E+10	105.992	99.9898	91.5960	101.861	97.5921	90.5702
.18935E+10	102.881	97.4339	89.8261	99.1197	95.2553	88.9056
.22090E+10	100.250	95.2536	88.2815	96.7906	93.2544	87.4451
.25246E+10	97.6160	93.0423	86.6634	94.4405	91.2113	85.9047
.28402E+10	95.6147	91.3478	85.3990	92.6461	89.6387	84.6966
.31558E+10	93.9202	89.9160	84.3347	91.1308	88.3120	83.6797
.63115E+10	84.9816	82.4144	78.8426	83.1793	81.3859	78.4386
.94673E+10	81.1636	79.1053	76.2420	79.7128	78.2800	75.9238
.12623E+11	78.9931	77.2394	74.7992	77.7555	76.5365	74.5306
.15779E+11	77.3902	75.8525	73.7133	76.3026	75.2357	73.4799
.18935E+11	75.8139	74.4678	72.5942	74.8615	73.9283	72.3915
.22090E+11	74.4589	73.2554	71.5797	73.6067	72.7732	71.3998
.25246E+11	73.2584	72.1674	70.6483	72.4842	71.7299	70.4868
.28402E+11	72.2014	71.2007	69.8064	71.4918	70.8001	69.6593
.31558E+11	71.2896	70.3576	69.0589	70.6276	69.9844	68.9233

 * Drift Wall Surface Temperatures *

 dmdside = midlength drift wall side surface
 dwpside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmdtop = midlength drift wall top surface
 dwptop = end of WP drift wall top surface

ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 99308.030 TIME= 13:15:20

NSOL command erases all previously stored or calculated data
unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2946 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2914 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3131 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 3109 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	113.2	.3156E+09
3	NSOL	2946 TEMP	dwpeside	26.14	.2000E-05	106.0	.6312E+09
4	NSOL	2914 TEMP	ddfeside	26.14	.2000E-05	95.57	.6312E+09
5	NSOL	229 TEMP	dmidtop	26.13	.1000E-05	111.8	.3156E+09
6	NSOL	3131 TEMP	dwpetop	26.13	.1000E-05	105.7	.6312E+09
7	NSOL	3109 TEMP	ddfetop	26.12	.1000E-05	95.73	.6312E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:22 JAN 27, 1995 CP= 99310.160
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2946 TEMP dwpeside	2914 TEMP ddfeside	229 TEMP dmidtop	3131 TEMP dwpetop	3109 TEMP ddfetop
.10000E-05	26.1409	26.1417	26.1428	26.1273	26.1261	26.1211
.20000E-05	26.1409	26.1409	26.1409	26.1409	26.1409	26.1409
31.558	26.1469	26.1439	26.1410	26.1466	26.1438	26.1410
.31558E+07	67.6068	56.6334	38.3208	65.5052	55.8685	38.4501
.63116E+07	74.4718	63.5220	44.5985	72.4003	62.7882	44.7760
.94673E+07	78.6846	67.8786	49.0105	76.6548	67.1746	49.2150
.12623E+08	81.7923	71.1335	52.4651	79.7987	70.4536	52.6884
.15779E+08	84.2630	73.7417	55.3104	82.3002	73.0809	55.5470
.18935E+08	86.3173	75.9211	57.7275	84.3809	75.2758	57.9736
.22090E+08	88.0759	77.7932	59.8265	86.1627	77.1609	60.0795
.25246E+08	89.6186	79.4379	61.6807	87.7257	78.8165	61.9387
.28402E+08	90.9841	80.8982	63.3383	89.1097	80.2865	63.6001
.31558E+08	92.2147	82.2149	64.8359	90.3570	81.6117	65.1005
.63115E+08	100.200	90.8621	74.7949	98.4554	90.3118	75.0659
.94673E+08	104.589	95.6480	80.4101	102.922	95.1304	80.6771
.12623E+09	107.407	98.7599	84.1257	105.796	98.2590	84.3870
.15779E+09	109.386	100.974	86.8084	107.816	100.489	87.0636
.18935E+09	110.814	102.603	88.8300	109.284	102.132	89.0790
.22090E+09	111.878	103.844	90.4074	110.379	103.384	90.6502
.25246E+09	112.776	104.888	91.7253	111.303	104.436	91.9622
.28402E+09	113.059	105.381	92.5766	111.628	104.942	92.8056
.31558E+09	113.194	105.679	93.1671	111.791	105.248	93.3890
.63115E+09	112.400	106.049	95.5671	111.207	105.678	95.7344
.94673E+09	109.630	104.093	94.9975	108.585	103.764	95.1306
.12623E+10	105.862	101.019	93.0836	104.944	100.727	93.1911
.15779E+10	102.513	98.1886	91.1190	101.691	97.9252	91.2087

.18935E+10	99.7132	95.7944	89.3982	98.9661	95.5530	89.4749
.22090E+10	97.3356	93.7462	87.8926	96.6497	93.5231	87.9591
.25246E+10	94.9401	91.6593	86.3102	94.3110	91.4533	86.3674
.28402E+10	93.1122	90.0548	85.0715	92.5246	89.8612	85.1221
.31558E+10	91.5681	88.7009	84.0287	91.0161	88.5180	84.0739
.63115E+10	83.4573	81.6278	78.6508	83.0992	81.5041	78.6684
.94673E+10	79.9341	78.4706	76.0889	79.6456	78.3693	76.0996
.12623E+11	77.9432	76.6972	74.6690	77.6966	76.6097	74.6761
.15779E+11	76.4665	75.3754	73.5995	76.2495	75.2976	73.6041
.18935E+11	75.0042	74.0495	72.4947	74.8134	73.9802	72.4969
.22090E+11	73.7335	72.8805	71.4908	73.5621	72.8174	71.4911
.25246E+11	72.5983	71.8261	70.5678	72.4421	71.7678	70.5665
.28402E+11	71.5956	70.8873	69.7325	71.4514	70.8328	69.7296
.31558E+11	70.7233	70.0645	68.9900	70.5881	70.0125	68.9857

* 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 99310.560 TIME= 13:15:22
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2904 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 3099 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2902 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	167 TEMP	1midside	26.14	.2000E-05	98.93	.6312E+09
3	NSOL	2904 TEMP	1dfeside	26.14	.2000E-05	89.02	.9467E+09
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	98.46	.6312E+09
5	NSOL	3099 TEMP	1dfetop	26.10	.1000E-05	89.16	.9467E+09
6	NSOL	165 TEMP	1midbot	26.19	.2000E-05	94.41	.6312E+09
7	NSOL	2902 TEMP	1dfebot	26.19	.2000E-05	86.44	.9467E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:24 JAN 27, 1995 CP= 99312.690
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2904 TEMP 1dfeside	219 TEMP 1midtop	3099 TEMP 1dfetop	165 TEMP 1midbot	2902 TEMP 1dfebot
.10000E-05	26.1424	26.1433	26.1002	26.0972	26.1932	26.1929
.20000E-05	26.1423	26.1423	26.1104	26.1104	26.1865	26.1865
31.558	26.1423	26.1423	26.1104	26.1104	26.1865	26.1865

.31558E+07	46.5930	32.0520	45.6933	32.1173	40.2976	29.8634
.63116E+07	53.8947	37.0596	52.9560	37.1893	47.5213	34.1411
.94673E+07	58.3765	40.8940	57.4685	41.0701	52.0076	37.6411
.12623E+08	61.6599	44.0204	60.7884	44.2328	55.3071	40.5851
.15779E+08	64.2665	46.6609	63.4267	46.9010	57.9299	43.1162
.18935E+08	66.4331	48.9422	65.6199	49.2035	60.1111	45.3276
.22090E+08	68.2899	50.9470	67.4992	51.2247	61.9815	47.2855
.25246E+08	69.9173	52.7326	69.1458	53.0231	63.6211	49.0380
.28402E+08	71.3652	54.3401	70.6104	54.6410	65.0816	50.6216
.31558E+08	72.6692	55.7992	71.9290	56.1085	66.3975	52.0630
.63115E+08	81.3000	65.6552	80.6481	66.0001	75.1729	61.8706
.94673E+08	86.1649	71.3224	85.5668	71.6743	80.1895	67.5572
.12623E+09	89.3935	75.1334	88.8256	75.4846	83.5367	71.4064
.15779E+09	91.7411	77.9209	91.1835	78.2677	85.9763	74.2350
.18935E+09	93.4956	80.0559	92.9650	80.3964	87.8281	76.4138
.22090E+09	94.8713	81.7489	94.3410	82.0813	89.2899	78.1502
.25246E+09	96.0219	83.1643	95.5024	83.4878	90.5076	79.6010
.28402E+09	96.7400	84.1984	96.2328	84.5106	91.3490	80.7042
.31558E+09	97.2082	84.9537	96.7041	85.2539	91.9250	81.5230
.63115E+09	98.9300	88.6051	98.4603	88.8081	94.4131	85.6432
.94673E+09	97.9975	89.0174	97.5587	89.1605	94.0813	86.4443
.12623E+10	95.8156	87.9699	95.4097	88.0713	92.4309	85.7553
.15779E+10	93.6347	86.6502	93.2584	86.7239	90.6566	84.7089
.18935E+10	91.7376	85.4204	91.3864	85.4750	89.0738	83.6913
.22090E+10	90.0835	84.3031	89.7537	84.3433	87.6736	82.7443
.25246E+10	88.3599	83.0774	88.0500	83.1046	86.1837	81.6758
.28402E+10	87.0151	82.0943	86.7202	82.1126	85.0082	80.8076
.31558E+10	85.8782	81.2640	85.5964	81.2752	84.0135	80.0733
.63115E+10	79.9167	76.9750	79.7108	76.9530	78.7936	76.2763
.94673E+10	77.1315	74.7798	76.9590	74.7534	76.2605	74.2470
.12623E+11	75.5720	73.5681	75.4206	73.5406	74.8433	73.1264
.15779E+11	74.3988	72.6454	74.2626	72.6173	73.7700	72.2674
.18935E+11	73.2034	71.6673	73.0800	71.6381	72.6612	71.3441
.22090E+11	72.1302	70.7574	72.0162	70.7273	71.6529	70.4754
.25246E+11	71.1519	69.9099	71.0450	69.8785	70.7273	69.6618
.28402E+11	70.2730	69.1325	70.1711	69.0995	69.8897	68.9109
.31558E+11	69.4959	68.4357	69.3973	68.4008	69.1460	68.2359

 * 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtopy = midlength 3 meter above drift top
 3dfetopy = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 99313.090 TIME= 13:15:25
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 3679 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtopy

VARIABLE 5 IS AT NODE 3939 ITEM= TEMP COMP= NAME= 3dfetopy

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3676 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
 VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2 NSOL 279 TEMP 3midside 26.14 .1000E-05 84.75 .9467E+09

3 NSOL	3679 TEMP	3dfeside	26.14	.2000E-05	81.01	.1262E+10
4 NSOL	309 TEMP	3midtop	26.06	.1000E-05	84.46	.9467E+09
5 NSOL	3939 TEMP	3dfetop	26.06	.1000E-05	80.89	.1262E+10
6 NSOL	276 TEMP	3midbot	26.23	.2000E-05	82.80	.9467E+09
7 NSOL	3676 TEMP	3dfebot	26.23	.2000E-05	79.67	.1262E+10

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:27 JAN 27, 1995 CP= 99315.220
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3679 TEMP 3dfeside	309 TEMP 3midtop	3939 TEMP 3dfetop	276 TEMP 3midbot	3676 TEMP 3dfebot
.10000E-05	26.1434	26.1437	26.0562	26.0552	26.2337	26.2337
.20000E-05	26.1436	26.1436	26.0632	26.0632	26.2291	26.2291
31.558	26.1436	26.1436	26.0632	26.0632	26.2291	26.2291
.31558E+07	29.8940	27.2107	29.5264	27.1064	28.5349	26.8365
.63116E+07	34.8944	29.6969	34.4173	29.6003	32.8076	28.7684
.94673E+07	38.5573	32.1958	38.0984	32.1363	36.2250	30.9490
.12623E+08	41.4144	34.4898	40.9933	34.4709	38.9658	33.0507
.15779E+08	43.7628	36.5653	43.3781	36.5827	41.2465	35.0021
.18935E+08	45.7616	38.4421	45.4087	38.4903	43.2013	36.7946
.22090E+08	47.5053	40.1452	47.1795	40.2192	44.9139	38.4379
.25246E+08	49.0538	41.6981	48.7513	41.7937	46.4397	39.9468
.28402E+08	50.4484	43.1217	50.1660	43.2356	47.8169	41.3370
.31558E+08	51.7169	44.4330	51.4520	44.5624	49.0724	42.6223
.63115E+08	60.4487	53.6658	60.2838	53.8750	57.7744	51.7544
.94673E+08	65.6519	59.2255	65.5311	59.4624	63.0061	57.3003
.12623E+09	69.2419	63.0765	69.1422	63.3241	66.6335	61.1594
.15779E+09	71.9191	65.9542	71.8287	66.2033	69.3436	64.0502
.18935E+09	74.0096	68.2095	73.9243	68.4536	71.4648	66.3196
.22090E+09	75.6949	70.0372	75.6059	70.2715	73.1788	68.1605
.25246E+09	77.1145	71.5750	77.0182	71.7961	74.6184	69.7069
.28402E+09	78.2340	72.8245	78.1311	73.0298	75.7737	70.9768
.31558E+09	79.0795	73.7980	78.9644	73.9846	76.6561	71.9722
.63115E+09	83.5773	79.1322	83.3499	79.1570	81.3975	77.4539
.94673E+09	84.7453	80.8803	84.4644	80.8176	82.7971	79.3657
.12623E+10	84.3809	81.0054	84.0801	80.8944	82.6665	79.6686
.15779E+10	83.5689	80.5647	83.2636	80.4278	82.0461	79.3764
.18935E+10	82.7205	80.0042	82.4178	79.8534	81.3535	78.9387
.22090E+10	81.9007	79.4154	81.6031	79.2564	80.6632	78.4526
.25246E+10	80.9441	78.6727	80.6523	78.5073	79.8272	77.8060
.28402E+10	80.1549	78.0396	79.8692	77.8713	79.1297	77.2470
.31558E+10	79.4817	77.4985	79.2021	77.3287	78.5341	76.7688
.63115E+10	75.9536	74.6892	75.7172	74.5218	75.4108	74.2839
.94673E+10	74.0054	72.9956	73.8011	72.8460	73.6033	72.7030
.12623E+11	72.9274	72.0663	72.7439	71.9293	72.5997	71.8317
.15779E+11	72.0970	71.3439	71.9288	71.2162	71.8208	71.1490
.18935E+11	71.1980	70.5380	71.0416	70.4170	70.9660	70.3771
.22090E+11	70.3459	69.7561	70.1983	69.6400	70.1479	69.6216
.25246E+11	69.5451	69.0116	69.4035	68.8983	69.3756	68.8993
.28402E+11	68.8029	68.3130	68.6647	68.2007	68.6567	68.2193
.31558E+11	68.1338	67.6782	67.9972	67.5655	68.0074	67.6006

 * Upper Rock Layer Interface Temperatures *

 surfTCW = center ground surface
 TCWPTn = center TCW and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 861 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 99315.620 TIME= 13:15:27
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 840 ITEM= TEMP COMP= NAME= TCwPTn

VARIABLE 4 IS AT NODE 783 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 683 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 480 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 406 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	861 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3 NSOL	840 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4 NSOL	783 TEMP	PTnTSw1	21.24	.1000E-05	33.91	.3156E+11
5 NSOL	683 TEMP	TSw1TSw2	24.25	.1000E-05	53.60	.3156E+11
6 NSOL	480 TEMP	upmodel	25.53	.1000E-05	63.22	.1893E+11
7 NSOL	406 TEMP	middrift	26.14	.1000E-05	66.76	.1262E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:30 JAN 27, 1995 CP= 99317.740
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	861 TEMP surfTCw	840 TEMP TCwPTn	783 TEMP PTnTSw1	683 TEMP TSw1TSw2	480 TEMP upmodel	406 TEMP middrift
.10000E-05	18.7000	19.5281	21.2397	24.2504	25.5335	26.1440
.20000E-05	18.7000	19.5283	21.2404	24.2521	25.5358	26.1447
.31558E+07	18.7000	19.5283	21.2404	24.2521	25.5358	26.1447
.63116E+07	18.7000	19.5283	21.2404	24.2521	25.5358	26.1447
.94673E+07	18.7000	19.5283	21.2404	24.2521	25.5358	26.1447
.12623E+08	18.7000	19.5283	21.2404	24.2521	25.5358	26.1447
.15779E+08	18.7000	19.5283	21.2404	24.2521	25.5358	26.1447
.18935E+08	18.7000	19.5283	21.2404	24.2521	25.5358	26.1449
.22090E+08	18.7000	19.5283	21.2404	24.2521	25.5360	26.1453
.25246E+08	18.7000	19.5283	21.2404	24.2521	25.5362	26.1460
.28402E+08	18.7000	19.5283	21.2404	24.2521	25.5367	26.1474
.31558E+08	18.7000	19.5283	21.2404	24.2521	25.5375	26.1497
.63115E+08	18.7000	19.5283	21.2404	24.2521	25.5941	26.2883
.94673E+08	18.7000	19.5283	21.2404	24.2521	25.8110	26.7746
.12623E+09	18.7000	19.5283	21.2404	24.2521	26.2092	27.6181
.15779E+09	18.7000	19.5283	21.2404	24.2521	26.7457	28.7146
.18935E+09	18.7000	19.5283	21.2404	24.2522	27.3694	29.9591
.22090E+09	18.7000	19.5283	21.2404	24.2522	28.0416	31.2755
.25246E+09	18.7000	19.5283	21.2404	24.2523	28.7369	32.6134
.28402E+09	18.7000	19.5283	21.2404	24.2527	29.4402	33.9423
.31558E+09	18.7000	19.5283	21.2404	24.2533	30.1422	35.2426
.63115E+09	18.7000	19.5283	21.2404	24.3307	36.5024	45.6197
.94673E+09	18.7000	19.5283	21.2404	24.6961	41.5101	52.0890
.12623E+10	18.7000	19.5283	21.2405	25.4161	45.3658	56.2685
.15779E+10	18.7000	19.5284	21.2410	26.4076	48.2883	58.9925
.18935E+10	18.7000	19.5284	21.2431	27.5609	50.5301	60.8355

.22090E+10	18.7000	19.5286	21.2489	28.7862	52.2831	62.1341
.25246E+10	18.7000	19.5291	21.2615	30.0226	53.6724	63.0637
.28402E+10	18.7000	19.5303	21.2842	31.2320	54.7739	63.7115
.31558E+10	18.7000	19.5328	21.3201	32.3924	55.6744	64.1988
.63115E+10	18.7000	19.7626	22.6145	40.8586	60.4611	66.5802
.94673E+10	18.7000	20.4166	24.9533	45.4568	61.8224	66.6870
.12623E+11	18.7000	21.1937	27.2912	48.2646	62.5853	66.7597
.15779E+11	18.7000	21.8844	29.2433	50.1802	63.0350	66.7364
.18935E+11	18.7000	22.4394	30.7755	51.5306	63.2163	66.5384
.22090E+11	18.7000	22.8681	31.9455	52.4513	63.1823	66.2075
.25246E+11	18.7000	23.1915	32.8191	53.0515	63.0231	65.8205
.28402E+11	18.7000	23.4299	33.4557	53.4131	62.7794	65.4029
.31558E+11	18.7000	23.6008	33.9059	53.5979	62.4889	64.9841

 * Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP
 TSw2TSw3 = center TSw2 and TSw3 interface
 TSw3CHnv = center TSw3 and CHn1v interface
 CHnvCHnz = center CHn1v and CHn1z interface
 CHnzCHn2 = center CHn1z and CHn2 interface
 CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 99318.140 TIME= 13:15:30
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 5 IS AT NODE 732 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 6 IS AT NODE 882 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 7 IS AT NODE 902 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 921 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 978 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.75	.3156E+07	64.48	.1893E+11
3	NSOL	840 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	783 TEMP	PTnTSw1	21.24	.1000E-05	33.91	.3156E+11
5	NSOL	732 TEMP	TSw2TSw3	27.69	.9467E+07	59.36	.3156E+11
6	NSOL	882 TEMP	TSw3CHnv	28.16	.2000E-05	57.18	.3156E+11
7	NSOL	978 TEMP	CHn2bot	31.87	.9467E+08	43.34	.3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:32 JAN 27, 1995 CP= 99320.270
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	840 TEMP TCwPTn	783 TEMP PTnTSw1	732 TEMP TSw2TSw3	882 TEMP TSw3CHnv	978 TEMP CHn2bot
.10000E-05	26.7546	19.5281	21.2397	27.6868	28.1581	31.8705
.20000E-05	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699
31.558	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699
.31558E+07	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699

.63116E+07	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699
.94673E+07	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699
.12623E+08	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699
.15779E+08	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699
.18935E+08	26.7537	19.5283	21.2404	27.6860	28.1573	31.8699
.22090E+08	26.7539	19.5283	21.2404	27.6860	28.1573	31.8699
.25246E+08	26.7541	19.5283	21.2404	27.6860	28.1573	31.8699
.28402E+08	26.7546	19.5283	21.2404	27.6860	28.1573	31.8699
.31558E+08	26.7554	19.5283	21.2404	27.6860	28.1573	31.8699
.63115E+08	26.8117	19.5283	21.2404	27.6860	28.1573	31.8699
.94673E+08	27.0270	19.5283	21.2404	27.6860	28.1573	31.8699
.12623E+09	27.4197	19.5283	21.2404	27.6860	28.1573	31.8699
.15779E+09	27.9457	19.5283	21.2404	27.6861	28.1573	31.8699
.18935E+09	28.5554	19.5283	21.2404	27.6865	28.1573	31.8699
.22090E+09	29.2118	19.5283	21.2404	27.6875	28.1574	31.8699
.25246E+09	29.8911	19.5283	21.2404	27.6899	28.1575	31.8699
.28402E+09	30.5788	19.5283	21.2404	27.6944	28.1577	31.8699
.31558E+09	31.2663	19.5283	21.2404	27.7018	28.1582	31.8699
.63115E+09	37.5320	19.5283	21.2404	28.0990	28.2303	31.8699
.94673E+09	42.5044	19.5283	21.2404	29.1998	28.5783	31.8699
.12623E+10	46.3616	19.5283	21.2405	30.7827	29.2698	31.8699
.15779E+10	49.3137	19.5284	21.2410	32.5728	30.2287	31.8699
.18935E+10	51.6024	19.5284	21.2431	34.3899	31.3499	31.8701
.22090E+10	53.4106	19.5286	21.2489	36.1363	32.5460	31.8709
.25246E+10	54.8568	19.5291	21.2615	37.7673	33.7567	31.8728
.28402E+10	56.0130	19.5303	21.2842	39.2670	34.9439	31.8769
.31558E+10	56.9629	19.5328	21.3201	40.6333	36.0851	31.8843
.63115E+10	61.9436	19.7626	22.6145	49.2921	44.4248	32.3600
.94673E+10	63.2690	20.4166	24.9533	53.2088	48.9115	33.6219
.12623E+11	63.9609	21.1937	27.2912	55.4157	51.6067	35.2462
.15779E+11	64.3483	21.8844	29.2433	56.8597	53.4343	36.9051
.18935E+11	64.4850	22.4394	30.7755	57.8497	54.7441	38.4674
.22090E+11	64.4261	22.8681	31.9455	58.5043	55.6817	39.8936
.25246E+11	64.2628	23.1915	32.8191	58.9318	56.3547	41.1768
.28402E+11	64.0340	23.4299	33.4557	59.2005	56.8376	42.3226
.31558E+11	63.7744	23.6008	33.9059	59.3589	57.1825	43.3427

***** ROUTINE COMPLETED ***** CP = 99320.280

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21j5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 46
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

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|
|               ANSYS RUN COMPLETED
|
|-----|
|
|               REV. 5.0 A               HP 9000/7XX
|
| CP TIME      (sec) =      99330.700      TIME = 13:15:50
| ELAPSED TIME (sec) =     129367.000      DATE  = 01/27/95
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WELCOME TO THE ANSYS PROGRAM

***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME = c21h5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED = 16777216 64.000 MB COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592 18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496 25.568 MB
WORK SPACE OBTAINED = 16777214 64.000 MB
BYTES PER WORD = 4

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ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON TO START THE ANSYS MENU SYSTEM
ENTER HELP FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 1/16/1995
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c21h5a.inp *
7 /COM, *
8 /COM, * 21 PWR WP/MPC (10 cm overpack) *
9 /COM, * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
10 /COM, * 5.0 m Diameter Drift with Concrete Invert *
11 /COM, * 25 MTU/acre (6.18 kgU/m^2) AML (Low Thermal Loading) *
12 /COM, * Drift spacing = 90.0 m (45.0 m model half width) *
13 /COM, * WP c/c spacing = 16.165 m *
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat *
16 /COM, * SNF Heat Loads file: snf2242.dat *
17 /COM, *
18 /COM, *****

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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,21 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.9008,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.682,
40 *SET,WPWLL,0.10,
41 *SET,WSPC,16.165,
42 *SET,WPNUM,21.0,
43 *SET,MODEL,45.0,
44 *SET,OFFST,0.137,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWLL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWLL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWLL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM, Model is 6 elements wide
372 LSEL,S,LINE,, 9,12,1, (3+7=10 divisions)
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 8,5.0,
378 /COM, Extrude WP 5 elements
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM, 1 element thick steel
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM, Extrude drift 5 elements with smallest
386 /COM, elements at WP mid-length
387 LESIZE, 58,,, 5,5.9,
388 LESIZE, 59,,, 5,5.9,
389 /COM, *****
390 /COM, Set element sizes in rock layers
391 /COM, 3 element thick TCW
392 LESIZE, 24,,, 3,
393 /COM, 3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM, 9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM, 12 elements above and below near field
398 /COM, with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,, 6,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,, 6,
403 LSEL,ALL,
404 /COM, 3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM, 2 element thick CHn1v
407 LESIZE, 46,,, 2,
408 /COM, 7 element thick CHn1z
409 LESIZE, 49,,, 7,
410 /COM, 12 element thick CHN2 with smaller elements
411 /COM, near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM, Concatenate lines for mapped meshing
417 /COM, (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM, Mesh 2-D areas
426 /COM, (first WP, then invert, DF wall and rock layers)
427 /COM, Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM, Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM, Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM,          TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM,          PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM,          TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM,          TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM,          CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM,          CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM,          CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM,          *****
468 /COM,          Delete concatenated lines
469 /COM,          (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM,          *****
477 /COM,          Extrude 2-D waste package into 3-D
478 /COM,          (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM,          ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM,          (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM,          Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM,          *****
505 /COM,          Extrude 2-D rock into front half 3-D
506 /COM,          Invert
507 /COM,          (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,      Rock around drift
513 /COM,      (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,,58,
527 VMESH,41,
528 /COM,      Mid-drift rock
529 /COM,      (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,,58,
535 /COM,      Concatenate to mesh volume 45
536 /COM,      (L's 311,312 used and freed up)
537 /COM,      (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,      Extrude rest of TSw2
546 /COM,      (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,      Extrude TSw1
549 /COM,      (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,      Extrude PTn
553 /COM,      (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,      Extrude TCw
557 /COM,      (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,      Extrude TSw3
561 /COM,      (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,      Extrude CHn1v
565 /COM,      (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,      Extrude CHn1z
569 /COM,      (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,      Extrude CHn2
573 /COM,      (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,      *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TMI0,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TMI1,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TMI10,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TM1100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM,          *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TM10,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),      0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TM11,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),      0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TM110,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),      0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TM1100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAB,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 100.0,
984 /VCON,1, 25.000,
985 /TYPE,1,HIDP,
986 /SHADE,,GOUR,
987 /GLINE,,0,
988 /TITLE,
989 VSEL,S,LOC,Z,0,100
990 ESLV,S
991 /SHOW,meshdrift,grph,0,8,
992 EPLOT
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1,+90,YS,1
995 /DIST,1, 17.5,
996 VSEL,S,LOC,X,-100,0
997 ESLV,S
998 /SHOW,meshside,grph,0,8,

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999  EPLLOT
1000 /COM, *****
1001 /COM,          Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM,          Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT , 1,
1009 /WIND,1, -1.0000 , 1.00000 , -1.0000 , 1.0000,
1010 /VIEW,1, -.36934 , .15899 , -.91559,
1011 /FOC, 1, 2.7776 , -.97308 , 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088 ,ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM,          Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM,          Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0 ,100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05 ,100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1 ,100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5 ,100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10 ,100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50 ,100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100 ,100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500 ,100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k ,100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM,          View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPLLOT
1065 /COM, *****
1066 /COM,          Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM,          Set view settings

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1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT, 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC, 1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG, 1, -.52088,ZS,
1079 /VCON,1, 25.000,
1080 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM, Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM, Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM, View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLOT
1131 FINISH
1132 /COM, *****
1133 /COM, Print time/temperature output at specific locations
1134 /POST26,
1135 /COM, *****
1136 /COM, *****
1137 /COM, * Waste Package Surface Temperatures *
1138 /COM, *****

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1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE(   WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE(   WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpside,
1147 NSOL,4,(NODE(      0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE(      0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE(      0.0, (0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE(      0.0, (0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWL),      0.0,      0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWL),      0.0, (WPLEN/2.0-WPWL))),TEMP,,swpside,
1164 NSOL,4,(NODE(0.0,      (WPRAD-WPWL),      0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0,      (WPRAD-WPWL), (WPLEN/2.0-WPWL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWL),      0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWL), (WPLEN/2.0-WPWL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE(      0.0,      0.0,      0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE(      0.0,      0.0, (WPLEN/2.0-WPWL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE(      0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE(      0.0, (DFCENT-DFRAD),      0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE(      0.0, (DFCENT-DFRAD),      (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE(      0.0, (DFCENT-DFRAD),      (WPSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfecent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE(      0.0,      YYY,      0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE(      0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE(      0.0,      YYY,      (WPSPC/2.0))),TEMP,,idfecent,
1199 NSOL,5,(NODE(      XXX,      YYY,      0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE(      XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE(      XXX,      YYY,      (WPSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpside = end of WP drift wall side surface

```

```

1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddfetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmidside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WSPSP/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,, dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,, dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WSPSP/2.0))),TEMP,, ddfetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *      1 meter Rock Temperatures      *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dfetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WSPSP/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,, 1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WSPSP/2.0))),TEMP,, 1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,, 1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WSPSP/2.0))),TEMP,, 1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *      3 meter Rock Temperatures      *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WSPSP/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,, 3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WSPSP/2.0))),TEMP,, 3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,, 3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WSPSP/2.0))),TEMP,, 3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *      Upper Rock Layer Interface Temperatures      *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *      Lower Rock Layer Interface Temperatures      *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHnvCHnz = center CHn1v and CHn1z interface

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```

1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL),          0.0)),TEMP,,dwnmodel,
1282 NSOL,5,(NODE( 0.0,(GSURF-393.5),          0.0)),TEMP,,TSw2TSw3,
1283 NSOL,6,(NODE( 0.0,(GSURF-409.3),          0.0)),TEMP,,TSw3CHnv,
1284 NSOL,7,(NODE( 0.0,(GSURF-414.5),          0.0)),TEMP,,CHnvCHnz,
1285 NSOL,7,(NODE( 0.0,(GSURF-518.5),          0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2),          0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM,          *****
1291 /COM,          End of batch input file
1292 /COM,          *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,1,

```


ABBREVIATION= RAS /show,,,0,
ABBREVIATION= ON /menu,on,
ABBREVIATION= OFF /menu,off,
ABBREVIATION= NVP /config,nvpag,512,
ABBREVIATION= QUIT /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

END start.ans

To start ANSYS menu:

type: x3d for console
x11 for X-term

type: on

ANSYS REVISION 5.0A 1/16/1995
3-D Model of Waste Package Drift Emplacement R.Bahney III

* *
* File name: c21h5a.inp *
* *
* 21 PWR WP/MPC (10 cm overpack) *
* Average SNF: 22 years old, 42.2 GWd/MTU burnup *
* 5.0 m Diameter Drift with Concrete Invert *
* 25 MTU/acre (6.18 kgU/m²) AML (Low Thermal Loading) *
* Drift spacing = 90.0 m (45.0 m model half width) *
* WP c/c spacing = 16.165 m *
* *
* Material Properties file: Proprep.dat *
* SNF Heat Loads file: snf2242.dat *
* *

Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

TITLE=

21 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
MASS = KILOGRAMS(KG)
TIME = SECONDS(SEC)
TEMPERATURE = CENTIGRADE
CURRENT = AMPS

Define emplacement parameters

WPRAD = radius of waste package (m)
DFRAD = radius of drift (m)
INVRT = height of invert backfill floor (m)
WPLEN = length of waste package (m)
WPWLL = thickness of outer barrier (m)
WSPC = waste package c/c spacing (m)
WPNUM = number of assemblies per WP
MODEL = model half width (m)
OFFST = WP center below drift center (m)

PARAMETER WPRAD = .9008000
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.682000
 PARAMETER WPWLL = .1000000
 PARAMETER WSPC = 16.16500
 PARAMETER WPNUM = 21.00000
 PARAMETER MODEL = 45.00000
 PARAMETER OFFST = .1370000

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1

PARAMETER GSURF = 308.6370
 PARAMETER DFCENT = .1370000
 PARAMETER XXX = 1.734935

```

PARAMETER YYY      =   -1.663000
PARAMETER WPVOL     =    11.04426
PARAMETER TM_START  =    31.55760
PARAMETER TM10      =    3155760.
PARAMETER TM11      =    .3155760E+08
PARAMETER TM110     =    .3155760E+09
PARAMETER TM1100    =    .3155760E+10
PARAMETER TM11000   =    .3155760E+11
PARAMETER TME0      =    .2840187E+08
PARAMETER TME1      =    .3155763E+08
PARAMETER TME9      =    .2840184E+09
PARAMETER TME10     =    .3155760E+09
PARAMETER TME90     =    .2840184E+10
PARAMETER TME100    =    .3155760E+10
PARAMETER TME1000   =    .3155760E+11
*****
          Define different element types
1

```

```

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT  VERSION=HP 9000/7XX  15:44:04 JAN 22, 1995 CP=      .760
FOR SUPPORT CALL BOB BAHNEY      PHONE (702) 794-5337  FAX
21 PWR MPC, 5 m Tunnel

```

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

```

ELEMENT TYPE      1 IS PLANE55      2-D THERMAL SOLID
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

```

CURRENT NODAL DOF SET IS TEMP
TWO-DIMENSIONAL MODEL

```

```

ELEMENT TYPE      2 IS SOLID70      3-D THERMAL SOLID
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

```

ELEMENT TYPE     16 IS SHELL57      THERMAL SHELL
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

```

ELEMENT TYPE     17 IS LINK32      2-D CONDUCTING BAR
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

```

ELEMENT TYPE     18 IS MATRIX50     SUBSTRUCTURE MATRIX
KEYOPT(1-12)=    1 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **
** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCw	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smearred Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **
** Emissivity EMIS **
** Conductivity: KXX (W/m/K) **
** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***
SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C	MAT= 4	NUM. POINTS= 8	
SLOC= 5	.1046900E+08	.1019840E+08	2006500. 2111400.
PROPERTY TABLE C	MAT= 4	NUM. POINTS= 11	
SLOC= 9	2191200.	2269200.	2341000.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 4	
SLOC= 1	1844300.	2031500.	2283100. 4559000.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 8	
SLOC= 5	4518800.	4480000.	2295300. 2448900.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 11	
SLOC= 9	2574000.	2679200.	2770200.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 4	
SLOC= 1	2443600.	2555700.	2696000. .3660130E+08
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 8	
SLOC= 5	.3532630E+08	.3417640E+08	1501300. 1601800.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 11	
SLOC= 9	1683600.	1752500.	1812000.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 4	
SLOC= 1	2603200.	2664700.	2744700. .3660690E+08
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 8	
SLOC= 5	.3534400E+08	.3420530E+08	2791400. 2741900.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 11	
SLOC= 9	2670700.	1581400.	1632000.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 4	
SLOC= 1	2430900.	2538500.	2680250. .2798690E+08
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 8	
SLOC= 5	.2705530E+08	.2621460E+08	2564400. 2593500.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 11	
SLOC= 9	2598500.	1981950.	2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
 SLOC= 1 21.11000 37.78000 65.56000
 93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
 SLOC= 7 176.6700 204.4400 232.2200
 260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
 SLOC= 13 343.3300 371.1100 398.8900
 426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
 SLOC= 19 510.0000 537.7800 565.5600

593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

 Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
 477.0000 467.8000

PARAMETER ASSY(13,1) = 459.2000 451.1000 443.5000 436.2000
429.3000 423.7000

PARAMETER ASSY(19,1) = 412.6000 404.5000 341.6000 294.1000
252.6000 222.0000

PARAMETER ASSY(25,1) = 198.5000 179.8000 162.5000 150.1000
139.7000 85.70000

PARAMETER ASSY(31,1) = 67.40000 56.80000 49.40000 42.90000
38.10000 34.30000

PARAMETER ASSY(37,1) = 31.30000 29.00000 15.50000 12.80000
11.10000 10.00000

PARAMETER ASSY(43,1) = 9.200000 8.600000 8.000000 7.600000
7.200000

PARAMETER ASSY(1,0) = .1000000E-05 .1000000 .2000000 .3000000
.4000000 .5000000

PARAMETER ASSY(7,0) = .6000000 .7000000 .8000000 .9000000
1.000000 2.000000

PARAMETER ASSY(13,0) = 3.000000 4.000000 5.000000 6.000000
7.000000 8.000000

PARAMETER ASSY(19,0) = 9.000000 10.00000 20.00000 30.00000
40.00000 50.00000

PARAMETER ASSY(25,0) = 60.00000 70.00000 80.00000 90.00000
100.0000 200.0000

PARAMETER ASSY(31,0) = 300.0000 400.0000 500.0000 600.0000
700.0000 800.0000

PARAMETER ASSY(37,0) = 900.0000 1000.000 2000.000 3000.000
4000.000 5000.000

PARAMETER ASSY(43,0) = 6000.000 7000.000 8000.000 9000.000
10000.00

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.9014
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
WPHOT(1) = COPY ASSY(1)
SCALE FACTORS RESULT= 1.9014 INPUT= 1.0000
VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000
PARAMETER WPTOP(0,1) = 1.000000
PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-45.0000	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	3	X,Y,Z=	45.0000	308.637	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	-45.0000	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	45.0000	272.637	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	-45.0000	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	45.0000	234.537	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	-45.0000	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	45.0000	104.437	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	-45.0000	45.1370	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.000000E+00	45.1370	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	45.0000	45.1370	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	-45.0000	.137000	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	45.0000	.137000	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	-45.0000	-44.8630	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.000000E+00	-44.8630	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	45.0000	-44.8630	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	-45.0000	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	45.0000	-84.8630	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	-45.0000	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	45.0000	-100.663	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	-45.0000	-105.863	.000000E+00	IN CSYS=	0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.863	.000000E+00	IN CSYS=	0

KEYPOINT 29 X,Y,Z= 45.0000 -105.863 .000000E+00 IN CSYS= 0
 KEYPOINT 30 X,Y,Z= -45.0000 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 31 X,Y,Z= .000000E+00 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 32 X,Y,Z= 45.0000 -209.863 .000000E+00 IN CSYS= 0
 KEYPOINT 33 X,Y,Z= -45.0000 -991.363 .000000E+00 IN CSYS= 0
 KEYPOINT 34 X,Y,Z= .000000E+00 -991.363 .000000E+00 IN CSYS= 0
 KEYPOINT 35 X,Y,Z= 45.0000 -991.363 .000000E+00 IN CSYS= 0

Define lines connecting rock layers
 (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS 1 2
 LINE NO.= 1 KP1= 1 TAN1= -1.0000 .0000 .0000
 KP2= 2 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 2 3
 LINE NO.= 2 KP1= 2 TAN1= -1.0000 .0000 .0000
 KP2= 3 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 4 5
 LINE NO.= 3 KP1= 4 TAN1= -1.0000 .0000 .0000
 KP2= 5 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 5 6
 LINE NO.= 4 KP1= 5 TAN1= -1.0000 .0000 .0000
 KP2= 6 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 7 8
 LINE NO.= 5 KP1= 7 TAN1= -1.0000 .0000 .0000
 KP2= 8 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 8 9
 LINE NO.= 6 KP1= 8 TAN1= -1.0000 .0000 .0000
 KP2= 9 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 10 11
 LINE NO.= 7 KP1= 10 TAN1= -1.0000 .0000 .0000
 KP2= 11 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 11 12
 LINE NO.= 8 KP1= 11 TAN1= -1.0000 .0000 .0000
 KP2= 12 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 13 14
 LINE NO.= 9 KP1= 13 TAN1= -1.0000 .0000 .0000
 KP2= 14 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 14 15
 LINE NO.= 10 KP1= 14 TAN1= -1.0000 .0000 .0000
 KP2= 15 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 18 19
 LINE NO.= 11 KP1= 18 TAN1= -1.0000 .0000 .0000
 KP2= 19 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 19 20
 LINE NO.= 12 KP1= 19 TAN1= -1.0000 .0000 .0000
 KP2= 20 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 21 22
 LINE NO.= 13 KP1= 21 TAN1= -1.0000 .0000 .0000
 KP2= 22 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.= 31	KP1= 9	TAN1= .0000	1.0000	.0000
	KP2= 12	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13				
LINE NO.= 32	KP1= 10	TAN1= .0000	1.0000	.0000
	KP2= 13	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14				
LINE NO.= 33	KP1= 11	TAN1= .0000	1.0000	.0000
	KP2= 14	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15				
LINE NO.= 34	KP1= 12	TAN1= .0000	1.0000	.0000
	KP2= 15	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16				
LINE NO.= 35	KP1= 13	TAN1= .0000	1.0000	.0000
	KP2= 16	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17				
LINE NO.= 36	KP1= 15	TAN1= .0000	1.0000	.0000
	KP2= 17	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18				
LINE NO.= 37	KP1= 16	TAN1= .0000	1.0000	.0000
	KP2= 18	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20				
LINE NO.= 38	KP1= 17	TAN1= .0000	1.0000	.0000
	KP2= 20	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21				
LINE NO.= 39	KP1= 18	TAN1= .0000	1.0000	.0000
	KP2= 21	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22				
LINE NO.= 40	KP1= 19	TAN1= .0000	1.0000	.0000
	KP2= 22	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23				
LINE NO.= 41	KP1= 20	TAN1= .0000	1.0000	.0000
	KP2= 23	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24				
LINE NO.= 42	KP1= 21	TAN1= .0000	1.0000	.0000
	KP2= 24	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25				
LINE NO.= 43	KP1= 22	TAN1= .0000	1.0000	.0000
	KP2= 25	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26				
LINE NO.= 44	KP1= 23	TAN1= .0000	1.0000	.0000
	KP2= 26	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27				
LINE NO.= 45	KP1= 24	TAN1= .0000	1.0000	.0000
	KP2= 27	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28				
LINE NO.= 46	KP1= 25	TAN1= .0000	1.0000	.0000
	KP2= 28	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29				
LINE NO.= 47	KP1= 26	TAN1= .0000	1.0000	.0000
	KP2= 29	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30				
LINE NO.= 48	KP1= 27	TAN1= .0000	1.0000	.0000
	KP2= 30	TAN2= .0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES

LINE LIST = 39 13 40 11
(TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES

LINE LIST = 40 14 41 12
(TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES

LINE LIST = 42 15 43 13
(TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES

LINE LIST = 43 13 44 14
(TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES

LINE LIST = 45 17 46 15
(TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES

LINE LIST = 46 18 47 16
(TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES

LINE LIST = 48 19 49 17
(TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES

LINE LIST = 49 20 50 18
(TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES

LINE LIST = 51 21 52 19
(TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES

LINE LIST = 52 22 53 20
(TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
(K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS=	0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.74100	IN CSYS=	0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.84100	IN CSYS=	0

```

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.74100 IN CSYS= 0
KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.84100 IN CSYS= 0
KEYPOINT 41 X,Y,Z= .000000E+00 .137000 .000000E+00 IN CSYS= 0
KEYPOINT 42 X,Y,Z= .000000E+00 .137000 8.08250 IN CSYS= 0
KEYPOINT 43 X,Y,Z= .000000E+00 .137000 -8.08250 IN CSYS= 0

```

Define extrude lines
(L's 54,55,56,57,58,59)

```

LINE CONNECTS KEYPOINTS 36 37
LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
              KP2= 37 TAN2= .0000 .0000 1.0000

```

```

LINE CONNECTS KEYPOINTS 37 38
LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
              KP2= 38 TAN2= .0000 .0000 1.0000

```

```

LINE CONNECTS KEYPOINTS 36 39
LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
              KP2= 39 TAN2= .0000 .0000 -1.0000

```

```

LINE CONNECTS KEYPOINTS 39 40
LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
              KP2= 40 TAN2= .0000 .0000 -1.0000

```

```

LINE CONNECTS KEYPOINTS 41 42
LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
              KP2= 42 TAN2= .0000 .0000 1.0000

```

```

LINE CONNECTS KEYPOINTS 41 43
LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
              KP2= 43 TAN2= .0000 .0000 -1.0000

```

Define arcs at WP, drift wall, 1 and 3 meter in rock
(K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
(58,60,61,62,63,64,65,66)
(L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
(76,77,78,79,80,81)

```

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .8008
AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
ARC = 360. NUMBER OF LINES = 4
LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
              KP2= 45 TAN2= .0000 1.0000 .0000
LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
              KP2= 46 TAN2= -1.0000 .0000 .0000
LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
              KP2= 47 TAN2= .0000 -1.0000 .0000
LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
              KP2= 44 TAN2= 1.0000 .0000 .0000

```

```

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .9008
AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
ARC = 360. NUMBER OF LINES = 4
LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
              KP2= 49 TAN2= .0000 1.0000 .0000
LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
              KP2= 50 TAN2= -1.0000 .0000 .0000
LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
              KP2= 51 TAN2= .0000 -1.0000 .0000
LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
              KP2= 48 TAN2= 1.0000 .0000 .0000

```

```

KEYPOINT 52 X,Y,Z= .000000E+00 -2.36300 .000000E+00 IN CSYS= 0
KEYPOINT 53 X,Y,Z= 1.73494 -1.66300 .000000E+00 IN CSYS= 0
KEYPOINT 54 X,Y,Z= 2.50000 .137000 .000000E+00 IN CSYS= 0

```


KEYPOINT 55 X,Y,Z= .000000E+00 2.63700 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .137000 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.66300 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.66300 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS		36	45			
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		36	46			
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000
		KP2=	46	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		36	47			
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		44	48			
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000
		KP2=	48	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		45	49			
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		46	50			
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000
		KP2=	50	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		47	51			
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		50	55			
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000
		KP2=	55	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		48	58			
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000
		KP2=	58	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		58	52			
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000
		KP2=	52	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		57	58			
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		58	53			
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		52	59			
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000
		KP2=	59	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		54	60			
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		55	61			
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000
		KP2=	61	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		56	62			
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		59	63			
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000
		KP2=	63	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		60	64			
LINE NO.=	100	KP1=	60	TAN1=	-1.0000	.0000

```

      KP2=    64 TAN2=    1.0000    .0000    .0000
LINE CONNECTS KEYPOINTS    61    65
LINE NO.=   101 KP1=    61 TAN1=    .0000   -1.0000    .0000
      KP2=    65 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    62    66
LINE NO.=   102 KP1=    62 TAN1=    1.0000    .0000    .0000
      KP2=    66 TAN2=   -1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    63    19
LINE NO.=   103 KP1=    63 TAN1=    .0000    1.0000    .0000
      KP2=    19 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS    64    17
LINE NO.=   104 KP1=    64 TAN1=   -1.0000    .0000    .0000
      KP2=    17 TAN2=    1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    65    14
LINE NO.=   105 KP1=    65 TAN1=    .0000   -1.0000    .0000
      KP2=    14 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    66    16
LINE NO.=   106 KP1=    66 TAN1=    1.0000    .0000    .0000
      KP2=    16 TAN2=   -1.0000    .0000    .0000

```

Define areas around drift
(A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
(35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
LINE LIST = 82 60 83
(TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
LINE LIST = 83 61 84
(TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
LINE LIST = 85 84 62
(TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
LINE LIST = 63 82 85
(TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
LINE LIST = 86 64 87 60
(TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
LINE LIST = 61 87 65 88
(TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
LINE LIST = 89 62 88 66
(TRAVERSED IN SAME DIRECTION AS LINE 89)

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES
LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4*6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1

1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1

10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide
(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO .38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 8, SPACING RATIO = 5.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 5.900

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 5.900

Set element sizes in rock layers
3 element thick TCW

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSW1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TS3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHn1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHn1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES
LINES = 36 10

COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14

CONCATENATE LINES

LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES

LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas

(first WP, then invert, DF wall and rock layers)

Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:

PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS

IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4

MAXIMUM NODE NUMBER = 121

MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS

IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4

MAXIMUM NODE NUMBER = 145

MAXIMUM ELEMENT NUMBER = 132

Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:

PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS

IN AREAS 27 TO 28 IN STEPS OF 1

** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2

MAXIMUM NODE NUMBER = 164

MAXIMUM ELEMENT NUMBER = 144

Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:

PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS

IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2

MAXIMUM NODE NUMBER = 218

MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS

IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 275
MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 395
MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
IN AREAS 37 TO 40 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 715
MAXIMUM ELEMENT NUMBER = 664

GENERATE NODES AND ELEMENTS
IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 799
MAXIMUM ELEMENT NUMBER = 736

TSw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 862
MAXIMUM ELEMENT NUMBER = 790

PIn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 883
MAXIMUM ELEMENT NUMBER = 808

TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 904
MAXIMUM ELEMENT NUMBER = 826

TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 925
MAXIMUM ELEMENT NUMBER = 844

CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 939
 MAXIMUM ELEMENT NUMBER = 856
 CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
 IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 988
 MAXIMUM ELEMENT NUMBER = 898
 CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
 IN AREAS 17 TO 18 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 1072
 MAXIMUM ELEMENT NUMBER = 970

Delete concatenated lines
 (L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
 (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 54,

DRAG AREAS
 23, 24, 25, 26,
 ALONG LINES
 54,

DRAG AREAS
 19, 20, 21, 22,

ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
56,

(plot area numbers before next drag commands)

DRAG AREAS
44, 47, 50, 52,
ALONG LINES
55,

DRAG AREAS
57, 61, 65, 68,
ALONG LINES
55,

DRAG AREAS
72, 75, 78, 80,
ALONG LINES
57,

DRAG AREAS
85, 89, 93, 96,
ALONG LINES
57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117
LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172

LINE 175 USED FOR LINE(S) 187
 LINE 176 USED FOR LINE(S) 193
 LINE 177 USED FOR LINE(S) 192
 LINE 179 USED FOR LINE(S) 194
 LINE 180 USED FOR LINE(S) 195
 LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1677
 MAXIMUM ELEMENT NUMBER = 1510

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1797
 MAXIMUM ELEMENT NUMBER = 1630

GENERATE NODES AND ELEMENTS
 IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 1942
 MAXIMUM ELEMENT NUMBER = 1762

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
 IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4

MAXIMUM NODE NUMBER = 2547
MAXIMUM ELEMENT NUMBER = 2302

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2667
MAXIMUM ELEMENT NUMBER = 2422

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2812
MAXIMUM ELEMENT NUMBER = 2554

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2907
MAXIMUM ELEMENT NUMBER = 2614
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3222
MAXIMUM ELEMENT NUMBER = 2814

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3387
MAXIMUM ELEMENT NUMBER = 2914

GENERATE NODES AND ELEMENTS

IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3552
MAXIMUM ELEMENT NUMBER = 3014

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3972
MAXIMUM ELEMENT NUMBER = 3314

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4192
MAXIMUM ELEMENT NUMBER = 3464

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4412
MAXIMUM ELEMENT NUMBER = 3614
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 28.100 TIME= 15:45:00
Meshing of volume 43 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3725 3726 3727 3728 3729 3730 3731 3732
3733 3734

*** WARNING *** CP= 29.110 TIME= 15:45:02
Meshing of volume 44 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
4325 4326 4327 4328 4329 4330 4331 4332
4333 4334

MAXIMUM NODE NUMBER = 5357
MAXIMUM ELEMENT NUMBER = 4414

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 30.270 TIME= 15:45:05
Meshing of volume 46 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
4450 4451 4452 4453 4454 4500 4501 4502
4503 4504

MAXIMUM NODE NUMBER = 5852
MAXIMUM ELEMENT NUMBER = 4814
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 30.450 TIME= 15:45:05
Meshing of area 197 produced 3 poorly shaped faces.

*** NOTE *** CP= 30.450 TIME= 15:45:05
Worst aspect ratio is 27.2313353 : 1.

*** WARNING *** CP= 31.730 TIME= 15:45:08
Meshing of volume 45 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
5101 5102 5109 5110 5117 5118 5125 5126
5133 5134

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 6347
MAXIMUM ELEMENT NUMBER = 5214

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS

Extrude rest of TSw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6837
MAXIMUM ELEMENT NUMBER = 5574
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7187
MAXIMUM ELEMENT NUMBER = 5844
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7327
MAXIMUM ELEMENT NUMBER = 5934
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7467
MAXIMUM ELEMENT NUMBER = 6024
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7607
MAXIMUM ELEMENT NUMBER = 6114
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7712
MAXIMUM ELEMENT NUMBER = 6174

Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7992
MAXIMUM ELEMENT NUMBER = 6384
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 36.410 TIME= 15:45:17
Meshing of volume 63 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

6430	6435	6436	6440	6441	6442	6490	6495
6496	6500	6501	6502	6550	6555	6556	6560
6561	6562						

*** WARNING *** CP= 36.860 TIME= 15:45:18
Meshing of volume 64 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

6610	6615	6616	6620	6621	6622	6670	6675
6676	6680	6681	6682	6730	6735	6736	6740
6741	6742						

MAXIMUM NODE NUMBER = 8447
MAXIMUM ELEMENT NUMBER = 6744

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 5899	USED FOR NODES	6384
NODE 5900	USED FOR NODES	6385
NODE 5901	USED FOR NODES	6386
NODE 5902	USED FOR NODES	6387
NODE 5359	USED FOR NODES	6593
NODE 7753	USED FOR NODES	8045
NODE 7754	USED FOR NODES	8046
NODE 7755	USED FOR NODES	8047
NODE 7756	USED FOR NODES	8048
NODE 6348	USED FOR NODES	6839
NODE 5898	USED FOR NODES	6349
NODE 6376	USED FOR NODES	6886
NODE 5358	USED FOR NODES	5853
NODE 7469	USED FOR NODES	7608
NODE 7609	USED FOR NODES	7713
NODE 7492	USED FOR NODES	7620
NODE 5457	USED FOR NODES	5854
NODE 5458	USED FOR NODES	5855
NODE 5459	USED FOR NODES	5856
NODE 5460	USED FOR NODES	5857
NODE 5461	USED FOR NODES	6621
NODE 5462	USED FOR NODES	6622
NODE 7493	USED FOR NODES	7621
NODE 5463	USED FOR NODES	6623

NODE	7494	USED FOR NODES	7622
NODE	7495	USED FOR NODES	7623
NODE	5464	USED FOR NODES	6624
NODE	6594	USED FOR NODES	7468
NODE	7628	USED FOR NODES	7745
NODE	7629	USED FOR NODES	7746
NODE	7630	USED FOR NODES	7747
NODE	7631	USED FOR NODES	7748
NODE	6377	USED FOR NODES	6887
NODE	7188	USED FOR NODES	7329
NODE	7204	USED FOR NODES	7352
NODE	6378	USED FOR NODES	6888
NODE	7205	USED FOR NODES	7353
NODE	6379	USED FOR NODES	6889
NODE	7714	USED FOR NODES	7993
NODE	7206	USED FOR NODES	7354
NODE	7207	USED FOR NODES	7355
NODE	6878	USED FOR NODES	7212
NODE	6879	USED FOR NODES	7213
NODE	6629	USED FOR NODES	7484
NODE	6630	USED FOR NODES	7485
NODE	6631	USED FOR NODES	7486
NODE	6632	USED FOR NODES	7487
NODE	6838	USED FOR NODES	7189
NODE	6880	USED FOR NODES	7214
NODE	6881	USED FOR NODES	7215
NODE	5597	USED FOR NODES	5894
NODE	5599	USED FOR NODES	5896
NODE	5598	USED FOR NODES	5895
NODE	5393	USED FOR NODES	5865
NODE	5600	USED FOR NODES	5897
NODE	5367	USED FOR NODES	6609
NODE	7722	USED FOR NODES	8021
NODE	6897	USED FOR NODES	7231
NODE	6392	USED FOR NODES	6902
NODE	6393	USED FOR NODES	6903
NODE	6394	USED FOR NODES	6904
NODE	6395	USED FOR NODES	6905
NODE	5479	USED FOR NODES	6639
NODE	5480	USED FOR NODES	6640
NODE	7769	USED FOR NODES	8061
NODE	7770	USED FOR NODES	8062
NODE	7771	USED FOR NODES	8063
NODE	7772	USED FOR NODES	8064
NODE	5940	USED FOR NODES	6400
NODE	5941	USED FOR NODES	6401
NODE	5942	USED FOR NODES	6402
NODE	5938	USED FOR NODES	6356
NODE	5943	USED FOR NODES	6403
NODE	7612	USED FOR NODES	7731
NODE	7473	USED FOR NODES	7616
NODE	5477	USED FOR NODES	6637
NODE	5478	USED FOR NODES	6638
NODE	6364	USED FOR NODES	6849
NODE	6645	USED FOR NODES	7500
NODE	6646	USED FOR NODES	7501
NODE	6647	USED FOR NODES	7502
NODE	6648	USED FOR NODES	7503
NODE	6860	USED FOR NODES	7193
NODE	7508	USED FOR NODES	7636
NODE	7509	USED FOR NODES	7637
NODE	7510	USED FOR NODES	7638
NODE	7511	USED FOR NODES	7639
NODE	7198	USED FOR NODES	7333
NODE	7644	USED FOR NODES	7761
NODE	7645	USED FOR NODES	7762
NODE	7646	USED FOR NODES	7763
NODE	7647	USED FOR NODES	7764
NODE	6601	USED FOR NODES	7478
NODE	7220	USED FOR NODES	7368

NODE	7221	USED FOR NODES	7369
NODE	6894	USED FOR NODES	7228
NODE	6895	USED FOR NODES	7229
NODE	6896	USED FOR NODES	7230
NODE	7222	USED FOR NODES	7370
NODE	7223	USED FOR NODES	7371
NODE	5596	USED FOR NODES	5893
NODE	5392	USED FOR NODES	5864
NODE	5593	USED FOR NODES	5890
NODE	5594	USED FOR NODES	5891
NODE	5595	USED FOR NODES	5892
NODE	5592	USED FOR NODES	5889
NODE	5590	USED FOR NODES	5887
NODE	5591	USED FOR NODES	5888
NODE	5391	USED FOR NODES	5863
NODE	5589	USED FOR NODES	5886
NODE	5585	USED FOR NODES	5882
NODE	5586	USED FOR NODES	5883
NODE	5390	USED FOR NODES	5862
NODE	5587	USED FOR NODES	5884
NODE	5588	USED FOR NODES	5885
NODE	7512	USED FOR NODES	7640
NODE	7513	USED FOR NODES	7641
NODE	7514	USED FOR NODES	7642
NODE	7515	USED FOR NODES	7643
NODE	7226	USED FOR NODES	7374
NODE	6399	USED FOR NODES	6909
NODE	7723	USED FOR NODES	8022
NODE	5368	USED FOR NODES	6610
NODE	6396	USED FOR NODES	6906
NODE	6397	USED FOR NODES	6907
NODE	6398	USED FOR NODES	6908
NODE	7773	USED FOR NODES	8065
NODE	7774	USED FOR NODES	8066
NODE	7775	USED FOR NODES	8067
NODE	7776	USED FOR NODES	8068
NODE	5481	USED FOR NODES	6641
NODE	6898	USED FOR NODES	7232
NODE	5939	USED FOR NODES	6357
NODE	7227	USED FOR NODES	7375
NODE	5944	USED FOR NODES	6404
NODE	5945	USED FOR NODES	6405
NODE	5946	USED FOR NODES	6406
NODE	7613	USED FOR NODES	7732
NODE	6899	USED FOR NODES	7233
NODE	7474	USED FOR NODES	7617
NODE	5947	USED FOR NODES	6407
NODE	5482	USED FOR NODES	6642
NODE	5483	USED FOR NODES	6643
NODE	5484	USED FOR NODES	6644
NODE	6365	USED FOR NODES	6850
NODE	6649	USED FOR NODES	7504
NODE	6650	USED FOR NODES	7505
NODE	6651	USED FOR NODES	7506
NODE	6652	USED FOR NODES	7507
NODE	7648	USED FOR NODES	7765
NODE	7649	USED FOR NODES	7766
NODE	7650	USED FOR NODES	7767
NODE	6900	USED FOR NODES	7234
NODE	6901	USED FOR NODES	7235
NODE	7199	USED FOR NODES	7334
NODE	7651	USED FOR NODES	7768
NODE	6861	USED FOR NODES	7194
NODE	6602	USED FOR NODES	7479
NODE	7224	USED FOR NODES	7372
NODE	7225	USED FOR NODES	7373
NODE	5581	USED FOR NODES	5878
NODE	5583	USED FOR NODES	5880
NODE	5584	USED FOR NODES	5881
NODE	5389	USED FOR NODES	5861

NODE	5582	USED FOR NODES	5879		
NODE	5580	USED FOR NODES	5877		
NODE	5388	USED FOR NODES	5860		
NODE	5577	USED FOR NODES	5874		
NODE	5578	USED FOR NODES	5875		
NODE	5579	USED FOR NODES	5876		
NODE	5387	USED FOR NODES	5859		
NODE	5573	USED FOR NODES	5870		
NODE	5574	USED FOR NODES	5871		
NODE	5575	USED FOR NODES	5872		
NODE	5576	USED FOR NODES	5873		
NODE	4030	USED FOR NODES	4195	5474	5867
NODE	3973	USED FOR NODES	4193	5377	5858
NODE	4029	USED FOR NODES	4194	5473	5866
NODE	4032	USED FOR NODES	4197	5476	5869
NODE	4031	USED FOR NODES	4196	5475	5868
NODE	4227	USED FOR NODES	6029		
NODE	4228	USED FOR NODES	6030		
NODE	4229	USED FOR NODES	6031		
NODE	4230	USED FOR NODES	6032		
NODE	4218	USED FOR NODES	5996		
NODE	4069	USED FOR NODES	5509		
NODE	4070	USED FOR NODES	5510		
NODE	4072	USED FOR NODES	5512		
NODE	3975	USED FOR NODES	5378		
NODE	4071	USED FOR NODES	5511		
NODE	4231	USED FOR NODES	6025		
NODE	4232	USED FOR NODES	6026		
NODE	4233	USED FOR NODES	6027		
NODE	4234	USED FOR NODES	6028		
NODE	4219	USED FOR NODES	5995		
NODE	4073	USED FOR NODES	5513		
NODE	4076	USED FOR NODES	5516		
NODE	3976	USED FOR NODES	5379		
NODE	4074	USED FOR NODES	5514		
NODE	4075	USED FOR NODES	5515		
NODE	4235	USED FOR NODES	6021		
NODE	4236	USED FOR NODES	6022		
NODE	4237	USED FOR NODES	6023		
NODE	4238	USED FOR NODES	6024		
NODE	4220	USED FOR NODES	5994		
NODE	4077	USED FOR NODES	5517		
NODE	4078	USED FOR NODES	5518		
NODE	3977	USED FOR NODES	5380		
NODE	4080	USED FOR NODES	5520		
NODE	4079	USED FOR NODES	5519		
NODE	4117	USED FOR NODES	4209		
NODE	4118	USED FOR NODES	4210		
NODE	3998	USED FOR NODES	4200		
NODE	4119	USED FOR NODES	4211		
NODE	4120	USED FOR NODES	4212		
NODE	4239	USED FOR NODES	6017		
NODE	4240	USED FOR NODES	6018		
NODE	4241	USED FOR NODES	6019		
NODE	4242	USED FOR NODES	6020		
NODE	4221	USED FOR NODES	5993		
NODE	3978	USED FOR NODES	5381		
NODE	4082	USED FOR NODES	5522		
NODE	4083	USED FOR NODES	5523		
NODE	4081	USED FOR NODES	5521		
NODE	4084	USED FOR NODES	5524		
NODE	4116	USED FOR NODES	4208		
NODE	4113	USED FOR NODES	4205		
NODE	3997	USED FOR NODES	4199		
NODE	4114	USED FOR NODES	4206		
NODE	4115	USED FOR NODES	4207		
NODE	4243	USED FOR NODES	6013		
NODE	4244	USED FOR NODES	6014		
NODE	4245	USED FOR NODES	6015		
NODE	4246	USED FOR NODES	6016		

NODE	4222	USED FOR NODES	5992		
NODE	3979	USED FOR NODES	5382		
NODE	4086	USED FOR NODES	5526		
NODE	4085	USED FOR NODES	5525		
NODE	4088	USED FOR NODES	5528		
NODE	4087	USED FOR NODES	5527		
NODE	3273	USED FOR NODES	3390	4022	4202
NODE	3274	USED FOR NODES	3391	4023	4203
NODE	3223	USED FOR NODES	3388	3987	4198
NODE	3275	USED FOR NODES	3392	4024	4204
NODE	3272	USED FOR NODES	3389	4021	4201
NODE	3417	USED FOR NODES	4319		
NODE	3418	USED FOR NODES	4320		
NODE	3419	USED FOR NODES	4321		
NODE	3420	USED FOR NODES	4322		
NODE	3408	USED FOR NODES	4286		
NODE	3310	USED FOR NODES	4035		
NODE	3308	USED FOR NODES	4033		
NODE	3309	USED FOR NODES	4034		
NODE	3311	USED FOR NODES	4036		
NODE	3225	USED FOR NODES	3988		
NODE	3421	USED FOR NODES	4315		
NODE	3422	USED FOR NODES	4316		
NODE	3423	USED FOR NODES	4317		
NODE	3424	USED FOR NODES	4318		
NODE	3409	USED FOR NODES	4285		
NODE	3226	USED FOR NODES	3989		
NODE	3312	USED FOR NODES	4037		
NODE	3313	USED FOR NODES	4038		
NODE	3315	USED FOR NODES	4040		
NODE	3314	USED FOR NODES	4039		
NODE	4247	USED FOR NODES	6009		
NODE	4248	USED FOR NODES	6010		
NODE	4249	USED FOR NODES	6011		
NODE	4250	USED FOR NODES	6012		
NODE	4223	USED FOR NODES	5991		
NODE	4089	USED FOR NODES	5529		
NODE	4090	USED FOR NODES	5530		
NODE	4091	USED FOR NODES	5531		
NODE	3980	USED FOR NODES	5383		
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NODE	7694	USED FOR NODES	7906
NODE	7695	USED FOR NODES	7907
NODE	7696	USED FOR NODES	7908
NODE	6518	USED FOR NODES	7085
NODE	6519	USED FOR NODES	7086
NODE	6520	USED FOR NODES	7087
NODE	7874	USED FOR NODES	8268
NODE	7913	USED FOR NODES	8300
NODE	7914	USED FOR NODES	8301
NODE	7915	USED FOR NODES	8302
NODE	7916	USED FOR NODES	8303
NODE	6735	USED FOR NODES	7555
NODE	7917	USED FOR NODES	8304
NODE	7918	USED FOR NODES	8305
NODE	7919	USED FOR NODES	8306
NODE	7920	USED FOR NODES	8307
NODE	6774	USED FOR NODES	7572
NODE	6775	USED FOR NODES	7573
NODE	6776	USED FOR NODES	7574
NODE	6777	USED FOR NODES	7575
NODE	4917	USED FOR NODES	6490
NODE	7580	USED FOR NODES	7689
NODE	7581	USED FOR NODES	7690
NODE	7582	USED FOR NODES	7691
NODE	7583	USED FOR NODES	7692
NODE	6498	USED FOR NODES	7040
NODE	4424	USED FOR NODES	6743
NODE	7275	USED FOR NODES	7410
NODE	5014	USED FOR NODES	6529
NODE	5015	USED FOR NODES	6530
NODE	5016	USED FOR NODES	6531
NODE	5017	USED FOR NODES	6532
NODE	7080	USED FOR NODES	7300
NODE	7081	USED FOR NODES	7301
NODE	7082	USED FOR NODES	7302
NODE	7292	USED FOR NODES	7440
NODE	7293	USED FOR NODES	7441
NODE	7083	USED FOR NODES	7303
NODE	7294	USED FOR NODES	7442
NODE	7670	USED FOR NODES	7884

NODE 7550 USED FOR NODES 7674
 NODE 4536 USED FOR NODES 6766
 NODE 4537 USED FOR NODES 6767
 NODE 4538 USED FOR NODES 6768
 NODE 4539 USED FOR NODES 6769
 NODE 7051 USED FOR NODES 7270
 NODE 7697 USED FOR NODES 7909
 NODE 7698 USED FOR NODES 7910
 NODE 7699 USED FOR NODES 7911
 NODE 7700 USED FOR NODES 7912
 NODE 6521 USED FOR NODES 7088
 NODE 6522 USED FOR NODES 7089
 NODE 6523 USED FOR NODES 7090
 NODE 6524 USED FOR NODES 7091
 NODE 7295 USED FOR NODES 7443
 NODE 7875 USED FOR NODES 8269
 NODE 6758 USED FOR NODES 7560
 NODE 6759 USED FOR NODES 7561
 NODE 6760 USED FOR NODES 7562
 NODE 6761 USED FOR NODES 7563
 NODE 7564 USED FOR NODES 7677
 NODE 7565 USED FOR NODES 7678
 NODE 7566 USED FOR NODES 7679
 NODE 7567 USED FOR NODES 7680
 NODE 4908 USED FOR NODES 6488
 NODE 7068 USED FOR NODES 7284
 NODE 6491 USED FOR NODES 7038
 NODE 7069 USED FOR NODES 7285
 NODE 7070 USED FOR NODES 7286
 NODE 5002 USED FOR NODES 6513
 NODE 5003 USED FOR NODES 6514
 NODE 5004 USED FOR NODES 6515
 NODE 5005 USED FOR NODES 6516
 NODE 6733 USED FOR NODES 7551
 NODE 4422 USED FOR NODES 6736
 NODE 7071 USED FOR NODES 7287
 NODE 4520 USED FOR NODES 6754
 NODE 4521 USED FOR NODES 6755
 NODE 4522 USED FOR NODES 6756
 NODE 4523 USED FOR NODES 6757
 NODE 6509 USED FOR NODES 7072
 NODE 6510 USED FOR NODES 7073
 NODE 6511 USED FOR NODES 7074
 NODE 6512 USED FOR NODES 7075
 NODE 7280 USED FOR NODES 7424
 NODE 7281 USED FOR NODES 7425
 NODE 7668 USED FOR NODES 7876
 NODE 7548 USED FOR NODES 7671
 NODE 7681 USED FOR NODES 7897
 NODE 7682 USED FOR NODES 7898
 NODE 7683 USED FOR NODES 7899
 NODE 7041 USED FOR NODES 7268
 NODE 7684 USED FOR NODES 7900
 NODE 7873 USED FOR NODES 8256
 NODE 7901 USED FOR NODES 8292
 NODE 7902 USED FOR NODES 8293
 NODE 7903 USED FOR NODES 8294
 NODE 7904 USED FOR NODES 8295
 NODE 7282 USED FOR NODES 7426
 NODE 7283 USED FOR NODES 7427
 NODE 7271 USED FOR NODES 7408

*** WARNING *** CP= 52.860 TIME= 15:45:48
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
 KEYPOINT 67 USED FOR KEYPOINT(S) 115
 KEYPOINT 72 USED FOR KEYPOINT(S) 78 114

KEYPOINT	76	USED FOR KEYPOINT(S)	89		
KEYPOINT	80	USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85	USED FOR KEYPOINT(S)	122		
KEYPOINT	91	USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93	USED FOR KEYPOINT(S)	104		
KEYPOINT	98	USED FOR KEYPOINT(S)	117		
KEYPOINT	101	USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120	USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121	USED FOR KEYPOINT(S)	137		
KEYPOINT	123	USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126	USED FOR KEYPOINT(S)	129	141	150
KEYPOINT	134	USED FOR KEYPOINT(S)	148	160	
KEYPOINT	135	USED FOR KEYPOINT(S)	162		
KEYPOINT	138	USED FOR KEYPOINT(S)	155		
KEYPOINT	139	USED FOR KEYPOINT(S)	144	153	
KEYPOINT	142	USED FOR KEYPOINT(S)	146		
KEYPOINT	143	USED FOR KEYPOINT(S)	152		
KEYPOINT	147	USED FOR KEYPOINT(S)	157		
KEYPOINT	151	USED FOR KEYPOINT(S)	164		
KEYPOINT	154	USED FOR KEYPOINT(S)	165		
KEYPOINT	156	USED FOR KEYPOINT(S)	167		
KEYPOINT	158	USED FOR KEYPOINT(S)	181		
KEYPOINT	159	USED FOR KEYPOINT(S)	184		
KEYPOINT	161	USED FOR KEYPOINT(S)	186		
KEYPOINT	163	USED FOR KEYPOINT(S)	170		
KEYPOINT	166	USED FOR KEYPOINT(S)	171		
KEYPOINT	168	USED FOR KEYPOINT(S)	173		
KEYPOINT	169	USED FOR KEYPOINT(S)	176		
KEYPOINT	172	USED FOR KEYPOINT(S)	177		
KEYPOINT	174	USED FOR KEYPOINT(S)	179		
KEYPOINT	182	USED FOR KEYPOINT(S)	187		
KEYPOINT	183	USED FOR KEYPOINT(S)	190		
KEYPOINT	185	USED FOR KEYPOINT(S)	192		
KEYPOINT	188	USED FOR KEYPOINT(S)	193		
KEYPOINT	189	USED FOR KEYPOINT(S)	196		
KEYPOINT	191	USED FOR KEYPOINT(S)	198		
KEYPOINT	194	USED FOR KEYPOINT(S)	199		
KEYPOINT	195	USED FOR KEYPOINT(S)	202		
KEYPOINT	197	USED FOR KEYPOINT(S)	204		
LINE	108	USED FOR LINE(S)	240		
LINE	121	USED FOR LINE(S)	241		
LINE	126	USED FOR LINE(S)	154	239	
LINE	134	USED FOR LINE(S)	174		
LINE	137	USED FOR LINE(S)	172		
LINE	141	USED FOR LINE(S)	238		
LINE	159	USED FOR LINE(S)	236	246	270
LINE	160	USED FOR LINE(S)	252		
LINE	161	USED FOR LINE(S)	251		
LINE	187	USED FOR LINE(S)	257		
LINE	192	USED FOR LINE(S)	220	256	264
LINE	193	USED FOR LINE(S)	225		
LINE	194	USED FOR LINE(S)	226		
LINE	200	USED FOR LINE(S)	244		
LINE	203	USED FOR LINE(S)	243		
LINE	205	USED FOR LINE(S)	233	259	272
LINE	207	USED FOR LINE(S)	265		
LINE	228	USED FOR LINE(S)	271		
LINE	245	USED FOR LINE(S)	269		
LINE	247	USED FOR LINE(S)	268	275	307
LINE	248	USED FOR LINE(S)	283		
LINE	249	USED FOR LINE(S)	282		
LINE	253	USED FOR LINE(S)	290		
LINE	254	USED FOR LINE(S)	262	289	299
LINE	255	USED FOR LINE(S)	263		
LINE	258	USED FOR LINE(S)	273		
LINE	260	USED FOR LINE(S)	267	292	309
LINE	261	USED FOR LINE(S)	300		
LINE	266	USED FOR LINE(S)	308		
LINE	274	USED FOR LINE(S)	306		
LINE	276	USED FOR LINE(S)	305	330	

LINE	277	USED FOR LINE(S)	336
LINE	278	USED FOR LINE(S)	335
LINE	285	USED FOR LINE(S)	320
LINE	286	USED FOR LINE(S)	319
LINE	287	USED FOR LINE(S)	297 315
LINE	288	USED FOR LINE(S)	298
LINE	291	USED FOR LINE(S)	310
LINE	293	USED FOR LINE(S)	302
LINE	295	USED FOR LINE(S)	313
LINE	296	USED FOR LINE(S)	314
LINE	303	USED FOR LINE(S)	325
LINE	304	USED FOR LINE(S)	331
LINE	312	USED FOR LINE(S)	339
LINE	317	USED FOR LINE(S)	341
LINE	318	USED FOR LINE(S)	340
LINE	322	USED FOR LINE(S)	346
LINE	323	USED FOR LINE(S)	345
LINE	326	USED FOR LINE(S)	377
LINE	327	USED FOR LINE(S)	383
LINE	328	USED FOR LINE(S)	382
LINE	332	USED FOR LINE(S)	388
LINE	333	USED FOR LINE(S)	387
LINE	338	USED FOR LINE(S)	352
LINE	343	USED FOR LINE(S)	354
LINE	344	USED FOR LINE(S)	353
LINE	348	USED FOR LINE(S)	359
LINE	349	USED FOR LINE(S)	358
LINE	351	USED FOR LINE(S)	365
LINE	356	USED FOR LINE(S)	367
LINE	357	USED FOR LINE(S)	366
LINE	361	USED FOR LINE(S)	372
LINE	362	USED FOR LINE(S)	371
LINE	378	USED FOR LINE(S)	390
LINE	379	USED FOR LINE(S)	396
LINE	380	USED FOR LINE(S)	395
LINE	384	USED FOR LINE(S)	401
LINE	385	USED FOR LINE(S)	400
LINE	391	USED FOR LINE(S)	403
LINE	392	USED FOR LINE(S)	409
LINE	393	USED FOR LINE(S)	408
LINE	397	USED FOR LINE(S)	414
LINE	398	USED FOR LINE(S)	413
LINE	404	USED FOR LINE(S)	416
LINE	405	USED FOR LINE(S)	422
LINE	406	USED FOR LINE(S)	421
LINE	410	USED FOR LINE(S)	427
LINE	411	USED FOR LINE(S)	426
AREA	56	USED FOR AREA(S)	161
AREA	84	USED FOR AREA(S)	123
AREA	95	USED FOR AREA(S)	160
AREA	112	USED FOR AREA(S)	168
AREA	142	USED FOR AREA(S)	172
AREA	148	USED FOR AREA(S)	156
AREA	154	USED FOR AREA(S)	163
AREA	155	USED FOR AREA(S)	177
AREA	159	USED FOR AREA(S)	181
AREA	165	USED FOR AREA(S)	180
AREA	166	USED FOR AREA(S)	188
AREA	170	USED FOR AREA(S)	193
AREA	171	USED FOR AREA(S)	176
AREA	174	USED FOR AREA(S)	182
AREA	175	USED FOR AREA(S)	199
AREA	179	USED FOR AREA(S)	204
AREA	184	USED FOR AREA(S)	203
AREA	185	USED FOR AREA(S)	223
AREA	191	USED FOR AREA(S)	212
AREA	192	USED FOR AREA(S)	198
AREA	195	USED FOR AREA(S)	205
AREA	197	USED FOR AREA(S)	208
AREA	202	USED FOR AREA(S)	219

AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
 27, 28,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 8542
 MAXIMUM ELEMENT NUMBER = 6804
 Rock around drift
 (V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
 29, 30,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 8857
 MAXIMUM ELEMENT NUMBER = 7004

ELEMENT TYPE SET TO 1

DRAG AREAS
 31,
 ALONG LINES
 59,

ELEMENT TYPE SET TO 2

DRAG AREAS
 32,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 9022
 MAXIMUM ELEMENT NUMBER = 7104

GENERATE NODES AND ELEMENTS
 IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 9187

MAXIMUM ELEMENT NUMBER = 7204

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9607
MAXIMUM ELEMENT NUMBER = 7504

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9827
MAXIMUM ELEMENT NUMBER = 7654

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 10047
MAXIMUM ELEMENT NUMBER = 7804
Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 62.330 TIME= 15:45:59
Meshing of volume 75 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
7915 7916 7917 7918 7919 7920 7921 7922
7923 7924

*** WARNING *** CP= 63.370 TIME= 15:46:00
Meshing of volume 76 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
8515 8516 8517 8518 8519 8520 8521 8522
8523 8524

MAXIMUM NODE NUMBER = 10992
MAXIMUM ELEMENT NUMBER = 8604

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS

40,
ALONG LINES
59,

*** WARNING *** CP= 64.580 TIME= 15:46:02
Meshing of volume 78 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
8640 8641 8642 8643 8644 8690 8691 8692
8693 8694

MAXIMUM NODE NUMBER = 11487
MAXIMUM ELEMENT NUMBER = 9004
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 64.760 TIME= 15:46:02
Meshing of area 311 produced 3 poorly shaped faces.

*** NOTE *** CP= 64.760 TIME= 15:46:02
Worst aspect ratio is 27.2313353 : 1.

*** WARNING *** CP= 66.040 TIME= 15:46:04
Meshing of volume 77 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
9315 9316 9317 9318 9319 9320 9321 9322
9323 9324

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 11982
MAXIMUM ELEMENT NUMBER = 9404

DELETE SELECTED LINES FROM 443 TO 443 BY 1
DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1
DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1
DELETED 1 AREAS
Extrude rest of TSw2
(V's 79,80,81,82)

DRAG AREAS

7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12472
MAXIMUM ELEMENT NUMBER = 9764
Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12822
MAXIMUM ELEMENT NUMBER = 10034
Extrude PTn
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12962
MAXIMUM ELEMENT NUMBER = 10124
Extrude TCw
(V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13102
MAXIMUM ELEMENT NUMBER = 10214
Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13242
MAXIMUM ELEMENT NUMBER = 10304
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13347
MAXIMUM ELEMENT NUMBER = 10364
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13627
MAXIMUM ELEMENT NUMBER = 10574
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 70.980 TIME= 15:46:11
Meshing of volume 95 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***
10620 10625 10626 10630 10631 10632 10680 10685
10686 10690 10691 10692 10740 10745 10746 10750
10751 10752

*** WARNING *** CP= 71.470 TIME= 15:46:12
Meshing of volume 96 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***
10800 10805 10806 10810 10811 10812 10860 10865
10866 10870 10871 10872 10920 10925 10926 10930
10931 10932

MAXIMUM NODE NUMBER = 14082
MAXIMUM ELEMENT NUMBER = 10934

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 12011 USED FOR NODES 12521
NODE 12012 USED FOR NODES 12522
NODE 12013 USED FOR NODES 12523
NODE 12014 USED FOR NODES 12524
NODE 13244 USED FOR NODES 13348
NODE 13349 USED FOR NODES 13628
NODE 11096 USED FOR NODES 12256
NODE 11097 USED FOR NODES 12257
NODE 11098 USED FOR NODES 12258
NODE 11099 USED FOR NODES 12259
NODE 12264 USED FOR NODES 13119
NODE 13263 USED FOR NODES 13380
NODE 13264 USED FOR NODES 13381
NODE 13265 USED FOR NODES 13382
NODE 13266 USED FOR NODES 13383
NODE 13388 USED FOR NODES 13680
NODE 13389 USED FOR NODES 13681
NODE 13390 USED FOR NODES 13682
NODE 13391 USED FOR NODES 13683
NODE 12265 USED FOR NODES 13120
NODE 13129 USED FOR NODES 13257
NODE 10993 USED FOR NODES 11488
NODE 11092 USED FOR NODES 11489
NODE 11093 USED FOR NODES 11490
NODE 11094 USED FOR NODES 11491
NODE 11095 USED FOR NODES 11492
NODE 12266 USED FOR NODES 13121
NODE 12267 USED FOR NODES 13122

NODE 13130	USED FOR NODES	13258
NODE 11533	USED FOR NODES	11984
NODE 11534	USED FOR NODES	12019
NODE 11535	USED FOR NODES	12020
NODE 11536	USED FOR NODES	12021
NODE 11537	USED FOR NODES	12022
NODE 10994	USED FOR NODES	12228
NODE 12823	USED FOR NODES	12964
NODE 12473	USED FOR NODES	12824
NODE 12229	USED FOR NODES	13103
NODE 12839	USED FOR NODES	12987
NODE 12840	USED FOR NODES	12988
NODE 12841	USED FOR NODES	12989
NODE 12842	USED FOR NODES	12990
NODE 12513	USED FOR NODES	12847
NODE 12514	USED FOR NODES	12848
NODE 12515	USED FOR NODES	12849
NODE 12516	USED FOR NODES	12850
NODE 13104	USED FOR NODES	13243
NODE 11983	USED FOR NODES	12474
NODE 13127	USED FOR NODES	13255
NODE 13128	USED FOR NODES	13256
NODE 11234	USED FOR NODES	11531
NODE 11232	USED FOR NODES	11529
NODE 11233	USED FOR NODES	11530
NODE 11028	USED FOR NODES	11500
NODE 11235	USED FOR NODES	11532
NODE 12529	USED FOR NODES	12863
NODE 12530	USED FOR NODES	12864
NODE 12531	USED FOR NODES	12865
NODE 12532	USED FOR NODES	12866
NODE 12027	USED FOR NODES	12537
NODE 12028	USED FOR NODES	12538
NODE 12029	USED FOR NODES	12539
NODE 12030	USED FOR NODES	12540
NODE 13357	USED FOR NODES	13656
NODE 12236	USED FOR NODES	13113
NODE 13247	USED FOR NODES	13366
NODE 13279	USED FOR NODES	13396
NODE 13280	USED FOR NODES	13397
NODE 13281	USED FOR NODES	13398
NODE 13282	USED FOR NODES	13399
NODE 13404	USED FOR NODES	13696
NODE 13405	USED FOR NODES	13697
NODE 13406	USED FOR NODES	13698
NODE 13407	USED FOR NODES	13699
NODE 11002	USED FOR NODES	12244
NODE 11112	USED FOR NODES	12272
NODE 11113	USED FOR NODES	12273
NODE 11114	USED FOR NODES	12274
NODE 11115	USED FOR NODES	12275
NODE 12280	USED FOR NODES	13135
NODE 12281	USED FOR NODES	13136
NODE 12282	USED FOR NODES	13137
NODE 12283	USED FOR NODES	13138
NODE 11573	USED FOR NODES	11991
NODE 11575	USED FOR NODES	12035
NODE 11576	USED FOR NODES	12036
NODE 12495	USED FOR NODES	12828
NODE 13143	USED FOR NODES	13271
NODE 13144	USED FOR NODES	13272
NODE 11577	USED FOR NODES	12037
NODE 11578	USED FOR NODES	12038
NODE 13145	USED FOR NODES	13273
NODE 13146	USED FOR NODES	13274
NODE 12833	USED FOR NODES	12968
NODE 12855	USED FOR NODES	13003
NODE 12856	USED FOR NODES	13004
NODE 12857	USED FOR NODES	13005
NODE 12858	USED FOR NODES	13006

NODE 11999	USED FOR NODES	12484
NODE 13108	USED FOR NODES	13251
NODE 11231	USED FOR NODES	11528
NODE 11027	USED FOR NODES	11499
NODE 11229	USED FOR NODES	11526
NODE 11230	USED FOR NODES	11527
NODE 11228	USED FOR NODES	11525
NODE 11225	USED FOR NODES	11522
NODE 11227	USED FOR NODES	11524
NODE 11026	USED FOR NODES	11498
NODE 11226	USED FOR NODES	11523
NODE 11224	USED FOR NODES	11521
NODE 11220	USED FOR NODES	11517
NODE 11221	USED FOR NODES	11518
NODE 11025	USED FOR NODES	11497
NODE 11222	USED FOR NODES	11519
NODE 11223	USED FOR NODES	11520
NODE 12533	USED FOR NODES	12867
NODE 12534	USED FOR NODES	12868
NODE 12535	USED FOR NODES	12869
NODE 12536	USED FOR NODES	12870
NODE 12031	USED FOR NODES	12541
NODE 12032	USED FOR NODES	12542
NODE 12033	USED FOR NODES	12543
NODE 12034	USED FOR NODES	12544
NODE 13147	USED FOR NODES	13275
NODE 13148	USED FOR NODES	13276
NODE 13358	USED FOR NODES	13657
NODE 13149	USED FOR NODES	13277
NODE 13150	USED FOR NODES	13278
NODE 13248	USED FOR NODES	13367
NODE 13283	USED FOR NODES	13400
NODE 13284	USED FOR NODES	13401
NODE 13285	USED FOR NODES	13402
NODE 13286	USED FOR NODES	13403
NODE 13408	USED FOR NODES	13700
NODE 13409	USED FOR NODES	13701
NODE 13410	USED FOR NODES	13702
NODE 13411	USED FOR NODES	13703
NODE 12237	USED FOR NODES	13114
NODE 11003	USED FOR NODES	12245
NODE 11116	USED FOR NODES	12276
NODE 11117	USED FOR NODES	12277
NODE 11118	USED FOR NODES	12278
NODE 11119	USED FOR NODES	12279
NODE 11574	USED FOR NODES	11992
NODE 12496	USED FOR NODES	12829
NODE 11579	USED FOR NODES	12039
NODE 11580	USED FOR NODES	12040
NODE 11581	USED FOR NODES	12041
NODE 11582	USED FOR NODES	12042
NODE 12284	USED FOR NODES	13139
NODE 12285	USED FOR NODES	13140
NODE 12286	USED FOR NODES	13141
NODE 12287	USED FOR NODES	13142
NODE 12834	USED FOR NODES	12969
NODE 12859	USED FOR NODES	13007
NODE 12860	USED FOR NODES	13008
NODE 12861	USED FOR NODES	13009
NODE 12862	USED FOR NODES	13010
NODE 12000	USED FOR NODES	12485
NODE 13109	USED FOR NODES	13252
NODE 11216	USED FOR NODES	11513
NODE 11218	USED FOR NODES	11515
NODE 11024	USED FOR NODES	11496
NODE 11217	USED FOR NODES	11514
NODE 11219	USED FOR NODES	11516
NODE 11215	USED FOR NODES	11512
NODE 11214	USED FOR NODES	11511
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NODE	9504	USED FOR NODES	10689
NODE	9412	USED FOR NODES	10564
NODE	9506	USED FOR NODES	10691
NODE	9505	USED FOR NODES	10690
NODE	9307	USED FOR NODES	10222
NODE	9306	USED FOR NODES	10221
NODE	9198	USED FOR NODES	10080
NODE	9304	USED FOR NODES	10219
NODE	9305	USED FOR NODES	10220
NODE	9503	USED FOR NODES	10688
NODE	9501	USED FOR NODES	10686
NODE	9502	USED FOR NODES	10687
NODE	9411	USED FOR NODES	10563
NODE	9500	USED FOR NODES	10685
NODE	9309	USED FOR NODES	10224
NODE	9310	USED FOR NODES	10225
NODE	9308	USED FOR NODES	10223
NODE	9311	USED FOR NODES	10226
NODE	9199	USED FOR NODES	10081
NODE	9496	USED FOR NODES	10681
NODE	9497	USED FOR NODES	10682
NODE	9498	USED FOR NODES	10683
NODE	9499	USED FOR NODES	10684
NODE	9410	USED FOR NODES	10562
NODE	9313	USED FOR NODES	10228
NODE	9314	USED FOR NODES	10229
NODE	9315	USED FOR NODES	10230
NODE	9200	USED FOR NODES	10082
NODE	9312	USED FOR NODES	10227
NODE	9495	USED FOR NODES	10680
NODE	9409	USED FOR NODES	10561
NODE	9494	USED FOR NODES	10679
NODE	9493	USED FOR NODES	10678
NODE	9492	USED FOR NODES	10677
NODE	9316	USED FOR NODES	10231
NODE	9318	USED FOR NODES	10233
NODE	9319	USED FOR NODES	10234
NODE	9317	USED FOR NODES	10232
NODE	9201	USED FOR NODES	10083
NODE	9244	USED FOR NODES	10163
NODE	9245	USED FOR NODES	10164
NODE	9246	USED FOR NODES	10165
NODE	9247	USED FOR NODES	10166
NODE	9192	USED FOR NODES	10067
NODE	13211	USED FOR NODES	13320
NODE	13212	USED FOR NODES	13321
NODE	13213	USED FOR NODES	13322
NODE	13214	USED FOR NODES	13323
NODE	13328	USED FOR NODES	13540
NODE	13329	USED FOR NODES	13541
NODE	13330	USED FOR NODES	13542
NODE	13331	USED FOR NODES	13543

NODE 10168	USED FOR NODES	12398
NODE 10169	USED FOR NODES	12399
NODE 12152	USED FOR NODES	12719
NODE 12153	USED FOR NODES	12720
NODE 12405	USED FOR NODES	13203
NODE 12406	USED FOR NODES	13204
NODE 12407	USED FOR NODES	13205
NODE 12408	USED FOR NODES	13206
NODE 10058	USED FOR NODES	12377
NODE 12132	USED FOR NODES	12674
NODE 10170	USED FOR NODES	12400
NODE 12154	USED FOR NODES	12721
NODE 12685	USED FOR NODES	12904
NODE 13509	USED FOR NODES	13903
NODE 13304	USED FOR NODES	13518
NODE 12711	USED FOR NODES	12931
NODE 12712	USED FOR NODES	12932
NODE 12713	USED FOR NODES	12933
NODE 12714	USED FOR NODES	12934
NODE 12155	USED FOR NODES	12722
NODE 13548	USED FOR NODES	13935
NODE 13549	USED FOR NODES	13936
NODE 13550	USED FOR NODES	13937
NODE 13551	USED FOR NODES	13938
NODE 10551	USED FOR NODES	12124
NODE 10645	USED FOR NODES	12160
NODE 10646	USED FOR NODES	12161
NODE 10647	USED FOR NODES	12162
NODE 10648	USED FOR NODES	12163
NODE 10167	USED FOR NODES	12397
NODE 12369	USED FOR NODES	13189
NODE 13184	USED FOR NODES	13308
NODE 12909	USED FOR NODES	13044
NODE 12923	USED FOR NODES	13071
NODE 12924	USED FOR NODES	13072
NODE 12925	USED FOR NODES	13073
NODE 12926	USED FOR NODES	13074
NODE 10652	USED FOR NODES	12167
NODE 13215	USED FOR NODES	13324
NODE 13216	USED FOR NODES	13325
NODE 13217	USED FOR NODES	13326
NODE 13218	USED FOR NODES	13327
NODE 13332	USED FOR NODES	13544
NODE 13333	USED FOR NODES	13545
NODE 13334	USED FOR NODES	13546
NODE 13335	USED FOR NODES	13547
NODE 12409	USED FOR NODES	13207
NODE 12410	USED FOR NODES	13208
NODE 12411	USED FOR NODES	13209
NODE 12412	USED FOR NODES	13210
NODE 10059	USED FOR NODES	12378
NODE 12133	USED FOR NODES	12675
NODE 10171	USED FOR NODES	12401
NODE 10172	USED FOR NODES	12402
NODE 10173	USED FOR NODES	12403
NODE 10174	USED FOR NODES	12404
NODE 12686	USED FOR NODES	12905
NODE 13510	USED FOR NODES	13904
NODE 13305	USED FOR NODES	13519
NODE 12715	USED FOR NODES	12935
NODE 12716	USED FOR NODES	12936
NODE 12717	USED FOR NODES	12937
NODE 12718	USED FOR NODES	12938
NODE 12156	USED FOR NODES	12723
NODE 12157	USED FOR NODES	12724
NODE 12158	USED FOR NODES	12725
NODE 12159	USED FOR NODES	12726
NODE 13552	USED FOR NODES	13939
NODE 13553	USED FOR NODES	13940
NODE 13554	USED FOR NODES	13941

NODE 13555 USED FOR NODES 13942
 NODE 10552 USED FOR NODES 12125
 NODE 10649 USED FOR NODES 12164
 NODE 10650 USED FOR NODES 12165
 NODE 10651 USED FOR NODES 12166
 NODE 13185 USED FOR NODES 13309
 NODE 12910 USED FOR NODES 13045
 NODE 12370 USED FOR NODES 13190
 NODE 12927 USED FOR NODES 13075
 NODE 12928 USED FOR NODES 13076
 NODE 12929 USED FOR NODES 13077
 NODE 12930 USED FOR NODES 13078
 NODE 13199 USED FOR NODES 13312
 NODE 13200 USED FOR NODES 13313
 NODE 13201 USED FOR NODES 13314
 NODE 13202 USED FOR NODES 13315
 NODE 13316 USED FOR NODES 13532
 NODE 13317 USED FOR NODES 13533
 NODE 13318 USED FOR NODES 13534
 NODE 13319 USED FOR NODES 13535
 NODE 12393 USED FOR NODES 13195
 NODE 12394 USED FOR NODES 13196
 NODE 12395 USED FOR NODES 13197
 NODE 12396 USED FOR NODES 13198
 NODE 12145 USED FOR NODES 12708
 NODE 12146 USED FOR NODES 12709
 NODE 12147 USED FOR NODES 12710
 NODE 10637 USED FOR NODES 12148
 NODE 10638 USED FOR NODES 12149
 NODE 10639 USED FOR NODES 12150
 NODE 10640 USED FOR NODES 12151
 NODE 12126 USED FOR NODES 12673
 NODE 12676 USED FOR NODES 12903
 NODE 12703 USED FOR NODES 12919
 NODE 12704 USED FOR NODES 12920
 NODE 12705 USED FOR NODES 12921
 NODE 12706 USED FOR NODES 12922
 NODE 12144 USED FOR NODES 12707
 NODE 13508 USED FOR NODES 13891
 NODE 13303 USED FOR NODES 13511
 NODE 13536 USED FOR NODES 13927
 NODE 13537 USED FOR NODES 13928
 NODE 13538 USED FOR NODES 13929
 NODE 13539 USED FOR NODES 13930
 NODE 10543 USED FOR NODES 12123
 NODE 10155 USED FOR NODES 12389
 NODE 10156 USED FOR NODES 12390
 NODE 10157 USED FOR NODES 12391
 NODE 10158 USED FOR NODES 12392
 NODE 12368 USED FOR NODES 13186
 NODE 13183 USED FOR NODES 13306
 NODE 12906 USED FOR NODES 13043
 NODE 12915 USED FOR NODES 13059
 NODE 12916 USED FOR NODES 13060
 NODE 12917 USED FOR NODES 13061
 NODE 12918 USED FOR NODES 13062
 NODE 10057 USED FOR NODES 12371

*** WARNING ***

CP= 115.380 TIME= 15:47:37

Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
 KEYPOINT 78 USED FOR KEYPOINT(S) 132
 KEYPOINT 89 USED FOR KEYPOINT(S) 106 131
 KEYPOINT 104 USED FOR KEYPOINT(S) 117
 KEYPOINT 111 USED FOR KEYPOINT(S) 130 137 157
 KEYPOINT 114 USED FOR KEYPOINT(S) 144
 KEYPOINT 119 USED FOR KEYPOINT(S) 127 146 152

KEYPOINT	122	USED FOR KEYPOINT(S)	128		
KEYPOINT	124	USED FOR KEYPOINT(S)	133		
KEYPOINT	125	USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140	USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141	USED FOR KEYPOINT(S)	170		
KEYPOINT	145	USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149	USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164	USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165	USED FOR KEYPOINT(S)	212		
KEYPOINT	171	USED FOR KEYPOINT(S)	205		
KEYPOINT	173	USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179	USED FOR KEYPOINT(S)	187		
KEYPOINT	181	USED FOR KEYPOINT(S)	199		
KEYPOINT	190	USED FOR KEYPOINT(S)	207		
KEYPOINT	198	USED FOR KEYPOINT(S)	214		
KEYPOINT	204	USED FOR KEYPOINT(S)	215		
KEYPOINT	206	USED FOR KEYPOINT(S)	217		
KEYPOINT	208	USED FOR KEYPOINT(S)	231		
KEYPOINT	209	USED FOR KEYPOINT(S)	234		
KEYPOINT	211	USED FOR KEYPOINT(S)	236		
KEYPOINT	213	USED FOR KEYPOINT(S)	220		
KEYPOINT	216	USED FOR KEYPOINT(S)	221		
KEYPOINT	218	USED FOR KEYPOINT(S)	223		
KEYPOINT	219	USED FOR KEYPOINT(S)	226		
KEYPOINT	222	USED FOR KEYPOINT(S)	227		
KEYPOINT	224	USED FOR KEYPOINT(S)	229		
KEYPOINT	232	USED FOR KEYPOINT(S)	237		
KEYPOINT	233	USED FOR KEYPOINT(S)	240		
KEYPOINT	235	USED FOR KEYPOINT(S)	242		
KEYPOINT	238	USED FOR KEYPOINT(S)	243		
KEYPOINT	239	USED FOR KEYPOINT(S)	246		
KEYPOINT	241	USED FOR KEYPOINT(S)	248		
KEYPOINT	244	USED FOR KEYPOINT(S)	249		
KEYPOINT	245	USED FOR KEYPOINT(S)	252		
KEYPOINT	247	USED FOR KEYPOINT(S)	254		
LINE	154	USED FOR LINE(S)	297		
LINE	172	USED FOR LINE(S)	298		
LINE	174	USED FOR LINE(S)	240	292	
LINE	233	USED FOR LINE(S)	257		
LINE	236	USED FOR LINE(S)	256		
LINE	239	USED FOR LINE(S)	290		
LINE	241	USED FOR LINE(S)	289	306	359
LINE	243	USED FOR LINE(S)	314		
LINE	244	USED FOR LINE(S)	313		
LINE	259	USED FOR LINE(S)	330		
LINE	262	USED FOR LINE(S)	271	325	345
LINE	263	USED FOR LINE(S)	272		
LINE	264	USED FOR LINE(S)	273		
LINE	267	USED FOR LINE(S)	302		
LINE	268	USED FOR LINE(S)	300		
LINE	269	USED FOR LINE(S)	283	335	366
LINE	270	USED FOR LINE(S)	346		
LINE	282	USED FOR LINE(S)	365		
LINE	305	USED FOR LINE(S)	358		
LINE	307	USED FOR LINE(S)	354	372	439
LINE	308	USED FOR LINE(S)	396		
LINE	309	USED FOR LINE(S)	395		
LINE	315	USED FOR LINE(S)	414		
LINE	319	USED FOR LINE(S)	340	413	431
LINE	320	USED FOR LINE(S)	341		
LINE	331	USED FOR LINE(S)	367		
LINE	336	USED FOR LINE(S)	353	421	441
LINE	339	USED FOR LINE(S)	432		
LINE	352	USED FOR LINE(S)	440		
LINE	371	USED FOR LINE(S)	438		
LINE	377	USED FOR LINE(S)	437	462	
LINE	382	USED FOR LINE(S)	468		
LINE	383	USED FOR LINE(S)	467		
LINE	401	USED FOR LINE(S)	452		
LINE	403	USED FOR LINE(S)	451		

LINE	408 USED FOR LINE(S)	429	447
LINE	409 USED FOR LINE(S)	430	
LINE	416 USED FOR LINE(S)	442	
LINE	422 USED FOR LINE(S)	434	
LINE	427 USED FOR LINE(S)	445	
LINE	428 USED FOR LINE(S)	446	
LINE	435 USED FOR LINE(S)	457	
LINE	436 USED FOR LINE(S)	463	
LINE	444 USED FOR LINE(S)	471	
LINE	449 USED FOR LINE(S)	473	
LINE	450 USED FOR LINE(S)	472	
LINE	454 USED FOR LINE(S)	478	
LINE	455 USED FOR LINE(S)	477	
LINE	458 USED FOR LINE(S)	509	
LINE	459 USED FOR LINE(S)	515	
LINE	460 USED FOR LINE(S)	514	
LINE	464 USED FOR LINE(S)	520	
LINE	465 USED FOR LINE(S)	519	
LINE	470 USED FOR LINE(S)	484	
LINE	475 USED FOR LINE(S)	486	
LINE	476 USED FOR LINE(S)	485	
LINE	480 USED FOR LINE(S)	491	
LINE	481 USED FOR LINE(S)	490	
LINE	483 USED FOR LINE(S)	497	
LINE	488 USED FOR LINE(S)	499	
LINE	489 USED FOR LINE(S)	498	
LINE	493 USED FOR LINE(S)	504	
LINE	494 USED FOR LINE(S)	503	
LINE	510 USED FOR LINE(S)	522	
LINE	511 USED FOR LINE(S)	528	
LINE	512 USED FOR LINE(S)	527	
LINE	516 USED FOR LINE(S)	533	
LINE	517 USED FOR LINE(S)	532	
LINE	523 USED FOR LINE(S)	535	
LINE	524 USED FOR LINE(S)	541	
LINE	525 USED FOR LINE(S)	540	
LINE	529 USED FOR LINE(S)	546	
LINE	530 USED FOR LINE(S)	545	
LINE	536 USED FOR LINE(S)	548	
LINE	537 USED FOR LINE(S)	554	
LINE	538 USED FOR LINE(S)	553	
LINE	542 USED FOR LINE(S)	559	
LINE	543 USED FOR LINE(S)	558	
AREA	123 USED FOR AREA(S)	230	
AREA	163 USED FOR AREA(S)	182	
AREA	176 USED FOR AREA(S)	226	
AREA	177 USED FOR AREA(S)	264	
AREA	193 USED FOR AREA(S)	282	
AREA	198 USED FOR AREA(S)	208	
AREA	204 USED FOR AREA(S)	239	
AREA	205 USED FOR AREA(S)	291	
AREA	223 USED FOR AREA(S)	295	
AREA	248 USED FOR AREA(S)	294	
AREA	255 USED FOR AREA(S)	302	
AREA	273 USED FOR AREA(S)	307	
AREA	277 USED FOR AREA(S)	290	
AREA	288 USED FOR AREA(S)	296	
AREA	289 USED FOR AREA(S)	313	
AREA	293 USED FOR AREA(S)	318	
AREA	298 USED FOR AREA(S)	317	
AREA	299 USED FOR AREA(S)	337	
AREA	305 USED FOR AREA(S)	326	
AREA	306 USED FOR AREA(S)	312	
AREA	309 USED FOR AREA(S)	319	
AREA	311 USED FOR AREA(S)	322	
AREA	316 USED FOR AREA(S)	333	
AREA	324 USED FOR AREA(S)	340	
AREA	328 USED FOR AREA(S)	344	
AREA	331 USED FOR AREA(S)	369	
AREA	335 USED FOR AREA(S)	373	

AREA 342 USED FOR AREA(S) 349
AREA 346 USED FOR AREA(S) 353
AREA 351 USED FOR AREA(S) 358
AREA 355 USED FOR AREA(S) 362
AREA 367 USED FOR AREA(S) 378
AREA 371 USED FOR AREA(S) 382
AREA 376 USED FOR AREA(S) 387
AREA 380 USED FOR AREA(S) 391
AREA 385 USED FOR AREA(S) 396
AREA 389 USED FOR AREA(S) 400

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 119.210 TIME= 15:47:45
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.220 TIME= 15:47:45
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.220 TIME= 15:47:45
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.230 TIME= 15:47:45
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.230 TIME= 15:47:45
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.250 TIME= 15:47:45
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.260 TIME= 15:47:45
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.270 TIME= 15:47:45
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.280 TIME= 15:47:45
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.280 TIME= 15:47:45
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.290 TIME= 15:47:45
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.300 TIME= 15:47:45
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.310 TIME= 15:47:45
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only

elements are deleted.

*** NOTE *** CP= 119.310 TIME= 15:47:45
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.310 TIME= 15:47:45
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.320 TIME= 15:47:45
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.330 TIME= 15:47:45
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.350 TIME= 15:47:45
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.360 TIME= 15:47:45
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.380 TIME= 15:47:45
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.390 TIME= 15:47:45
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.400 TIME= 15:47:45
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.410 TIME= 15:47:45
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.420 TIME= 15:47:45
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.420 TIME= 15:47:45
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.430 TIME= 15:47:45
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.430 TIME= 15:47:45
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.440 TIME= 15:47:45
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.440 TIME= 15:47:45
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.450 TIME= 15:47:45
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only
elements are deleted.

*** NOTE *** CP= 119.460 TIME= 15:47:45
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.470 TIME= 15:47:45
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.480 TIME= 15:47:46
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.490 TIME= 15:47:46
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.510 TIME= 15:47:46
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.520 TIME= 15:47:46
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.530 TIME= 15:47:46
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.560 TIME= 15:47:46
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.600 TIME= 15:47:46
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only elements are deleted.

*** NOTE *** CP= 119.630 TIME= 15:47:46
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 12082 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1
7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1
8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1
9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1
10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1
11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1
12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1
13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 12082 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

99 NODES (OF 12082 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 80
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

363 NODES (OF 12082 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 320

ALL SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=

IN RANGE 1 TO 14082 STEP 1

12082 NODES (OF 12082 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE ***

CP= 170.360 TIME= 15:49:10

Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 170.890

Generate super-element

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:49:11 JAN 22, 1995 CP= 170.890
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 10916 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

994 NODES (OF 12082 DEFINED) SELECTED FROM
952 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c21h5a.sub

*** WARNING *** CP= 171.460 TIME= 15:49:12
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 952 NUMBER OF NODES= 994
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11886 STEP 1

10916 ELEMENTS (OF 10916 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14082 STEP 1

12082 NODES (OF 12082 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2158.770

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:54:26 JAN 22, 1995 CP= 2158.770
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 11887 c21h5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 11887

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 11887
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 10917 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11887 STEP 1

9965 ELEMENTS (OF 9965 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2159.800

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 2159.810 TIME= 16:54:33
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.64 AND 308.64
KABS= 0. TOLERANCE= 1.54319

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 12082 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 14082 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.36 AND -991.36
KABS= 0. TOLERANCE= 4.95682

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 12082 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 14082 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14082 STEP 1

12082 NODES (OF 12082 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2162.860 TIME= 16:54:45
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:54:46 JAN 22, 1995 CP= 2162.870
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 2165.310 TIME= 16:54:49
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2165.320 TIME= 16:54:49
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER.1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPINGON
INITIAL NUMBER OF SUBSTEPS0
MAXIMUM NUMBER OF SUBSTEPS0
MINIMUM NUMBER OF SUBSTEPS1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONSNO
TRANSIENT (INERTIA) EFFECTSOFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS

PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .20293E+07

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.59280E-09	IXX = .4857E+12	IXX = .2802E+12
YC = -318.20	IYY = .1284E+10	IYY = .1284E+10
ZC = .19630E-15	IZZ = .4869E+12	IZZ = .2814E+12
	IXY = -.8960	IXY = -.5132
	IYZ = .1537E-07	IYZ = -.1114E-06
	IZX = -.1048E-07	IZX = -.1048E-07

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
2	.20293E+07

Range of element maximum matrix coefficients in global coordinates
 Maximum= 671.620379 at element 10630.
 Minimum= 6.196026003E-08 at element 11887.

*** WARNING *** CP= 2224.740 TIME= 16:56:47
 Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	9964	SOLID70	42.860	.004
18	1	MATRIX50	1.220	1.220

Time at end of element matrix formulation CP= 2224.74.

HT FLOW CONVERGENCE VALUE= 498.3 CRITERION= .4983

Estimated number of active DOF= 11928.
 Maximum wavefront= 1321.

Time at end of matrix triangularization CP= 2845.08.

Equation solver maximum pivot= 2391.5488 at node 1036 TEMP.

Equation solver minimum pivot= 0.949464133 at node 1214 TEMP.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05

HT FLOW CONVERGENCE VALUE= .1719 CRITERION= .1024E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3830E-02

HT FLOW CONVERGENCE VALUE= .8535E-05 CRITERION= .1024E-01 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	9964	SOLID70	28.590	.003
18	1	MATRIX50	1.630	1.630

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	9964	SOLID70	2.490	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2

*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 11928
R.M.S. WAVEFRONT SIZE = 521.3

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
15.828 MB WRITTEN ON ELEMENT MATRIX FILE: c21h5a.emat
8.969 MB WRITTEN ON ELEMENT SAVED DATA FILE: c21h5a.esav
39.531 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c21h5a.tri
.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c21h5a.dsub
7.797 MB WRITTEN ON RESULTS FILE: c21h5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 3627.050

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:43:20 JAN 22, 1995 CP= 3627.120
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.14140

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 3640.300

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 12082 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 14082 BY 1
REAL= 26.1414001 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14082 STEP 1

12082 NODES (OF 12082 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11887 STEP 1

9965 ELEMENTS (OF 9965 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP intial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:43:51 JAN 22, 1995 CP= 3641.240
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 3643.600 TIME= 17:43:56
This load step will be a static (steady-state) step.

*** NOTE *** CP= 3644.400 TIME= 17:43:57
The step data was checked and warning messages were found.
Please review output or errors file (c21h5a.err) for these warning
messages.

*** NOTE *** CP= 3644.400 TIME= 17:43:57
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:44:00 JAN 22, 1995 CP= 3644.900
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

```

LOAD STEP NUMBER. . . . . 2
TIME AT END OF THE LOAD STEP. . . . . .20000E-05
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 0
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 0
  MINIMUM NUMBER OF SUBSTEPS . . . . . 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS . . . . . OFF
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 293.1 CRITERION= .2932
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 151.0
HT FLOW CONVERGENCE VALUE= 143.4 CRITERION= .2932
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -9.222
HT FLOW CONVERGENCE VALUE= 7.129 CRITERION= .2932
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3531
HT FLOW CONVERGENCE VALUE= .9075E-01 CRITERION= .2932 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
    Release drift wall temperatures

```

```

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

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IN RANGE      181 TO      181 STEP      1
  9 AREAS (OF   364 DEFINED) SELECTED BY ASEL  COMMAND.

ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      199 TO      199 STEP      1
 10 AREAS (OF   364 DEFINED) SELECTED BY ASEL  COMMAND.

ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      212 TO      212 STEP      1
 11 AREAS (OF   364 DEFINED) SELECTED BY ASEL  COMMAND.

ALSO SELECT   FOR ITEM=AREA COMPONENT=
IN RANGE      235 TO      235 STEP      1
 12 AREAS (OF   364 DEFINED) SELECTED BY ASEL  COMMAND.

SELECT        ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES,   AND AT
              KEYPOINTS) RELATED TO SELECTED AREA SET.

 440 NODES (OF 12082 DEFINED) SELECTED FROM
 12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE         1 TO    14082 BY      1

NUMBER OF SPECIFIED CONSTRAINTS DELETED=      440

ALL SELECT    FOR ITEM=AREA COMPONENT=
IN RANGE      1 TO      401 STEP      1
 364 AREAS (OF   364 DEFINED) SELECTED BY ASEL  COMMAND.

ALL SELECT    FOR ITEM=NODE COMPONENT=
IN RANGE      1 TO    14082 STEP      1

12082 NODES (OF 12082 DEFINED) SELECTED BY NSEL  COMMAND.
*****
Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR  ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
  Time substep ranges from 10 sec to loadstep

USE    10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL  DOFS
FOR AUTOMATIC TIME STEPPING:
  USE    80 SUBSTEPS AS A MAXIMUM
  USE    4 SUBSTEPS AS A MINIMUM
  USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
  AS THE STARTING TIME STEP SIZE.
    Begin Transient
    Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM      FROM 31.558      TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT        FOR ITEM=MAT  COMPONENT=
IN RANGE      10 TO      10 STEP      1
  8 VOLUMES (OF   96 DEFINED) SELECTED BY VSEL  COMMAND.

SELECT        ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV  COMMAND.
```

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 925.430854 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 11887 STEP 1

9965 ELEMENTS (OF 9965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 4121.490 TIME= 18:06:44
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:06:44 JAN 22, 1995 CP= 4121.490
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
 TIME AT END OF THE LOAD STEP. 31.558
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 550.1 CRITERION= .2933
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9372E-04
 HT FLOW CONVERGENCE VALUE= .9740E-04 CRITERION= .6234 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
 *** TIME = .394472 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9694E-05 OSCILLATION LIMIT = .3824E-05
 *** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6235
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1874E-03
 HT FLOW CONVERGENCE VALUE= .1948E-03 CRITERION= .6234 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
 *** TIME = .788942 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9694E-05 OSCILLATION LIMIT = .3824E-05
 *** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6235

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5623E-03
 HT FLOW CONVERGENCE VALUE= .5844E-03 CRITERION= .6233 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
 *** TIME = 1.97235 TIME INC = 1.18341
 *** RESPONSE EIGENVALUE = .9693E-05 OSCILLATION LIMIT = .1147E-04
 *** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6234
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1687E-02
 HT FLOW CONVERGENCE VALUE= .1753E-02 CRITERION= .6233 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
 *** TIME = 5.52258 TIME INC = 3.55023
 *** RESPONSE EIGENVALUE = .9690E-05 OSCILLATION LIMIT = .3440E-04
 *** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6234
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3748E-02
 HT FLOW CONVERGENCE VALUE= .3895E-02 CRITERION= .6233 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
 *** TIME = 13.4120 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9683E-05 OSCILLATION LIMIT = .7640E-04
 *** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6234
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3747E-02
 HT FLOW CONVERGENCE VALUE= .3894E-02 CRITERION= .6232 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
 *** TIME = 21.3014 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9675E-05 OSCILLATION LIMIT = .7633E-04
 *** AUTO TIME STEP: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6233
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2435E-02
 HT FLOW CONVERGENCE VALUE= .2531E-02 CRITERION= .6232 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
 *** TIME = 26.4295 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9669E-05 OSCILLATION LIMIT = .4958E-04
 *** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6233
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2435E-02
 HT FLOW CONVERGENCE VALUE= .2530E-02 CRITERION= .6232 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
 *** TIME = 31.5576 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9664E-05 OSCILLATION LIMIT = .4956E-04

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 19:22:04 JAN 22, 1995 CP= 5952.550
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 1100. CRITERION= .6232
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 12.92
 HT FLOW CONVERGENCE VALUE= 13.04 CRITERION= .4625
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2798
 HT FLOW CONVERGENCE VALUE= .3799 CRITERION= .4619 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP      4  SUBSTEP      1  COMPLETED.    CUM ITER =    16
*** TIME = 39478.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .7907E-05  OSCILLATION LIMIT = .3119
*** AUTO STEP TIME: NEXT TIME INC = 39447.    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 736.5      CRITERION= .4797
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.380
    HT FLOW CONVERGENCE VALUE= 7.459      CRITERION= .4113
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1272
    HT FLOW CONVERGENCE VALUE= .2027      CRITERION= .4129    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      4  SUBSTEP      2  COMPLETED.    CUM ITER =    18
*** TIME = 78925.6      TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4755E-05  OSCILLATION LIMIT = .1876
*** AUTO TIME STEP: NEXT TIME INC = .10515E+06  INCREASED (FACTOR = 2.6656)

    HT FLOW CONVERGENCE VALUE= 622.6      CRITERION= .4421
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.590
    HT FLOW CONVERGENCE VALUE= 13.05      CRITERION= .3781
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3045
    HT FLOW CONVERGENCE VALUE= .5400      CRITERION= .3808
    EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1051E-01
    HT FLOW CONVERGENCE VALUE= .1334E-01  CRITERION= .3806    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP      4  SUBSTEP      3  COMPLETED.    CUM ITER =    21
*** TIME = 184075.      TIME INC = 105149.
*** RESPONSE EIGENVALUE = .2463E-05  OSCILLATION LIMIT = .2590
*** AUTO STEP TIME: NEXT TIME INC = .10515E+06  UNCHANGED

    HT FLOW CONVERGENCE VALUE= 536.1      CRITERION= .4134
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.179
    HT FLOW CONVERGENCE VALUE= 8.605      CRITERION= .3688
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1649
    HT FLOW CONVERGENCE VALUE= .3221      CRITERION= .3707    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      4  SUBSTEP      4  COMPLETED.    CUM ITER =    23
*** TIME = 289224.      TIME INC = 105149.
*** RESPONSE EIGENVALUE = .1228E-05  OSCILLATION LIMIT = .1292
*** AUTO TIME STEP: NEXT TIME INC = .31545E+06  INCREASED (FACTOR = 3.0000)

    HT FLOW CONVERGENCE VALUE= 502.4      CRITERION= .4010
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.952
    HT FLOW CONVERGENCE VALUE= 17.99      CRITERION= .3600
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4928
    HT FLOW CONVERGENCE VALUE= 1.012      CRITERION= .3623
    EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2942E-01
    HT FLOW CONVERGENCE VALUE= .5395E-01  CRITERION= .3621    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP      4  SUBSTEP      5  COMPLETED.    CUM ITER =    26
*** TIME = 604671.      TIME INC = 315447.
*** RESPONSE EIGENVALUE = .7448E-06  OSCILLATION LIMIT = .2349
*** AUTO STEP TIME: NEXT TIME INC = .31545E+06  UNCHANGED

    HT FLOW CONVERGENCE VALUE= 457.4      CRITERION= .3812
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.156
    HT FLOW CONVERGENCE VALUE= 11.42      CRITERION= .3550
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3056
    HT FLOW CONVERGENCE VALUE= .6502      CRITERION= .3564
    EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1774E-01
    HT FLOW CONVERGENCE VALUE= .3388E-01  CRITERION= .3562    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP      4  SUBSTEP      6  COMPLETED.    CUM ITER =    29
*** TIME = 920119.      TIME INC = 315447.
*** RESPONSE EIGENVALUE = .4666E-06  OSCILLATION LIMIT = .1472
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06  INCREASED (FACTOR = 2.5010)

    HT FLOW CONVERGENCE VALUE= 429.7      CRITERION= .3704
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 7.558
    HT FLOW CONVERGENCE VALUE= 19.66      CRITERION= .3516
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6641

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HT FLOW CONVERGENCE VALUE= 1.447 CRITERION= .3528
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5053E-01
HT FLOW CONVERGENCE VALUE= .1116 CRITERION= .3526 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 32
*** TIME = .170906E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3064E-06 OSCILLATION LIMIT = .2418
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 403.9 CRITERION= .3589
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.649
HT FLOW CONVERGENCE VALUE= 12.54 CRITERION= .3517
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4245
HT FLOW CONVERGENCE VALUE= .9403 CRITERION= .3523
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3024E-01
HT FLOW CONVERGENCE VALUE= .6833E-01 CRITERION= .3522 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 35
*** TIME = .249800E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1899E-06 OSCILLATION LIMIT = .1499
*** AUTO TIME STEP: NEXT TIME INC = .65779E+06 DECREASED (FACTOR = .8338)

HT FLOW CONVERGENCE VALUE= 402.1 CRITERION= .3581
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.916
HT FLOW CONVERGENCE VALUE= 8.174 CRITERION= .3538
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2620
HT FLOW CONVERGENCE VALUE= .5827 CRITERION= .3542
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1706E-01
HT FLOW CONVERGENCE VALUE= .3820E-01 CRITERION= .3542 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 38
*** TIME = .315579E+07 TIME INC = 657793.
*** RESPONSE EIGENVALUE = .1365E-06 OSCILLATION LIMIT = .8977E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 22:30:32 JAN 22, 1995 CP= 10444.470
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 405.2 CRITERION= .3577
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.402
HT FLOW CONVERGENCE VALUE= 6.813 CRITERION= .3544
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2165
HT FLOW CONVERGENCE VALUE= .4819 CRITERION= .3547
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1380E-01
HT FLOW CONVERGENCE VALUE= .3112E-01 CRITERION= .3546 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 41
*** TIME = .381358E+07 TIME INC = 657793.
*** RESPONSE EIGENVALUE = .1102E-06 OSCILLATION LIMIT = .7249E-01
*** AUTO STEP TIME: NEXT TIME INC = .65779E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 408.5 CRITERION= .3589
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.041
HT FLOW CONVERGENCE VALUE= 5.904 CRITERION= .3561
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1863
HT FLOW CONVERGENCE VALUE= .4149 CRITERION= .3563
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1166E-01
HT FLOW CONVERGENCE VALUE= .2639E-01 CRITERION= .3563 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 44
*** TIME = .447138E+07 TIME INC = 657793.
*** RESPONSE EIGENVALUE = .9292E-07 OSCILLATION LIMIT = .6112E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.1994)

HT FLOW CONVERGENCE VALUE= 411.4 CRITERION= .3587
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.130
 HT FLOW CONVERGENCE VALUE= 6.205 CRITERION= .3565
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2014
 HT FLOW CONVERGENCE VALUE= .4486 CRITERION= .3567
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1323E-01
 HT FLOW CONVERGENCE VALUE= .3054E-01 CRITERION= .3566 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 47
 *** TIME = .526032E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7994E-07 OSCILLATION LIMIT = .6306E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52562E+06 DECREASED (FACTOR = .6662)

HT FLOW CONVERGENCE VALUE= 414.6 CRITERION= .3600
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.291
 HT FLOW CONVERGENCE VALUE= 3.688 CRITERION= .3577
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1092
 HT FLOW CONVERGENCE VALUE= .2420 CRITERION= .3579 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 49
 *** TIME = .578593E+07 TIME INC = 525617.
 *** RESPONSE EIGENVALUE = .7092E-07 OSCILLATION LIMIT = .3728E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52562E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 416.5 CRITERION= .3597
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.209
 HT FLOW CONVERGENCE VALUE= 3.420 CRITERION= .3576
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1005
 HT FLOW CONVERGENCE VALUE= .2221 CRITERION= .3577 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 51
 *** TIME = .631155E+07 TIME INC = 525617.
 *** RESPONSE EIGENVALUE = .6532E-07 OSCILLATION LIMIT = .3433E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:19:18 JAN 23, 1995 CP= 12944.020
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 418.1 CRITERION= .3607
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.136
 HT FLOW CONVERGENCE VALUE= 3.184 CRITERION= .3587
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9350E-01
 HT FLOW CONVERGENCE VALUE= .2067 CRITERION= .3588 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 53
 *** TIME = .683717E+07 TIME INC = 525617.
 *** RESPONSE EIGENVALUE = .6050E-07 OSCILLATION LIMIT = .3180E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52562E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 419.6 CRITERION= .3602
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.073
 HT FLOW CONVERGENCE VALUE= 2.992 CRITERION= .3584
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8716E-01
 HT FLOW CONVERGENCE VALUE= .1921 CRITERION= .3585 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 55
 *** TIME = .736279E+07 TIME INC = 525617.
 *** RESPONSE EIGENVALUE = .5640E-07 OSCILLATION LIMIT = .2964E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5010)

HT FLOW CONVERGENCE VALUE= 420.9 CRITERION= .3611
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.508
 HT FLOW CONVERGENCE VALUE= 4.203 CRITERION= .3595
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1336

HT FLOW CONVERGENCE VALUE= .2956 CRITERION= .3596 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 57
 *** TIME = .815173E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .5197E-07 OSCILLATION LIMIT = .4100E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 422.6 CRITERION= .3607
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.401
 HT FLOW CONVERGENCE VALUE= 3.879 CRITERION= .3592
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1222
 HT FLOW CONVERGENCE VALUE= .2696 CRITERION= .3593 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 59
 *** TIME = .894067E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4756E-07 OSCILLATION LIMIT = .3752E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52665E+06 DECREASED (FACTOR = .6675)

HT FLOW CONVERGENCE VALUE= 423.9 CRITERION= .3616
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8838
 HT FLOW CONVERGENCE VALUE= 2.410 CRITERION= .3600
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6940E-01
 HT FLOW CONVERGENCE VALUE= .1522 CRITERION= .3601 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 61
 *** TIME = .946731E+07 TIME INC = 526646.
 *** RESPONSE EIGENVALUE = .4445E-07 OSCILLATION LIMIT = .2341E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:49:58 JAN 23, 1995 CP= 15014.470
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 424.6 CRITERION= .3611
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8466
 HT FLOW CONVERGENCE VALUE= 2.303 CRITERION= .3595
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6589E-01
 HT FLOW CONVERGENCE VALUE= .1441 CRITERION= .3596 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 63
 *** TIME = .999396E+07 TIME INC = 526646.
 *** RESPONSE EIGENVALUE = .4223E-07 OSCILLATION LIMIT = .2224E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52665E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 425.2 CRITERION= .3618
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8134
 HT FLOW CONVERGENCE VALUE= 2.205 CRITERION= .3603
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6309E-01
 HT FLOW CONVERGENCE VALUE= .1379 CRITERION= .3604 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 65
 *** TIME = .105206E+08 TIME INC = 526646.
 *** RESPONSE EIGENVALUE = .4022E-07 OSCILLATION LIMIT = .2118E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4980)

HT FLOW CONVERGENCE VALUE= 425.7 CRITERION= .3611
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.161
 HT FLOW CONVERGENCE VALUE= 3.158 CRITERION= .3598
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9800E-01
 HT FLOW CONVERGENCE VALUE= .2148 CRITERION= .3598 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 67
 *** TIME = .113095E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3794E-07 OSCILLATION LIMIT = .2993E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 426.4 CRITERION= .3618
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.099
 HT FLOW CONVERGENCE VALUE= 2.973 CRITERION= .3605
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9213E-01
 HT FLOW CONVERGENCE VALUE= .2016 CRITERION= .3605 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 69
 *** TIME = .120985E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3558E-07 OSCILLATION LIMIT = .2807E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52459E+06 DECREASED (FACTOR = .6649)

HT FLOW CONVERGENCE VALUE= 426.8 CRITERION= .3612
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6997
 HT FLOW CONVERGENCE VALUE= 1.873 CRITERION= .3598
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5270E-01
 HT FLOW CONVERGENCE VALUE= .1144 CRITERION= .3599 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 71
 *** TIME = .126231E+08 TIME INC = 524588.
 *** RESPONSE EIGENVALUE = .3391E-07 OSCILLATION LIMIT = .1779E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 03:15:33 JAN 23, 1995 CP= 17041.500
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 427.0 CRITERION= .3618
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6763
 HT FLOW CONVERGENCE VALUE= 1.804 CRITERION= .3605
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5090E-01
 HT FLOW CONVERGENCE VALUE= .1104 CRITERION= .3605 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 73
 *** TIME = .131477E+08 TIME INC = 524588.
 *** RESPONSE EIGENVALUE = .3262E-07 OSCILLATION LIMIT = .1711E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52459E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 427.2 CRITERION= .3611
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6549
 HT FLOW CONVERGENCE VALUE= 1.745 CRITERION= .3598
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4893E-01
 HT FLOW CONVERGENCE VALUE= .1059 CRITERION= .3598 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 75
 *** TIME = .136722E+08 TIME INC = 524588.
 *** RESPONSE EIGENVALUE = .3146E-07 OSCILLATION LIMIT = .1650E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5039)

HT FLOW CONVERGENCE VALUE= 427.3 CRITERION= .3616
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9464
 HT FLOW CONVERGENCE VALUE= 2.529 CRITERION= .3604
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7756E-01
 HT FLOW CONVERGENCE VALUE= .1686 CRITERION= .3604 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 77
 *** TIME = .144612E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3001E-07 OSCILLATION LIMIT = .2368E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 427.3 CRITERION= .3609
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9048
 HT FLOW CONVERGENCE VALUE= 2.412 CRITERION= .3597
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7344E-01
 HT FLOW CONVERGENCE VALUE= .1592 CRITERION= .3597 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 79
*** TIME = .152501E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2854E-07 OSCILLATION LIMIT = .2252E-01
*** AUTO TIME STEP: NEXT TIME INC = .52870E+06 DECREASED (FACTOR = .6701)
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HT FLOW CONVERGENCE VALUE= 427.3 CRITERION= .3614
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5852
HT FLOW CONVERGENCE VALUE= 1.541 CRITERION= .3602
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4307E-01
HT FLOW CONVERGENCE VALUE= .9280E-01 CRITERION= .3603 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 81
*** TIME = .157788E+08 TIME INC = 528704.
*** RESPONSE EIGENVALUE = .2749E-07 OSCILLATION LIMIT = .1453E-01
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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 04:39:19 JAN 23, 1995 CP= 19052.090
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 427.3 CRITERION= .3606
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5688
HT FLOW CONVERGENCE VALUE= 1.498 CRITERION= .3595
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4160E-01
HT FLOW CONVERGENCE VALUE= .8943E-01 CRITERION= .3595 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 83
*** TIME = .163075E+08 TIME INC = 528704.
*** RESPONSE EIGENVALUE = .2666E-07 OSCILLATION LIMIT = .1409E-01
*** AUTO STEP TIME: NEXT TIME INC = .52870E+06 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 427.2 CRITERION= .3612
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5536
HT FLOW CONVERGENCE VALUE= 1.454 CRITERION= .3600
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4048E-01
HT FLOW CONVERGENCE VALUE= .8699E-01 CRITERION= .3601 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 85
*** TIME = .168362E+08 TIME INC = 528704.
*** RESPONSE EIGENVALUE = .2585E-07 OSCILLATION LIMIT = .1367E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4922)
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HT FLOW CONVERGENCE VALUE= 427.1 CRITERION= .3603
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7987
HT FLOW CONVERGENCE VALUE= 2.110 CRITERION= .3593
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6363E-01
HT FLOW CONVERGENCE VALUE= .1371 CRITERION= .3593 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 87
*** TIME = .176252E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2486E-07 OSCILLATION LIMIT = .1961E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 426.9 CRITERION= .3608
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7691
HT FLOW CONVERGENCE VALUE= 2.024 CRITERION= .3597
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6105E-01
HT FLOW CONVERGENCE VALUE= .1314 CRITERION= .3597 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 89
*** TIME = .184141E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2384E-07 OSCILLATION LIMIT = .1880E-01
*** AUTO TIME STEP: NEXT TIME INC = .52047E+06 DECREASED (FACTOR = .6597)
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HT FLOW CONVERGENCE VALUE= 426.7    CRITERION= .3600
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4925
HT FLOW CONVERGENCE VALUE= 1.284    CRITERION= .3590
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3516E-01
HT FLOW CONVERGENCE VALUE= .7506E-01 CRITERION= .3590    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 91
*** TIME = .189346E+08 TIME INC = 520472.
*** RESPONSE EIGENVALUE = .2316E-07 OSCILLATION LIMIT = .1206E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 06:03:16 JAN 23, 1995 CP= 21066.510
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 426.5    CRITERION= .3605
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4807
HT FLOW CONVERGENCE VALUE= 1.250    CRITERION= .3595
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3435E-01
HT FLOW CONVERGENCE VALUE= .7332E-01 CRITERION= .3595    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 93
*** TIME = .194551E+08 TIME INC = 520472.
*** RESPONSE EIGENVALUE = .2256E-07 OSCILLATION LIMIT = .1174E-01
*** AUTO STEP TIME: NEXT TIME INC = .52047E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 426.3    CRITERION= .3597
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4697
HT FLOW CONVERGENCE VALUE= 1.223    CRITERION= .3587
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3338E-01
HT FLOW CONVERGENCE VALUE= .7107E-01 CRITERION= .3587    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 95
*** TIME = .199755E+08 TIME INC = 520472.
*** RESPONSE EIGENVALUE = .2202E-07 OSCILLATION LIMIT = .1146E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5158)

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HT FLOW CONVERGENCE VALUE= 426.1    CRITERION= .3601
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6914
HT FLOW CONVERGENCE VALUE= 1.806    CRITERION= .3592
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5407E-01
HT FLOW CONVERGENCE VALUE= .1157    CRITERION= .3592    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 97
*** TIME = .207645E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2125E-07 OSCILLATION LIMIT = .1676E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 425.8    CRITERION= .3593
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6689
HT FLOW CONVERGENCE VALUE= 1.750    CRITERION= .3583
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5338E-01
HT FLOW CONVERGENCE VALUE= .1126    CRITERION= .3583    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 99
*** TIME = .215534E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2052E-07 OSCILLATION LIMIT = .1619E-01
*** AUTO TIME STEP: NEXT TIME INC = .53694E+06 DECREASED (FACTOR = .6806)

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HT FLOW CONVERGENCE VALUE= 425.5    CRITERION= .3597
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4431
HT FLOW CONVERGENCE VALUE= 1.194    CRITERION= .3588
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3488E-01
HT FLOW CONVERGENCE VALUE= .7185E-01 CRITERION= .3588    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 101
 *** TIME = .220904E+08 TIME INC = 536937.
 *** RESPONSE EIGENVALUE = .2003E-07 OSCILLATION LIMIT = .1075E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:27:39 JAN 23, 1995 CP= 23081.580
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 425.2 CRITERION= .3589
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4328
 HT FLOW CONVERGENCE VALUE= 1.188 CRITERION= .3580
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3503E-01
 HT FLOW CONVERGENCE VALUE= .7134E-01 CRITERION= .3580 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 103
 *** TIME = .226273E+08 TIME INC = 536937.
 *** RESPONSE EIGENVALUE = .1960E-07 OSCILLATION LIMIT = .1052E-01
 *** AUTO STEP TIME: NEXT TIME INC = .53694E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 425.0 CRITERION= .3594
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4229
 HT FLOW CONVERGENCE VALUE= 1.185 CRITERION= .3585
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3499E-01
 HT FLOW CONVERGENCE VALUE= .7124E-01 CRITERION= .3585 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 105
 *** TIME = .231642E+08 TIME INC = 536937.
 *** RESPONSE EIGENVALUE = .1914E-07 OSCILLATION LIMIT = .1028E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4693)

HT FLOW CONVERGENCE VALUE= 424.7 CRITERION= .3586
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6037
 HT FLOW CONVERGENCE VALUE= 1.715 CRITERION= .3577
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5679E-01
 HT FLOW CONVERGENCE VALUE= .1144 CRITERION= .3577 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 107
 *** TIME = .239532E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1856E-07 OSCILLATION LIMIT = .1464E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 424.3 CRITERION= .3589
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5843
 HT FLOW CONVERGENCE VALUE= 1.630 CRITERION= .3581
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5565E-01
 HT FLOW CONVERGENCE VALUE= .1093 CRITERION= .3581 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 109
 *** TIME = .247421E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1795E-07 OSCILLATION LIMIT = .1416E-01
 *** AUTO TIME STEP: NEXT TIME INC = .50401E+06 DECREASED (FACTOR = .6388)

HT FLOW CONVERGENCE VALUE= 423.8 CRITERION= .3581
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3637
 HT FLOW CONVERGENCE VALUE= .9940 CRITERION= .3573
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2891E-01
 HT FLOW CONVERGENCE VALUE= .5555E-01 CRITERION= .3573 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 111
 *** TIME = .252461E+08 TIME INC = 504006.
 *** RESPONSE EIGENVALUE = .1760E-07 OSCILLATION LIMIT = .8872E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:51:47 JAN 23, 1995 CP= 25094.990
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 423.5 CRITERION= .3585
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3566
 HT FLOW CONVERGENCE VALUE= .9480 CRITERION= .3577
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2726E-01
 HT FLOW CONVERGENCE VALUE= .5293E-01 CRITERION= .3578 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 113
 *** TIME = .257501E+08 TIME INC = 504006.
 *** RESPONSE EIGENVALUE = .1723E-07 OSCILLATION LIMIT = .8683E-02
 *** AUTO STEP TIME: NEXT TIME INC = .50401E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 423.2 CRITERION= .3577
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3499.
 HT FLOW CONVERGENCE VALUE= .9091 CRITERION= .3570
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2570E-01
 HT FLOW CONVERGENCE VALUE= .5121E-01 CRITERION= .3570 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 115
 *** TIME = .262541E+08 TIME INC = 504006.
 *** RESPONSE EIGENVALUE = .1692E-07 OSCILLATION LIMIT = .8527E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5653)

HT FLOW CONVERGENCE VALUE= 422.9 CRITERION= .3581
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5348
 HT FLOW CONVERGENCE VALUE= 1.373 CRITERION= .3573
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4342E-01
 HT FLOW CONVERGENCE VALUE= .8899E-01 CRITERION= .3573 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 117
 *** TIME = .270431E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1637E-07 OSCILLATION LIMIT = .1292E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 422.4 CRITERION= .3572
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5201
 HT FLOW CONVERGENCE VALUE= 1.332 CRITERION= .3565
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4165E-01
 HT FLOW CONVERGENCE VALUE= .8396E-01 CRITERION= .3565 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 119
 *** TIME = .278320E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1591E-07 OSCILLATION LIMIT = .1255E-01
 *** AUTO TIME STEP: NEXT TIME INC = .56987E+06 DECREASED (FACTOR = .7223)

HT FLOW CONVERGENCE VALUE= 421.9 CRITERION= .3576
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3672
 HT FLOW CONVERGENCE VALUE= .9348 CRITERION= .3569
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2661E-01
 HT FLOW CONVERGENCE VALUE= .5328E-01 CRITERION= .3569 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 121
 *** TIME = .284019E+08 TIME INC = 569867.
 *** RESPONSE EIGENVALUE = .1559E-07 OSCILLATION LIMIT = .8882E-02
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
 TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
906.986869 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11887 STEP 1

9965 ELEMENTS (OF 9965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 27107.210 TIME= 10:15:46
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 10:15:47 JAN 23, 1995 CP= 27107.210
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
TIME AT END OF THE LOAD STEP.31558E+08
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 421.5 CRITERION= .3568
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3604
HT FLOW CONVERGENCE VALUE= .9200 CRITERION= .3561
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2588E-01
HT FLOW CONVERGENCE VALUE= .5217E-01 CRITERION= .3561 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 123
*** TIME = .289717E+08 TIME INC = 569867.
*** RESPONSE EIGENVALUE = .1529E-07 OSCILLATION LIMIT = .8716E-02
*** AUTO STEP TIME: NEXT TIME INC = .56987E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 421.2 CRITERION= .3572

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3539
HT FLOW CONVERGENCE VALUE= .9359 CRITERION= .3565
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2583E-01
HT FLOW CONVERGENCE VALUE= .5143E-01 CRITERION= .3565 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 125
*** TIME = .295416E+08 TIME INC = 569867.
*** RESPONSE EIGENVALUE = .1499E-07 OSCILLATION LIMIT = .8540E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3844)

HT FLOW CONVERGENCE VALUE= 420.8 CRITERION= .3564
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4794
HT FLOW CONVERGENCE VALUE= 1.303 CRITERION= .3557
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3884E-01
HT FLOW CONVERGENCE VALUE= .7568E-01 CRITERION= .3557 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 127
*** TIME = .303305E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1461E-07 OSCILLATION LIMIT = .1152E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 420.3 CRITERION= .3567
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4673
HT FLOW CONVERGENCE VALUE= 1.253 CRITERION= .3560
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3796E-01
HT FLOW CONVERGENCE VALUE= .7443E-01 CRITERION= .3560 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 129
*** TIME = .311195E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1423E-07 OSCILLATION LIMIT = .1123E-01
*** AUTO TIME STEP: NEXT TIME INC = .43815E+06 DECREASED (FACTOR = .5554)

HT FLOW CONVERGENCE VALUE= 419.8 CRITERION= .3559
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2545
HT FLOW CONVERGENCE VALUE= .6620 CRITERION= .3553
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1681E-01
HT FLOW CONVERGENCE VALUE= .3309E-01 CRITERION= .3553 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 131
*** TIME = .315576E+08 TIME INC = 438146.
*** RESPONSE EIGENVALUE = .1416E-07 OSCILLATION LIMIT = .6202E-02

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 11:12:14 JAN 23, 1995 CP= 29037.410
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 419.6 CRITERION= .3564
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2511
HT FLOW CONVERGENCE VALUE= .6409 CRITERION= .3557
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1632E-01
HT FLOW CONVERGENCE VALUE= .3263E-01 CRITERION= .3558 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 133
*** TIME = .319958E+08 TIME INC = 438146.
*** RESPONSE EIGENVALUE = .1393E-07 OSCILLATION LIMIT = .6102E-02
*** AUTO STEP TIME: NEXT TIME INC = .43815E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 419.3 CRITERION= .3556
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2479
HT FLOW CONVERGENCE VALUE= .6216 CRITERION= .3550
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1560E-01
HT FLOW CONVERGENCE VALUE= .3225E-01 CRITERION= .3550 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 135
*** TIME = .324339E+08 TIME INC = 438146.
*** RESPONSE EIGENVALUE = .1376E-07 OSCILLATION LIMIT = .6029E-02
*** AUTO TIME STEP: NEXT TIME INC = .13144E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 419.0 CRITERION= .3560
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7249
HT FLOW CONVERGENCE VALUE= 1.844 CRITERION= .3552
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5776E-01
HT FLOW CONVERGENCE VALUE= .1189 CRITERION= .3552 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 137
*** TIME = .337484E+08 TIME INC = .131444E+07
*** RESPONSE EIGENVALUE = .1316E-07 OSCILLATION LIMIT = .1730E-01
*** AUTO TIME STEP: NEXT TIME INC = .39433E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 418.2 CRITERION= .3546
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.037
HT FLOW CONVERGENCE VALUE= 5.475 CRITERION= .3536
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2323
HT FLOW CONVERGENCE VALUE= .4866 CRITERION= .3534
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1142E-01
HT FLOW CONVERGENCE VALUE= .2562E-01 CRITERION= .3534 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 140
*** TIME = .376917E+08 TIME INC = .394331E+07
*** RESPONSE EIGENVALUE = .1222E-07 OSCILLATION LIMIT = .4817E-01
*** AUTO STEP TIME: NEXT TIME INC = .39433E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 416.0 CRITERION= .3539
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.822
HT FLOW CONVERGENCE VALUE= 4.728 CRITERION= .3530
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1880
HT FLOW CONVERGENCE VALUE= .3944 CRITERION= .3528
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1108E-01
HT FLOW CONVERGENCE VALUE= .2481E-01 CRITERION= .3528 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 143
*** TIME = .416350E+08 TIME INC = .394331E+07
*** RESPONSE EIGENVALUE = .1103E-07 OSCILLATION LIMIT = .4348E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.0007)

HT FLOW CONVERGENCE VALUE= 413.8 CRITERION= .3515
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.196
HT FLOW CONVERGENCE VALUE= 8.218 CRITERION= .3504
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4022
HT FLOW CONVERGENCE VALUE= .9052 CRITERION= .3500
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2025E-01
HT FLOW CONVERGENCE VALUE= .4223E-01 CRITERION= .3499 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 146
*** TIME = .495244E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .9582E-08 OSCILLATION LIMIT = .7560E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 409.6 CRITERION= .3497
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.683
HT FLOW CONVERGENCE VALUE= 7.010 CRITERION= .3487
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3337
HT FLOW CONVERGENCE VALUE= .7354 CRITERION= .3483
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1333E-01
HT FLOW CONVERGENCE VALUE= .2828E-01 CRITERION= .3483 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 149
*** TIME = .574138E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .8162E-08 OSCILLATION LIMIT = .6440E-01
*** AUTO TIME STEP: NEXT TIME INC = .57014E+07 DECREASED (FACTOR = .7227)

HT FLOW CONVERGENCE VALUE= 405.6 CRITERION= .3471

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.679
HT FLOW CONVERGENCE VALUE= 4.273 CRITERION= .3463
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1895
HT FLOW CONVERGENCE VALUE= .3847 CRITERION= .3461
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6182E-02
HT FLOW CONVERGENCE VALUE= .1342E-01 CRITERION= .3460 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 152
*** TIME = .631152E+08 TIME INC = .570144E+07
*** RESPONSE EIGENVALUE = .7250E-08 OSCILLATION LIMIT = .4134E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:35:12 JAN 23, 1995 CP= 32779.400
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 402.8 CRITERION= .3461
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.511
HT FLOW CONVERGENCE VALUE= 4.033 CRITERION= .3453
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1684
HT FLOW CONVERGENCE VALUE= .3538 CRITERION= .3451
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5057E-02
HT FLOW CONVERGENCE VALUE= .1120E-01 CRITERION= .3451 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 155
*** TIME = .688167E+08 TIME INC = .570144E+07
*** RESPONSE EIGENVALUE = .6603E-08 OSCILLATION LIMIT = .3765E-01
*** AUTO STEP TIME: NEXT TIME INC = .57014E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 400.0 CRITERION= .3440
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.376
HT FLOW CONVERGENCE VALUE= 4.041 CRITERION= .3432
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1454
HT FLOW CONVERGENCE VALUE= .3089 CRITERION= .3430 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 157
*** TIME = .745181E+08 TIME INC = .570144E+07
*** RESPONSE EIGENVALUE = .6062E-08 OSCILLATION LIMIT = .3456E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3838)

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HT FLOW CONVERGENCE VALUE= 397.5 CRITERION= .3428
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.731
HT FLOW CONVERGENCE VALUE= 4.950 CRITERION= .3419
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1809
HT FLOW CONVERGENCE VALUE= .3825 CRITERION= .3417
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8777E-02
HT FLOW CONVERGENCE VALUE= .1599E-01 CRITERION= .3416 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 160
*** TIME = .824075E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .5538E-08 OSCILLATION LIMIT = .4369E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 394.3 CRITERION= .3402
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.555
HT FLOW CONVERGENCE VALUE= 4.863 CRITERION= .3394
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1616
HT FLOW CONVERGENCE VALUE= .3581 CRITERION= .3392
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7150E-02
HT FLOW CONVERGENCE VALUE= .1291E-01 CRITERION= .3391 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 163
*** TIME = .902969E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .5044E-08 OSCILLATION LIMIT = .3979E-01
*** AUTO TIME STEP: NEXT TIME INC = .43759E+07 DECREASED (FACTOR = .5547)

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HT FLOW CONVERGENCE VALUE= 391.3      CRITERION= .3393
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7925
HT FLOW CONVERGENCE VALUE= 2.645      CRITERION= .3388
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6988E-01
HT FLOW CONVERGENCE VALUE= .1459      CRITERION= .3387 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 165
*** TIME = .946728E+08 TIME INC = .437591E+07
*** RESPONSE EIGENVALUE = .4735E-08 OSCILLATION LIMIT = .2072E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:25:40 JAN 23, 1995 CP= 35103.970
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 389.8      CRITERION= .3377
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7510
HT FLOW CONVERGENCE VALUE= 2.203      CRITERION= .3372
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6217E-01
HT FLOW CONVERGENCE VALUE= .1246      CRITERION= .3371 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 167
*** TIME = .990487E+08 TIME INC = .437591E+07
*** RESPONSE EIGENVALUE = .4522E-08 OSCILLATION LIMIT = .1979E-01
*** AUTO STEP TIME: NEXT TIME INC = .43759E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 388.3      CRITERION= .3373
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7147
HT FLOW CONVERGENCE VALUE= 2.003      CRITERION= .3369
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5885E-01
HT FLOW CONVERGENCE VALUE= .1134      CRITERION= .3368 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 169
*** TIME = .103425E+09 TIME INC = .437591E+07
*** RESPONSE EIGENVALUE = .4320E-08 OSCILLATION LIMIT = .1890E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8029)

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HT FLOW CONVERGENCE VALUE= 386.9      CRITERION= .3353
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.211
HT FLOW CONVERGENCE VALUE= 3.415      CRITERION= .3347
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1091
HT FLOW CONVERGENCE VALUE= .2244      CRITERION= .3345 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 171
*** TIME = .111314E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .4067E-08 OSCILLATION LIMIT = .3209E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 384.6      CRITERION= .3343
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.126
HT FLOW CONVERGENCE VALUE= 3.236      CRITERION= .3337
EQUIL ITER 2 COMPLETE). NEW TRIANG MATRIX. MAX DOF INC= -.1005
HT FLOW CONVERGENCE VALUE= .1955      CRITERION= .3335 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 173
*** TIME = .119203E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .3798E-08 OSCILLATION LIMIT = .2997E-01
*** AUTO TIME STEP: NEXT TIME INC = .70270E+07 DECREASED (FACTOR = .8907)

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HT FLOW CONVERGENCE VALUE= 382.5      CRITERION= .3321
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9342
HT FLOW CONVERGENCE VALUE= 2.734      CRITERION= .3317
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8351E-01
HT FLOW CONVERGENCE VALUE= .1710      CRITERION= .3315 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 175
*** TIME = .126230E+09 TIME INC = .702697E+07
*** RESPONSE EIGENVALUE = .3604E-08 OSCILLATION LIMIT = .2532E-01
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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:10:32 JAN 23, 1995 CP= 37008.570
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 380.7 CRITERION= .3314
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8749
HT FLOW CONVERGENCE VALUE= 2.512 CRITERION= .3310
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7536E-01
HT FLOW CONVERGENCE VALUE= .1534 CRITERION= .3308 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 177
*** TIME = .133257E+09 TIME INC = .702697E+07
*** RESPONSE EIGENVALUE = .3397E-08 OSCILLATION LIMIT = .2387E-01
*** AUTO STEP TIME: NEXT TIME INC = .70270E+07 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 379.0 CRITERION= .3295
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8260
HT FLOW CONVERGENCE VALUE= 2.421 CRITERION= .3291
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6435E-01
HT FLOW CONVERGENCE VALUE= .1270 CRITERION= .3290 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 179
*** TIME = .140284E+09 TIME INC = .702697E+07
*** RESPONSE EIGENVALUE = .3229E-08 OSCILLATION LIMIT = .2269E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1227)
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HT FLOW CONVERGENCE VALUE= 377.5 CRITERION= .3287
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8759
HT FLOW CONVERGENCE VALUE= 2.503 CRITERION= .3283
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6983E-01
HT FLOW CONVERGENCE VALUE= .1415 CRITERION= .3282 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 181
*** TIME = .148174E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .3062E-08 OSCILLATION LIMIT = .2416E-01
*** AUTO TIME STEP: NEXT TIME INC = .48071E+07 DECREASED (FACTOR = .6093)
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HT FLOW CONVERGENCE VALUE= 375.9 CRITERION= .3271
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5065
HT FLOW CONVERGENCE VALUE= 1.358 CRITERION= .3268
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3695E-01
HT FLOW CONVERGENCE VALUE= .7051E-01 CRITERION= .3267 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 183
*** TIME = .152981E+09 TIME INC = .480713E+07
*** RESPONSE EIGENVALUE = .2965E-08 OSCILLATION LIMIT = .1425E-01
*** AUTO STEP TIME: NEXT TIME INC = .48071E+07 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 375.0 CRITERION= .3268
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4894
HT FLOW CONVERGENCE VALUE= 1.246 CRITERION= .3266
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3509E-01
HT FLOW CONVERGENCE VALUE= .6745E-01 CRITERION= .3265 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 185
*** TIME = .157788E+09 TIME INC = .480713E+07
*** RESPONSE EIGENVALUE = .2865E-08 OSCILLATION LIMIT = .1377E-01
```

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 14:53:13 JAN 23, 1995 CP= 38909.360
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 374.1 CRITERION= .3254
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4743
 HT FLOW CONVERGENCE VALUE= 1.202 CRITERION= .3252
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3248E-01
 HT FLOW CONVERGENCE VALUE= .6111E-01 CRITERION= .3251 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 187
 *** TIME = .162595E+09 TIME INC = .480713E+07
 *** RESPONSE EIGENVALUE = .2769E-08 OSCILLATION LIMIT = .1331E-01
 *** AUTO STEP TIME: NEXT TIME INC = .48071E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 373.3 CRITERION= .3252
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4603
 HT FLOW CONVERGENCE VALUE= 1.199 CRITERION= .3250
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3110E-01
 HT FLOW CONVERGENCE VALUE= .5762E-01 CRITERION= .3250 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 189
 *** TIME = .167402E+09 TIME INC = .480713E+07
 *** RESPONSE EIGENVALUE = .2672E-08 OSCILLATION LIMIT = .1285E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6412)

HT FLOW CONVERGENCE VALUE= 372.5 CRITERION= .3235
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7259
 HT FLOW CONVERGENCE VALUE= 1.878 CRITERION= .3232
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5383E-01
 HT FLOW CONVERGENCE VALUE= .1027 CRITERION= .3231 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 191
 *** TIME = .175292E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2578E-08 OSCILLATION LIMIT = .2034E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 371.2 CRITERION= .3229
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6894
 HT FLOW CONVERGENCE VALUE= 1.847 CRITERION= .3226
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5225E-01
 HT FLOW CONVERGENCE VALUE= .1019 CRITERION= .3225 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 193
 *** TIME = .183181E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2469E-08 OSCILLATION LIMIT = .1948E-01
 *** AUTO TIME STEP: NEXT TIME INC = .61645E+07 DECREASED (FACTOR = .7814)

HT FLOW CONVERGENCE VALUE= 370.0 CRITERION= .3212
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5143
 HT FLOW CONVERGENCE VALUE= 1.314 CRITERION= .3210
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3559E-01
 HT FLOW CONVERGENCE VALUE= .6900E-01 CRITERION= .3209 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 195
 *** TIME = .189346E+09 TIME INC = .616455E+07
 *** RESPONSE EIGENVALUE = .2404E-08 OSCILLATION LIMIT = .1482E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:38:18 JAN 23, 1995 CP= 40822.310
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 369.1 CRITERION= .3209
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4953
HT FLOW CONVERGENCE VALUE= 1.158 CRITERION= .3207
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3295E-01
HT FLOW CONVERGENCE VALUE= .6059E-01 CRITERION= .3206 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 197
*** TIME = .195510E+09 TIME INC = .616455E+07
*** RESPONSE EIGENVALUE = .2292E-08 OSCILLATION LIMIT = .1413E-01
*** AUTO STEP TIME: NEXT TIME INC = .61645E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 368.3 CRITERION= .3194
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4774
HT FLOW CONVERGENCE VALUE= 1.070 CRITERION= .3192
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3006E-01
HT FLOW CONVERGENCE VALUE= .5421E-01 CRITERION= .3191 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 199
*** TIME = .201675E+09 TIME INC = .616455E+07
*** RESPONSE EIGENVALUE = .2217E-08 OSCILLATION LIMIT = .1367E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2798)

HT FLOW CONVERGENCE VALUE= 367.5 CRITERION= .3189
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5886
HT FLOW CONVERGENCE VALUE= 1.441 CRITERION= .3187
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3851E-01
HT FLOW CONVERGENCE VALUE= .7277E-01 CRITERION= .3186 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 201
*** TIME = .209564E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2125E-08 OSCILLATION LIMIT = .1677E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 366.5 CRITERION= .3172
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5652
HT FLOW CONVERGENCE VALUE= 1.372 CRITERION= .3169
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3791E-01
HT FLOW CONVERGENCE VALUE= .7212E-01 CRITERION= .3169 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 203
*** TIME = .217454E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2059E-08 OSCILLATION LIMIT = .1624E-01
*** AUTO TIME STEP: NEXT TIME INC = .34497E+07 DECREASED (FACTOR = .4373)

HT FLOW CONVERGENCE VALUE= 365.5 CRITERION= .3171
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2398
HT FLOW CONVERGENCE VALUE= .5938 CRITERION= .3170
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1422E-01
HT FLOW CONVERGENCE VALUE= .2648E-01 CRITERION= .3170 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 205
*** TIME = .220903E+09 TIME INC = .344970E+07
*** RESPONSE EIGENVALUE = .2033E-08 OSCILLATION LIMIT = .7012E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:29:14 JAN 23, 1995 CP= 42743.680
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 365.1 CRITERION= .3161
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2354
HT FLOW CONVERGENCE VALUE= .5589 CRITERION= .3160

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1343E-01
 HT FLOW CONVERGENCE VALUE= .2425E-01 CRITERION= .3159 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 207
 *** TIME = .224353E+09 TIME INC = .344970E+07
 *** RESPONSE EIGENVALUE = .1925E-08 OSCILLATION LIMIT = .6641E-02
 *** AUTO STEP TIME: NEXT TIME INC = .34497E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 364.7 CRITERION= .3163
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2312
 HT FLOW CONVERGENCE VALUE= .5495 CRITERION= .3162
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1317E-01
 HT FLOW CONVERGENCE VALUE= .2342E-01 CRITERION= .3161 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 209
 *** TIME = .227803E+09 TIME INC = .344970E+07
 *** RESPONSE EIGENVALUE = .1843E-08 OSCILLATION LIMIT = .6359E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.2870)

HT FLOW CONVERGENCE VALUE= 364.3 CRITERION= .3149
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5142
 HT FLOW CONVERGENCE VALUE= 1.205 CRITERION= .3147
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3113E-01
 HT FLOW CONVERGENCE VALUE= .5585E-01 CRITERION= .3146 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 211
 *** TIME = .235692E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1779E-08 OSCILLATION LIMIT = .1404E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 363.5 CRITERION= .3145
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4953
 HT FLOW CONVERGENCE VALUE= 1.099 CRITERION= .3143
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3043E-01
 HT FLOW CONVERGENCE VALUE= .5430E-01 CRITERION= .3143 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 213
 *** TIME = .243581E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1695E-08 OSCILLATION LIMIT = .1338E-01
 *** AUTO TIME STEP: NEXT TIME INC = .44397E+07 DECREASED (FACTOR = .5627)

HT FLOW CONVERGENCE VALUE= 362.6 CRITERION= .3133
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2712
 HT FLOW CONVERGENCE VALUE= .5669 CRITERION= .3132
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1570E-01
 HT FLOW CONVERGENCE VALUE= .2802E-01 CRITERION= .3132 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 215
 *** TIME = .248021E+09 TIME INC = .443970E+07
 *** RESPONSE EIGENVALUE = .1681E-08 OSCILLATION LIMIT = .7465E-02
 *** AUTO STEP TIME: NEXT TIME INC = .44397E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 362.2 CRITERION= .3134
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2662
 HT FLOW CONVERGENCE VALUE= .5500 CRITERION= .3133
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1560E-01
 HT FLOW CONVERGENCE VALUE= .2789E-01 CRITERION= .3132 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 6 COMPLETED. CUM ITER = 217
 *** TIME = .252461E+09 TIME INC = .443970E+07
 *** RESPONSE EIGENVALUE = .1626E-08 OSCILLATION LIMIT = .7217E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:20:19 JAN 23, 1995 CP= 45219.010
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 361.7 CRITERION= .3119
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2614
 HT FLOW CONVERGENCE VALUE= .4697 CRITERION= .3118
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1475E-01
 HT FLOW CONVERGENCE VALUE= .2779E-01 CRITERION= .3118 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 219
 *** TIME = .256901E+09 TIME INC = .443970E+07
 *** RESPONSE EIGENVALUE = .2227E-08 OSCILLATION LIMIT = .9889E-02
 *** AUTO STEP TIME: NEXT TIME INC = .44397E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 361.3 CRITERION= .3116
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2823
 HT FLOW CONVERGENCE VALUE= .4339 CRITERION= .3115
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1330E-01
 HT FLOW CONVERGENCE VALUE= .2603E-01 CRITERION= .3114 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 221
 *** TIME = .261340E+09 TIME INC = .443970E+07
 *** RESPONSE EIGENVALUE = .2438E-08 OSCILLATION LIMIT = .1082E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.7770)

HT FLOW CONVERGENCE VALUE= 360.8 CRITERION= .3095
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4834
 HT FLOW CONVERGENCE VALUE= .8192 CRITERION= .3093
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2408E-01
 HT FLOW CONVERGENCE VALUE= .4861E-01 CRITERION= .3092 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 223
 *** TIME = .269230E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2382E-08 OSCILLATION LIMIT = .1879E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 359.9 CRITERION= .3084
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5423
 HT FLOW CONVERGENCE VALUE= .6261 CRITERION= .3083
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2174E-01
 HT FLOW CONVERGENCE VALUE= .4401E-01 CRITERION= .3082 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 225
 *** TIME = .277119E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2482E-08 OSCILLATION LIMIT = .1958E-01
 *** AUTO TIME STEP: NEXT TIME INC = .68994E+07 DECREASED (FACTOR = .8745)

HT FLOW CONVERGENCE VALUE= 359.0 CRITERION= .3064
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4788
 HT FLOW CONVERGENCE VALUE= .5189 CRITERION= .3062
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1618E-01
 HT FLOW CONVERGENCE VALUE= .3322E-01 CRITERION= .3062 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 227
 *** TIME = .284018E+09 TIME INC = .689941E+07
 *** RESPONSE EIGENVALUE = .2493E-08 OSCILLATION LIMIT = .1720E-01
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
769.132473 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11887 STEP 1

9965 ELEMENTS (OF 9965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 47267.070 TIME= 19:49:53
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:49:53 JAN 23, 1995 CP= 47267.070
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
TIME AT END OF THE LOAD STEP.31558E+09
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 358.1 CRITERION= .3059
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3508
HT FLOW CONVERGENCE VALUE= .4596 CRITERION= .3057
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1485E-01
HT FLOW CONVERGENCE VALUE= .2899E-01 CRITERION= .3056 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 229
*** TIME = .290918E+09 TIME INC = .689941E+07
*** RESPONSE EIGENVALUE = .2043E-08 OSCILLATION LIMIT = .1410E-01
*** AUTO STEP TIME: NEXT TIME INC = .68994E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 357.3 CRITERION= .3042
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3399
HT FLOW CONVERGENCE VALUE= .4174 CRITERION= .3040
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1422E-01
HT FLOW CONVERGENCE VALUE= .2702E-01 CRITERION= .3040 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 231

*** TIME = .297817E+09 TIME INC = .689941E+07
 *** RESPONSE EIGENVALUE = .1904E-08 OSCILLATION LIMIT = .1314E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1435)

HT FLOW CONVERGENCE VALUE= 356.4 CRITERION= .3035
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3957
 HT FLOW CONVERGENCE VALUE= .3996 CRITERION= .3033
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1576E-01
 HT FLOW CONVERGENCE VALUE= .3036E-01 CRITERION= .3033 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 233
 *** TIME = .305707E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1940E-08 OSCILLATION LIMIT = .1530E-01
 *** AUTO TIME STEP: NEXT TIME INC = .49347E+07 DECREASED (FACTOR = .6255)

HT FLOW CONVERGENCE VALUE= 355.5 CRITERION= .3021
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2309
 HT FLOW CONVERGENCE VALUE= .2246 CRITERION= .3019 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 234
 *** TIME = .310641E+09 TIME INC = .493469E+07
 *** RESPONSE EIGENVALUE = .1861E-08 OSCILLATION LIMIT = .9182E-02
 *** AUTO STEP TIME: NEXT TIME INC = .49347E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 354.9 CRITERION= .3019
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2629
 HT FLOW CONVERGENCE VALUE= .2016 CRITERION= .3017 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 235
 *** TIME = .315576E+09 TIME INC = .493469E+07
 *** RESPONSE EIGENVALUE = .1901E-08 OSCILLATION LIMIT = .9380E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:02:13 JAN 23, 1995 CP= 48981.390
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 354.3 CRITERION= .3006
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2201
 HT FLOW CONVERGENCE VALUE= .2339 CRITERION= .3005 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 236
 *** TIME = .320511E+09 TIME INC = .493469E+07
 *** RESPONSE EIGENVALUE = .1631E-08 OSCILLATION LIMIT = .8048E-02
 *** AUTO STEP TIME: NEXT TIME INC = .49347E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 353.7 CRITERION= .3006
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2163
 HT FLOW CONVERGENCE VALUE= .2396 CRITERION= .3004 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 237
 *** TIME = .325445E+09 TIME INC = .493469E+07
 *** RESPONSE EIGENVALUE = .1554E-08 OSCILLATION LIMIT = .7666E-02
 *** AUTO TIME STEP: NEXT TIME INC = .14804E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 353.1 CRITERION= .2984
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6288
 HT FLOW CONVERGENCE VALUE= .6708 CRITERION= .2979
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2782E-01
 HT FLOW CONVERGENCE VALUE= .5230E-01 CRITERION= .2978 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 239
 *** TIME = .340249E+09 TIME INC = .148041E+08

*** RESPONSE EIGENVALUE = .1513E-08 OSCILLATION LIMIT = .2239E-01
 *** AUTO STEP TIME: NEXT TIME INC = .14804E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 351.2 CRITERION= .2970
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6002
 HT FLOW CONVERGENCE VALUE= .6252 CRITERION= .2965
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2629E-01
 HT FLOW CONVERGENCE VALUE= .4995E-01 CRITERION= .2964 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 241
 *** TIME = .355054E+09 TIME INC = .148041E+08
 *** RESPONSE EIGENVALUE = .1460E-08 OSCILLATION LIMIT = .2162E-01
 *** AUTO TIME STEP: NEXT TIME INC = .44412E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 349.5 CRITERION= .2915
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.760
 HT FLOW CONVERGENCE VALUE= 1.290 CRITERION= .2902
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8833E-01
 HT FLOW CONVERGENCE VALUE= .1757 CRITERION= .2900 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 243
 *** TIME = .399466E+09 TIME INC = .444122E+08
 *** RESPONSE EIGENVALUE = .1422E-08 OSCILLATION LIMIT = .6317E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7764)

HT FLOW CONVERGENCE VALUE= 344.2 CRITERION= .2830
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.623
 HT FLOW CONVERGENCE VALUE= 1.390 CRITERION= .2805
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1372
 HT FLOW CONVERGENCE VALUE= .2790 CRITERION= .2801 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 245
 *** TIME = .478360E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1435E-08 OSCILLATION LIMIT = .1132
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 334.7 CRITERION= .2720
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.184
 HT FLOW CONVERGENCE VALUE= 1.537 CRITERION= .2693
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1037
 HT FLOW CONVERGENCE VALUE= .1971 CRITERION= .2689 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 247
 *** TIME = .557254E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1567E-08 OSCILLATION LIMIT = .1236
 *** AUTO TIME STEP: NEXT TIME INC = .73898E+08 DECREASED (FACTOR = .9367)

HT FLOW CONVERGENCE VALUE= 324.6 CRITERION= .2625
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.331
 HT FLOW CONVERGENCE VALUE= 2.026 CRITERION= .2598
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8190E-01
 HT FLOW CONVERGENCE VALUE= .1391 CRITERION= .2595 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 249
 *** TIME = .631152E+09 TIME INC = .738983E+08
 *** RESPONSE EIGENVALUE = .1760E-08 OSCILLATION LIMIT = .1300

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:04:05 JAN 23, 1995 CP= 51897.010
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 314.7 CRITERION= .2536
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.445
 HT FLOW CONVERGENCE VALUE= 1.791 CRITERION= .2508

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5841E-01
 HT FLOW CONVERGENCE VALUE= .8954E-01 CRITERION= .2506 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 251
 *** TIME = .705050E+09 TIME INC = .738983E+08
 *** RESPONSE EIGENVALUE = .1457E-08 OSCILLATION LIMIT = .1076
 *** AUTO STEP TIME: NEXT TIME INC = .73898E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 304.8 CRITERION= .2459
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.484
 HT FLOW CONVERGENCE VALUE= 1.811 CRITERION= .2431
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5495E-01
 HT FLOW CONVERGENCE VALUE= .7927E-01 CRITERION= .2430 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 253
 *** TIME = .778949E+09 TIME INC = .738983E+08
 *** RESPONSE EIGENVALUE = .1467E-08 OSCILLATION LIMIT = .1084
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0676)

HT FLOW CONVERGENCE VALUE= 295.3 CRITERION= .2367
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.896
 HT FLOW CONVERGENCE VALUE= 2.127 CRITERION= .2339
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5754E-01
 HT FLOW CONVERGENCE VALUE= .7497E-01 CRITERION= .2337 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 255
 *** TIME = .857843E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1602E-08 OSCILLATION LIMIT = .1264
 *** AUTO TIME STEP: NEXT TIME INC = .44443E+08 DECREASED (FACTOR = .5633)

HT FLOW CONVERGENCE VALUE= 285.3 CRITERION= .2311
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.243
 HT FLOW CONVERGENCE VALUE= 1.284 CRITERION= .2296
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2579E-01
 HT FLOW CONVERGENCE VALUE= .3297E-01 CRITERION= .2295 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 257
 *** TIME = .902285E+09 TIME INC = .444427E+08
 *** RESPONSE EIGENVALUE = .1687E-08 OSCILLATION LIMIT = .7495E-01
 *** AUTO STEP TIME: NEXT TIME INC = .44443E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 279.9 CRITERION= .2257
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.314
 HT FLOW CONVERGENCE VALUE= 1.350 CRITERION= .2242
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2610E-01
 HT FLOW CONVERGENCE VALUE= .3316E-01 CRITERION= .2241 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 259
 *** TIME = .946728E+09 TIME INC = .444427E+08
 *** RESPONSE EIGENVALUE = .1808E-08 OSCILLATION LIMIT = .8037E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:28:46 JAN 24, 1995 CP= 53914.760
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 274.6 CRITERION= .2218
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.071
 HT FLOW CONVERGENCE VALUE= 1.245 CRITERION= .2203
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2244E-01
 HT FLOW CONVERGENCE VALUE= .2922E-01 CRITERION= .2203 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 261
 *** TIME = .991171E+09 TIME INC = .444427E+08
 *** RESPONSE EIGENVALUE = .1648E-08 OSCILLATION LIMIT = .7323E-01

*** AUTO STEP TIME: NEXT TIME INC = .44443E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 269.3 CRITERION= .2169
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.086
 HT FLOW CONVERGENCE VALUE= 1.227 CRITERION= .2154
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2143E-01
 HT FLOW CONVERGENCE VALUE= .2840E-01 CRITERION= .2153 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 263
 *** TIME = .103561E+10 TIME INC = .444427E+08
 *** RESPONSE EIGENVALUE = .1688E-08 OSCILLATION LIMIT = .7504E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7752)

HT FLOW CONVERGENCE VALUE= 264.2 CRITERION= .2110
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.746
 HT FLOW CONVERGENCE VALUE= 2.144 CRITERION= .2084
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4528E-01
 HT FLOW CONVERGENCE VALUE= .5215E-01 CRITERION= .2083 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 265
 *** TIME = .111451E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1772E-08 OSCILLATION LIMIT = .1398
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 255.4 CRITERION= .2028
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.839
 HT FLOW CONVERGENCE VALUE= 2.212 CRITERION= .2002
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4718E-01
 HT FLOW CONVERGENCE VALUE= .5220E-01 CRITERION= .2001 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 267
 *** TIME = .119340E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1925E-08 OSCILLATION LIMIT = .1519
 *** AUTO STEP TIME: NEXT TIME INC = .68903E+08 DECREASED (FACTOR = .8734)

HT FLOW CONVERGENCE VALUE= 246.8 CRITERION= .1964
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.423
 HT FLOW CONVERGENCE VALUE= 1.963 CRITERION= .1943
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3843E-01
 HT FLOW CONVERGENCE VALUE= .4499E-01 CRITERION= .1942 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 269
 *** TIME = .126230E+10 TIME INC = .689025E+08
 *** RESPONSE EIGENVALUE = .2074E-08 OSCILLATION LIMIT = .1429

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:53:13 JAN 24, 1995 CP= 55934.310
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 239.5 CRITERION= .1904
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.713
 HT FLOW CONVERGENCE VALUE= 1.698 CRITERION= .1883
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3203E-01
 HT FLOW CONVERGENCE VALUE= .3823E-01 CRITERION= .1883 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 271
 *** TIME = .133121E+10 TIME INC = .689025E+08
 *** RESPONSE EIGENVALUE = .1692E-08 OSCILLATION LIMIT = .1166
 *** AUTO STEP TIME: NEXT TIME INC = .68903E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 232.4 CRITERION= .1857
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.617
 HT FLOW CONVERGENCE VALUE= 1.536 CRITERION= .1837
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3102E-01

HT FLOW CONVERGENCE VALUE= .3383E-01 CRITERION= .1836 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 273
 *** TIME = .140011E+10 TIME INC = .689025E+08
 *** RESPONSE EIGENVALUE = .1620E-08 OSCILLATION LIMIT = .1116
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1450)

HT FLOW CONVERGENCE VALUE= 225.7 CRITERION= .1794
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.035
 HT FLOW CONVERGENCE VALUE= 1.730 CRITERION= .1773
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3845E-01
 HT FLOW CONVERGENCE VALUE= .3847E-01 CRITERION= .1772 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 275
 *** TIME = .147900E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1706E-08 OSCILLATION LIMIT = .1346
 *** AUTO TIME STEP: NEXT TIME INC = .49438E+08 DECREASED (FACTOR = .6266)

HT FLOW CONVERGENCE VALUE= 218.5 CRITERION= .1755
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.892
 HT FLOW CONVERGENCE VALUE= 1.069 CRITERION= .1742
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1967E-01
 HT FLOW CONVERGENCE VALUE= .2287E-01 CRITERION= .1742 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 277
 *** TIME = .152844E+10 TIME INC = .494385E+08
 *** RESPONSE EIGENVALUE = .1737E-08 OSCILLATION LIMIT = .8589E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49438E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 214.2 CRITERION= .1713
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.937
 HT FLOW CONVERGENCE VALUE= 1.101 CRITERION= .1701
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2106E-01
 HT FLOW CONVERGENCE VALUE= .2287E-01 CRITERION= .1700 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 279
 *** TIME = .157788E+10 TIME INC = .494385E+08
 *** RESPONSE EIGENVALUE = .1854E-08 OSCILLATION LIMIT = .9168E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 03:18:04 JAN 24, 1995 CP= 57954.360
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 210.0 CRITERION= .1688
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.568
 HT FLOW CONVERGENCE VALUE= .9542 CRITERION= .1676
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1873E-01
 HT FLOW CONVERGENCE VALUE= .1995E-01 CRITERION= .1676 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 281
 *** TIME = .162732E+10 TIME INC = .494385E+08
 *** RESPONSE EIGENVALUE = .1523E-08 OSCILLATION LIMIT = .7529E-01
 *** AUTO STEP TIME: NEXT TIME INC = .49438E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 205.9 CRITERION= .1653
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.540
 HT FLOW CONVERGENCE VALUE= .8951 CRITERION= .1641
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1693E-01
 HT FLOW CONVERGENCE VALUE= .1823E-01 CRITERION= .1641 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 283
 *** TIME = .167676E+10 TIME INC = .494385E+08
 *** RESPONSE EIGENVALUE = .1484E-08 OSCILLATION LIMIT = .7335E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5958)

HT FLOW CONVERGENCE VALUE= 202.0 CRITERION= .1619
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.420
 HT FLOW CONVERGENCE VALUE= 1.343 CRITERION= .1601
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3297E-01
 HT FLOW CONVERGENCE VALUE= .2935E-01 CRITERION= .1601 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 285
 *** TIME = .175565E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1483E-08 OSCILLATION LIMIT = .1170
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 196.1 CRITERION= .1567
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.431
 HT FLOW CONVERGENCE VALUE= 1.309 CRITERION= .1550
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3231E-01
 HT FLOW CONVERGENCE VALUE= .2776E-01 CRITERION= .1550 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 287
 *** TIME = .183455E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1540E-08 OSCILLATION LIMIT = .1215
 *** AUTO TIME STEP: NEXT TIME INC = .58911E+08 DECREASED (FACTOR = .7467)

HT FLOW CONVERGENCE VALUE= 190.5 CRITERION= .1535
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.818
 HT FLOW CONVERGENCE VALUE= .9727 CRITERION= .1523
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2169E-01
 HT FLOW CONVERGENCE VALUE= .1939E-01 CRITERION= .1523 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 289
 *** TIME = .189346E+10 TIME INC = .589110E+08
 *** RESPONSE EIGENVALUE = .1587E-08 OSCILLATION LIMIT = .9351E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 04:43:11 JAN 24, 1995 CP= 59975.820
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 186.6 CRITERION= .1500
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.543
 HT FLOW CONVERGENCE VALUE= .8716 CRITERION= .1489
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1915E-01
 HT FLOW CONVERGENCE VALUE= .1736E-01 CRITERION= .1489 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 291
 *** TIME = .195237E+10 TIME INC = .589110E+08
 *** RESPONSE EIGENVALUE = .1379E-08 OSCILLATION LIMIT = .8124E-01
 *** AUTO STEP TIME: NEXT TIME INC = .58911E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 182.7 CRITERION= .1478
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.484
 HT FLOW CONVERGENCE VALUE= .7984 CRITERION= .1467
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1811E-01
 HT FLOW CONVERGENCE VALUE= .1571E-01 CRITERION= .1467 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 293
 *** TIME = .201128E+10 TIME INC = .589110E+08
 *** RESPONSE EIGENVALUE = .1306E-08 OSCILLATION LIMIT = .7693E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.3392)

HT FLOW CONVERGENCE VALUE= 179.1 CRITERION= .1439
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.994
 HT FLOW CONVERGENCE VALUE= 1.031 CRITERION= .1425
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2732E-01
 HT FLOW CONVERGENCE VALUE= .2162E-01 CRITERION= .1425 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 295
*** TIME = .209017E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1340E-08 OSCILLATION LIMIT = .1057
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 174.5 CRITERION= .1408
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.977
HT FLOW CONVERGENCE VALUE= .9995 CRITERION= .1396
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2751E-01
HT FLOW CONVERGENCE VALUE= .2106E-01 CRITERION= .1395 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 297
*** TIME = .216907E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1362E-08 OSCILLATION LIMIT = .1074
*** AUTO TIME STEP: NEXT TIME INC = .39966E+08 DECREASED (FACTOR = .5066)

HT FLOW CONVERGENCE VALUE= 170.2 CRITERION= .1378
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.020
HT FLOW CONVERGENCE VALUE= .5188 CRITERION= .1372
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1066E-01
HT FLOW CONVERGENCE VALUE= .9446E-02 CRITERION= .1372 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 299
*** TIME = .220903E+10 TIME INC = .399660E+08
*** RESPONSE EIGENVALUE = .1431E-08 OSCILLATION LIMIT = .5720E-01
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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 06:08:12 JAN 24, 1995 CP= 61997.140
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 168.1 CRITERION= .1367
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9519
HT FLOW CONVERGENCE VALUE= .4909 CRITERION= .1361
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1019E-01
HT FLOW CONVERGENCE VALUE= .8909E-02 CRITERION= .1361 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 301
*** TIME = .224900E+10 TIME INC = .399660E+08
*** RESPONSE EIGENVALUE = .1345E-08 OSCILLATION LIMIT = .5377E-01
*** AUTO STEP TIME: NEXT TIME INC = .39966E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 166.0 CRITERION= .1344
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9582
HT FLOW CONVERGENCE VALUE= .4846 CRITERION= .1339
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1039E-01
HT FLOW CONVERGENCE VALUE= .8802E-02 CRITERION= .1338 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 303
*** TIME = .228896E+10 TIME INC = .399660E+08
*** RESPONSE EIGENVALUE = .1373E-08 OSCILLATION LIMIT = .5487E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.9740)

HT FLOW CONVERGENCE VALUE= 164.0 CRITERION= .1324
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.872
HT FLOW CONVERGENCE VALUE= .9153 CRITERION= .1312
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2803E-01
HT FLOW CONVERGENCE VALUE= .1998E-01 CRITERION= .1312 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 305
*** TIME = .236786E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1387E-08 OSCILLATION LIMIT = .1095
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 160.2 CRITERION= .1286
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.893
HT FLOW CONVERGENCE VALUE= .9102 CRITERION= .1275
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2925E-01
HT FLOW CONVERGENCE VALUE= .2026E-01 CRITERION= .1275 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 307
*** TIME = .244675E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1463E-08 OSCILLATION LIMIT = .1154
*** AUTO TIME STEP: NEXT TIME INC = .77856E+08 DECREASED (FACTOR = .9868)

HT FLOW CONVERGENCE VALUE= 156.5 CRITERION= .1260
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.874
HT FLOW CONVERGENCE VALUE= .8865 CRITERION= .1250
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2913E-01
HT FLOW CONVERGENCE VALUE= .1953E-01 CRITERION= .1249 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 309
*** TIME = .252461E+10 TIME INC = .778561E+08
*** RESPONSE EIGENVALUE = .1523E-08 OSCILLATION LIMIT = .1185

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 07:33:27 JAN 24, 1995 CP= 64025.410
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 153.0 CRITERION= .1229
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.470
HT FLOW CONVERGENCE VALUE= .7416 CRITERION= .1219
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2182E-01
HT FLOW CONVERGENCE VALUE= .1426E-01 CRITERION= .1219 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 311
*** TIME = .260246E+10 TIME INC = .778561E+08
*** RESPONSE EIGENVALUE = .1200E-08 OSCILLATION LIMIT = .9342E-01
*** AUTO STEP TIME: NEXT TIME INC = .77856E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 149.6 CRITERION= .1210
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.372
HT FLOW CONVERGENCE VALUE= .6437 CRITERION= .1201
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2071E-01
HT FLOW CONVERGENCE VALUE= .1326E-01 CRITERION= .1200 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 313
*** TIME = .268032E+10 TIME INC = .778561E+08
*** RESPONSE EIGENVALUE = .1072E-08 OSCILLATION LIMIT = .8344E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0133)

HT FLOW CONVERGENCE VALUE= 146.4 CRITERION= .1180
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.402
HT FLOW CONVERGENCE VALUE= .6434 CRITERION= .1171
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2239E-01
HT FLOW CONVERGENCE VALUE= .1431E-01 CRITERION= .1171 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 315
*** TIME = .275921E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1108E-08 OSCILLATION LIMIT = .8739E-01
*** AUTO TIME STEP: NEXT TIME INC = .40485E+08 DECREASED (FACTOR = .5132)

HT FLOW CONVERGENCE VALUE= 143.4 CRITERION= .1169
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7050
HT FLOW CONVERGENCE VALUE= .3225 CRITERION= .1164
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8285E-02
HT FLOW CONVERGENCE VALUE= .5588E-02 CRITERION= .1164 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 317
 *** TIME = .279970E+10 TIME INC = .404849E+08
 *** RESPONSE EIGENVALUE = .1090E-08 OSCILLATION LIMIT = .4413E-01
 *** AUTO STEP TIME: NEXT TIME INC = .40485E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 141.9 CRITERION= .1151
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7224
 HT FLOW CONVERGENCE VALUE= .3270 CRITERION= .1147
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8682E-02
 HT FLOW CONVERGENCE VALUE= .5722E-02 CRITERION= .1147 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 319
 *** TIME = .284018E+10 TIME INC = .404849E+08
 *** RESPONSE EIGENVALUE = .1143E-08 OSCILLATION LIMIT = .4629E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 265.631169 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 11887 STEP 1

9965 ELEMENTS (OF 9965 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 66060.020 TIME= 08:59:55
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:59:55 JAN 24, 1995 CP= 66060.020
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
 TIME AT END OF THE LOAD STEP.31558E+10
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON

TRANSIENT INTEGRATION PARAMETERS

THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 140.5 CRITERION= .1146
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6208
 HT FLOW CONVERGENCE VALUE= .2930 CRITERION= .1142
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7140E-02
 HT FLOW CONVERGENCE VALUE= .4884E-02 CRITERION= .1142 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 321
 *** TIME = .288067E+10 TIME INC = .404849E+08
 *** RESPONSE EIGENVALUE = .9801E-09 OSCILLATION LIMIT = .3968E-01
 *** AUTO STEP TIME: NEXT TIME INC = .40485E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 139.0 CRITERION= .1129
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6146
 HT FLOW CONVERGENCE VALUE= .2806 CRITERION= .1125
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7440E-02
 HT FLOW CONVERGENCE VALUE= .4821E-02 CRITERION= .1125 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 323
 *** TIME = .292115E+10 TIME INC = .404849E+08
 *** RESPONSE EIGENVALUE = .9585E-09 OSCILLATION LIMIT = .3880E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.9487)

HT FLOW CONVERGENCE VALUE= 137.7 CRITERION= .1119
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.172
 HT FLOW CONVERGENCE VALUE= .5215 CRITERION= .1111
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1717E-01
 HT FLOW CONVERGENCE VALUE= .1037E-01 CRITERION= .1111 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 325
 *** TIME = .300005E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9365E-09 OSCILLATION LIMIT = .7388E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 135.1 CRITERION= .1093
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.176
 HT FLOW CONVERGENCE VALUE= .5142 CRITERION= .1086
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1700E-01
 HT FLOW CONVERGENCE VALUE= .1020E-01 CRITERION= .1085 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 327
 *** TIME = .307894E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9581E-09 OSCILLATION LIMIT = .7558E-01
 *** AUTO STEP TIME: NEXT TIME INC = .76818E+08 DECREASED (FACTOR = .9737)

HT FLOW CONVERGENCE VALUE= 132.6 CRITERION= .1079
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.135
 HT FLOW CONVERGENCE VALUE= .4866 CRITERION= .1072
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1499E-01
 HT FLOW CONVERGENCE VALUE= .8885E-02 CRITERION= .1072 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 329
 *** TIME = .315576E+10 TIME INC = .768181E+08
 *** RESPONSE EIGENVALUE = .9644E-09 OSCILLATION LIMIT = .7408E-01

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 10:25:38 JAN 24, 1995 CP= 68095.340
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 130.4    CRITERION= .1060
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6905
HT FLOW CONVERGENCE VALUE= .3293    CRITERION= .1054
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7992E-02
HT FLOW CONVERGENCE VALUE= .5253E-02 CRITERION= .1053    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 331
*** TIME = .323258E+10 TIME INC = .768181E+08
*** RESPONSE EIGENVALUE = .6055E-09 OSCILLATION LIMIT = .4651E-01
*** AUTO STEP TIME: NEXT TIME INC = .76818E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 128.2    CRITERION= .1053
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5837
HT FLOW CONVERGENCE VALUE= .2445    CRITERION= .1047
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6728E-02
HT FLOW CONVERGENCE VALUE= .3966E-02 CRITERION= .1047    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 333
*** TIME = .330940E+10 TIME INC = .768181E+08
*** RESPONSE EIGENVALUE = .4724E-09 OSCILLATION LIMIT = .3629E-01
*** AUTO TIME STEP: NEXT TIME INC = .23045E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 126.2    CRITERION= .1022
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.720
HT FLOW CONVERGENCE VALUE= .6523    CRITERION= .1007
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2510E-01
HT FLOW CONVERGENCE VALUE= .1418E-01 CRITERION= .1006    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 335
*** TIME = .353985E+10 TIME INC = .230454E+09
*** RESPONSE EIGENVALUE = .4464E-09 OSCILLATION LIMIT = .1029
*** AUTO TIME STEP: NEXT TIME INC = .69136E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 121.0    CRITERION= .9562E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.951
HT FLOW CONVERGENCE VALUE= 1.562    CRITERION= .9199E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9015E-01
HT FLOW CONVERGENCE VALUE= .5282E-01 CRITERION= .9187E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 337
*** TIME = .423121E+10 TIME INC = .691363E+09
*** RESPONSE EIGENVALUE = .4343E-09 OSCILLATION LIMIT = .3003
*** AUTO STEP TIME: NEXT TIME INC = .69136E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 108.8    CRITERION= .8572E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.142
HT FLOW CONVERGENCE VALUE= 1.486    CRITERION= .8282E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7811E-01
HT FLOW CONVERGENCE VALUE= .3917E-01 CRITERION= .8273E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 339
*** TIME = .492258E+10 TIME INC = .691363E+09
*** RESPONSE EIGENVALUE = .5036E-09 OSCILLATION LIMIT = .3482
*** AUTO STEP TIME: NEXT TIME INC = .69136E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 98.85    CRITERION= .7775E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.431
HT FLOW CONVERGENCE VALUE= 1.478    CRITERION= .7521E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7346E-01
HT FLOW CONVERGENCE VALUE= .3213E-01 CRITERION= .7514E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 341
*** TIME = .561394E+10 TIME INC = .691363E+09
  
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*** RESPONSE EIGENVALUE = .6226E-09 OSCILLATION LIMIT = .4305
*** AUTO TIME STEP: NEXT TIME INC = .69758E+09 INCREASED (FACTOR = 1.0090)
HT FLOW CONVERGENCE VALUE= 90.33 CRITERION= .6908E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.806
HT FLOW CONVERGENCE VALUE= 1.419 CRITERION= .6675E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6906E-01
HT FLOW CONVERGENCE VALUE= .2585E-01 CRITERION= .6670E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 343
*** TIME = .631152E+10 TIME INC = .697580E+09
*** RESPONSE EIGENVALUE = .7810E-09 OSCILLATION LIMIT = .5448

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:24:58 JAN 24, 1995 CP= 70942.070
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 82.20 CRITERION= .6539E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.285
HT FLOW CONVERGENCE VALUE= .6475 CRITERION= .6356E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2320E-01
HT FLOW CONVERGENCE VALUE= .8179E-02 CRITERION= .6352E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 345
*** TIME = .700910E+10 TIME INC = .697580E+09
*** RESPONSE EIGENVALUE = .2921E-09 OSCILLATION LIMIT = .2037
*** AUTO STEP TIME: NEXT TIME INC = .69758E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 75.68 CRITERION= .6109E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.849
HT FLOW CONVERGENCE VALUE= .4104 CRITERION= .5978E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2063E-01
HT FLOW CONVERGENCE VALUE= .7141E-02 CRITERION= .5975E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 347
*** TIME = .770668E+10 TIME INC = .697580E+09
*** RESPONSE EIGENVALUE = .2111E-09 OSCILLATION LIMIT = .1473
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1310)

HT FLOW CONVERGENCE VALUE= 70.55 CRITERION= .5818E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.250
HT FLOW CONVERGENCE VALUE= .5030 CRITERION= .5706E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2333E-01
HT FLOW CONVERGENCE VALUE= .7385E-02 CRITERION= .5703E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 349
*** TIME = .849562E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .2439E-09 OSCILLATION LIMIT = .1924
*** AUTO TIME STEP: NEXT TIME INC = .48583E+09 DECREASED (FACTOR = .6158)

HT FLOW CONVERGENCE VALUE= 65.66 CRITERION= .5517E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.339
HT FLOW CONVERGENCE VALUE= .2821 CRITERION= .5462E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1240E-01
HT FLOW CONVERGENCE VALUE= .3815E-02 CRITERION= .5461E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 351
*** TIME = .898145E+10 TIME INC = .485830E+09
*** AUTO STEP TIME: NEXT TIME INC = .48583E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 62.89 CRITERION= .5386E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.416
HT FLOW CONVERGENCE VALUE= .3050 CRITERION= .5341E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1224E-01

HT FLOW CONVERGENCE VALUE= .3585E-02 CRITERION= .5340E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 353
*** TIME = .946728E+10 TIME INC = .485830E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:50:37 JAN 24, 1995 CP= 72982.320
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 60.38 CRITERION= .5210E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8486
HT FLOW CONVERGENCE VALUE= .1845 CRITERION= .5174E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7043E-02
HT FLOW CONVERGENCE VALUE= .2028E-02 CRITERION= .5173E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 355
*** TIME = .995311E+10 TIME INC = .485830E+09
*** AUTO STEP TIME: NEXT TIME INC = .48583E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 58.00 CRITERION= .5153E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7943
HT FLOW CONVERGENCE VALUE= .1621 CRITERION= .5128E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6664E-02
HT FLOW CONVERGENCE VALUE= .1872E-02 CRITERION= .5127E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 357
*** TIME = .104389E+11 TIME INC = .485830E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6239)

HT FLOW CONVERGENCE VALUE= 55.92 CRITERION= .4953E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.294
HT FLOW CONVERGENCE VALUE= .2449 CRITERION= .4929E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1166E-01
HT FLOW CONVERGENCE VALUE= .3167E-02 CRITERION= .4928E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 359
*** TIME = .112279E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 52.73 CRITERION= .4863E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.302
HT FLOW CONVERGENCE VALUE= .2403 CRITERION= .4857E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1118E-01
HT FLOW CONVERGENCE VALUE= .2896E-02 CRITERION= .4856E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 361
*** TIME = .120168E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .60622E+09 DECREASED (FACTOR = .7684)

HT FLOW CONVERGENCE VALUE= 49.93 CRITERION= .4714E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.021
HT FLOW CONVERGENCE VALUE= .1838 CRITERION= .4719E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8004E-02
HT FLOW CONVERGENCE VALUE= .2000E-02 CRITERION= .4718E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 363
*** TIME = .126230E+11 TIME INC = .606221E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:16:03 JAN 24, 1995 CP= 75020.720
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 47.88 CRITERION= .4709E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7375
 HT FLOW CONVERGENCE VALUE= .1378 CRITERION= .4721E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5485E-02
 HT FLOW CONVERGENCE VALUE= .1336E-02 CRITERION= .4721E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 365
 *** TIME = .132293E+11 TIME INC = .606221E+09
 *** AUTO STEP TIME: NEXT TIME INC = .60622E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 46.04 CRITERION= .4609E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7053
 HT FLOW CONVERGENCE VALUE= .1206 CRITERION= .4630E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5301E-02
 HT FLOW CONVERGENCE VALUE= .1266E-02 CRITERION= .4629E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 367
 *** TIME = .138355E+11 TIME INC = .606221E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.3014)

HT FLOW CONVERGENCE VALUE= 44.29 CRITERION= .4601E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9321
 HT FLOW CONVERGENCE VALUE= .1579 CRITERION= .4635E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7062E-02
 HT FLOW CONVERGENCE VALUE= .1621E-02 CRITERION= .4635E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 369
 *** TIME = .146244E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 42.27 CRITERION= .4511E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9405
 HT FLOW CONVERGENCE VALUE= .1518 CRITERION= .4553E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6936E-02
 HT FLOW CONVERGENCE VALUE= .1541E-02 CRITERION= .4552E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 371
 *** TIME = .154134E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .36544E+09 DECREASED (FACTOR = .4632)

HT FLOW CONVERGENCE VALUE= 40.33 CRITERION= .4565E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4422
 HT FLOW CONVERGENCE VALUE= .7444E-01 CRITERION= .4586E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2691E-02
 HT FLOW CONVERGENCE VALUE= .6067E-03 CRITERION= .4586E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 373
 *** TIME = .157788E+11 TIME INC = .365438E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 16:42:38 JAN 24, 1995 CP= 77060.040
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 39.53 CRITERION= .4510E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3991
 HT FLOW CONVERGENCE VALUE= .6533E-01 CRITERION= .4532E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2380E-02
 HT FLOW CONVERGENCE VALUE= .5286E-03 CRITERION= .4532E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 375

*** TIME = .161442E+11 TIME INC = .365438E+09
 *** AUTO STEP TIME: NEXT TIME INC = .36544E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 38.71 CRITERION= .4548E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3916
 HT FLOW CONVERGENCE VALUE= .6466E-01 CRITERION= .4571E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2309E-02
 HT FLOW CONVERGENCE VALUE= .5081E-03 CRITERION= .4571E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 377
 *** TIME = .165097E+11 TIME INC = .365438E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.1589)

HT FLOW CONVERGENCE VALUE= 37.98 CRITERION= .4464E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8621
 HT FLOW CONVERGENCE VALUE= .1330 CRITERION= .4516E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5770E-02
 HT FLOW CONVERGENCE VALUE= .1179E-02 CRITERION= .4516E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 379
 *** TIME = .172986E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 36.39 CRITERION= .4500E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8705
 HT FLOW CONVERGENCE VALUE= .1332 CRITERION= .4553E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5546E-02
 HT FLOW CONVERGENCE VALUE= .1095E-02 CRITERION= .4553E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 381
 *** TIME = .180876E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .42350E+09 DECREASED (FACTOR = .5368)

HT FLOW CONVERGENCE VALUE= 34.97 CRITERION= .4479E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4797
 HT FLOW CONVERGENCE VALUE= .7269E-01 CRITERION= .4509E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2644E-02
 HT FLOW CONVERGENCE VALUE= .5328E-03 CRITERION= .4508E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 383
 *** TIME = .185111E+11 TIME INC = .423502E+09
 *** AUTO STEP TIME: NEXT TIME INC = .42350E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 34.21 CRITERION= .4519E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4785
 HT FLOW CONVERGENCE VALUE= .7334E-01 CRITERION= .4549E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2564E-02
 HT FLOW CONVERGENCE VALUE= .5150E-03 CRITERION= .4549E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 6 COMPLETED. CUM ITER = 385
 *** TIME = .189346E+11 TIME INC = .423502E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:25:52 JAN 24, 1995 CP= 79498.570
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 33.53 CRITERION= .4486E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3830
 HT FLOW CONVERGENCE VALUE= .5943E-01 CRITERION= .4515E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1967E-02
 HT FLOW CONVERGENCE VALUE= .4040E-03 CRITERION= .4515E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 387
 *** TIME = .193581E+11 TIME INC = .423502E+09

*** AUTO STEP TIME: NEXT TIME INC = .42350E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 32.83 CRITERION= .4533E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3613
 HT FLOW CONVERGENCE VALUE= .5524E-01 CRITERION= .4562E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1858E-02
 HT FLOW CONVERGENCE VALUE= .3710E-03 CRITERION= .4562E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 389
 *** TIME = .197816E+11 TIME INC = .42350E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.8629)

HT FLOW CONVERGENCE VALUE= 32.22 CRITERION= .4484E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6907
 HT FLOW CONVERGENCE VALUE= .9963E-01 CRITERION= .4538E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3919E-02
 HT FLOW CONVERGENCE VALUE= .7121E-03 CRITERION= .4538E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 391
 *** TIME = .205705E+11 TIME INC = .78894E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 31.06 CRITERION= .4538E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6850
 HT FLOW CONVERGENCE VALUE= .9767E-01 CRITERION= .4591E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3738E-02
 HT FLOW CONVERGENCE VALUE= .6649E-03 CRITERION= .4591E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 393
 *** TIME = .213594E+11 TIME INC = .78894E+09
 *** AUTO TIME STEP: NEXT TIME INC = .73088E+09 DECREASED (FACTOR = .9264)

HT FLOW CONVERGENCE VALUE= 30.05 CRITERION= .4520E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6529
 HT FLOW CONVERGENCE VALUE= .9010E-01 CRITERION= .4568E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3431E-02
 HT FLOW CONVERGENCE VALUE= .5969E-03 CRITERION= .4568E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 395
 *** TIME = .220903E+11 TIME INC = .73087E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 19:51:04 JAN 24, 1995 CP= 81534.290
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 29.14 CRITERION= .4577E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5357
 HT FLOW CONVERGENCE VALUE= .7660E-01 CRITERION= .4624E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2646E-02
 HT FLOW CONVERGENCE VALUE= .4721E-03 CRITERION= .4624E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 397
 *** TIME = .228212E+11 TIME INC = .73087E+09
 *** AUTO STEP TIME: NEXT TIME INC = .73088E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 28.34 CRITERION= .4564E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5345
 HT FLOW CONVERGENCE VALUE= .7229E-01 CRITERION= .4609E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2644E-02
 HT FLOW CONVERGENCE VALUE= .4482E-03 CRITERION= .4609E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 399
 *** TIME = .235521E+11 TIME INC = .73087E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.0794)

HT FLOW CONVERGENCE VALUE= 27.55 CRITERION= .4616E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5746
 HT FLOW CONVERGENCE VALUE= .7756E-01 CRITERION= .4662E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2765E-02
 HT FLOW CONVERGENCE VALUE= .4626E-03 CRITERION= .4662E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 401
 *** TIME = .243410E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .45253E+09 DECREASED (FACTOR = .5736)

HT FLOW CONVERGENCE VALUE= 26.81 CRITERION= .4614E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3380
 HT FLOW CONVERGENCE VALUE= .4451E-01 CRITERION= .4640E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 402
 *** TIME = .247935E+11 TIME INC = .452533E+09
 *** AUTO STEP TIME: NEXT TIME INC = .45253E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 26.39 CRITERION= .4658E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3308
 HT FLOW CONVERGENCE VALUE= .4450E-01 CRITERION= .4683E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 403
 *** TIME = .252461E+11 TIME INC = .452533E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:02:57 JAN 24, 1995 CP= 83265.030
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 26.02 CRITERION= .4640E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2872
 HT FLOW CONVERGENCE VALUE= .3873E-01 CRITERION= .4664E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 404
 *** TIME = .256986E+11 TIME INC = .452533E+09
 *** AUTO STEP TIME: NEXT TIME INC = .45253E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.63 CRITERION= .4684E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2706
 HT FLOW CONVERGENCE VALUE= .3665E-01 CRITERION= .4707E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 405
 *** TIME = .261511E+11 TIME INC = .452533E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7434)

HT FLOW CONVERGENCE VALUE= 25.30 CRITERION= .4657E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4882
 HT FLOW CONVERGENCE VALUE= .6240E-01 CRITERION= .4697E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2114E-02
 HT FLOW CONVERGENCE VALUE= .3424E-03 CRITERION= .4696E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 407
 *** TIME = .269401E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 24.69 CRITERION= .4707E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4804
 HT FLOW CONVERGENCE VALUE= .6118E-01 CRITERION= .4744E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2039E-02
 HT FLOW CONVERGENCE VALUE= .3262E-03 CRITERION= .4744E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 409
 *** TIME = .277290E+11 TIME INC = .788940E+09

*** AUTO TIME STEP: NEXT TIME INC = .67281E+09 DECREASED (FACTOR = .8528)
HT FLOW CONVERGENCE VALUE= 24.18 CRITERION= .4699E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4225
HT FLOW CONVERGENCE VALUE= .5204E-01 CRITERION= .4729E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1732E-02
HT FLOW CONVERGENCE VALUE= .2732E-03 CRITERION= .4729E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 411
*** TIME = .284018E+11 TIME INC = .672814E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 22:14:39 JAN 24, 1995 CP= 84994.220
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 23.74 CRITERION= .4745E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3409
HT FLOW CONVERGENCE VALUE= .4450E-01 CRITERION= .4773E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 412
*** TIME = .290747E+11 TIME INC = .672814E+09
*** AUTO STEP TIME: NEXT TIME INC = .67281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.36 CRITERION= .4734E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3402
HT FLOW CONVERGENCE VALUE= .4205E-01 CRITERION= .4760E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 413
*** TIME = .297475E+11 TIME INC = .672814E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1726)

HT FLOW CONVERGENCE VALUE= 22.96 CRITERION= .4774E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3910
HT FLOW CONVERGENCE VALUE= .4868E-01 CRITERION= .4802E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1461E-02
HT FLOW CONVERGENCE VALUE= .2429E-03 CRITERION= .4802E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 415
*** TIME = .305364E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .51060E+09 DECREASED (FACTOR = .6472)

HT FLOW CONVERGENCE VALUE= 22.57 CRITERION= .4767E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2616
HT FLOW CONVERGENCE VALUE= .3132E-01 CRITERION= .4784E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 416
*** TIME = .310470E+11 TIME INC = .510596E+09
*** AUTO STEP TIME: NEXT TIME INC = .51060E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.31 CRITERION= .4802E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2520
HT FLOW CONVERGENCE VALUE= .3103E-01 CRITERION= .4818E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 417
*** TIME = .315576E+11 TIME INC = .510596E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 86416.810

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21h5a.db

FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 23:13:53 JAN 24, 1995 CP= 86430.840
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 69.14048
PARAMETER WPSID(JINC) = 69.19429
PARAMETER WPBOT(JINC) = 69.25585
PARAMETER DFTOP(JINC) = 26.14178
PARAMETER DFSID(JINC) = 26.14176
PARAMETER DFEDG(JINC) = 26.14164
PARAMETER DFBOT(JINC) = 26.16481
PARAMETER WPTOP(JINC,0) = 31.55760
PARAMETER WPSID(JINC,0) = 31.55760
PARAMETER WPBOT(JINC,0) = 31.55760
PARAMETER DFTOP(JINC,0) = 31.55760
PARAMETER DFSID(JINC,0) = 31.55760
PARAMETER DFEDG(JINC,0) = 31.55760
PARAMETER DFBOT(JINC,0) = 31.55760
PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 131
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 123.2191
PARAMETER WPSID(JINC) = 124.2551
PARAMETER WPBOT(JINC) = 126.8714
PARAMETER DFTOP(JINC) = 82.62771
PARAMETER DFSID(JINC) = 82.37722
PARAMETER DFEDG(JINC) = 80.55264
PARAMETER DFBOT(JINC) = 72.93396
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08
PARAMETER DFSID(JINC,0) = .3155763E+08
PARAMETER DFEDG(JINC,0) = .3155763E+08
PARAMETER DFBOT(JINC,0) = .3155763E+08
PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 235
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 145.6514
PARAMETER WPSID(JINC) = 146.4552
PARAMETER WPBOT(JINC) = 148.5590
PARAMETER DFTOP(JINC) = 117.1910
PARAMETER DFSID(JINC) = 116.9857
PARAMETER DFEDG(JINC) = 115.5958
PARAMETER DFBOT(JINC) = 108.5098
PARAMETER WPTOP(JINC,0) = .3155760E+09
PARAMETER WPSID(JINC,0) = .3155760E+09
PARAMETER WPBOT(JINC,0) = .3155760E+09
PARAMETER DFTOP(JINC,0) = .3155760E+09
PARAMETER DFSID(JINC,0) = .3155760E+09
PARAMETER DFEDG(JINC,0) = .3155760E+09
PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 329
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 106.0000

PARAMETER WPSID(JINC) = 106.3335

PARAMETER WPBOT(JINC) = 107.1434

PARAMETER DFTOP(JINC) = 93.72541

PARAMETER DFSID(JINC) = 93.66724

PARAMETER DFEDG(JINC) = 93.15115

PARAMETER DFBOT(JINC) = 90.85424

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10

PARAMETER DFTOP(JINC,0) = .3155760E+10

PARAMETER DFSID(JINC,0) = .3155760E+10

PARAMETER DFEDG(JINC,0) = .3155760E+10

PARAMETER DFBOT(JINC,0) = .3155760E+10

PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 88910.030

*** NOTE *** CP= 88910.030 TIME= 00:32:08
Write parameters to file= c21h5a.parm.

*** NOTE *** CP= 88910.100 TIME= 00:32:08
Parameters written. Lines= 770.

*** WARNING *** CP= 88910.110 TIME= 00:32:08
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c21h5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:32:09 JAN 25, 1995 CP= 88910.180
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

21 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE
TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 100.0

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE
TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4982 ELEMENTS (OF 9965 DEFINED) SELECTED FROM

48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 17.50

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .00000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4982 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4982 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 88941.620 TIME= 00:33:18
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 81
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 88966.770 TIME= 00:34:06
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 131
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 88992.020 TIME= 00:34:51
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 185
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89016.770 TIME= 00:35:38
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 235
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89041.740 TIME= 00:36:28
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 279
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89066.940 TIME= 00:37:14
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 329
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89091.950 TIME= 00:38:01
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 373
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89116.980 TIME= 00:38:46
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 417
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89141.940 TIME= 00:39:30
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2491 ELEMENTS (OF 9965 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89167.420 TIME= 00:40:19
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 81
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89188.030 TIME= 00:41:02
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 131
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89208.650 TIME= 00:41:43
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 185
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89229.640 TIME= 00:42:20
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 235
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89250.610 TIME= 00:43:00
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 279
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89271.440 TIME= 00:43:37
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 329
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89292.430 TIME= 00:44:13
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 373
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89313.110 TIME= 00:44:53
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 417
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 89333.760 TIME= 00:45:36
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 89339.660

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:45:46 JAN 25, 1995 CP= 89339.660
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
VARIABLE 3 IS AT NODE 1920 ITEM= TEMP COMP= NAME= wwpeside
VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
VARIABLE 5 IS AT NODE 1926 ITEM= TEMP COMP= NAME= wwpetop
VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
VARIABLE 7 IS AT NODE 1919 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	146.5 .3156E+09
3	NSOL	1920 TEMP	wwpeside	26.14	.1000E-05	134.9 .3156E+09
4	NSOL	129 TEMP	wmidtop	26.14	.1000E-05	145.7 .3156E+09
5	NSOL	1926 TEMP	wwpetop	26.14	.1000E-05	134.5 .3156E+09
6	NSOL	122 TEMP	wmidbot	26.15	.1000E-05	148.6 .3156E+09
7	NSOL	1919 TEMP	wwpebot	26.14	.1000E-05	136.0 .3156E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:45:57 JAN 25, 1995 CP= 89342.110
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1920 TEMP wwpeside	129 TEMP wmidtop	1926 TEMP wwpetop	122 TEMP wmidbot	1919 TEMP wwpebot
.10000E-05	26.1416	26.1414	26.1355	26.1372	26.1466	26.1444
.20000E-05	69.1943	56.4814	69.1405	56.3699	69.2559	56.9124
31.558	69.1943	56.4814	69.1405	56.3699	69.2559	56.9124
.31558E+07	98.2623	81.3580	97.1372	80.7849	100.953	82.9042
.63116E+07	105.065	88.4395	103.947	87.8766	107.773	89.9906
.94673E+07	109.459	93.1145	108.355	92.5653	112.147	94.6498
.12623E+08	112.806	96.7051	111.717	96.1665	115.484	98.2321
.15779E+08	115.511	99.6227	114.434	99.0939	118.169	101.136
.18935E+08	117.795	102.095	116.730	101.574	120.442	103.600
.22090E+08	119.757	104.229	118.705	103.715	122.389	105.722
.25246E+08	121.426	106.078	120.382	105.570	124.060	107.565
.28402E+08	122.908	107.705	121.865	107.201	125.532	109.184
.31558E+08	124.255	109.179	123.219	108.680	126.871	110.655
.63115E+08	132.937	118.735	131.951	118.266	135.458	120.156
.94673E+08	137.520	123.836	136.570	123.388	139.961	125.208
.12623E+09	140.501	127.227	139.583	126.796	142.879	128.560
.15779E+09	142.593	129.659	141.698	129.242	144.917	130.958
.18935E+09	144.128	131.499	143.252	131.092	146.407	132.770
.22090E+09	145.274	132.909	144.418	132.513	147.510	134.154
.25246E+09	146.243	134.098	145.401	133.710	148.445	135.321
.28402E+09	146.382	134.567	145.562	134.190	148.529	135.760
.31558E+09	146.455	134.880	145.651	134.510	148.559	136.047
.63115E+09	143.480	133.595	142.791	133.281	145.274	134.587
.94673E+09	137.722	128.995	137.113	128.716	139.293	129.863
.12623E+10	131.066	123.344	130.527	123.097	132.440	124.102
.15779E+10	125.186	118.218	124.700	117.994	126.413	118.896
.18935E+10	120.242	113.869	119.798	113.663	121.352	114.482
.22090E+10	116.072	110.191	115.662	110.001	117.090	110.755
.25246E+10	112.058	106.643	111.680	106.467	112.986	107.157
.28402E+10	108.930	103.859	108.576	103.693	109.795	104.339
.31558E+10	106.333	101.557	106.000	101.401	107.143	102.006
.63115E+10	92.8805	89.7693	92.6619	89.6652	93.3964	90.0570
.94673E+10	87.4475	84.9373	87.2707	84.8526	87.8588	85.1666
.12623E+11	84.3393	82.1946	84.1879	82.1218	84.6895	82.3907
.15779E+11	82.0774	80.1912	81.9440	80.1269	82.3834	80.3621
.18935E+11	79.9157	78.2612	79.7985	78.2045	80.1832	78.4107
.22090E+11	78.1235	76.6434	78.0183	76.5923	78.3629	76.7779
.25246E+11	76.5780	75.2350	76.4821	75.1883	76.7940	75.3559
.28402E+11	75.2434	74.0114	75.1551	73.9681	75.4421	74.1232
.31558E+11	74.1199	72.9712	74.0371	72.9306	74.3044	73.0745

 * Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 89342.490 TIME= 00:45:58
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1108 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1258 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 1073 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	147.1 .3156E+09
3	NSOL	1108 TEMP	swpeside	26.14	.1000E-05	135.6 .3156E+09
4	NSOL	38 TEMP	smidtop	26.14	.1000E-05	146.3 .3156E+09
5	NSOL	1258 TEMP	swpetop	26.14	.1000E-05	135.3 .3156E+09
6	NSOL	2 TEMP	smidbot	26.15	.1000E-05	149.2 .3156E+09
7	NSOL	1073 TEMP	swpebot	26.14	.1000E-05	136.7 .3156E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:01 JAN 25, 1995 CP= 89344.410
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1108 TEMP swpeside	38 TEMP smidtop	1258 TEMP swpetop	2 TEMP smidbot	1073 TEMP swpebot
.10000E-05	26.1416	26.1414	26.1356	26.1373	26.1465	26.1444
.20000E-05	70.0015	57.3473	69.9500	57.2540	70.0606	57.7005
31.558	70.0015	57.3473	69.9500	57.2540	70.0606	57.7005
.31558E+07	99.0554	82.2942	97.9345	81.7369	101.681	83.7442
.63116E+07	105.861	89.3718	104.746	88.8243	108.503	90.8274
.94673E+07	110.254	94.0410	109.154	93.5066	112.877	95.4821
.12623E+08	113.601	97.6268	112.516	97.1026	116.213	99.0603
.15779E+08	116.304	100.540	115.232	100.025	118.898	101.960
.18935E+08	118.587	103.008	117.526	102.501	121.169	104.421
.22090E+08	120.548	105.137	119.500	104.637	123.116	106.539
.25246E+08	122.217	106.982	121.176	106.488	124.785	108.379
.28402E+08	123.697	108.605	122.657	108.114	126.256	109.995
.31558E+08	125.043	110.076	124.010	109.589	127.594	111.462
.63115E+08	133.711	119.604	132.728	119.146	136.169	120.939
.94673E+08	138.280	124.684	137.334	124.247	140.660	125.973
.12623E+09	141.248	128.056	140.333	127.636	143.566	129.309
.15779E+09	143.328	130.472	142.435	130.065	145.594	131.693
.18935E+09	144.850	132.297	143.978	131.901	147.072	133.491
.22090E+09	145.986	133.693	145.132	133.307	148.165	134.863
.25246E+09	146.945	134.870	146.106	134.492	149.092	136.020
.28402E+09	147.066	135.319	146.248	134.951	149.158	136.440

.31558E+09	147.126	135.616	146.324	135.257	149.177	136.713
.63115E+09	144.046	134.219	143.359	133.913	145.795	135.151
.94673E+09	138.209	129.536	137.602	129.264	139.741	130.352
.12623E+10	131.484	123.814	130.947	123.572	132.824	124.526
.15779E+10	125.554	118.634	125.069	118.415	126.749	119.271
.18935E+10	120.570	114.243	120.127	114.042	121.653	114.819
.22090E+10	116.369	110.532	115.960	110.346	117.361	111.061
.25246E+10	112.326	106.953	111.950	106.781	113.232	107.436
.28402E+10	109.177	104.146	108.825	103.985	110.021	104.597
.31558E+10	106.564	101.825	106.232	101.673	107.354	102.247
.63115E+10	93.0216	89.9370	92.8039	89.8355	93.5247	90.2074
.94673E+10	87.5586	85.0705	87.3825	84.9879	87.9603	85.2861
.12623E+11	84.4329	82.3073	84.2822	82.2362	84.7744	82.4915
.15779E+11	82.1588	80.2897	82.0261	80.2270	82.4579	80.4504
.18935E+11	79.9865	78.3470	79.8697	78.2917	80.2479	78.4876
.22090E+11	78.1863	76.7197	78.0816	76.6698	78.4197	76.8460
.25246E+11	76.6346	75.3040	76.5391	75.2584	76.8459	75.4177
.28402E+11	75.2950	74.0743	75.2071	74.0321	75.4887	74.1794
.31558E+11	74.1678	73.0298	74.0854	72.9901	74.3482	73.1270

* Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 89344.760 TIME= 00:46:01
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1078 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1799 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2826 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2814 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	1 TEMP	wmidcent	26.14	.1000E-05	232.4	.1893E+09
3	NSOL	1078 TEMP	shellcnt	26.14	.1000E-05	138.8	.3156E+09
4	NSOL	1799 TEMP	wwpecent	26.14	.1000E-05	138.1	.3156E+09
5	NSOL	147 TEMP	imidbot	26.16	.2000E-05	120.8	.6312E+09
6	NSOL	2826 TEMP	iwpebot	26.16	.2000E-05	116.6	.6312E+09
7	NSOL	2814 TEMP	idfebot	26.16	.2000E-05	111.3	.6312E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:05 JAN 25, 1995 CP= 89346.690
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP	1078 TEMP	1799 TEMP	147 TEMP	2826 TEMP	2814 TEMP
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	wmidcent	shellcnt	wwpecent	imidbot	iwpebot	idfebot
.10000E-05	26.1413	26.1411	26.1411	26.1733	26.1722	26.1718
.20000E-05	167.716	62.6690	61.9266	26.1648	26.1648	26.1648
31.558	167.716	62.6691	61.9266	26.1648	26.1648	26.1648
.31558E+07	195.743	86.3242	85.5329	55.8284	48.0892	38.4747
.63116E+07	202.698	93.3242	92.5338	64.7492	56.9140	46.5455
.94673E+07	207.025	97.9714	97.1774	70.3459	62.6482	52.2998
.12623E+08	210.258	101.531	100.740	74.5397	66.9990	56.8242
.15779E+08	212.814	104.434	103.641	77.9221	70.5275	60.5549
.18935E+08	214.927	106.882	106.093	80.7631	73.4996	63.7230
.22090E+08	216.720	109.004	108.214	83.2143	76.0679	66.4716
.25246E+08	218.233	110.837	110.051	85.3391	78.3069	68.8816
.28402E+08	219.532	112.456	111.669	87.2166	80.2847	71.0147
.31558E+08	220.709	113.916	113.132	88.9098	82.0657	72.9340
.63115E+08	227.604	123.352	122.583	99.7965	93.6720	85.4649
.94673E+08	230.473	128.345	127.586	105.718	99.8171	92.2383
.12623E+09	231.825	131.634	130.890	109.732	104.006	96.6836
.15779E+09	232.389	133.983	133.249	112.666	107.105	99.9567
.18935E+09	232.450	135.741	135.021	114.928	109.510	102.548
.22090E+09	232.205	137.081	136.370	116.727	111.417	104.610
.25246E+09	232.042	138.211	137.509	118.208	113.003	106.348
.28402E+09	229.949	138.568	137.887	119.126	114.079	107.607
.31558E+09	228.373	138.804	138.134	119.763	114.833	108.510
.63115E+09	212.662	136.913	136.346	120.773	116.619	111.311
.94673E+09	197.273	131.857	131.372	117.733	114.079	109.407
.12623E+10	182.211	125.816	125.398	113.427	110.187	106.050
.15779E+10	170.123	120.395	120.029	109.286	106.359	102.619
.18935E+10	160.420	115.824	115.495	105.713	103.033	99.6050
.22090E+10	152.456	111.963	111.667	102.667	100.192	97.0215
.25246E+10	144.941	108.251	107.982	99.7208	97.4388	94.5099
.28402E+10	139.296	105.344	105.097	97.3713	95.2317	92.4931
.31558E+10	134.597	102.945	102.713	95.4456	93.4310	90.8542
.63115E+10	110.207	90.6245	90.4840	85.7716	84.4604	82.7771
.94673E+10	101.075	85.6159	85.5032	81.7069	80.6484	79.2882
.12623E+11	95.8182	82.7645	82.6715	79.4271	78.5225	77.3588
.15779E+11	92.0638	80.6910	80.6080	77.7573	76.9619	75.9384
.18935E+11	88.5878	78.6962	78.6239	76.1238	75.4258	74.5273
.22090E+11	85.8207	77.0268	76.9647	74.7261	74.1012	73.2961
.25246E+11	83.5110	75.5839	75.5258	73.4975	72.9304	72.1997
.28402E+11	81.5657	74.3267	74.2758	72.4133	71.8925	71.2209
.31558E+11	79.9813	73.2670	73.2177	71.4848	70.9992	70.3730

* Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 89347.060 TIME= 00:46:05
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2834 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2818 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2878 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2868 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	136.8	.3156E+09
3	NSOL	2834 TEMP	iwpecent	26.14	.2000E-05	127.0	.3156E+09
4	NSOL	2818 TEMP	idfecent	26.14	.2000E-05	119.4	.6312E+09
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	130.1	.3156E+09
6	NSOL	2878 TEMP	iwpeedge	26.14	.2000E-05	123.4	.6312E+09
7	NSOL	2868 TEMP	idfeedge	26.14	.2000E-05	117.3	.6312E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:09 JAN 25, 1995 CP= 89349.000
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2834 TEMP iwpecent	2818 TEMP idfecent	157 TEMP imidedge	2878 TEMP iwpeedge	2868 TEMP idfeedge
.10000E-05	26.1518	26.1485	26.1474	26.1551	26.1553	26.1567
.20000E-05	26.1414	26.1414	26.1414	26.1414	26.1414	26.1414
31.558	26.1563	26.1476	26.1419	26.1459	26.1434	26.1416
.31558E+07	79.8026	63.8218	47.8164	68.4498	56.8096	44.6870
.63116E+07	87.9156	72.4067	56.8428	77.1153	65.6212	53.4444
.94673E+07	93.1015	78.0037	62.9406	82.6475	71.4029	59.4872
.12623E+08	96.9999	82.2504	67.6226	86.8149	75.8002	64.1672
.15779E+08	100.151	85.6917	71.4337	90.1786	79.3665	67.9946
.18935E+08	102.794	88.5860	74.6455	93.0036	82.3690	71.2295
.22090E+08	105.070	91.0821	77.4178	95.4350	84.9605	74.0274
.25246E+08	107.009	93.2344	79.8248	97.4791	87.2022	76.4652
.28402E+08	108.731	95.1346	81.9469	99.2823	89.1791	78.6171
.31558E+08	110.284	96.8455	83.8545	100.947	90.9597	80.5526
.63115E+08	120.284	107.897	96.1677	111.689	102.437	93.0915
.94673E+08	125.598	113.778	102.723	117.476	108.607	99.7418
.12623E+09	129.096	117.700	107.099	121.304	112.737	104.209
.15779E+09	131.589	120.539	110.297	124.058	115.744	107.489
.18935E+09	133.454	122.704	112.774	126.135	118.052	110.033
.22090E+09	134.882	124.388	114.721	127.744	119.855	112.042
.25246E+09	136.077	125.796	116.348	129.087	121.358	113.717
.28402E+09	136.505	126.527	117.376	129.717	122.222	114.824
.31558E+09	136.788	127.027	118.089	130.146	122.818	115.596
.63115E+09	135.172	126.906	119.400	129.530	123.354	117.311
.94673E+09	130.251	122.963	116.356	125.259	119.838	114.538
.12623E+10	124.311	117.860	112.009	119.876	115.100	110.420
.15779E+10	118.963	113.135	107.841	114.945	110.644	106.422
.18935E+10	114.453	109.117	104.263	110.766	106.838	102.976
.22090E+10	110.646	105.718	101.228	107.231	103.614	100.050
.25246E+10	106.991	102.450	98.3054	103.839	100.512	97.2297
.28402E+10	104.126	99.8687	95.9806	101.164	98.0536	94.9797
.31558E+10	101.767	97.7546	94.0881	98.9718	96.0447	93.1511
.63115E+10	89.7461	87.1292	84.7272	87.9065	86.0165	84.1375
.94673E+10	84.8667	82.7535	80.8096	83.3761	81.8563	80.3412
.12623E+11	82.1041	80.2983	78.6348	80.8283	79.5322	78.2379
.15779E+11	80.0968	78.5083	77.0440	78.9727	77.8349	76.6975
.18935E+11	78.1635	76.7695	75.4833	77.1758	76.1791	75.1816
.22090E+11	76.5414	75.2938	74.1413	75.6570	74.7659	73.8729
.25246E+11	75.1372	74.0045	72.9576	74.3334	73.5257	72.7157
.28402E+11	73.9106	72.8709	71.9088	73.1729	72.4320	71.6881
.31558E+11	72.8755	71.9055	71.0076	72.1866	71.4964	70.8031

 * Drift Wall Surface Temperatures *

 dmidside = midlength drift wall side surface

dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 89349.350 TIME= 00:46:09
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2951 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2921 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3105 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 3083 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	131.5 .3156E+09
3	NSOL	2951 TEMP	dwpeside	26.14	.2000E-05	124.4 .6312E+09
4	NSOL	2921 TEMP	ddfeside	26.14	.2000E-05	118.5 .6312E+09
5	NSOL	229 TEMP	dmidtop	26.13	.1000E-05	130.2 .3156E+09
6	NSOL	3105 TEMP	dwpetop	26.13	.1000E-05	124.2 .6312E+09
7	NSOL	3083 TEMP	ddfetop	26.12	.1000E-05	118.6 .6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:13 JAN 25, 1995 CP= 89351.320
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2951 TEMP dwpeside	2921 TEMP ddfeside	229 TEMP dmidtop	3105 TEMP dwpetop	3083 TEMP ddfetop
.10000E-05	26.1414	26.1424	26.1431	26.1270	26.1251	26.1216
.20000E-05	26.1414	26.1414	26.1414	26.1414	26.1414	26.1414
31.558	26.1474	26.1441	26.1418	26.1471	26.1440	26.1418
.31558E+07	70.6658	58.6593	46.4311	68.5712	57.9997	46.5684
.63116E+07	79.2250	67.4477	55.3338	77.1801	66.8251	55.5100
.94673E+07	84.6979	73.2052	61.4060	82.7096	72.6168	61.6045
.12623E+08	88.8217	77.5795	66.0838	86.8809	77.0192	66.2991
.15779E+08	92.1499	81.1248	69.8989	90.2493	80.5868	70.1262
.18935E+08	94.9447	84.1082	73.1185	93.0780	83.5881	73.3540
.22090E+08	97.3062	86.6823	75.9006	95.5136	86.1766	76.1417
.25246E+08	99.3007	88.9056	78.3216	97.5080	88.4118	78.5660
.28402E+08	101.129	90.8647	80.4570	99.3296	90.3815	80.7049
.31558E+08	102.782	92.6262	82.3772	101.002	92.1532	82.6277
.63115E+08	113.398	103.979	94.7844	111.745	103.554	95.0395
.94673E+08	119.102	110.090	101.336	117.537	109.695	101.588
.12623E+09	122.870	114.181	105.774	121.369	113.804	106.011
.15779E+09	125.576	117.157	109.018	124.122	116.792	109.247
.18935E+09	127.611	119.431	111.541	126.194	119.079	111.765
.22090E+09	129.186	121.205	113.521	127.807	120.864	113.740
.25246E+09	130.498	122.685	115.172	129.147	122.352	115.390
.28402E+09	131.086	123.511	116.247	129.774	123.188	116.458
.31558E+09	131.487	124.078	116.986	130.203	123.764	117.191

.63115E+09	130.670	124.418	118.478	129.584	124.154	118.649
.94673E+09	126.268	120.770	115.553	125.309	120.534	115.697
.12623E+10	120.770	115.918	111.310	119.921	115.706	111.430
.15779E+10	115.755	111.378	107.215	114.989	111.184	107.320
.18935E+10	111.508	107.505	103.694	110.806	107.325	103.786
.22090E+10	107.916	104.225	100.706	107.268	104.057	100.787
.25246E+10	104.470	101.072	97.8282	103.872	100.915	97.8991
.28402E+10	101.755	98.5742	95.5339	101.194	98.4252	95.5977
.31558E+10	99.5282	96.5319	93.6672	98.9984	96.3903	93.7254
.63115E+10	88.2647	86.3222	84.4574	87.9157	86.2229	84.4852
.94673E+10	83.6629	82.0982	80.5929	83.3798	82.0158	80.6120
.12623E+11	81.0722	79.7367	78.4499	80.8297	79.6649	78.4643
.15779E+11	79.1862	78.0129	76.8818	78.9720	77.9487	76.8929
.18935E+11	77.3621	76.3337	75.3412	77.1734	76.2761	75.3493
.22090E+11	75.8228	74.9030	74.0141	75.6533	74.8503	74.0198
.25246E+11	74.4829	73.6487	72.8423	74.3280	73.5997	72.8459
.28402E+11	73.3091	72.5437	71.8028	73.1662	72.4975	71.8045
.31558E+11	72.3126	71.5994	70.9088	72.1782	71.5550	70.9087

 * 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 89351.700 TIME= 00:46:14
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2911 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 3073 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2909 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	167 TEMP	1midside	26.14	.2000E-05	115.3	.6312E+09
3	NSOL	2911 TEMP	1dfeside	26.14	.2000E-05	108.4	.6312E+09
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	115.0	.6312E+09
5	NSOL	3073 TEMP	1dfetop	26.10	.1000E-05	108.8	.6312E+09
6	NSOL	165 TEMP	1midbot	26.19	.2000E-05	109.9	.6312E+09
7	NSOL	2909 TEMP	1dfebot	26.19	.2000E-05	104.2	.6312E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:17 JAN 25, 1995 CP= 89353.600
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2911 TEMP 1dfeside	219 TEMP 1midtop	3073 TEMP 1dfetop	165 TEMP 1midbot	2909 TEMP 1dfebot
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.10000E-05	26.1429	26.1436	26.0999	26.0976	26.1941	26.1936
.20000E-05	26.1428	26.1428	26.1109	26.1109	26.1871	26.1871
31.558	26.1428	26.1428	26.1109	26.1109	26.1871	26.1871
.31558E+07	47.9288	36.1914	47.0561	36.2823	41.0574	32.5229
.63116E+07	56.5450	43.6523	55.6473	43.8064	49.3438	39.0570
.94673E+07	62.1159	49.1401	61.2629	49.3430	54.7868	44.1642
.12623E+08	66.3212	53.5050	65.5185	53.7487	58.9321	48.3377
.15779E+08	69.7281	57.1286	68.9688	57.4039	62.3068	51.8512
.18935E+08	72.6000	60.2205	71.8768	60.5203	65.1613	54.8737
.22090E+08	75.0816	62.9131	74.3923	63.2318	67.6385	57.5191
.25246E+08	77.2126	65.2842	76.5703	65.6175	69.8137	59.8610
.28402E+08	79.1226	67.3895	78.4786	67.7351	71.7439	61.9490
.31558E+08	80.8509	69.2871	80.2243	69.6426	73.4869	63.8339
.63115E+08	92.0924	81.7573	91.5534	82.1535	84.9470	76.3278
.94673E+08	98.2020	88.4819	97.7154	88.8799	91.2374	83.2141
.12623E+09	102.453	93.0157	102.010	93.3862	95.5048	87.8002
.15779E+09	105.568	96.3114	105.143	96.6890	98.6638	91.1613
.18935E+09	107.960	98.9837	107.549	99.3603	101.151	93.8112
.22090E+09	109.885	101.083	109.495	101.464	103.154	95.9280
.25246E+09	111.470	102.834	111.094	103.213	104.823	97.7491
.28402E+09	112.545	104.188	112.181	104.564	106.071	99.1552
.31558E+09	113.320	105.144	112.965	105.511	106.961	100.206
.63115E+09	115.309	108.448	115.005	108.754	109.922	104.229
.94673E+09	112.977	106.947	112.688	107.189	108.317	103.309
.12623E+10	109.267	103.939	108.989	104.131	105.248	100.811
.15779E+10	105.585	100.770	105.320	100.925	102.040	98.0279
.18935E+10	102.363	97.9568	102.107	98.0843	99.1907	95.5140
.22090E+10	99.6030	95.5320	99.3563	95.6368	96.7281	93.3286
.25246E+10	96.9176	93.1655	96.6812	93.2515	94.3213	91.1894
.28402E+10	94.7608	91.2512	94.5318	91.3229	92.3708	89.4458
.31558E+10	92.9979	89.6982	92.7761	89.7588	90.7802	88.0303
.63115E+10	84.2009	82.0586	84.0295	82.0680	82.8674	81.0761
.94673E+10	80.4451	78.7182	80.2985	78.7163	79.4093	77.9634
.12623E+11	78.3511	76.8751	78.2212	76.8683	77.4842	76.2478
.15779E+11	76.8121	75.5157	76.6943	75.5056	76.0634	74.9766
.18935E+11	75.2949	74.1578	75.1873	74.1444	74.6495	73.6958
.22090E+11	73.9839	72.9655	73.8840	72.9495	73.4151	72.5607
.25246E+11	72.8230	71.8998	72.7285	71.8811	72.3158	71.5408
.28402E+11	71.7930	70.9447	71.7023	70.9233	71.3349	70.6226
.31558E+11	70.9046	70.1146	70.8162	70.0905	70.4853	69.8215

* 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 89353.960 TIME= 00:46:18
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 3557 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 3773 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3554 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	279 TEMP	3midside	26.14	.1000E-05	97.28	.9467E+09
3 NSOL	3557 TEMP	3dfeside	26.14	.1000E-05	95.13	.9467E+09
4 NSOL	309 TEMP	3midtop	26.06	.1000E-05	97.23	.9467E+09
5 NSOL	3773 TEMP	3dfetop	26.06	.1000E-05	95.26	.9467E+09
6 NSOL	276 TEMP	3midbot	26.23	.2000E-05	95.01	.9467E+09
7 NSOL	3554 TEMP	3dfebot	26.23	.2000E-05	93.16	.9467E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:20 JAN 25, 1995 CP= 89355.990
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3557 TEMP 3dfeside	309 TEMP 3midtop	3773 TEMP 3dfetop	276 TEMP 3midbot	3554 TEMP 3dfebot
.10000E-05	26.1439	26.1440	26.0561	26.0554	26.2345	26.2344
.20000E-05	26.1441	26.1441	26.0635	26.0635	26.2297	26.2297
31.558	26.1441	26.1441	26.0635	26.0635	26.2297	26.2297
.31558E+07	30.0327	28.0125	29.6572	27.8716	28.5947	27.3100
.63116E+07	35.6351	31.9902	35.1402	31.8394	33.2965	30.4516
.94673E+07	39.9811	35.7656	39.5118	35.6579	37.2856	33.7931
.12623E+08	43.4990	39.1034	43.0804	39.0471	40.6159	36.8863
.15779E+08	46.4662	42.0412	46.0968	42.0317	43.4671	39.6727
.18935E+08	49.0391	44.6445	48.7130	44.6748	45.9617	42.1751
.22090E+08	51.3137	46.9721	51.0248	47.0359	48.1807	44.4313
.25246E+08	53.3472	49.0704	53.0935	49.1622	50.1777	46.4772
.28402E+08	55.1793	50.9719	54.9524	51.0878	51.9871	48.3405
.31558E+08	56.8497	52.7067	56.6451	52.8432	53.6400	50.0465
.63115E+08	68.2774	64.6093	68.1992	64.8501	65.0568	61.8623
.94673E+08	74.8925	71.4443	74.8609	71.7120	71.7127	68.7433
.12623E+09	79.4551	76.1341	79.4525	76.4134	76.2969	73.4502
.15779E+09	82.8642	79.6381	82.8757	79.9239	79.7472	76.9823
.18935E+09	85.5483	82.4277	85.5700	82.7162	82.4665	79.7770
.22090E+09	87.7341	84.6729	87.7659	84.9680	84.6832	82.0542
.25246E+09	89.5644	86.5565	89.6031	86.8551	86.5466	83.9706
.28402E+09	91.0324	88.1269	91.0744	88.4202	88.0788	85.5511
.31558E+09	92.1809	89.3214	92.2258	89.6108	89.2635	86.7998
.63115E+09	97.1932	94.7701	97.1988	94.9880	94.6426	92.5466
.94673E+09	97.2835	95.1345	97.2258	95.2587	95.0147	93.1642
.12623E+10	95.6578	93.7652	95.5504	93.8220	93.6766	92.0340
.15779E+10	93.5798	91.8661	93.4426	91.8759	91.8165	90.3314
.18935E+10	91.6101	90.0449	91.4544	90.0223	90.0300	88.6727
.22090E+10	89.8560	88.4117	89.6882	88.3655	88.4263	87.1762
.25246E+10	88.0949	86.7679	87.9191	86.7038	86.8083	85.6575
.28402E+10	86.6253	85.3851	86.4443	85.3080	85.4465	84.3719
.31558E+10	85.4267	84.2607	85.2427	84.1743	84.3379	83.3278
.63115E+10	79.5210	78.7640	79.3417	78.6471	78.8951	78.2379
.94673E+10	76.7544	76.1445	76.5931	76.0332	76.2864	75.7564
.12623E+11	75.2321	74.7106	75.0846	74.6056	74.8493	74.3959
.15779E+11	74.0962	73.6382	73.9589	73.5382	73.7720	73.3738
.18935E+11	72.9320	72.5304	72.8025	72.4334	72.6590	72.3096
.22090E+11	71.8822	71.5223	71.7584	71.4276	71.6479	71.3347
.25246E+11	70.9287	70.6025	70.8083	70.5084	70.7262	70.4424
.28402E+11	70.0624	69.7626	69.9436	69.6678	69.8865	69.6255
.31558E+11	69.2998	69.0207	69.1809	68.9241	69.1458	68.9028

 * Upper Rock Layer Interface Temperatures *

 surfTCw = center ground surface
 TCwPTn = center TCw and PTn interface

PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 887 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 89356.360 TIME= 00:46:21
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 866 ITEM= TEMP COMP= NAME= TCwPTn

VARIABLE 4 IS AT NODE 809 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 722 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 491 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 407 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	887 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3 NSOL	866 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4 NSOL	809 TEMP	PTnTSw1	21.24	.1000E-05	33.90	.3156E+11
5 NSOL	722 TEMP	TSw1TSw2	24.25	.1000E-05	53.60	.3156E+11
6 NSOL	491 TEMP	upmodel	25.33	.1000E-05	61.50	.2209E+11
7 NSOL	407 TEMP	middrift	26.14	.1000E-05	65.89	.1578E+11

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:24 JAN 25, 1995 CP= 89358.330
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	887 TEMP surfTCw	866 TEMP TCwPTn	809 TEMP PTnTSw1	722 TEMP TSw1TSw2	491 TEMP upmodel	407 TEMP middrift
.10000E-05	18.7000	19.5281	21.2395	24.2502	25.3286	26.1445
.20000E-05	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
31.558	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.31558E+07	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.63116E+07	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.94673E+07	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.12623E+08	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.15779E+08	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.18935E+08	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.22090E+08	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.25246E+08	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.28402E+08	18.7000	19.5283	21.2402	24.2517	25.3305	26.1452
.31558E+08	18.7000	19.5283	21.2402	24.2517	25.3305	26.1453
.63115E+08	18.7000	19.5283	21.2402	24.2517	25.3349	26.1559
.94673E+08	18.7000	19.5283	21.2402	24.2517	25.3659	26.2264
.12623E+09	18.7000	19.5283	21.2402	24.2517	25.4545	26.4193
.15779E+09	18.7000	19.5283	21.2402	24.2517	25.6185	26.7653
.18935E+09	18.7000	19.5283	21.2402	24.2517	25.8588	27.2612
.22090E+09	18.7000	19.5283	21.2402	24.2517	26.1660	27.8853
.25246E+09	18.7000	19.5283	21.2402	24.2519	26.5272	28.6107
.28402E+09	18.7000	19.5283	21.2402	24.2522	26.9294	29.4113
.31558E+09	18.7000	19.5283	21.2402	24.2529	27.3614	30.2648
.63115E+09	18.7000	19.5283	21.2402	24.3327	32.0584	39.1150

.94673E+09	18.7000	19.5283	21.2402	24.6974	36.2778	46.0975
.12623E+10	18.7000	19.5283	21.2403	25.4069	39.8082	51.0742
.15779E+10	18.7000	19.5283	21.2408	26.3848	42.7057	54.5673
.18935E+10	18.7000	19.5283	21.2428	27.5277	45.0659	57.0250
.22090E+10	18.7000	19.5285	21.2485	28.7482	46.9977	58.7882
.25246E+10	18.7000	19.5290	21.2608	29.9845	48.5905	60.0791
.28402E+10	18.7000	19.5302	21.2831	31.1972	49.9040	61.0194
.31558E+10	18.7000	19.5327	21.3185	32.3625	51.0014	61.7228
.63115E+10	18.7000	19.7608	22.6071	40.8562	57.0372	65.0613
.94673E+10	18.7000	20.4144	24.9468	45.4562	59.0979	65.5259
.12623E+11	18.7000	21.1919	27.2864	48.2642	60.2519	65.7873
.15779E+11	18.7000	21.8830	29.2398	50.1796	60.9704	65.8929
.18935E+11	18.7000	22.4384	30.7727	51.5297	61.3670	65.8053
.22090E+11	18.7000	22.8673	31.9432	52.4503	61.5039	65.5572
.25246E+11	18.7000	23.1908	32.8171	53.0503	61.4787	65.2358
.28402E+11	18.7000	23.4292	33.4539	53.4120	61.3405	64.8701
.31558E+11	18.7000	23.6003	33.9042	53.5968	61.1307	64.4908

* Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP

TSw2TSw3 = center TSw2 and TSw3 interface

TSw3CHnv = center TSw3 and CHn1v interface

CHnvCHnz = center CHn1v and CHn1z interface

CHnzCHn2 = center CHn1z and CHn2 interface

CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 89358.690 TIME= 00:46:25

NSOL command erases all previously stored or calculated data
unless STORE, MERGE is used.

VARIABLE 5 IS AT NODE 764 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 6 IS AT NODE 908 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 7 IS AT NODE 928 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 947 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 1004 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.96	.2000E-05	63.18	.2209E+11
3	NSOL	866 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	809 TEMP	PTnTSw1	21.24	.1000E-05	33.90	.3156E+11
5	NSOL	764 TEMP	TSw2TSw3	27.69	.1893E+08	59.36	.3156E+11
6	NSOL	908 TEMP	TSw3CHnv	28.16	.9467E+07	57.18	.3156E+11
7	NSOL	1004 TEMP	CHn2bot	31.87	.2000E-05	43.34	.3156E+11

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

TRW ENVIRONMENT VERSION=HP 9000/7XX 00:46:28 JAN 25, 1995 CP= 89360.600
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	866 TEMP TCwPTn	809 TEMP PTnTSw1	764 TEMP TSw2TSw3	908 TEMP TSw3CHnv	1004 TEMP CHn2bot
------	----------------------	--------------------	---------------------	----------------------	----------------------	----------------------

.10000E-05	26.9604	19.5281	21.2395	27.6879	28.1592	31.8715
.20000E-05	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
31.558	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.31558E+07	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.63116E+07	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.94673E+07	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.12623E+08	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.15779E+08	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.18935E+08	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.22090E+08	26.9598	19.5283	21.2402	27.6874	28.1588	31.8711
.25246E+08	26.9599	19.5283	21.2402	27.6874	28.1588	31.8711
.28402E+08	26.9599	19.5283	21.2402	27.6874	28.1588	31.8711
.31558E+08	26.9599	19.5283	21.2402	27.6874	28.1588	31.8711
.63115E+08	26.9643	19.5283	21.2402	27.6874	28.1588	31.8711
.94673E+08	26.9953	19.5283	21.2402	27.6874	28.1588	31.8711
.12623E+09	27.0835	19.5283	21.2402	27.6874	28.1588	31.8711
.15779E+09	27.2459	19.5283	21.2402	27.6874	28.1588	31.8711
.18935E+09	27.4827	19.5283	21.2402	27.6880	28.1588	31.8711
.22090E+09	27.7844	19.5283	21.2402	27.6892	28.1588	31.8711
.25246E+09	28.1384	19.5283	21.2402	27.6920	28.1589	31.8711
.28402E+09	28.5321	19.5283	21.2402	27.6972	28.1592	31.8711
.31558E+09	28.9549	19.5283	21.2402	27.7058	28.1598	31.8711
.63115E+09	33.5679	19.5283	21.2402	28.1310	28.2359	31.8711
.94673E+09	37.7501	19.5283	21.2402	29.2427	28.5875	31.8711
.12623E+10	41.2862	19.5283	21.2403	30.8092	29.2725	31.8711
.15779E+10	44.2214	19.5283	21.2408	32.5801	30.2196	31.8711
.18935E+10	46.6386	19.5283	21.2428	34.3865	31.3304	31.8713
.22090E+10	48.6361	19.5285	21.2485	36.1310	32.5208	31.8721
.25246E+10	50.2956	19.5290	21.2608	37.7657	33.7302	31.8740
.28402E+10	51.6721	19.5302	21.2831	39.2714	34.9194	31.8780
.31558E+10	52.8261	19.5327	21.3185	40.6438	36.0644	31.8853
.63115E+10	59.0657	19.7608	22.6071	49.3160	44.4273	32.3581
.94673E+10	61.0609	20.4144	24.9468	53.2262	48.9148	33.6190
.12623E+11	62.1143	21.1919	27.2864	55.4298	51.6097	35.2433
.15779E+11	62.7466	21.8830	29.2398	56.8714	53.4368	36.9027
.18935E+11	63.0814	22.4384	30.7727	57.8596	54.7460	38.4654
.22090E+11	63.1840	22.8673	31.9432	58.5127	55.6832	39.8916
.25246E+11	63.1526	23.1908	32.8171	58.9389	56.3558	41.1750
.28402E+11	63.0339	23.4292	33.4539	59.2072	56.8386	42.3210
.31558E+11	62.8651	23.6003	33.9042	59.3649	57.1833	43.3411

***** ROUTINE COMPLETED ***** CP = 89360.620

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c21h5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 46
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```

*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|               REV. 5.0 A               |               HP 9000/7XX
|               CP TIME   (sec) =      89370.350   |               TIME = 00:46:54
|               ELAPSED TIME (sec) =    205379.000   |               DATE  = 01/25/95
|               |               |               |               |
*-----*

```

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*-----*
| WELCOME TO THE ANSYS PROGRAM |
*-----*

```

```

***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = c12x5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

```

```

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED = 16777216      64.000 MB  COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592    18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496    25.568 MB
WORK SPACE OBTAINED = 16777214      64.000 MB
BYTES PER WORD = 4

```

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ERRORS ENCOUNTERED IN EITHER THE DOCUMENTATION OR THE
RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON TO START THE ANSYS MENU SYSTEM
ENTER HELP FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 3/29/1994
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c12x5a.inp
7 /COM, *
8 /COM, * 12 PWR WP/MPC (10 cm overpack)
9 /COM, * Average SNF: 22 years old, 42.2 GWd/MTU burnup
10 /COM, * 5.0 m Diameter Drift with Concrete Invert
11 /COM, * 100 MTU/acre (24.7 kgU/m^2) AML (High Thermal Loading)
12 /COM, * Drift spacing = 22.5 m (11.25 m model half width)
13 /COM, * WP c/c spacing = 9.237 m
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat
16 /COM, * SNF Heat Loads file: snf2242.dat
17 /COM, *
18 /COM, *****

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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,12 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.76525,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.647,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,9.237,
42 *SET,WPNUM,12.0,
43 *SET,MODEL,11.25,
44 *SET,OFFST,0.27255,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TM1100+TM_START
90 TME1000=TM11000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWLL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWLL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWLL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM,
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 3,
378 /COM,
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM,
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM,
386 /COM,
387 LESIZE, 58,,, 4,3.6,
388 LESIZE, 59,,, 4,3.6,
389 /COM,
390 /COM,
391 /COM,
392 LESIZE, 24,,, 3,
393 /COM,
394 LESIZE, 27,,, 3,
395 /COM,
396 LESIZE, 30,,, 9,
397 /COM,
398 /COM,
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,,12,0.3,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,,12,3,
403 LSEL,ALL,
404 /COM,
405 LESIZE, 43,,, 3,
406 /COM,
407 LESIZE, 46,,, 2,
408 /COM,
409 LESIZE, 49,,, 7,
410 /COM,
411 /COM,
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM,
416 /COM,
417 /COM,
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM,
425 /COM,
426 /COM,
427 /COM,
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM,
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM,

```

Model is 6 elements wide
(3+7=10 divisions)

Extrude WP 5 elements

1 element thick steel

Extrude drift 5 elements with smallest
elements at WP mid-length

Set element sizes in rock layers

3 element thick TCw

3 element thick PTn

9 element thick TSw1

12 elements above and below near field
with smaller elements near drift

3 element thick TSw3

2 element thick CHn1v

7 element thick CHn1z

12 element thick CHN2 with smaller elements
near the top

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)

Waste package

Invert

Drift wall and TSw2 areas

```

439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSW1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCW areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSW3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatenated lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,          Rock around drift
513 /COM,          (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,58,
527 VMESH,41,
528 /COM,          Mid-drift rock
529 /COM,          (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,58,
535 /COM,          Concatenate to mesh volume 45
536 /COM,          (L's 311,312 used and freed up)
537 /COM,          (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,          Extrude rest of TSw2
546 /COM,          (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,          Extrude TSw1
549 /COM,          (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,          Extrude PTn
553 /COM,          (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,          Extrude TCw
557 /COM,          (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,          Extrude TSw3
561 /COM,          (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,          Extrude CHn1v
565 /COM,          (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,          Extrude CHn1z
569 /COM,          (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,          Extrude CHn2
573 /COM,          (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,          *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PIn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,      Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,      Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,      Set solution parameters and apply B.C.'s
746 /COM,      Repository surface = 18.70 C
747 /COM,      1300 m depth      = 53.05 C
748 /COM,      Solve steady-state for initial drift wall conditions
749 /COM,      Hot waste package radiates heat to the
750 /COM,      steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,      Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,      Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,      Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,      Apply initial conditions wall temperature
778 /COM,      as a temporary boundary condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TMI100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM, *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TMI0,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TMI1,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TMI10,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0))

```

```

929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TMI100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0)))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0)))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0)))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0)))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAB,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 21.233,
984 /DIST,1,1.25,1
985 /VCON,1, 25.000,
986 /TYPE,1,HIDP,
987 /SHADE,,GOUR,
988 /GLINE,,0,
989 /TITLE,
990 VSEL,S,LOC,Z,0,100
991 ESLV,S
992 /SHOW,meshdrift,grph,0,8,
993 EPLOT
994 /COM,          View model meshing for side cut-away
995 /ANGLE, 1,+90,YS,1
996 /DIST,1,0.8,1
997 VSEL,S,LOC,X,-100,0
998 ESLV,S

```

```

999 /SHOW,meshside,grph,0,8,
1000 EPLOT
1001 /COM, *****
1002 /COM, Create color temp. contour plots for WP end view
1003 /COM,
1004 /COM, Set view settings
1005 /RESET
1006 /DEVICE,VECT,OFF
1007 /NUM, 1,
1008 /TRIAD,OFF,
1009 /PNUM,MAT, 1,
1010 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
1011 /VIEW,1, -.36934, .15899, -.91559,
1012 /FOC, 1, 2.7776, -.97308, 7.5978,
1013 /DIST,1, 12.182,
1014 /DIST,1,1.5,1
1015 /ANG, 1, 5.1088, ZS,
1016 /VCON,1, 25.000,
1017 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1018 /TYPE,,HIDP,
1019 /GLIN,1,-1,
1020 /CVAL,,40,50,60,70,80,90,100,300,
1021 /COM, Select end view of WP
1022 VSEL,S,LOC,Z,0,100,
1023 ESLV,S,
1024 /COM, Select load steps and plot temperatures
1025 SET,3,
1026 /TITLE,
1027 /SHOW,near0,100.grph,0,8,
1028 PLNSOL,TEMP,
1029 SET,8,
1030 /TITLE,
1031 /SHOW,near05,100.grph,0,8,
1032 PLNSOL,TEMP,
1033 SET,13,
1034 /TITLE,
1035 /SHOW,near1,100.grph,0,8,
1036 PLNSOL,TEMP,
1037 SET,17,
1038 /TITLE,
1039 /SHOW,near5,100.grph,0,8,
1040 PLNSOL,TEMP,
1041 SET,22,
1042 /TITLE,
1043 /SHOW,near10,100.grph,0,8,
1044 PLNSOL,TEMP,
1045 SET,26,
1046 /TITLE,
1047 /SHOW,near50,100.grph,0,8,
1048 PLNSOL,TEMP,
1049 SET,31,
1050 /TITLE,
1051 /SHOW,near100,100.grph,0,8,
1052 PLNSOL,TEMP,
1053 SET,35,
1054 /TITLE,
1055 /SHOW,near500,100.grph,0,8,
1056 PLNSOL,TEMP,
1057 SET,40,
1058 /TITLE,
1059 /SHOW,near1k,100.grph,0,8,
1060 PLNSOL,TEMP,
1061 /COM, View mesh for closeup end of model
1062 /GLINE,,0,
1063 /TYPE,,HIDP,
1064 /SHADE,,GOUR,
1065 /SHOW,meshnear,grph,0,8,
1066 EPLOT
1067 /COM, *****
1068 /COM, Create color temp. contour plots for WP corner view

```

```

1069 /COM,
1070 /COM,          Set view settings
1071 /RESET
1072 /DEVICE,VECT,OFF,
1073 /NUM, 1,
1074 /TRIAD,OFF,
1075 /PNUM,MAT , 1,
1076 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1077 /VIEW,1, .64865, .48519E-01, -.75954,
1078 /FOC, 1, -.21216E-01, .39180, 2.3739,
1079 /DIST,1, 7.6223,
1080 /DIST,1,1.5,1
1081 /ANG, 1, -.52088,ZS,
1082 /VCON,1, 25.000,
1083 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1084 /TYPE,1,HIDP,
1085 /GLIN,1,-1,
1086 /CVAL,,40,50,60,70,80,90,100,300,
1087 /COM,          Select corner view of WP
1088 VSEL,S,LOC,X,-100,0,
1089 VSEL,R,LOC,Z,0,100,
1090 ESLV,S,
1091 /COM,          Select load steps and plot temperatures
1092 SET,3,
1093 /TITLE,
1094 /SHOW,corn0 ,100.grph,0,8,
1095 PLNSOL,TEMP,
1096 SET,8,
1097 /TITLE,
1098 /SHOW,corn05 ,100.grph,0,8,
1099 PLNSOL,TEMP,
1100 SET,13,
1101 /TITLE,
1102 /SHOW,corn1 ,100.grph,0,8,
1103 PLNSOL,TEMP,
1104 SET,17,
1105 /TITLE,
1106 /SHOW,corn5 ,100.grph,0,8,
1107 PLNSOL,TEMP,
1108 SET,22,
1109 /TITLE,
1110 /SHOW,corn10 ,100.grph,0,8,
1111 PLNSOL,TEMP,
1112 SET,26,
1113 /TITLE,
1114 /SHOW,corn50 ,100.grph,0,8,
1115 PLNSOL,TEMP,
1116 SET,31,
1117 /TITLE,
1118 /SHOW,corn100 ,100.grph,0,8,
1119 PLNSOL,TEMP,
1120 SET,35,
1121 /TITLE,
1122 /SHOW,corn500 ,100.grph,0,8,
1123 PLNSOL,TEMP,
1124 SET,40,
1125 /TITLE,
1126 /SHOW,corn1k ,100.grph,0,8,
1127 PLNSOL,TEMP,
1128 /COM,          View mesh for corner of model
1129 /GLINE,,0,
1130 /TYPE,,HIDP,
1131 /SHADE,,GOUR,
1132 /SHOW,meshcorn,grph,0,8,
1133 EPLT
1134 FINISH
1135 /COM, *****
1136 /COM,          Print time/temperature output at specific locations
1137 /POST26,
1138 /COM,

```

```

1139 /COM, *****
1140 /COM, *      Waste Package Surface Temperatures      *
1141 /COM, *****
1142 /COM,      wmidside = midlength side surface
1143 /COM,      wwpeside = end of WP side surface
1144 /COM,      wmidtop  = midlength top surface
1145 /COM,      wwpetop  = end of WP top surface
1146 /COM,      wmidbot  = midlength bottom surface
1147 /COM,      wwpebot  = end of WP bottom surface
1148 NSOL,2,(NODE( WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1149 NSOL,3,(NODE( WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpeside,
1150 NSOL,4,(NODE( 0.0,      WPRAD,      0.0)),TEMP,, wmidtop,
1151 NSOL,5,(NODE( 0.0,      WPRAD,      (WPLEN/2.0))),TEMP,, wwpetop,
1152 NSOL,6,(NODE( 0.0, (0.0-WPRAD),      0.0)),TEMP,, wmidbot,
1153 NSOL,7,(NODE( 0.0, (0.0-WPRAD),      (WPLEN/2.0))),TEMP,, wwpebot,
1154 PRVAR,2,3,4,5,6,7,
1155 /COM,
1156 /COM, *****
1157 /COM, *      Waste Package Inside Shell Temperatures      *
1158 /COM, *****
1159 /COM,      smidside = midlength side inside shell
1160 /COM,      swpeside = end of WP side inside shell
1161 /COM,      smidtop  = midlength top inside shell
1162 /COM,      swpetop  = end of WP top inside shell
1163 /COM,      smidbot  = midlength bottom inside shell
1164 /COM,      swpebot  = end of WP bottom inside shell
1165 NSOL,2,(NODE((WPRAD-WPWLL), 0.0,      0.0)),TEMP,,smidside,
1166 NSOL,3,(NODE((WPRAD-WPWLL), 0.0, (WPLEN/2.0-WPWLL))),TEMP,,swpeside,
1167 NSOL,4,(NODE(0.0, (WPRAD-WPWLL), 0.0)),TEMP,, smidtop,
1168 NSOL,5,(NODE(0.0, (WPRAD-WPWLL), (WPLEN/2.0-WPWLL))),TEMP,, swpetop,
1169 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWLL), 0.0)),TEMP,, smidbot,
1170 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWLL), (WPLEN/2.0-WPWLL))),TEMP,, swpebot,
1171 PRVAR,2,3,4,5,6,7,
1172 /COM,
1173 /COM, *****
1174 /COM, *      Waste Package Center and Bottom of Invert      *
1175 /COM, *****
1176 /COM,      wmidcent = midlength center of WP
1177 /COM,      shellcnt = end of WP center inside shell
1178 /COM,      wwpecent = end of WP center surface
1179 /COM,      imidbot  = midlength bottom of invert
1180 /COM,      iwpebot  = end of WP bottom of invert
1181 /COM,      idfebot  = end of drift bottom of invert
1182 NSOL,2,(NODE( 0.0,      0.0,      0.0)),TEMP,,wmidcent,
1183 NSOL,3,(NODE( 0.0,      0.0, (WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1184 NSOL,4,(NODE( 0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1185 NSOL,5,(NODE( 0.0, (DFCENT-DFRAD), 0.0)),TEMP,, imidbot,
1186 NSOL,6,(NODE( 0.0, (DFCENT-DFRAD), (WPLEN/2.0))),TEMP,, iwpebot,
1187 NSOL,7,(NODE( 0.0, (DFCENT-DFRAD), (WSPC/2.0))),TEMP,, idfebot,
1188 PRVAR,2,3,4,5,6,7,
1189 /COM,
1190 /COM, *****
1191 /COM, *      Surface Temperature of Invert      *
1192 /COM, *****
1193 /COM,      imidcent = midlength center of invert surface
1194 /COM,      iwpecent = end of WP center of invert surface
1195 /COM,      idfecent = end of drift center of invert surface
1196 /COM,      imidedge = midlength corner of invert surface
1197 /COM,      iwpeedge = end of WP corner of invert surface
1198 /COM,      idfeedge = end of drift corner of invert surface
1199 NSOL,2,(NODE( 0.0,      YYY,      0.0)),TEMP,,imidcent,
1200 NSOL,3,(NODE( 0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1201 NSOL,4,(NODE( 0.0,      YYY,      (WSPC/2.0))),TEMP,,idfecent,
1202 NSOL,5,(NODE( XXX,      YYY,      0.0)),TEMP,,imidedge,
1203 NSOL,6,(NODE( XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1204 NSOL,7,(NODE( XXX,      YYY,      (WSPC/2.0))),TEMP,,idfeedge,
1205 PRVAR,2,3,4,5,6,7,
1206 /COM,
1207 /COM, *****
1208 /COM, *      Drift Wall Surface Temperatures      *

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1209 /COM, *****
1210 /COM,      dmidside = midlength drift wall side surface
1211 /COM,      dwpeside = end of WP drift wall side surface
1212 /COM,      ddfeside = end of drift side surface
1213 /COM,      dmidtopy = midlength drift wall top surface
1214 /COM,      dwpetop = end of WP drift wall top surface
1215 /COM,      ddfetop = end of drift top surface
1216 NSOL,2,(NODE( DFRAD,      DFCENT,      0.0)),TEMP,,dmidside,
1217 NSOL,3,(NODE( DFRAD,      DFCENT,      (WPLEN/2.0))),TEMP,,dwpeside,
1218 NSOL,4,(NODE( DFRAD,      DFCENT,      (WSPC/2.0))),TEMP,,ddfeside,
1219 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),      0.0)),TEMP,, dmidtopy,
1220 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),      (WPLEN/2.0))),TEMP,, dwpetop,
1221 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),      (WSPC/2.0))),TEMP,, ddfetop,
1222 PRVAR,2,3,4,5,6,7,
1223 /COM,
1224 /COM, *****
1225 /COM, *      1 meter Rock Temperatures      *
1226 /COM, *****
1227 /COM,      1midside = midlength 1 meter from drift side
1228 /COM,      1dfeside = end of drift 1 meter from drift side
1229 /COM,      1midtopy = midlength 1 meter above drift top
1230 /COM,      1dfetop = end of drift 1 meter above drift top
1231 /COM,      1midbot = midlength 1 meter below drift cut
1232 /COM,      1dfebot = end of drift 1 meter below drift cut
1233 NSOL,2,(NODE((DFRAD+1),      DFCENT,      0.0)),TEMP,,1midside,
1234 NSOL,3,(NODE((DFRAD+1),      DFCENT,      (WSPC/2.0))),TEMP,,1dfeside,
1235 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),      0.0)),TEMP,, 1midtopy,
1236 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),      (WSPC/2.0))),TEMP,, 1dfetop,
1237 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),      0.0)),TEMP,, 1midbot,
1238 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),      (WSPC/2.0))),TEMP,, 1dfebot,
1239 PRVAR,2,3,4,5,6,7,
1240 /COM,
1241 /COM, *****
1242 /COM, *      3 meter Rock Temperatures      *
1243 /COM, *****
1244 /COM,      3midside = midlength 3 meter from drift side
1245 /COM,      3dfeside = end of drift 3 meter from drift side
1246 /COM,      3midtopy = midlength 3 meter above drift top
1247 /COM,      3dfetop = end of drift 3 meter above drift top
1248 /COM,      3midbot = midlength 3 meter below drift cut
1249 /COM,      3dfebot = end of drift 3 meter below drift cut
1250 NSOL,2,(NODE((DFRAD+3),      DFCENT,      0.0)),TEMP,,3midside,
1251 NSOL,3,(NODE((DFRAD+3),      DFCENT,      (WSPC/2.0))),TEMP,,3dfeside,
1252 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),      0.0)),TEMP,, 3midtopy,
1253 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),      (WSPC/2.0))),TEMP,, 3dfetop,
1254 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),      0.0)),TEMP,, 3midbot,
1255 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),      (WSPC/2.0))),TEMP,, 3dfebot,
1256 PRVAR,2,3,4,5,6,7,
1257 /COM,
1258 /COM, *****
1259 /COM, *      Upper Rock Layer Interface Temperatures      *
1260 /COM, *****
1261 /COM,      surfTCw = center ground surface
1262 /COM,      TCwPTn = center TCw and PTn interface
1263 /COM,      PTnTSw1 = center PTn and TSw1 interface
1264 /COM,      TSw1TSw2 = center TSw1 and TSw2 interface
1265 /COM,      upmodel = center TSw2 1/2 drift spacing above WP
1266 /COM,      middrift = drift to drift midplane at rep. height
1267 NSOL,2,(NODE( 0.0,      GSURF,      0.0)),TEMP,, surfTCw,
1268 NSOL,3,(NODE( 0.0, (GSURF-36.00),      0.0)),TEMP,, TCwPTn,
1269 NSOL,4,(NODE( 0.0, (GSURF-74.10),      0.0)),TEMP,, PTnTSw1,
1270 NSOL,5,(NODE( 0.0, (GSURF-204.2),      0.0)),TEMP,, TSw1TSw2,
1271 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),      0.0)),TEMP,, upmodel,
1272 NSOL,7,(NODE( MODEL,      DFCENT,      0.0)),TEMP,, middrift,
1273 PRVAR,2,3,4,5,6,7,
1274 /COM,
1275 /COM, *****
1276 /COM, *      Lower Rock Layer Interface Temperatures      *
1277 /COM, *****
1278 /COM,      dwnmodel = center TSw2 1/2 drift spacing below WP

```

```

1279 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1280 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1281 /COM,          CHnvCHnz = center CHn1v and CHn1z interface
1282 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1283 /COM,          CHn2bot = center actual lower contact of CHn2
1284 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1285 NSOL,3,(NODE( 0.0,(GSURF-393.5), 0.0)),TEMP,,TSw2TSw3,
1286 NSOL,4,(NODE( 0.0,(GSURF-409.3), 0.0)),TEMP,,TSw3CHnv,
1287 NSOL,5,(NODE( 0.0,(GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1288 NSOL,6,(NODE( 0.0,(GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1289 NSOL,7,(NODE( 0.0,(GSURF-535.2), 0.0)),TEMP,,CHn2bot,
1290 PRVAR,2,3,4,5,6,7,
1291 FINISH
1292 /EXIT,
1293 /COM,          *****
1294 /COM,          End of batch input file
1295 /COM,          *****
1296 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,

```

```

ABBREVIATION= X11      /show,x11,
ABBREVIATION= VEC      /show,,,1,
ABBREVIATION= RAS      /show,,,0,
ABBREVIATION= ON       /menu,on,
ABBREVIATION= OFF      /menu,off,
ABBREVIATION= NVP      /config,nvpag,512,

ABBREVIATION= QUIT     /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

```

VIEW CONE ANGLE FOR WINDOW 1 25.00

```

*****
END start.ans
*****

```

To start ANSYS menu:

```

type:  x3d  for console
       x11  for X-term

```

```

type:  on

```

```

*****
*****
ANSYS REVISION  5.0A                      3/29/1994
3-D Model of Waste Package Drift Emplacement  R.Bahney III
*****
*
* File name: c12x5a.inp
*
* 12 PWR WP/MPC (10 cm overpack)
* Average SNF: 22 years old, 42.2 GWd/MTU burnup
* 5.0 m Diameter Drift with Concrete Invert
* 100 MTU/acre (24.7 kgU/m^2) AML (High Thermal Loading)
* Drift spacing = 22.5 m (11.25 m model half width)
* WP c/c spacing = 9.237 m
*
* Material Properties file: Proprep.dat
* SNF Heat Loads file: snf2242.dat
*
*****
Increase the number of database pages from 16 (256) to 32 Mb

```

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

```

*****

```

TITLE=

12 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

```

LENGTH      = METERS(M)
MASS         = KILOGRAMS(KG)
TIME         = SECONDS(SEC)
TEMPERATURE  = CENTIGRADE
CURRENT      = AMPS

```

```

*****

```

Define emplacement parameters

```

WPRAD = radius of waste package (m)
DFRAD = radius of drift (m)
INVRT = height of invert backfill floor (m)
WPLEN = length of waste package (m)
WPWLL = thickness of outer barrier (m)
WPSPC = waste package c/c spacing (m)

```

WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .7652500
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.647000
 PARAMETER WPLL = .1000000
 PARAMETER WSPC = 9.237000
 PARAMETER WPNUM = 12.00000
 PARAMETER MODEL = 11.25000
 PARAMETER OFFST = .2725500

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1
 PARAMETER GSURF = 308.7726

PARAMETER DFCENT = .2725500
PARAMETER XXX = 1.734935
PARAMETER YYY = -1.527450
PARAMETER WPVOL = 7.573152
PARAMETER TM_START = 31.55760
PARAMETER TM10 = 3155760.
PARAMETER TM11 = .3155760E+08
PARAMETER TM110 = .3155760E+09
PARAMETER TM1100 = .3155760E+10
PARAMETER TM11000 = .3155760E+11
PARAMETER TME0 = .2840187E+08
PARAMETER TME1 = .3155763E+08
PARAMETER TME9 = .2840184E+09
PARAMETER TME10 = .3155760E+09
PARAMETER TME90 = .2840184E+10
PARAMETER TME100 = .3155760E+10
PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 19:43:22 MAR 29, 1995 CP= .720
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCw	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smearred Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density:	DENS	(kg/m^3)	**
** Emissivity	EMIS		**
** Conductivity:	KXX	(W/m/K)	**
** Specific Heat:	C	(J/kg/K)	**

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***

SLOC= 1 .000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1

SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C MAT= 4 NUM. POINTS= 8
SLOC= 5 .1046900E+08 .1019840E+08 2006500. 2111400.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 11
SLOC= 9 2191200. 2269200. 2341000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 4
SLOC= 1 1844300. 2031500. 2283100. 4559000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 8
SLOC= 5 4518800. 4480000. 2295300. 2448900.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 11
SLOC= 9 2574000. 2679200. 2770200.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 4
SLOC= 1 2443600. 2555700. 2696000. .3660130E+08

PROPERTY TABLE C MAT= 6 NUM. POINTS= 8
SLOC= 5 .3532630E+08 .3417640E+08 1501300. 1601800.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 11
SLOC= 9 1683600. 1752500. 1812000.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 4
SLOC= 1 2603200. 2664700. 2744700. .3660690E+08

PROPERTY TABLE C MAT= 7 NUM. POINTS= 8
SLOC= 5 .3534400E+08 .3420530E+08 2791400. 2741900.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 11
SLOC= 9 2670700. 1581400. 1632000.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 4
SLOC= 1 2430900. 2538500. 2680250. .2798690E+08

PROPERTY TABLE C MAT= 8 NUM. POINTS= 8
SLOC= 5 .2705530E+08 .2621460E+08 2564400. 2593500.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 11
SLOC= 9 2598500. 1981950. 2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
SLOC= 1 21.11000 37.78000 65.56000
93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
SLOC= 7 176.6700 204.4400 232.2200
260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
SLOC= 13 343.3300 371.1100 398.8900
426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
 SLOC= 19 510.0000 537.7800 565.5600
 593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

```

PARAMETER ASSY(7,1) =    480.8000    479.8000    478.9000    477.9000
                        477.0000    467.8000
PARAMETER ASSY(13,1) =   459.2000    451.1000    443.5000    436.2000
                        429.3000    423.7000
PARAMETER ASSY(19,1) =   412.6000    404.5000    341.6000    294.1000
                        252.6000    222.0000
PARAMETER ASSY(25,1) =   198.5000    179.8000    162.5000    150.1000
                        139.7000    85.70000
PARAMETER ASSY(31,1) =    67.40000    56.80000    49.40000    42.90000
                        38.10000    34.30000
PARAMETER ASSY(37,1) =    31.30000    29.00000    15.50000    12.80000
                        11.10000    10.00000
PARAMETER ASSY(43,1) =     9.200000    8.600000    8.000000    7.600000
                        7.200000
PARAMETER ASSY(1,0) =    .1000000E-05    .1000000    .2000000    .3000000
                        .4000000    .5000000
PARAMETER ASSY(7,0) =     .6000000    .7000000    .8000000    .9000000
                        1.000000    2.000000
PARAMETER ASSY(13,0) =     3.000000    4.000000    5.000000    6.000000
                        7.000000    8.000000
PARAMETER ASSY(19,0) =     9.000000    10.00000    20.00000    30.00000
                        40.00000    50.00000
PARAMETER ASSY(25,0) =    60.00000    70.00000    80.00000    90.00000
                        100.0000    200.0000
PARAMETER ASSY(31,0) =    300.0000    400.0000    500.0000    600.0000
                        700.0000    800.0000
PARAMETER ASSY(37,0) =    900.0000    1000.000    2000.000    3000.000
                        4000.000    5000.000
PARAMETER ASSY(43,0) =    6000.000    7000.000    8000.000    9000.000
                        10000.00
PARAMETER ASSY(0,1) =     1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE=    47 ROWS BY    2 COLUMNS
RESULT MATRIX SIZE=    47 ROWS BY    2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.5845
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
  WPHOT(1)      = COPY ASSY(1)
SCALE FACTORS  RESULT= 1.5845    INPUT= 1.0000
VECTOR LENGTH=    47

PARAMETER WPHOT(0,1) =     1.000000
PARAMETER WPTOP(0,1) =     1.000000

```

PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)

(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)

(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-11.2500	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	3	X,Y,Z=	11.2500	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	-11.2500	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	11.2500	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	-11.2500	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	11.2500	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	-11.2500	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	11.2500	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	-11.2500	11.5226	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.000000E+00	11.5226	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	11.2500	11.5226	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	-11.2500	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	11.2500	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	-11.2500	-10.9775	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.000000E+00	-10.9775	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	11.2500	-10.9775	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	-11.2500	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	11.2500	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	-11.2500	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	11.2500	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	-11.2500	-105.727	.000000E+00	IN CSYS=	0

KEYPOINT 28 X,Y,Z= .000000E+00 -105.727 .000000E+00 IN CSYS= 0
 KEYPOINT 29 X,Y,Z= 11.2500 -105.727 .000000E+00 IN CSYS= 0
 KEYPOINT 30 X,Y,Z= -11.2500 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 31 X,Y,Z= .000000E+00 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 32 X,Y,Z= 11.2500 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 33 X,Y,Z= -11.2500 -991.227 .000000E+00 IN CSYS= 0
 KEYPOINT 34 X,Y,Z= .000000E+00 -991.227 .000000E+00 IN CSYS= 0
 KEYPOINT 35 X,Y,Z= 11.2500 -991.227 .000000E+00 IN CSYS= 0

Define lines connecting rock layers
 (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS	1	2			
LINE NO.= 1 KP1=	1	TAN1=	-1.0000	.0000	.0000
KP2=	2	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	2	3			
LINE NO.= 2 KP1=	2	TAN1=	-1.0000	.0000	.0000
KP2=	3	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	4	5			
LINE NO.= 3 KP1=	4	TAN1=	-1.0000	.0000	.0000
KP2=	5	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	5	6			
LINE NO.= 4 KP1=	5	TAN1=	-1.0000	.0000	.0000
KP2=	6	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	7	8			
LINE NO.= 5 KP1=	7	TAN1=	-1.0000	.0000	.0000
KP2=	8	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	8	9			
LINE NO.= 6 KP1=	8	TAN1=	-1.0000	.0000	.0000
KP2=	9	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	10	11			
LINE NO.= 7 KP1=	10	TAN1=	-1.0000	.0000	.0000
KP2=	11	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	11	12			
LINE NO.= 8 KP1=	11	TAN1=	-1.0000	.0000	.0000
KP2=	12	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	13	14			
LINE NO.= 9 KP1=	13	TAN1=	-1.0000	.0000	.0000
KP2=	14	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	14	15			
LINE NO.= 10 KP1=	14	TAN1=	-1.0000	.0000	.0000
KP2=	15	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	18	19			
LINE NO.= 11 KP1=	18	TAN1=	-1.0000	.0000	.0000
KP2=	19	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	19	20			
LINE NO.= 12 KP1=	19	TAN1=	-1.0000	.0000	.0000
KP2=	20	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	21	22			
LINE NO.= 13 KP1=	21	TAN1=	-1.0000	.0000	.0000
KP2=	22	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000

	KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 9 12						
LINE NO.=	31	KP1=	9	TAN1=	.0000	1.0000
		KP2=	12	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 10 13						
LINE NO.=	32	KP1=	10	TAN1=	.0000	1.0000
		KP2=	13	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 11 14						
LINE NO.=	33	KP1=	11	TAN1=	.0000	1.0000
		KP2=	14	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 12 15						
LINE NO.=	34	KP1=	12	TAN1=	.0000	1.0000
		KP2=	15	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 13 16						
LINE NO.=	35	KP1=	13	TAN1=	.0000	1.0000
		KP2=	16	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 15 17						
LINE NO.=	36	KP1=	15	TAN1=	.0000	1.0000
		KP2=	17	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 16 18						
LINE NO.=	37	KP1=	16	TAN1=	.0000	1.0000
		KP2=	18	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 17 20						
LINE NO.=	38	KP1=	17	TAN1=	.0000	1.0000
		KP2=	20	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 18 21						
LINE NO.=	39	KP1=	18	TAN1=	.0000	1.0000
		KP2=	21	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 19 22						
LINE NO.=	40	KP1=	19	TAN1=	.0000	1.0000
		KP2=	22	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 20 23						
LINE NO.=	41	KP1=	20	TAN1=	.0000	1.0000
		KP2=	23	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 21 24						
LINE NO.=	42	KP1=	21	TAN1=	.0000	1.0000
		KP2=	24	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 22 25						
LINE NO.=	43	KP1=	22	TAN1=	.0000	1.0000
		KP2=	25	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 23 26						
LINE NO.=	44	KP1=	23	TAN1=	.0000	1.0000
		KP2=	26	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 24 27						
LINE NO.=	45	KP1=	24	TAN1=	.0000	1.0000
		KP2=	27	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 25 28						
LINE NO.=	46	KP1=	25	TAN1=	.0000	1.0000
		KP2=	28	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS 26 29						
LINE NO.=	47	KP1=	26	TAN1=	.0000	1.0000
		KP2=	29	TAN2=	.0000	-1.0000

LINE CONNECTS KEYPOINTS 27 30
 LINE NO.= 48 KP1= 27 TAN1= .0000 1.0000 .0000
 KP2= 30 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8


```

      (TRAVERSED IN SAME DIRECTION AS LINE    33)
      AREA NUMBER =      8
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    39  13  40  11
      (TRAVERSED IN SAME DIRECTION AS LINE    39)
      AREA NUMBER =      9
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    40  14  41  12
      (TRAVERSED IN SAME DIRECTION AS LINE    40)
      AREA NUMBER =     10
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    42  15  43  13
      (TRAVERSED IN SAME DIRECTION AS LINE    42)
      AREA NUMBER =     11
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    43  16  44  14
      (TRAVERSED IN SAME DIRECTION AS LINE    43)
      AREA NUMBER =     12
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    45  17  46  15
      (TRAVERSED IN SAME DIRECTION AS LINE    45)
      AREA NUMBER =     13
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    46  18  47  16
      (TRAVERSED IN SAME DIRECTION AS LINE    46)
      AREA NUMBER =     14
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    48  19  49  17
      (TRAVERSED IN SAME DIRECTION AS LINE    48)
      AREA NUMBER =     15
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    49  20  50  18
      (TRAVERSED IN SAME DIRECTION AS LINE    49)
      AREA NUMBER =     16
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    51  21  52  19
      (TRAVERSED IN SAME DIRECTION AS LINE    51)
      AREA NUMBER =     17
      DEFINE AREA BY LIST OF LINES
      LINE LIST =    52  22  53  20
      (TRAVERSED IN SAME DIRECTION AS LINE    52)
      AREA NUMBER =     18
      *****
      Define center and axis keypoints for drift
      (K's 36,37,38,39,40,41,42,43)
      KEYPOINT   36   X,Y,Z=   .000000E+00   .000000E+00   .000000E+00   IN CSYS=  0
      KEYPOINT   37   X,Y,Z=   .000000E+00   .000000E+00   2.72350      IN CSYS=  0
  
```

KEYPOINT 38 X,Y,Z= .000000E+00 .000000E+00 2.82350 IN CSYS= 0
 KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.72350 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.82350 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .272550 4.61850 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .272550 -4.61850 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .6653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .7653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.22745 .000000E+00 IN CSYS= 0

KEYPOINT 53 X,Y,Z= 1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 55 X,Y,Z= .000000E+00 2.77255 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.52745 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44

LINE NO.=	82	KP1=	36	TAN1=	.0000	1.0000	.0000
		KP2=	44	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 36 45							
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 36 46							
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000	.0000
		KP2=	46	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 36 47							
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 44 48							
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000	.0000
		KP2=	48	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 45 49							
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 46 50							
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000	.0000
		KP2=	50	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 47 51							
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 50 55							
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000	.0000
		KP2=	55	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 48 58							
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000	.0000
		KP2=	58	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 58 52							
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000	.0000
		KP2=	52	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 57 58							
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 58 53							
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 52 59							
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000	.0000
		KP2=	59	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 54 60							
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 55 61							
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000	.0000
		KP2=	61	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 56 62							
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 59 63							
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000	.0000
		KP2=	63	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 60 64
 LINE NO.= 100 KP1= 60 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 61 65
 LINE NO.= 101 KP1= 61 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 62 66
 LINE NO.= 102 KP1= 62 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= -1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 63 19
 LINE NO.= 103 KP1= 63 TAN1= .0000 1.0000 .0000
 KP2= 19 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 64 17
 LINE NO.= 104 KP1= 64 TAN1= -1.0000 .0000 .0000
 KP2= 17 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 65 14
 LINE NO.= 105 KP1= 65 TAN1= .0000 -1.0000 .0000
 KP2= 14 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 66 16
 LINE NO.= 106 KP1= 66 TAN1= 1.0000 .0000 .0000
 KP2= 16 TAN2= -1.0000 .0000 .0000

Define areas around drift
 (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
 (35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 82 60 83
 (TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
 LINE LIST = 83 61 84
 (TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
 LINE LIST = 85 84 62
 (TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
 LINE LIST = 63 82 85
 (TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
 LINE LIST = 86 64 87 60
 (TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
 LINE LIST = 61 87 65 88
 (TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
 LINE LIST = 89 62 88 66

(TRAVERSED IN SAME DIRECTION AS LINE 89)

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES

LINE LIST = 67 86 63 89

(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES

LINE LIST = 73 92 93

(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES

LINE LIST = 68 94 92

(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES

LINE LIST = 95 74 96 69 68

(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES

LINE LIST = 96 75 97 70

(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES

LINE LIST = 98 71 97 76

(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES

LINE LIST = 77 95 73 72 98

(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES

LINE LIST = 99 78 100 74

(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES

LINE LIST = 100 79 101 75

(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES

LINE LIST = 102 76 101 80

(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES

LINE LIST = 81 99 77 102

(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES
LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES
LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES
LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES
LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 93 TO 94 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1
1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1
10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide

(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 4, SPACING RATIO = 3.600

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 4, SPACING RATIO = 3.600

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000

12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = .300

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 3.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick Tsw3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHn1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHn1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES

LINES = 36 10
 COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14
 CONCATENATE LINES
 LINES = 9 35
 COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16
 CONCATENATE LINES
 LINES = 37 11
 COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

 Mesh 2-D areas
 (first WP, then invert, DF wall and rock layers)
 Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS
 IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 121
 MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 145
 MAXIMUM ELEMENT NUMBER = 132
 Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
 OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS
 IN AREAS 27 TO 28 IN STEPS OF 1
 ** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
 ** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 164
 MAXIMUM ELEMENT NUMBER = 144
 Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS
 IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 218
 MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 275
MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 395
MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
IN AREAS 37 TO 40 IN STEPS OF 1

*** WARNING *** CP= 6.770 TIME= 19:43:29
Meshing of area 37 produced 1 poorly shaped elements.

*** NOTE *** CP= 6.770 TIME= 19:43:29
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
353

*** WARNING *** CP= 6.830 TIME= 19:43:29
Meshing of area 38 produced 1 poorly shaped elements.

*** NOTE *** CP= 6.830 TIME= 19:43:29
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
398

*** WARNING *** CP= 6.890 TIME= 19:43:29
Meshing of area 39 produced 1 poorly shaped elements.

*** NOTE *** CP= 6.890 TIME= 19:43:29
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
432

*** WARNING *** CP= 6.950 TIME= 19:43:29
Meshing of area 40 produced 1 poorly shaped elements.

*** NOTE *** CP= 6.950 TIME= 19:43:29
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
442

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 515
MAXIMUM ELEMENT NUMBER = 464

GENERATE NODES AND ELEMENTS
IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 683
MAXIMUM ELEMENT NUMBER = 608

Tsw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 746
MAXIMUM ELEMENT NUMBER = 662
PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 767
MAXIMUM ELEMENT NUMBER = 680
TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 788
MAXIMUM ELEMENT NUMBER = 698
TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 809
MAXIMUM ELEMENT NUMBER = 716
CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 823
MAXIMUM ELEMENT NUMBER = 728
CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 872
MAXIMUM ELEMENT NUMBER = 770
CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 7.920 TIME= 19:43:30
Meshing of area 17 produced 12 poorly shaped elements.

*** NOTE *** CP= 7.920 TIME= 19:43:30
Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

779 780 781 782 791 792 793 794 803 804
805 806

*** WARNING *** CP= 7.990 TIME= 19:43:30
Meshing of area 18 produced 12 poorly shaped elements.

*** NOTE *** CP= 7.990 TIME= 19:43:30
Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

815 816 817 818 827 828 829 830 839 840
841 842

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 956
MAXIMUM ELEMENT NUMBER = 842

Delete concatenated lines
(L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
(V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
54,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
54,

DRAG AREAS
19, 20, 21, 22,
ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,

ALONG LINES

56,
(plot area numbers before next drag commands)

DRAG AREAS

44, 47, 50, 52,

ALONG LINES

55,

DRAG AREAS

57, 61, 65, 68,

ALONG LINES

55,

DRAG AREAS

72, 75, 78, 80,

ALONG LINES

57,

DRAG AREAS

85, 89, 93, 96,

ALONG LINES

57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172
LINE	175 USED FOR LINE(S)	187
LINE	176 USED FOR LINE(S)	193
LINE	177 USED FOR LINE(S)	192
LINE	179 USED FOR LINE(S)	194
LINE	180 USED FOR LINE(S)	195

LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151
 Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1561
 MAXIMUM ELEMENT NUMBER = 1382

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1681
 MAXIMUM ELEMENT NUMBER = 1502

GENERATE NODES AND ELEMENTS
 IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 1826
 MAXIMUM ELEMENT NUMBER = 1634

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
 IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 2431
 MAXIMUM ELEMENT NUMBER = 2174

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2551
MAXIMUM ELEMENT NUMBER = 2294

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2696
MAXIMUM ELEMENT NUMBER = 2426

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2772
MAXIMUM ELEMENT NUMBER = 2474
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3024
MAXIMUM ELEMENT NUMBER = 2634

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3156
MAXIMUM ELEMENT NUMBER = 2714

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3288
MAXIMUM ELEMENT NUMBER = 2794

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3624
MAXIMUM ELEMENT NUMBER = 3034

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3800
MAXIMUM ELEMENT NUMBER = 3154

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3976
MAXIMUM ELEMENT NUMBER = 3274
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 26.520 TIME= 19:43:49
Meshing of volume 43 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3299 3300 3301 3302 3303 3304 3305 3306
3307 3308 3309 3310

*** WARNING *** CP= 26.900 TIME= 19:43:49
Meshing of volume 44 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
3479 3480 3481 3482 3483 3484 3485 3486
3487 3488 3489 3490

MAXIMUM NODE NUMBER = 4312
MAXIMUM ELEMENT NUMBER = 3514

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,

ALONG LINES
58,

*** WARNING *** CP= 27.440 TIME= 19:43:50
Meshing of volume 46 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
3543 3544 3545 3546 3583 3584 3585 3586
3623 3624 3625 3626

MAXIMUM NODE NUMBER = 4488
MAXIMUM ELEMENT NUMBER = 3634
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 27.790 TIME= 19:43:50
Meshing of area 200 produced 1 poorly shaped faces.

*** NOTE *** CP= 27.790 TIME= 19:43:50
Worst shape angle is 41 degrees.

*** WARNING *** CP= 28.110 TIME= 19:43:51
Meshing of volume 45 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
3719 3720 3721 3722 3723 3724 3725 3726
3727 3728 3729 3730

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4664
MAXIMUM ELEMENT NUMBER = 3754

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSW2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,

ALONG LINES
58,

MAXIMUM NODE NUMBER = 5392
MAXIMUM ELEMENT NUMBER = 4330
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 5672
MAXIMUM ELEMENT NUMBER = 4546
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 5784
MAXIMUM ELEMENT NUMBER = 4618
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 5896
MAXIMUM ELEMENT NUMBER = 4690
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6008
MAXIMUM ELEMENT NUMBER = 4762
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6092
MAXIMUM ELEMENT NUMBER = 4810
Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6316
MAXIMUM ELEMENT NUMBER = 4978
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 32.700 TIME= 19:43:55
Meshing of volume 63 produced 66 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

4999	5003	5004	5007	5008	5009	5011	5012
5013	5014	5015	5016	5017	5018	5019	5020
5021	5022	5023	5024	5025	5026	5047	5051
5052	5055	5056	5057	5059	5060	5061	5062
5063	5064	5065	5066	5067	5068	5069	5070
5071	5072	5073	5074	5095	5099	5100	5103
5104	5105	5107	5108	5109	5110	5111	5112
5113	5114	5115	5116	5117	5118	5119	5120
5121	5122						

*** WARNING *** CP= 33.090 TIME= 19:43:56
Meshing of volume 64 produced 66 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

5143	5147	5148	5151	5152	5153	5155	5156
5157	5158	5159	5160	5161	5162	5163	5164
5165	5166	5167	5168	5169	5170	5191	5195
5196	5199	5200	5201	5203	5204	5205	5206
5207	5208	5209	5210	5211	5212	5213	5214
5215	5216	5217	5218	5239	5243	5244	5247
5248	5249	5251	5252	5253	5254	5255	5256
5257	5258	5259	5260	5261	5262	5263	5264
5265	5266						

MAXIMUM NODE NUMBER = 6680
MAXIMUM ELEMENT NUMBER = 5266

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 4313	USED FOR NODES 4489
NODE 4314	USED FOR NODES 5029
NODE 4665	USED FOR NODES 5394
NODE 4505	USED FOR NODES 4666
NODE 5673	USED FOR NODES 5786
NODE 5689	USED FOR NODES 5807
NODE 5690	USED FOR NODES 5808
NODE 5691	USED FOR NODES 5809
NODE 6094	USED FOR NODES 6317
NODE 5030	USED FOR NODES 5897
NODE 5898	USED FOR NODES 6009
NODE 5393	USED FOR NODES 5674
NODE 5087	USED FOR NODES 5913
NODE 5088	USED FOR NODES 5914
NODE 5089	USED FOR NODES 5915
NODE 5919	USED FOR NODES 6021
NODE 5920	USED FOR NODES 6022

NODE	5921	USED	FOR	NODES	6023		
NODE	6131	USED	FOR	NODES	6369		
NODE	6132	USED	FOR	NODES	6370		
NODE	6133	USED	FOR	NODES	6371		
NODE	5433	USED	FOR	NODES	5695		
NODE	4357	USED	FOR	NODES	4490		
NODE	4358	USED	FOR	NODES	4491		
NODE	4359	USED	FOR	NODES	4492		
NODE	4362	USED	FOR	NODES	5083		
NODE	4360	USED	FOR	NODES	5081		
NODE	4361	USED	FOR	NODES	5082		
NODE	5434	USED	FOR	NODES	5696		
NODE	5435	USED	FOR	NODES	5697		
NODE	6010	USED	FOR	NODES	6093		
NODE	6027	USED	FOR	NODES	6125		
NODE	6028	USED	FOR	NODES	6126		
NODE	6029	USED	FOR	NODES	6127		
NODE	4506	USED	FOR	NODES	4723		
NODE	4507	USED	FOR	NODES	4724		
NODE	4508	USED	FOR	NODES	4725		
NODE	4717	USED	FOR	NODES	5439		
NODE	4718	USED	FOR	NODES	5440		
NODE	4719	USED	FOR	NODES	5441		
NODE	4432	USED	FOR	NODES	4502		
NODE	4433	USED	FOR	NODES	4503		
NODE	4434	USED	FOR	NODES	4504		
NODE	4338	USED	FOR	NODES	4495		
NODE	5701	USED	FOR	NODES	5819		
NODE	5702	USED	FOR	NODES	5820		
NODE	5703	USED	FOR	NODES	5821		
NODE	4537	USED	FOR	NODES	4679		
NODE	4539	USED	FOR	NODES	4735		
NODE	4540	USED	FOR	NODES	4736		
NODE	4541	USED	FOR	NODES	4737		
NODE	4322	USED	FOR	NODES	5057		
NODE	5101	USED	FOR	NODES	5927		
NODE	5445	USED	FOR	NODES	5707		
NODE	5446	USED	FOR	NODES	5708		
NODE	5447	USED	FOR	NODES	5709		
NODE	6102	USED	FOR	NODES	6345		
NODE	5902	USED	FOR	NODES	6017		
NODE	5043	USED	FOR	NODES	5907		
NODE	5099	USED	FOR	NODES	5925		
NODE	5100	USED	FOR	NODES	5926		
NODE	5931	USED	FOR	NODES	6033		
NODE	5932	USED	FOR	NODES	6034		
NODE	5933	USED	FOR	NODES	6035		
NODE	6143	USED	FOR	NODES	6381		
NODE	6144	USED	FOR	NODES	6382		
NODE	6145	USED	FOR	NODES	6383		
NODE	4729	USED	FOR	NODES	5451		
NODE	4372	USED	FOR	NODES	5093		
NODE	5415	USED	FOR	NODES	5678		
NODE	4373	USED	FOR	NODES	5094		
NODE	4374	USED	FOR	NODES	5095		
NODE	4730	USED	FOR	NODES	5452		
NODE	4731	USED	FOR	NODES	5453		
NODE	6013	USED	FOR	NODES	6111		
NODE	4693	USED	FOR	NODES	5404		
NODE	5683	USED	FOR	NODES	5790		
NODE	6039	USED	FOR	NODES	6137		
NODE	6040	USED	FOR	NODES	6138		
NODE	6041	USED	FOR	NODES	6139		
NODE	4429	USED	FOR	NODES	4499		
NODE	4431	USED	FOR	NODES	4501		
NODE	4337	USED	FOR	NODES	4494		
NODE	4430	USED	FOR	NODES	4500		
NODE	3625	USED	FOR	NODES	3801	4327	4493
NODE	3678	USED	FOR	NODES	3802	4369	4496
NODE	3679	USED	FOR	NODES	3803	4370	4497

NODE	3680	USED FOR NODES	3804	4371	4498
NODE	3830	USED FOR NODES	4590		
NODE	3831	USED FOR NODES	4591		
NODE	3832	USED FOR NODES	4592		
NODE	3821	USED FOR NODES	4565		
NODE	3709	USED FOR NODES	4397		
NODE	3627	USED FOR NODES	4328		
NODE	3710	USED FOR NODES	4398		
NODE	3708	USED FOR NODES	4396		
NODE	3628	USED FOR NODES	4329		
NODE	3822	USED FOR NODES	4564		
NODE	3833	USED FOR NODES	4587		
NODE	3834	USED FOR NODES	4588		
NODE	3835	USED FOR NODES	4589		
NODE	3711	USED FOR NODES	4399		
NODE	3712	USED FOR NODES	4400		
NODE	3713	USED FOR NODES	4401		
NODE	3629	USED FOR NODES	4330		
NODE	3823	USED FOR NODES	4563		
NODE	3836	USED FOR NODES	4584		
NODE	3837	USED FOR NODES	4585		
NODE	3838	USED FOR NODES	4586		
NODE	3714	USED FOR NODES	4402		
NODE	3715	USED FOR NODES	4403		
NODE	3716	USED FOR NODES	4404		
NODE	3744	USED FOR NODES	3814		
NODE	3745	USED FOR NODES	3815		
NODE	3746	USED FOR NODES	3816		
NODE	3650	USED FOR NODES	3807		
NODE	3630	USED FOR NODES	4331		
NODE	3824	USED FOR NODES	4562		
NODE	3839	USED FOR NODES	4581		
NODE	3840	USED FOR NODES	4582		
NODE	3841	USED FOR NODES	4583		
NODE	3717	USED FOR NODES	4405		
NODE	3718	USED FOR NODES	4406		
NODE	3719	USED FOR NODES	4407		
NODE	3741	USED FOR NODES	3811		
NODE	3742	USED FOR NODES	3812		
NODE	3743	USED FOR NODES	3813		
NODE	3649	USED FOR NODES	3806		
NODE	3842	USED FOR NODES	4578		
NODE	3843	USED FOR NODES	4579		
NODE	3844	USED FOR NODES	4580		
NODE	3825	USED FOR NODES	4561		
NODE	3631	USED FOR NODES	4332		
NODE	3721	USED FOR NODES	4409		
NODE	3722	USED FOR NODES	4410		
NODE	3720	USED FOR NODES	4408		
NODE	4538	USED FOR NODES	4680		
NODE	4542	USED FOR NODES	4738		
NODE	4543	USED FOR NODES	4739		
NODE	4544	USED FOR NODES	4740		
NODE	4376	USED FOR NODES	5097		
NODE	5936	USED FOR NODES	6038		
NODE	5684	USED FOR NODES	5791		
NODE	5102	USED FOR NODES	5928		
NODE	4732	USED FOR NODES	5454		
NODE	5104	USED FOR NODES	5930		
NODE	5450	USED FOR NODES	5712		
NODE	5705	USED FOR NODES	5823		
NODE	5704	USED FOR NODES	5822		
NODE	5706	USED FOR NODES	5824		
NODE	5103	USED FOR NODES	5929		
NODE	6147	USED FOR NODES	6385		
NODE	5449	USED FOR NODES	5711		
NODE	4734	USED FOR NODES	5456		
NODE	6146	USED FOR NODES	6384		
NODE	5934	USED FOR NODES	6036		
NODE	5044	USED FOR NODES	5908		

NODE	6042	USED FOR NODES	6140		
NODE	6103	USED FOR NODES	6346		
NODE	5448	USED FOR NODES	5710		
NODE	5903	USED FOR NODES	6018		
NODE	4323	USED FOR NODES	5058		
NODE	4694	USED FOR NODES	5405		
NODE	6148	USED FOR NODES	6386		
NODE	5935	USED FOR NODES	6037		
NODE	6014	USED FOR NODES	6112		
NODE	4733	USED FOR NODES	5455		
NODE	5416	USED FOR NODES	5679		
NODE	4375	USED FOR NODES	5096		
NODE	6043	USED FOR NODES	6141		
NODE	4377	USED FOR NODES	5098		
NODE	6044	USED FOR NODES	6142		
NODE	3025	USED FOR NODES	3157	3639	3805
NODE	3070	USED FOR NODES	3158	3672	3808
NODE	3071	USED FOR NODES	3159	3673	3809
NODE	3072	USED FOR NODES	3160	3674	3810
NODE	3182	USED FOR NODES	3902		
NODE	3183	USED FOR NODES	3903		
NODE	3184	USED FOR NODES	3904		
NODE	3173	USED FOR NODES	3877		
NODE	3027	USED FOR NODES	3640		
NODE	3097	USED FOR NODES	3681		
NODE	3098	USED FOR NODES	3682		
NODE	3099	USED FOR NODES	3683		
NODE	3185	USED FOR NODES	3899		
NODE	3186	USED FOR NODES	3900		
NODE	3187	USED FOR NODES	3901		
NODE	3174	USED FOR NODES	3876		
NODE	3028	USED FOR NODES	3641		
NODE	3101	USED FOR NODES	3685		
NODE	3102	USED FOR NODES	3686		
NODE	3100	USED FOR NODES	3684		
NODE	3632	USED FOR NODES	4333		
NODE	3826	USED FOR NODES	4560		
NODE	3845	USED FOR NODES	4575		
NODE	3846	USED FOR NODES	4576		
NODE	3847	USED FOR NODES	4577		
NODE	3723	USED FOR NODES	4411		
NODE	3724	USED FOR NODES	4412		
NODE	3725	USED FOR NODES	4413		
NODE	3029	USED FOR NODES	3642		
NODE	3175	USED FOR NODES	3875		
NODE	3103	USED FOR NODES	3687		
NODE	3104	USED FOR NODES	3688		
NODE	3105	USED FOR NODES	3689		
NODE	3188	USED FOR NODES	3896		
NODE	3189	USED FOR NODES	3897		
NODE	3190	USED FOR NODES	3898		
NODE	3048	USED FOR NODES	3162		
NODE	3127	USED FOR NODES	3166		
NODE	3128	USED FOR NODES	3167		
NODE	3129	USED FOR NODES	3168		
NODE	3191	USED FOR NODES	3893		
NODE	3192	USED FOR NODES	3894		
NODE	3193	USED FOR NODES	3895		
NODE	3176	USED FOR NODES	3874		
NODE	3107	USED FOR NODES	3691		
NODE	3108	USED FOR NODES	3692		
NODE	3030	USED FOR NODES	3643		
NODE	3106	USED FOR NODES	3690		
NODE	3042	USED FOR NODES	3161		
NODE	3061	USED FOR NODES	3163		
NODE	3062	USED FOR NODES	3164		
NODE	3063	USED FOR NODES	3165		
NODE	3848	USED FOR NODES	4572		
NODE	3849	USED FOR NODES	4573		
NODE	3850	USED FOR NODES	4574		

NODE	3827	USED FOR NODES	4559
NODE	3727	USED FOR NODES	4415
NODE	3728	USED FOR NODES	4416
NODE	3633	USED FOR NODES	4334
NODE	3726	USED FOR NODES	4414
NODE	3194	USED FOR NODES	3890
NODE	3195	USED FOR NODES	3891
NODE	3196	USED FOR NODES	3892
NODE	3177	USED FOR NODES	3873
NODE	3031	USED FOR NODES	3644
NODE	3110	USED FOR NODES	3694
NODE	3109	USED FOR NODES	3693
NODE	3111	USED FOR NODES	3695
NODE	3197	USED FOR NODES	3887
NODE	3198	USED FOR NODES	3888
NODE	3199	USED FOR NODES	3889
NODE	3178	USED FOR NODES	3872
NODE	3114	USED FOR NODES	3698
NODE	3112	USED FOR NODES	3696
NODE	3113	USED FOR NODES	3697
NODE	3032	USED FOR NODES	3645
NODE	2712	USED FOR NODES	3065
NODE	2711	USED FOR NODES	3064
NODE	2697	USED FOR NODES	3038
NODE	2713	USED FOR NODES	3066
NODE	3851	USED FOR NODES	4569
NODE	3852	USED FOR NODES	4570
NODE	3853	USED FOR NODES	4571
NODE	3828	USED FOR NODES	4558
NODE	3731	USED FOR NODES	4419
NODE	3634	USED FOR NODES	4335
NODE	3729	USED FOR NODES	4417
NODE	3730	USED FOR NODES	4418
NODE	3033	USED FOR NODES	3646
NODE	3179	USED FOR NODES	3871
NODE	3200	USED FOR NODES	3884
NODE	3201	USED FOR NODES	3885
NODE	3202	USED FOR NODES	3886
NODE	3115	USED FOR NODES	3699
NODE	3116	USED FOR NODES	3700
NODE	3117	USED FOR NODES	3701
NODE	2699	USED FOR NODES	3039
NODE	2717	USED FOR NODES	3088
NODE	2718	USED FOR NODES	3089
NODE	2719	USED FOR NODES	3090
NODE	3034	USED FOR NODES	3647
NODE	3180	USED FOR NODES	3870
NODE	3203	USED FOR NODES	3881
NODE	3204	USED FOR NODES	3882
NODE	3205	USED FOR NODES	3883
NODE	3118	USED FOR NODES	3702
NODE	3119	USED FOR NODES	3703
NODE	3120	USED FOR NODES	3704
NODE	2720	USED FOR NODES	3091
NODE	2721	USED FOR NODES	3092
NODE	2700	USED FOR NODES	3040
NODE	2722	USED FOR NODES	3093
NODE	3854	USED FOR NODES	4566
NODE	3855	USED FOR NODES	4567
NODE	3856	USED FOR NODES	4568
NODE	3829	USED FOR NODES	4557
NODE	3732	USED FOR NODES	4420
NODE	3734	USED FOR NODES	4422
NODE	3635	USED FOR NODES	4336
NODE	3733	USED FOR NODES	4421
NODE	3206	USED FOR NODES	3878
NODE	3207	USED FOR NODES	3879
NODE	3208	USED FOR NODES	3880
NODE	3181	USED FOR NODES	3869
NODE	3035	USED FOR NODES	3648

NODE	3121	USED FOR NODES	3705		
NODE	3122	USED FOR NODES	3706		
NODE	3123	USED FOR NODES	3707		
NODE	2723	USED FOR NODES	3094		
NODE	2724	USED FOR NODES	3095		
NODE	2725	USED FOR NODES	3096		
NODE	2701	USED FOR NODES	3041		
NODE	5692	USED FOR NODES	5810		
NODE	5693	USED FOR NODES	5811		
NODE	5694	USED FOR NODES	5812		
NODE	5680	USED FOR NODES	5789		
NODE	5406	USED FOR NODES	5677		
NODE	5436	USED FOR NODES	5698		
NODE	5437	USED FOR NODES	5699		
NODE	5438	USED FOR NODES	5700		
NODE	6134	USED FOR NODES	6372		
NODE	6101	USED FOR NODES	6333		
NODE	6135	USED FOR NODES	6373		
NODE	6136	USED FOR NODES	6374		
NODE	6031	USED FOR NODES	6129		
NODE	6012	USED FOR NODES	6104		
NODE	6030	USED FOR NODES	6128		
NODE	6032	USED FOR NODES	6130		
NODE	4681	USED FOR NODES	5403		
NODE	4720	USED FOR NODES	5442		
NODE	4722	USED FOR NODES	5444		
NODE	4721	USED FOR NODES	5443		
NODE	5901	USED FOR NODES	6015		
NODE	5922	USED FOR NODES	6024		
NODE	5923	USED FOR NODES	6025		
NODE	5924	USED FOR NODES	6026		
NODE	5042	USED FOR NODES	5904		
NODE	5090	USED FOR NODES	5916		
NODE	5091	USED FOR NODES	5917		
NODE	5092	USED FOR NODES	5918		
NODE	4025	USED FOR NODES	4364	5085	
NODE	4193	USED FOR NODES	4534	4726	
NODE	4194	USED FOR NODES	4535	4727	
NODE	4160	USED FOR NODES	4533	4678	
NODE	4195	USED FOR NODES	4536	4728	
NODE	3978	USED FOR NODES	4321	5045	
NODE	4024	USED FOR NODES	4363	5084	
NODE	4026	USED FOR NODES	4365	5086	
NODE	4256	USED FOR NODES	4551		
NODE	4165	USED FOR NODES	4549		
NODE	4257	USED FOR NODES	4552		
NODE	4258	USED FOR NODES	4553		
NODE	4253	USED FOR NODES	4554		
NODE	4254	USED FOR NODES	4555		
NODE	4255	USED FOR NODES	4556		
NODE	4164	USED FOR NODES	4550		
NODE	3509	USED FOR NODES	3819	4200	4547
NODE	3465	USED FOR NODES	3817	4163	4545
NODE	3290	USED FOR NODES	3626	3977	4324
NODE	3510	USED FOR NODES	3820	4201	4548
NODE	3508	USED FOR NODES	3818	4199	4546
NODE	3339	USED FOR NODES	3675	4030	4366
NODE	3340	USED FOR NODES	3676	4031	4367
NODE	3341	USED FOR NODES	3677	4032	4368
NODE	3570	USED FOR NODES	3865		
NODE	3477	USED FOR NODES	3861		
NODE	3569	USED FOR NODES	3864		
NODE	3568	USED FOR NODES	3863		
NODE	3567	USED FOR NODES	3868		
NODE	3565	USED FOR NODES	3866		
NODE	3566	USED FOR NODES	3867		
NODE	3476	USED FOR NODES	3862		
NODE	2940	USED FOR NODES	3172	3507	3860
NODE	2905	USED FOR NODES	3169	3475	3857
NODE	2817	USED FOR NODES	3069	3335	3671

NODE	2816	USED FOR NODES	3068	3334	3670
NODE	2938	USED FOR NODES	3170	3505	3858
NODE	2815	USED FOR NODES	3067	3333	3669
NODE	2939	USED FOR NODES	3171	3506	3859
NODE	2774	USED FOR NODES	3026	3289	3636
NODE	2997	USED FOR NODES	3216		
NODE	2996	USED FOR NODES	3215		
NODE	2916	USED FOR NODES	3213		
NODE	2995	USED FOR NODES	3214		
NODE	2710	USED FOR NODES	2808	3060	
NODE	2937	USED FOR NODES	3212		
NODE	2698	USED FOR NODES	2773	3036	
NODE	2709	USED FOR NODES	2807	3059	
NODE	2708	USED FOR NODES	2806	3058	
NODE	2935	USED FOR NODES	3210		
NODE	2915	USED FOR NODES	3209		
NODE	2936	USED FOR NODES	3211		
NODE	3979	USED FOR NODES	4325		
NODE	4088	USED FOR NODES	4424		
NODE	4087	USED FOR NODES	4423		
NODE	2872	USED FOR NODES	3124		
NODE	3399	USED FOR NODES	3735		
NODE	4091	USED FOR NODES	4427		
NODE	2873	USED FOR NODES	3125		
NODE	2874	USED FOR NODES	3126		
NODE	3400	USED FOR NODES	3736		
NODE	3402	USED FOR NODES	3738		
NODE	4090	USED FOR NODES	4426		
NODE	3291	USED FOR NODES	3637		
NODE	3292	USED FOR NODES	3638		
NODE	4092	USED FOR NODES	4428		
NODE	3404	USED FOR NODES	3740		
NODE	3403	USED FOR NODES	3739		
NODE	2775	USED FOR NODES	3037		
NODE	4089	USED FOR NODES	4425		
NODE	3980	USED FOR NODES	4326		
NODE	3401	USED FOR NODES	3737		
NODE	2742	USED FOR NODES	2794		
NODE	2752	USED FOR NODES	2821		
NODE	2753	USED FOR NODES	2822		
NODE	2754	USED FOR NODES	2823		
NODE	2992	USED FOR NODES	3535		
NODE	2994	USED FOR NODES	3537		
NODE	2993	USED FOR NODES	3536		
NODE	2914	USED FOR NODES	3486		
NODE	2845	USED FOR NODES	3345		
NODE	2847	USED FOR NODES	3347		
NODE	2846	USED FOR NODES	3346		
NODE	2777	USED FOR NODES	3306		
NODE	3562	USED FOR NODES	4250		
NODE	3563	USED FOR NODES	4251		
NODE	3564	USED FOR NODES	4252		
NODE	3474	USED FOR NODES	4174		
NODE	3374	USED FOR NODES	4062		
NODE	3373	USED FOR NODES	4061		
NODE	3294	USED FOR NODES	3994		
NODE	3372	USED FOR NODES	4060		
NODE	2755	USED FOR NODES	2824		
NODE	2756	USED FOR NODES	2825		
NODE	2757	USED FOR NODES	2826		
NODE	2743	USED FOR NODES	2795		
NODE	2989	USED FOR NODES	3532		
NODE	2990	USED FOR NODES	3533		
NODE	2991	USED FOR NODES	3534		
NODE	2778	USED FOR NODES	3307		
NODE	2848	USED FOR NODES	3348		
NODE	2849	USED FOR NODES	3349		
NODE	2850	USED FOR NODES	3350		
NODE	2913	USED FOR NODES	3485		
NODE	2744	USED FOR NODES	2796		

NODE	2758	USED	FOR	NODES	2827
NODE	2759	USED	FOR	NODES	2828
NODE	2760	USED	FOR	NODES	2829
NODE	2986	USED	FOR	NODES	3529
NODE	2987	USED	FOR	NODES	3530
NODE	2988	USED	FOR	NODES	3531
NODE	2779	USED	FOR	NODES	3308
NODE	2851	USED	FOR	NODES	3351
NODE	2852	USED	FOR	NODES	3352
NODE	2853	USED	FOR	NODES	3353
NODE	2912	USED	FOR	NODES	3484
NODE	3561	USED	FOR	NODES	4249
NODE	3473	USED	FOR	NODES	4173
NODE	3559	USED	FOR	NODES	4247
NODE	3560	USED	FOR	NODES	4248
NODE	3375	USED	FOR	NODES	4063
NODE	3376	USED	FOR	NODES	4064
NODE	3377	USED	FOR	NODES	4065
NODE	3295	USED	FOR	NODES	3995
NODE	2741	USED	FOR	NODES	2788
NODE	2751	USED	FOR	NODES	2811
NODE	2750	USED	FOR	NODES	2810
NODE	2749	USED	FOR	NODES	2809
NODE	2911	USED	FOR	NODES	3483
NODE	2983	USED	FOR	NODES	3526
NODE	2984	USED	FOR	NODES	3527
NODE	2985	USED	FOR	NODES	3528
NODE	2856	USED	FOR	NODES	3356
NODE	2855	USED	FOR	NODES	3355
NODE	2780	USED	FOR	NODES	3309
NODE	2854	USED	FOR	NODES	3354
NODE	2910	USED	FOR	NODES	3482
NODE	2981	USED	FOR	NODES	3524
NODE	2980	USED	FOR	NODES	3523
NODE	2982	USED	FOR	NODES	3525
NODE	2781	USED	FOR	NODES	3310
NODE	2859	USED	FOR	NODES	3359
NODE	2858	USED	FOR	NODES	3358
NODE	2857	USED	FOR	NODES	3357
NODE	3558	USED	FOR	NODES	4246
NODE	3557	USED	FOR	NODES	4245
NODE	3556	USED	FOR	NODES	4244
NODE	3472	USED	FOR	NODES	4172
NODE	3378	USED	FOR	NODES	4066
NODE	3380	USED	FOR	NODES	4068
NODE	3379	USED	FOR	NODES	4067
NODE	3296	USED	FOR	NODES	3996
NODE	2909	USED	FOR	NODES	3481
NODE	2977	USED	FOR	NODES	3520
NODE	2978	USED	FOR	NODES	3521
NODE	2979	USED	FOR	NODES	3522
NODE	2861	USED	FOR	NODES	3361
NODE	2862	USED	FOR	NODES	3362
NODE	2860	USED	FOR	NODES	3360
NODE	2782	USED	FOR	NODES	3311
NODE	2783	USED	FOR	NODES	3312
NODE	2863	USED	FOR	NODES	3363
NODE	2864	USED	FOR	NODES	3364
NODE	2865	USED	FOR	NODES	3365
NODE	2908	USED	FOR	NODES	3480
NODE	2974	USED	FOR	NODES	3517
NODE	2975	USED	FOR	NODES	3518
NODE	2976	USED	FOR	NODES	3519
NODE	3381	USED	FOR	NODES	4069
NODE	3382	USED	FOR	NODES	4070
NODE	3383	USED	FOR	NODES	4071
NODE	3553	USED	FOR	NODES	4241
NODE	3554	USED	FOR	NODES	4242
NODE	3555	USED	FOR	NODES	4243
NODE	3297	USED	FOR	NODES	3997

NODE	3471	USED	FOR	NODES	4171
NODE	2907	USED	FOR	NODES	3479
NODE	2971	USED	FOR	NODES	3514
NODE	2972	USED	FOR	NODES	3515
NODE	2973	USED	FOR	NODES	3516
NODE	2866	USED	FOR	NODES	3366
NODE	2784	USED	FOR	NODES	3313
NODE	2867	USED	FOR	NODES	3367
NODE	2868	USED	FOR	NODES	3368
NODE	2970	USED	FOR	NODES	3513
NODE	2906	USED	FOR	NODES	3478
NODE	2968	USED	FOR	NODES	3511
NODE	2969	USED	FOR	NODES	3512
NODE	2870	USED	FOR	NODES	3370
NODE	2871	USED	FOR	NODES	3371
NODE	2785	USED	FOR	NODES	3314
NODE	2869	USED	FOR	NODES	3369
NODE	2776	USED	FOR	NODES	3303
NODE	2818	USED	FOR	NODES	3336
NODE	2819	USED	FOR	NODES	3337
NODE	2820	USED	FOR	NODES	3338
NODE	6078	USED	FOR	NODES	6251
NODE	5289	USED	FOR	NODES	5980
NODE	6222	USED	FOR	NODES	6540
NODE	4202	USED	FOR	NODES	4924
NODE	5238	USED	FOR	NODES	5967
NODE	5985	USED	FOR	NODES	6072
NODE	4920	USED	FOR	NODES	5597
NODE	5565	USED	FOR	NODES	5738
NODE	3982	USED	FOR	NODES	5252
NODE	5288	USED	FOR	NODES	5979
NODE	5590	USED	FOR	NODES	5762
NODE	5589	USED	FOR	NODES	5761
NODE	5986	USED	FOR	NODES	6073
NODE	5743	USED	FOR	NODES	5850
NODE	4038	USED	FOR	NODES	5284
NODE	5962	USED	FOR	NODES	6062
NODE	4037	USED	FOR	NODES	5283
NODE	6058	USED	FOR	NODES	6231
NODE	4204	USED	FOR	NODES	4926
NODE	5987	USED	FOR	NODES	6074
NODE	5591	USED	FOR	NODES	5763
NODE	4161	USED	FOR	NODES	4874
NODE	6259	USED	FOR	NODES	6572
NODE	4918	USED	FOR	NODES	5595
NODE	4036	USED	FOR	NODES	5282
NODE	4203	USED	FOR	NODES	4925
NODE	4919	USED	FOR	NODES	5596
NODE	6079	USED	FOR	NODES	6252
NODE	5757	USED	FOR	NODES	5875
NODE	6080	USED	FOR	NODES	6253
NODE	5290	USED	FOR	NODES	5981
NODE	5755	USED	FOR	NODES	5873
NODE	6258	USED	FOR	NODES	6571
NODE	5756	USED	FOR	NODES	5874
NODE	6257	USED	FOR	NODES	6570
NODE	4888	USED	FOR	NODES	5554
NODE	3551	USED	FOR	NODES	4239
NODE	3552	USED	FOR	NODES	4240
NODE	3470	USED	FOR	NODES	4170
NODE	3550	USED	FOR	NODES	4238
NODE	3385	USED	FOR	NODES	4073
NODE	3386	USED	FOR	NODES	4074
NODE	3384	USED	FOR	NODES	4072
NODE	3298	USED	FOR	NODES	3998
NODE	3387	USED	FOR	NODES	4075
NODE	3388	USED	FOR	NODES	4076
NODE	3389	USED	FOR	NODES	4077
NODE	3547	USED	FOR	NODES	4235
NODE	3548	USED	FOR	NODES	4236

NODE	3549	USED FOR NODES	4237
NODE	3299	USED FOR NODES	3999
NODE	3469	USED FOR NODES	4169
NODE	3390	USED FOR NODES	4078
NODE	3391	USED FOR NODES	4079
NODE	3392	USED FOR NODES	4080
NODE	3544	USED FOR NODES	4232
NODE	3545	USED FOR NODES	4233
NODE	3546	USED FOR NODES	4234
NODE	3300	USED FOR NODES	4000
NODE	3468	USED FOR NODES	4168
NODE	3393	USED FOR NODES	4081
NODE	3394	USED FOR NODES	4082
NODE	3395	USED FOR NODES	4083
NODE	3541	USED FOR NODES	4229
NODE	3542	USED FOR NODES	4230
NODE	3543	USED FOR NODES	4231
NODE	3301	USED FOR NODES	4001
NODE	3467	USED FOR NODES	4167
NODE	3540	USED FOR NODES	4228
NODE	3538	USED FOR NODES	4226
NODE	3539	USED FOR NODES	4227
NODE	3466	USED FOR NODES	4166
NODE	3396	USED FOR NODES	4084
NODE	3302	USED FOR NODES	4002
NODE	3398	USED FOR NODES	4086
NODE	3397	USED FOR NODES	4085
NODE	3293	USED FOR NODES	3991
NODE	3342	USED FOR NODES	4033
NODE	3343	USED FOR NODES	4034
NODE	3344	USED FOR NODES	4035
NODE	6082	USED FOR NODES	6255
NODE	5744	USED FOR NODES	5851
NODE	6083	USED FOR NODES	6256
NODE	6260	USED FOR NODES	6573
NODE	6261	USED FOR NODES	6574
NODE	6262	USED FOR NODES	6575
NODE	5566	USED FOR NODES	5739
NODE	4205	USED FOR NODES	4927
NODE	4206	USED FOR NODES	4928
NODE	4207	USED FOR NODES	4929
NODE	5239	USED FOR NODES	5968
NODE	5758	USED FOR NODES	5876
NODE	5759	USED FOR NODES	5877
NODE	5760	USED FOR NODES	5878
NODE	5592	USED FOR NODES	5764
NODE	3983	USED FOR NODES	5253
NODE	5593	USED FOR NODES	5765
NODE	5594	USED FOR NODES	5766
NODE	4039	USED FOR NODES	5285
NODE	4040	USED FOR NODES	5286
NODE	4041	USED FOR NODES	5287
NODE	5291	USED FOR NODES	5982
NODE	5292	USED FOR NODES	5983
NODE	5293	USED FOR NODES	5984
NODE	4889	USED FOR NODES	5555
NODE	5963	USED FOR NODES	6063
NODE	5988	USED FOR NODES	6075
NODE	5989	USED FOR NODES	6076
NODE	5990	USED FOR NODES	6077
NODE	6223	USED FOR NODES	6541
NODE	4162	USED FOR NODES	4875
NODE	6059	USED FOR NODES	6232
NODE	4921	USED FOR NODES	5598
NODE	4922	USED FOR NODES	5599
NODE	4923	USED FOR NODES	5600
NODE	6081	USED FOR NODES	6254
NODE	4196	USED FOR NODES	4915
NODE	4197	USED FOR NODES	4916
NODE	4198	USED FOR NODES	4917

NODE 6221 USED FOR NODES 6528
 NODE 5740 USED FOR NODES 5849
 NODE 5237 USED FOR NODES 5964
 NODE 5749 USED FOR NODES 5864
 NODE 5750 USED FOR NODES 5865
 NODE 5751 USED FOR NODES 5866
 NODE 3981 USED FOR NODES 5240
 NODE 5585 USED FOR NODES 5754
 NODE 4027 USED FOR NODES 5276
 NODE 4028 USED FOR NODES 5277
 NODE 4029 USED FOR NODES 5278
 NODE 5279 USED FOR NODES 5973
 NODE 5280 USED FOR NODES 5974
 NODE 5281 USED FOR NODES 5975
 NODE 5556 USED FOR NODES 5737
 NODE 6069 USED FOR NODES 6245
 NODE 4153 USED FOR NODES 4873
 NODE 5961 USED FOR NODES 6060
 NODE 5976 USED FOR NODES 6066
 NODE 5977 USED FOR NODES 6067
 NODE 5978 USED FOR NODES 6068
 NODE 6057 USED FOR NODES 6224
 NODE 4876 USED FOR NODES 5553
 NODE 5583 USED FOR NODES 5752
 NODE 5584 USED FOR NODES 5753
 NODE 4912 USED FOR NODES 5586
 NODE 6070 USED FOR NODES 6246
 NODE 4913 USED FOR NODES 5587
 NODE 6071 USED FOR NODES 6247
 NODE 4914 USED FOR NODES 5588
 NODE 6248 USED FOR NODES 6564
 NODE 6249 USED FOR NODES 6565
 NODE 6250 USED FOR NODES 6566

*** WARNING *** CP= 46.970 TIME= 19:44:13
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT 67 USED FOR KEYPOINT(S)	115		
KEYPOINT 72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT 76 USED FOR KEYPOINT(S)	89		
KEYPOINT 80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT 85 USED FOR KEYPOINT(S)	122		
KEYPOINT 91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT 93 USED FOR KEYPOINT(S)	104		
KEYPOINT 98 USED FOR KEYPOINT(S)	117		
KEYPOINT 101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT 120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT 121 USED FOR KEYPOINT(S)	137		
KEYPOINT 123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT 126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT 134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT 135 USED FOR KEYPOINT(S)	162		
KEYPOINT 138 USED FOR KEYPOINT(S)	155		
KEYPOINT 139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT 142 USED FOR KEYPOINT(S)	146		
KEYPOINT 143 USED FOR KEYPOINT(S)	152		
KEYPOINT 147 USED FOR KEYPOINT(S)	157		
KEYPOINT 151 USED FOR KEYPOINT(S)	164		
KEYPOINT 154 USED FOR KEYPOINT(S)	165		
KEYPOINT 156 USED FOR KEYPOINT(S)	167		
KEYPOINT 158 USED FOR KEYPOINT(S)	181		
KEYPOINT 159 USED FOR KEYPOINT(S)	184		
KEYPOINT 161 USED FOR KEYPOINT(S)	186		
KEYPOINT 163 USED FOR KEYPOINT(S)	170		
KEYPOINT 166 USED FOR KEYPOINT(S)	171		
KEYPOINT 168 USED FOR KEYPOINT(S)	173		
KEYPOINT 169 USED FOR KEYPOINT(S)	176		

KEYPOINT	172	USED FOR KEYPOINT(S)	177
KEYPOINT	174	USED FOR KEYPOINT(S)	179
KEYPOINT	182	USED FOR KEYPOINT(S)	187
KEYPOINT	183	USED FOR KEYPOINT(S)	190
KEYPOINT	185	USED FOR KEYPOINT(S)	192
KEYPOINT	188	USED FOR KEYPOINT(S)	193
KEYPOINT	189	USED FOR KEYPOINT(S)	196
KEYPOINT	191	USED FOR KEYPOINT(S)	198
KEYPOINT	194	USED FOR KEYPOINT(S)	199
KEYPOINT	195	USED FOR KEYPOINT(S)	202
KEYPOINT	197	USED FOR KEYPOINT(S)	204
LINE	108	USED FOR LINE(S)	240
LINE	121	USED FOR LINE(S)	241
LINE	126	USED FOR LINE(S)	154 239
LINE	134	USED FOR LINE(S)	174
LINE	137	USED FOR LINE(S)	172
LINE	141	USED FOR LINE(S)	238
LINE	159	USED FOR LINE(S)	236 246 270
LINE	160	USED FOR LINE(S)	252
LINE	161	USED FOR LINE(S)	251
LINE	187	USED FOR LINE(S)	257
LINE	192	USED FOR LINE(S)	220 256 264
LINE	193	USED FOR LINE(S)	225
LINE	194	USED FOR LINE(S)	226
LINE	200	USED FOR LINE(S)	244
LINE	203	USED FOR LINE(S)	243
LINE	205	USED FOR LINE(S)	233 259 272
LINE	207	USED FOR LINE(S)	265
LINE	228	USED FOR LINE(S)	271
LINE	245	USED FOR LINE(S)	269
LINE	247	USED FOR LINE(S)	268 275 307
LINE	248	USED FOR LINE(S)	283
LINE	249	USED FOR LINE(S)	282
LINE	253	USED FOR LINE(S)	290
LINE	254	USED FOR LINE(S)	262 289 299
LINE	255	USED FOR LINE(S)	263
LINE	258	USED FOR LINE(S)	273
LINE	260	USED FOR LINE(S)	267 292 309
LINE	261	USED FOR LINE(S)	300
LINE	266	USED FOR LINE(S)	308
LINE	274	USED FOR LINE(S)	306
LINE	276	USED FOR LINE(S)	305 330
LINE	277	USED FOR LINE(S)	336
LINE	278	USED FOR LINE(S)	335
LINE	285	USED FOR LINE(S)	320
LINE	286	USED FOR LINE(S)	319
LINE	287	USED FOR LINE(S)	297 315
LINE	288	USED FOR LINE(S)	298
LINE	291	USED FOR LINE(S)	310
LINE	293	USED FOR LINE(S)	302
LINE	295	USED FOR LINE(S)	313
LINE	296	USED FOR LINE(S)	314
LINE	303	USED FOR LINE(S)	325
LINE	304	USED FOR LINE(S)	331
LINE	312	USED FOR LINE(S)	339
LINE	317	USED FOR LINE(S)	341
LINE	318	USED FOR LINE(S)	340
LINE	322	USED FOR LINE(S)	346
LINE	323	USED FOR LINE(S)	345
LINE	326	USED FOR LINE(S)	377
LINE	327	USED FOR LINE(S)	383
LINE	328	USED FOR LINE(S)	382
LINE	332	USED FOR LINE(S)	388
LINE	333	USED FOR LINE(S)	387
LINE	338	USED FOR LINE(S)	352
LINE	343	USED FOR LINE(S)	354
LINE	344	USED FOR LINE(S)	353
LINE	348	USED FOR LINE(S)	359
LINE	349	USED FOR LINE(S)	358
LINE	351	USED FOR LINE(S)	365

LINE 356 USED FOR LINE(S) 367
 LINE 357 USED FOR LINE(S) 366
 LINE 361 USED FOR LINE(S) 372
 LINE 362 USED FOR LINE(S) 371
 LINE 378 USED FOR LINE(S) 390
 LINE 379 USED FOR LINE(S) 396
 LINE 380 USED FOR LINE(S) 395
 LINE 384 USED FOR LINE(S) 401
 LINE 385 USED FOR LINE(S) 400
 LINE 391 USED FOR LINE(S) 403
 LINE 392 USED FOR LINE(S) 409
 LINE 393 USED FOR LINE(S) 408
 LINE 397 USED FOR LINE(S) 414
 LINE 398 USED FOR LINE(S) 413
 LINE 404 USED FOR LINE(S) 416
 LINE 405 USED FOR LINE(S) 422
 LINE 406 USED FOR LINE(S) 421
 LINE 410 USED FOR LINE(S) 427
 LINE 411 USED FOR LINE(S) 426
 AREA 56 USED FOR AREA(S) 161
 AREA 84 USED FOR AREA(S) 123
 AREA 95 USED FOR AREA(S) 160
 AREA 112 USED FOR AREA(S) 168
 AREA 142 USED FOR AREA(S) 172
 AREA 148 USED FOR AREA(S) 156
 AREA 154 USED FOR AREA(S) 163
 AREA 155 USED FOR AREA(S) 177
 AREA 159 USED FOR AREA(S) 181
 AREA 165 USED FOR AREA(S) 180
 AREA 166 USED FOR AREA(S) 188
 AREA 170 USED FOR AREA(S) 193
 AREA 171 USED FOR AREA(S) 176
 AREA 174 USED FOR AREA(S) 182
 AREA 175 USED FOR AREA(S) 199
 AREA 179 USED FOR AREA(S) 204
 AREA 184 USED FOR AREA(S) 203
 AREA 185 USED FOR AREA(S) 223
 AREA 191 USED FOR AREA(S) 212
 AREA 192 USED FOR AREA(S) 198
 AREA 195 USED FOR AREA(S) 205
 AREA 197 USED FOR AREA(S) 208
 AREA 202 USED FOR AREA(S) 219
 AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
 27, 28,

ALONG LINES
59,

MAXIMUM NODE NUMBER = 6756
MAXIMUM ELEMENT NUMBER = 5314
Rock around drift
(V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7008
MAXIMUM ELEMENT NUMBER = 5474

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7140
MAXIMUM ELEMENT NUMBER = 5554

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 7272
MAXIMUM ELEMENT NUMBER = 5634

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7608
MAXIMUM ELEMENT NUMBER = 5874

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7784
MAXIMUM ELEMENT NUMBER = 5994

GENERATE NODES AND ELEMENTS

IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 7960
 MAXIMUM ELEMENT NUMBER = 6114
 Mid-drift rock
 (V's 75,76,77,78)

DRAG AREAS
 37, 38,
 ALONG LINES
 59,

*** WARNING *** CP= 54.380 TIME= 19:44:21
 Meshing of volume 75 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
 6139 6140 6141 6142 6143 6144 6145 6146
 6147 6148 6149 6150

*** WARNING *** CP= 54.770 TIME= 19:44:21
 Meshing of volume 76 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
 6319 6320 6321 6322 6323 6324 6325 6326
 6327 6328 6329 6330

MAXIMUM NODE NUMBER = 8296
 MAXIMUM ELEMENT NUMBER = 6354

ELEMENT TYPE SET TO 1

DRAG AREAS
 39,
 ALONG LINES
 59,

ELEMENT TYPE SET TO 2

DRAG AREAS
 40,
 ALONG LINES
 59,

*** WARNING *** CP= 55.330 TIME= 19:44:22
 Meshing of volume 78 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
 6383 6384 6385 6386 6423 6424 6425 6426
 6463 6464 6465 6466

MAXIMUM NODE NUMBER = 8472
 MAXIMUM ELEMENT NUMBER = 6474
 Concatenate to mesh volume 77
 (L's 443,444 used and freed up)
 (A's 321 used and freed up)

CONCATENATE AREAS
 AREAS = 311 310

COMPOSITE AREA NO.= 321
 LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
 LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES

LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS

IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 55.690 TIME= 19:44:22
Meshing of area 314 produced 1 poorly shaped faces.

*** NOTE *** CP= 55.700 TIME= 19:44:22
Worst shape angle is 41 degrees.

*** WARNING *** CP= 56.020 TIME= 19:44:23
Meshing of volume 77 produced 12 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
6559 6560 6561 6562 6563 6564 6565 6566
6567 6568 6569 6570

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 8648
MAXIMUM ELEMENT NUMBER = 6594

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
Extrude rest of Tsw2
(V's 79,80,81,82)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9376
MAXIMUM ELEMENT NUMBER = 7170
Extrude Tsw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9656
MAXIMUM ELEMENT NUMBER = 7386
Extrude PTn
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9768
 MAXIMUM ELEMENT NUMBER = 7458
 Extrude TCw
 (V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
 1, 2,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 9880
 MAXIMUM ELEMENT NUMBER = 7530
 Extrude TSw3
 (V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
 11, 12,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 9992
 MAXIMUM ELEMENT NUMBER = 7602
 Extrude CHn1v
 (V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
 13, 14,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 10076
 MAXIMUM ELEMENT NUMBER = 7650
 Extrude CHn1z
 (V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
 15, 16,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 10300
 MAXIMUM ELEMENT NUMBER = 7818
 Extrude CHn2
 (V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
 17, 18,
 ALONG LINES
 59,

*** WARNING *** CP= 60.840 TIME= 19:44:28
 Meshing of volume 95 produced 66 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

7839	7843	7844	7847	7848	7849	7851	7852
7853	7854	7855	7856	7857	7858	7859	7860
7861	7862	7863	7864	7865	7866	7887	7891
7892	7895	7896	7897	7899	7900	7901	7902
7903	7904	7905	7906	7907	7908	7909	7910

7911	7912	7913	7914	7935	7939	7940	7943
7944	7945	7947	7948	7949	7950	7951	7952
7953	7954	7955	7956	7957	7958	7959	7960
7961	7962						

*** WARNING *** CP= 61.250 TIME= 19:44:29
 Meshing of volume 96 produced 66 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

7983	7987	7988	7991	7992	7993	7995	7996
7997	7998	7999	8000	8001	8002	8003	8004
8005	8006	8007	8008	8009	8010	8031	8035
8036	8039	8040	8041	8043	8044	8045	8046
8047	8048	8049	8050	8051	8052	8053	8054
8055	8056	8057	8058	8079	8083	8084	8087
8088	8089	8091	8092	8093	8094	8095	8096
8097	8098	8099	8100	8101	8102	8103	8104
8105	8106						

MAXIMUM NODE NUMBER = 10664
 MAXIMUM ELEMENT NUMBER = 8106

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 9674	USED FOR NODES	9792
NODE 9675	USED FOR NODES	9793
NODE 9882	USED FOR NODES	9993
NODE 9994	USED FOR NODES	10077
NODE 9072	USED FOR NODES	9898
NODE 9903	USED FOR NODES	10005
NODE 9904	USED FOR NODES	10006
NODE 9905	USED FOR NODES	10007
NODE 10011	USED FOR NODES	10109
NODE 10012	USED FOR NODES	10110
NODE 9073	USED FOR NODES	9899
NODE 10013	USED FOR NODES	10111
NODE 10078	USED FOR NODES	10301
NODE 10115	USED FOR NODES	10353
NODE 10116	USED FOR NODES	10354
NODE 10117	USED FOR NODES	10355
NODE 8297	USED FOR NODES	8473
NODE 8298	USED FOR NODES	9013
NODE 9377	USED FOR NODES	9658
NODE 8649	USED FOR NODES	9378
NODE 8341	USED FOR NODES	8474
NODE 8342	USED FOR NODES	8475
NODE 8343	USED FOR NODES	8476
NODE 8344	USED FOR NODES	9065
NODE 8345	USED FOR NODES	9066
NODE 8346	USED FOR NODES	9067
NODE 9417	USED FOR NODES	9679
NODE 9418	USED FOR NODES	9680
NODE 9419	USED FOR NODES	9681
NODE 8701	USED FOR NODES	9423
NODE 8702	USED FOR NODES	9424
NODE 8703	USED FOR NODES	9425
NODE 8489	USED FOR NODES	8650
NODE 8490	USED FOR NODES	8707
NODE 8491	USED FOR NODES	8708
NODE 8492	USED FOR NODES	8709
NODE 9071	USED FOR NODES	9897
NODE 9014	USED FOR NODES	9881
NODE 9657	USED FOR NODES	9770
NODE 9673	USED FOR NODES	9791
NODE 8418	USED FOR NODES	8488
NODE 8322	USED FOR NODES	8479
NODE 8416	USED FOR NODES	8486
NODE 8417	USED FOR NODES	8487

NODE 9997	USED FOR NODES	10095		
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NODE	7285	USED FOR NODES	7985
NODE	7450	USED FOR NODES	8150
NODE	7522	USED FOR NODES	8210
NODE	7523	USED FOR NODES	8211
NODE	7524	USED FOR NODES	8212
NODE	7286	USED FOR NODES	7986
NODE	7382	USED FOR NODES	8070
NODE	7380	USED FOR NODES	8068
NODE	7381	USED FOR NODES	8069

NODE	7277	USED FOR NODES	7975
NODE	7326	USED FOR NODES	8017
NODE	7327	USED FOR NODES	8018
NODE	7328	USED FOR NODES	8019
NODE	9947	USED FOR NODES	10047
NODE	9223	USED FOR NODES	9952
NODE	9275	USED FOR NODES	9966
NODE	9276	USED FOR NODES	9967
NODE	9277	USED FOR NODES	9968
NODE	8146	USED FOR NODES	8859
NODE	9972	USED FOR NODES	10059
NODE	9973	USED FOR NODES	10060
NODE	9974	USED FOR NODES	10061
NODE	7967	USED FOR NODES	9237
NODE	8189	USED FOR NODES	8911
NODE	8190	USED FOR NODES	8912
NODE	8191	USED FOR NODES	8913
NODE	10043	USED FOR NODES	10216
NODE	10065	USED FOR NODES	10238
NODE	10066	USED FOR NODES	10239
NODE	10067	USED FOR NODES	10240
NODE	8023	USED FOR NODES	9269
NODE	8024	USED FOR NODES	9270
NODE	8025	USED FOR NODES	9271
NODE	8905	USED FOR NODES	9582
NODE	8906	USED FOR NODES	9583
NODE	10207	USED FOR NODES	10525
NODE	9728	USED FOR NODES	9835
NODE	10244	USED FOR NODES	10557
NODE	10245	USED FOR NODES	10558
NODE	10246	USED FOR NODES	10559
NODE	8907	USED FOR NODES	9584
NODE	8873	USED FOR NODES	9539
NODE	9550	USED FOR NODES	9723
NODE	9576	USED FOR NODES	9748
NODE	9577	USED FOR NODES	9749
NODE	9578	USED FOR NODES	9750
NODE	9742	USED FOR NODES	9860
NODE	9743	USED FOR NODES	9861
NODE	9744	USED FOR NODES	9862
NODE	9733	USED FOR NODES	9848
NODE	9945	USED FOR NODES	10044
NODE	9221	USED FOR NODES	9948
NODE	8137	USED FOR NODES	8857
NODE	9263	USED FOR NODES	9957
NODE	9264	USED FOR NODES	9958
NODE	9265	USED FOR NODES	9959
NODE	9960	USED FOR NODES	10050
NODE	9961	USED FOR NODES	10051
NODE	9962	USED FOR NODES	10052
NODE	7965	USED FOR NODES	9224
NODE	9734	USED FOR NODES	9849
NODE	8180	USED FOR NODES	8899
NODE	8181	USED FOR NODES	8900
NODE	8182	USED FOR NODES	8901
NODE	10041	USED FOR NODES	10208
NODE	8011	USED FOR NODES	9260
NODE	8012	USED FOR NODES	9261
NODE	8013	USED FOR NODES	9262
NODE	10053	USED FOR NODES	10229
NODE	10054	USED FOR NODES	10230
NODE	10055	USED FOR NODES	10231
NODE	8860	USED FOR NODES	9537
NODE	9735	USED FOR NODES	9850
NODE	10205	USED FOR NODES	10512
NODE	9724	USED FOR NODES	9833
NODE	10232	USED FOR NODES	10548
NODE	10233	USED FOR NODES	10549
NODE	10234	USED FOR NODES	10550
NODE	9540	USED FOR NODES	9721

NODE 9567 USED FOR NODES 9736
 NODE 9568 USED FOR NODES 9737
 NODE 9569 USED FOR NODES 9738
 NODE 8896 USED FOR NODES 9570
 NODE 8897 USED FOR NODES 9571
 NODE 8898 USED FOR NODES 9572

*** WARNING *** CP= 98.860 TIME= 19:45:08
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78	USED FOR KEYPOINT(S)	132		
KEYPOINT	89	USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104	USED FOR KEYPOINT(S)	117		
KEYPOINT	111	USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114	USED FOR KEYPOINT(S)	144		
KEYPOINT	119	USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122	USED FOR KEYPOINT(S)	128		
KEYPOINT	124	USED FOR KEYPOINT(S)	133		
KEYPOINT	125	USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140	USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141	USED FOR KEYPOINT(S)	170		
KEYPOINT	145	USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149	USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164	USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165	USED FOR KEYPOINT(S)	212		
KEYPOINT	171	USED FOR KEYPOINT(S)	205		
KEYPOINT	173	USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179	USED FOR KEYPOINT(S)	187		
KEYPOINT	181	USED FOR KEYPOINT(S)	199		
KEYPOINT	190	USED FOR KEYPOINT(S)	207		
KEYPOINT	198	USED FOR KEYPOINT(S)	214		
KEYPOINT	204	USED FOR KEYPOINT(S)	215		
KEYPOINT	206	USED FOR KEYPOINT(S)	217		
KEYPOINT	208	USED FOR KEYPOINT(S)	231		
KEYPOINT	209	USED FOR KEYPOINT(S)	234		
KEYPOINT	211	USED FOR KEYPOINT(S)	236		
KEYPOINT	213	USED FOR KEYPOINT(S)	220		
KEYPOINT	216	USED FOR KEYPOINT(S)	221		
KEYPOINT	218	USED FOR KEYPOINT(S)	223		
KEYPOINT	219	USED FOR KEYPOINT(S)	226		
KEYPOINT	222	USED FOR KEYPOINT(S)	227		
KEYPOINT	224	USED FOR KEYPOINT(S)	229		
KEYPOINT	232	USED FOR KEYPOINT(S)	237		
KEYPOINT	233	USED FOR KEYPOINT(S)	240		
KEYPOINT	235	USED FOR KEYPOINT(S)	242		
KEYPOINT	238	USED FOR KEYPOINT(S)	243		
KEYPOINT	239	USED FOR KEYPOINT(S)	246		
KEYPOINT	241	USED FOR KEYPOINT(S)	248		
KEYPOINT	244	USED FOR KEYPOINT(S)	249		
KEYPOINT	245	USED FOR KEYPOINT(S)	252		
KEYPOINT	247	USED FOR KEYPOINT(S)	254		
LINE	154	USED FOR LINE(S)	297		
LINE	172	USED FOR LINE(S)	298		
LINE	174	USED FOR LINE(S)	240	292	
LINE	233	USED FOR LINE(S)	257		
LINE	236	USED FOR LINE(S)	256		
LINE	239	USED FOR LINE(S)	290		
LINE	241	USED FOR LINE(S)	289	306	359
LINE	243	USED FOR LINE(S)	314		
LINE	244	USED FOR LINE(S)	313		
LINE	259	USED FOR LINE(S)	330		
LINE	262	USED FOR LINE(S)	271	325	345
LINE	263	USED FOR LINE(S)	272		
LINE	264	USED FOR LINE(S)	273		
LINE	267	USED FOR LINE(S)	302		
LINE	268	USED FOR LINE(S)	300		
LINE	269	USED FOR LINE(S)	283	335	366

LINE	270	USED FOR LINE(S)	346		
LINE	282	USED FOR LINE(S)	365		
LINE	305	USED FOR LINE(S)	358		
LINE	307	USED FOR LINE(S)	354	372	439
LINE	308	USED FOR LINE(S)	396		
LINE	309	USED FOR LINE(S)	395		
LINE	315	USED FOR LINE(S)	414		
LINE	319	USED FOR LINE(S)	340	413	431
LINE	320	USED FOR LINE(S)	341		
LINE	331	USED FOR LINE(S)	367		
LINE	336	USED FOR LINE(S)	353	421	441
LINE	339	USED FOR LINE(S)	432		
LINE	352	USED FOR LINE(S)	440		
LINE	371	USED FOR LINE(S)	438		
LINE	377	USED FOR LINE(S)	437	462	
LINE	382	USED FOR LINE(S)	468		
LINE	383	USED FOR LINE(S)	467		
LINE	401	USED FOR LINE(S)	452		
LINE	403	USED FOR LINE(S)	451		
LINE	408	USED FOR LINE(S)	429	447	
LINE	409	USED FOR LINE(S)	430		
LINE	416	USED FOR LINE(S)	442		
LINE	422	USED FOR LINE(S)	434		
LINE	427	USED FOR LINE(S)	445		
LINE	428	USED FOR LINE(S)	446		
LINE	435	USED FOR LINE(S)	457		
LINE	436	USED FOR LINE(S)	463		
LINE	444	USED FOR LINE(S)	471		
LINE	449	USED FOR LINE(S)	473		
LINE	450	USED FOR LINE(S)	472		
LINE	454	USED FOR LINE(S)	478		
LINE	455	USED FOR LINE(S)	477		
LINE	458	USED FOR LINE(S)	509		
LINE	459	USED FOR LINE(S)	515		
LINE	460	USED FOR LINE(S)	514		
LINE	464	USED FOR LINE(S)	520		
LINE	465	USED FOR LINE(S)	519		
LINE	470	USED FOR LINE(S)	484		
LINE	475	USED FOR LINE(S)	486		
LINE	476	USED FOR LINE(S)	485		
LINE	480	USED FOR LINE(S)	491		
LINE	481	USED FOR LINE(S)	490		
LINE	483	USED FOR LINE(S)	497		
LINE	488	USED FOR LINE(S)	499		
LINE	489	USED FOR LINE(S)	498		
LINE	493	USED FOR LINE(S)	504		
LINE	494	USED FOR LINE(S)	503		
LINE	510	USED FOR LINE(S)	522		
LINE	511	USED FOR LINE(S)	528		
LINE	512	USED FOR LINE(S)	527		
LINE	516	USED FOR LINE(S)	533		
LINE	517	USED FOR LINE(S)	532		
LINE	523	USED FOR LINE(S)	535		
LINE	524	USED FOR LINE(S)	541		
LINE	525	USED FOR LINE(S)	540		
LINE	529	USED FOR LINE(S)	546		
LINE	530	USED FOR LINE(S)	545		
LINE	536	USED FOR LINE(S)	548		
LINE	537	USED FOR LINE(S)	554		
LINE	538	USED FOR LINE(S)	553		
LINE	542	USED FOR LINE(S)	559		
LINE	543	USED FOR LINE(S)	558		
AREA	123	USED FOR AREA(S)	230		
AREA	163	USED FOR AREA(S)	182		
AREA	176	USED FOR AREA(S)	226		
AREA	177	USED FOR AREA(S)	264		
AREA	193	USED FOR AREA(S)	282		
AREA	198	USED FOR AREA(S)	208		
AREA	204	USED FOR AREA(S)	239		
AREA	205	USED FOR AREA(S)	291		

```

AREA 223 USED FOR AREA(S) 295
AREA 248 USED FOR AREA(S) 294
AREA 255 USED FOR AREA(S) 302
AREA 273 USED FOR AREA(S) 307
AREA 277 USED FOR AREA(S) 290
AREA 288 USED FOR AREA(S) 296
AREA 289 USED FOR AREA(S) 313
AREA 293 USED FOR AREA(S) 318
AREA 298 USED FOR AREA(S) 317
AREA 299 USED FOR AREA(S) 337
AREA 305 USED FOR AREA(S) 326
AREA 306 USED FOR AREA(S) 312
AREA 309 USED FOR AREA(S) 319
AREA 311 USED FOR AREA(S) 322
AREA 316 USED FOR AREA(S) 333
AREA 324 USED FOR AREA(S) 340
AREA 328 USED FOR AREA(S) 344
AREA 331 USED FOR AREA(S) 369
AREA 335 USED FOR AREA(S) 373
AREA 342 USED FOR AREA(S) 349
AREA 346 USED FOR AREA(S) 353
AREA 351 USED FOR AREA(S) 358
AREA 355 USED FOR AREA(S) 362
AREA 367 USED FOR AREA(S) 378
AREA 371 USED FOR AREA(S) 382
AREA 376 USED FOR AREA(S) 387
AREA 380 USED FOR AREA(S) 391
AREA 385 USED FOR AREA(S) 396
AREA 389 USED FOR AREA(S) 400

```

Clear 2-D mesh

```

SELECT      FOR ITEM=TYPE COMPONENT=
IN RANGE    1 TO      1 STEP      1

```

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

```

*** NOTE ***                      CP= 102.100  TIME= 19:45:11
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 102.110  TIME= 19:45:11
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 102.110  TIME= 19:45:11
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 102.120  TIME= 19:45:11
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 102.120  TIME= 19:45:11
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 102.130  TIME= 19:45:11
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 102.150  TIME= 19:45:11
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only
elements are deleted.

```

```

*** NOTE ***                      CP= 102.160  TIME= 19:45:11
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only
elements are deleted.

```

*** NOTE *** CP= 102.180 TIME= 19:45:11
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.190 TIME= 19:45:11
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.210 TIME= 19:45:11
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.210 TIME= 19:45:11
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.220 TIME= 19:45:11
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.220 TIME= 19:45:11
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.230 TIME= 19:45:11
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.240 TIME= 19:45:11
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.250 TIME= 19:45:11
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.270 TIME= 19:45:11
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.280 TIME= 19:45:11
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.290 TIME= 19:45:11
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.310 TIME= 19:45:11
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.320 TIME= 19:45:11
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.330 TIME= 19:45:11
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.330 TIME= 19:45:11
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.340 TIME= 19:45:11
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.340 TIME= 19:45:11

Nodes cannot be cleared from area 26 because volume 8 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.350 TIME= 19:45:11
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.350 TIME= 19:45:11
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.360 TIME= 19:45:11
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.370 TIME= 19:45:11
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.370 TIME= 19:45:11
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.380 TIME= 19:45:11
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.390 TIME= 19:45:11
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.410 TIME= 19:45:11
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.420 TIME= 19:45:11
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.440 TIME= 19:45:11
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.450 TIME= 19:45:11
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.460 TIME= 19:45:11
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.480 TIME= 19:45:11
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only elements are deleted.

*** NOTE *** CP= 102.490 TIME= 19:45:11
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 9184 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 9184 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT

KEYPOINTS) RELATED TO SELECTED AREA SET.

81 NODES (OF 9184 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 64
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

297 NODES (OF 9184 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 256

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=

IN RANGE 1 TO 10664 STEP 1

9184 NODES (OF 9184 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE *** CP= 144.920 TIME= 19:45:54
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 145.450

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 19:45:55 MAR 29, 1995 CP= 145.450
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

872 ELEMENTS (OF 8136 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

914 NODES (OF 9184 DEFINED) SELECTED FROM
872 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c12x5a.sub

*** WARNING *** CP= 145.860 TIME= 19:45:55
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 872 NUMBER OF NODES= 914
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8978 STEP 1

8136 ELEMENTS (OF 8136 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10664 STEP 1

9184 NODES (OF 9184 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1638.370

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:11:43 MAR 29, 1995 CP= 1638.370
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 8979 c12x5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 8979

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 8979
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

872 ELEMENTS (OF 8137 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8979 STEP 1

7265 ELEMENTS (OF 7265 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1639.200

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 1639.210 TIME= 20:11:44
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.77 AND 308.77
KABS= 0. TOLERANCE= 1.54386

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

63 NODES (OF 9184 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 10664 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.23 AND -991.23
KABS= 0. TOLERANCE= 4.95614

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

63 NODES (OF 9184 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 10664 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10664 STEP 1

9184 NODES (OF 9184 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 1641.320 TIME= 20:11:46
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:11:46 MAR 29, 1995 CP= 1641.320
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 1642.970 TIME= 20:11:48

This load step will be a static (steady-state) step.

*** NOTE *** CP= 1642.980 TIME= 20:11:48
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER. 1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS. ALL DATA WRITTEN
FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .36155E+06

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.46129E-09	IXX = .6936E+11	IXX = .4582E+11
YC = -.255.17	IYY = .1338E+08	IYY = .1338E+08
ZC = .17656E-15	IZZ = .6937E+11	IZZ = .4583E+11
	IXY = -.1250	IXY = -.8248E-01
	IYZ = .4962E-07	IYZ = .3333E-07
	IZX = -.1514E-09	IZX = -.1514E-09

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
2	361554.

Range of element maximum matrix coefficients in global coordinates
Maximum= 173.195535 at element 7863.
Minimum= 3.707673773E-08 at element 8979.

*** WARNING *** CP= 1683.530 TIME= 20:12:33
Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	7264	SOLID70	29.350	.004
18	1	MATRIX50	.880	.880

Time at end of element matrix formulation CP= 1683.53.

HT FLOW CONVERGENCE VALUE= 75.38 CRITERION= .7538E-01

Estimated number of active DOF= 9058.

Maximum wavefront= 1093.

Time at end of matrix triangularization CP= 1955.22.

Equation solver maximum pivot= 726.165651 at node 898 TEMP.

Equation solver minimum pivot= 0.916904357 at node 1968 TEMP.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
HT FLOW CONVERGENCE VALUE= .1009 CRITERION= .1550E-02
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3920E-02
HT FLOW CONVERGENCE VALUE= .4670E-05 CRITERION= .1550E-02 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	7264	SOLID70	19.630	.003
18	1	MATRIX50	1.390	1.390

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	7264	SOLID70	1.720	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 9058
R.M.S. WAVEFRONT SIZE = 415.3

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
12.453 MB WRITTEN ON ELEMENT MATRIX FILE: c12x5a.emat
6.563 MB WRITTEN ON ELEMENT SAVED DATA FILE: c12x5a.esav
21.828 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c12x5a.tri
.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c12x5a.dsub
5.719 MB WRITTEN ON RESULTS FILE: c12x5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 2340.870

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:23:39 MAR 29, 1995 CP= 2340.930
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.13797

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 2350.400

Apply initial conditions wall temperature
as a temporary boundry condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

360 NODES (OF 9184 DEFINED) SELECTED FROM

12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 10664 BY 1
REAL= 26.1379688 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10664 STEP 1

9184 NODES (OF 9184 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8979 STEP 1

7265 ELEMENTS (OF 7265 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP intial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:23:50 MAR 29, 1995 CP= 2351.120
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPE.TRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO.273.15
NEWTON-RAPHSON OPTION.PROGRAM CHOSEN

*** WARNING *** CP= 2352.780 TIME= 20:23:52
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2353.370 TIME= 20:23:53
The step data was checked and warning messages were found.
Please review output or errors file (c12x5a.err) for these warning messages.

*** NOTE *** CP= 2353.380 TIME= 20:23:53
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:23:53 MAR 29, 1995 CP= 2353.700
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
TIME AT END OF THE LOAD STEP.20000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 167.5 CRITERION= .1675
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 93.65
HT FLOW CONVERGENCE VALUE= 58.67 CRITERION= .1675
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.091
HT FLOW CONVERGENCE VALUE= 2.226 CRITERION= .1675
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1126
HT FLOW CONVERGENCE VALUE= .2308E-01 CRITERION= .1675 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1


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5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.
SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

360 NODES (OF 9184 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 10664 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 360

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10664 STEP 1

9184 NODES (OF 9184 DEFINED) SELECTED BY NSEL COMMAND.
*****
Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE 80 SUBSTEPS AS A MAXIMUM
USE 4 SUBSTEPS AS A MINIMUM
```

USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

Begin Transient

Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8979 STEP 1

7265 ELEMENTS (OF 7265 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2643.350 TIME= 20:28:49
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 20:28:49 MAR 29, 1995 CP= 2643.350
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 31.558
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 330.4 CRITERION= .1675
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6025E-04
 HT FLOW CONVERGENCE VALUE= .3778E-04 CRITERION= .3704 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
 *** TIME = .394472 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9963E-05 OSCILLATION LIMIT = .3930E-05
 *** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3704
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1205E-03
 HT FLOW CONVERGENCE VALUE= .7556E-04 CRITERION= .3704 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
 *** TIME = .788942 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9963E-05 OSCILLATION LIMIT = .3930E-05
 *** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3704
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3615E-03
 HT FLOW CONVERGENCE VALUE= .2267E-03 CRITERION= .3704 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
 *** TIME = 1.97235 TIME INC = 1.18341
 *** RESPONSE EIGENVALUE = .9962E-05 OSCILLATION LIMIT = .1179E-04
 *** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3704
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1084E-02
 HT FLOW CONVERGENCE VALUE= .6800E-03 CRITERION= .3704 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
 *** TIME = 5.52258 TIME INC = 3.55023
 *** RESPONSE EIGENVALUE = .9958E-05 OSCILLATION LIMIT = .3535E-04
 *** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3704
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2409E-02
 HT FLOW CONVERGENCE VALUE= .1511E-02 CRITERION= .3703 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
 *** TIME = 13.4120 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9951E-05 OSCILLATION LIMIT = .7850E-04
 *** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

HT FLOW CONVERGENCE VALUE= 660.6 CRITERION= .3704
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2409E-02
 HT FLOW CONVERGENCE VALUE= .1510E-02 CRITERION= .3703 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
 *** TIME = 21.3014 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9940E-05 OSCILLATION LIMIT = .7842E-04
 *** AUTO TIME STEP: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 660.5 CRITERION= .3703
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1566E-02
 HT FLOW CONVERGENCE VALUE= .9815E-03 CRITERION= .3703 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
 *** TIME = 26.4295 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9933E-05 OSCILLATION LIMIT = .5094E-04
 *** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 660.5 CRITERION= .3703
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1565E-02
 HT FLOW CONVERGENCE VALUE= .9814E-03 CRITERION= .3703 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
 *** TIME = 31.5576 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9927E-05 OSCILLATION LIMIT = .5091E-04

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 20:49:21 MAR 29, 1995 CP= 3857.830
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 660.5 CRITERION= .3703
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.349
 HT FLOW CONVERGENCE VALUE= 5.150 CRITERION= .2771
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1346
 HT FLOW CONVERGENCE VALUE= .1198 CRITERION= .2769 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
 *** TIME = 39478.6 TIME INC = 39447.0
 *** RESPONSE EIGENVALUE = .8052E-05 OSCILLATION LIMIT = .3176
 *** AUTO STEP TIME: NEXT TIME INC = 39447. UNCHANGED

HT FLOW CONVERGENCE VALUE= 452.4 CRITERION= .2860
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.567
 HT FLOW CONVERGENCE VALUE= 3.062 CRITERION= .2470
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6465E-01
 HT FLOW CONVERGENCE VALUE= .6751E-01 CRITERION= .2477 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
 *** TIME = 78925.6 TIME INC = 39447.0
 *** RESPONSE EIGENVALUE = .4835E-05 OSCILLATION LIMIT = .1907
 *** AUTO TIME STEP: NEXT TIME INC = .10341E+06 INCREASED (FACTOR = 2.6214)

HT FLOW CONVERGENCE VALUE= 385.8 CRITERION= .2631
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.018
 HT FLOW CONVERGENCE VALUE= 5.549 CRITERION= .2263
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1593
 HT FLOW CONVERGENCE VALUE= .1878 CRITERION= .2274 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 20
 *** TIME = 182333. TIME INC = 103407.
 *** RESPONSE EIGENVALUE = .2520E-05 OSCILLATION LIMIT = .2606
 *** AUTO TIME STEP: NEXT TIME INC = .19839E+06 INCREASED (FACTOR = 1.9186)

HT FLOW CONVERGENCE VALUE= 334.3 CRITERION= .2455
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.920
 HT FLOW CONVERGENCE VALUE= 7.261 CRITERION= .2171
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2158
 HT FLOW CONVERGENCE VALUE= .2868 CRITERION= .2183
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8123E-02
 HT FLOW CONVERGENCE VALUE= .8334E-02 CRITERION= .2182 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
 *** TIME = 380726. TIME INC = 198393.
 *** RESPONSE EIGENVALUE = .1096E-05 OSCILLATION LIMIT = .2174
 *** AUTO STEP TIME: NEXT TIME INC = .19839E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 304.0 CRITERION= .2338
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.635
 HT FLOW CONVERGENCE VALUE= 5.182 CRITERION= .2142
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1473
 HT FLOW CONVERGENCE VALUE= .2004 CRITERION= .2149 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 25
 *** TIME = 579118. TIME INC = 198393.
 *** RESPONSE EIGENVALUE = .6598E-06 OSCILLATION LIMIT = .1309
 *** AUTO TIME STEP: NEXT TIME INC = .59518E+06 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 287.4 CRITERION= .2262
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.756
 HT FLOW CONVERGENCE VALUE= 11.31 CRITERION= .2086
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4348
 HT FLOW CONVERGENCE VALUE= .6039 CRITERION= .2094
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2593E-01
 HT FLOW CONVERGENCE VALUE= .3406E-01 CRITERION= .2092 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 28
 *** TIME = .117430E+07 TIME INC = 595178.
 *** RESPONSE EIGENVALUE = .4199E-06 OSCILLATION LIMIT = .2499
 *** AUTO STEP TIME: NEXT TIME INC = .59518E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 262.2 CRITERION= .2159
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.045
 HT FLOW CONVERGENCE VALUE= 7.216 CRITERION= .2068
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2875
 HT FLOW CONVERGENCE VALUE= .3958 CRITERION= .2072
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1595E-01
 HT FLOW CONVERGENCE VALUE= .2089E-01 CRITERION= .2071 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 31
 *** TIME = .176947E+07 TIME INC = 595178.
 *** RESPONSE EIGENVALUE = .2601E-06 OSCILLATION LIMIT = .1548
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3256)

HT FLOW CONVERGENCE VALUE= 251.6 CRITERION= .2114
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.028
 HT FLOW CONVERGENCE VALUE= 7.282 CRITERION= .2072
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3014
 HT FLOW CONVERGENCE VALUE= .4140 CRITERION= .2074
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1836E-01
 HT FLOW CONVERGENCE VALUE= .2501E-01 CRITERION= .2074 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 34
 *** TIME = .255841E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1787E-06 OSCILLATION LIMIT = .1410
 *** AUTO TIME STEP: NEXT TIME INC = .59738E+06 DECREASED (FACTOR = .7572)

HT FLOW CONVERGENCE VALUE= 252.0 CRITERION= .2113
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.435
 HT FLOW CONVERGENCE VALUE= 4.364 CRITERION= .2084
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1691
 HT FLOW CONVERGENCE VALUE= .2314 CRITERION= .2086
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9037E-02
 HT FLOW CONVERGENCE VALUE= .1194E-01 CRITERION= .2086 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 37
 *** TIME = .315579E+07 TIME INC = 597377.
 *** RESPONSE EIGENVALUE = .1299E-06 OSCILLATION LIMIT = .7762E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 21:33:20 MAR 29, 1995 CP= 6458.540
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 253.9 CRITERION= .2112
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.095
 HT FLOW CONVERGENCE VALUE= 3.759 CRITERION= .2087
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1435
 HT FLOW CONVERGENCE VALUE= .1956 CRITERION= .2088 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 39
 *** TIME = .375317E+07 TIME INC = 597377.
 *** RESPONSE EIGENVALUE = .1061E-06 OSCILLATION LIMIT = .6336E-01

*** AUTO STEP TIME: NEXT TIME INC = .59738E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 255.5 CRITERION= .2118
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.857
 HT FLOW CONVERGENCE VALUE= 3.298 CRITERION= .2095
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1252
 HT FLOW CONVERGENCE VALUE= .1702 CRITERION= .2096 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 41
 *** TIME = .435054E+07 TIME INC = 597377.
 *** RESPONSE EIGENVALUE = .9025E-07 OSCILLATION LIMIT = .5391E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3207)

HT FLOW CONVERGENCE VALUE= 256.4 CRITERION= .2115
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.163
 HT FLOW CONVERGENCE VALUE= 3.848 CRITERION= .2094
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1526
 HT FLOW CONVERGENCE VALUE= .2065 CRITERION= .2095 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 43
 *** TIME = .513948E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7762E-07 OSCILLATION LIMIT = .6124E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.1 CRITERION= .2119
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.921
 HT FLOW CONVERGENCE VALUE= 3.394 CRITERION= .2099
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1337
 HT FLOW CONVERGENCE VALUE= .1802 CRITERION= .2100 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 45
 *** TIME = .592842E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .6717E-07 OSCILLATION LIMIT = .5299E-01
 *** AUTO STEP TIME: NEXT TIME INC = .38313E+06 DECREASED (FACTOR = .4856)

HT FLOW CONVERGENCE VALUE= 257.2 CRITERION= .2114
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8607
 HT FLOW CONVERGENCE VALUE= 1.507 CRITERION= .2095
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5001E-01
 HT FLOW CONVERGENCE VALUE= .6687E-01 CRITERION= .2096 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 47
 *** TIME = .631155E+07 TIME INC = 383127.
 *** RESPONSE EIGENVALUE = .6115E-07 OSCILLATION LIMIT = .2343E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 21:54:02 MAR 29, 1995 CP= 7670.280
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 257.2 CRITERION= .2117
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8219
 HT FLOW CONVERGENCE VALUE= 1.433 CRITERION= .2099
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4764E-01
 HT FLOW CONVERGENCE VALUE= .6363E-01 CRITERION= .2100 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 49
 *** TIME = .669468E+07 TIME INC = 383127.
 *** RESPONSE EIGENVALUE = .5773E-07 OSCILLATION LIMIT = .2212E-01
 *** AUTO STEP TIME: NEXT TIME INC = .38313E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.2 CRITERION= .2112
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7880
 HT FLOW CONVERGENCE VALUE= 1.375 CRITERION= .2095
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4531E-01

HT FLOW CONVERGENCE VALUE= .6035E-01 CRITERION= .2096 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 51
 *** TIME = .707781E+07 TIME INC = 383127.
 *** RESPONSE EIGENVALUE = .5467E-07 OSCILLATION LIMIT = .2094E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.0592)

HT FLOW CONVERGENCE VALUE= 257.2 CRITERION= .2115
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.529
 HT FLOW CONVERGENCE VALUE= 2.674 CRITERION= .2099
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1030
 HT FLOW CONVERGENCE VALUE= .1374 CRITERION= .2100 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 53
 *** TIME = .786675E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .5036E-07 OSCILLATION LIMIT = .3973E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.2 CRITERION= .2110
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.417
 HT FLOW CONVERGENCE VALUE= 2.484 CRITERION= .2096
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9421E-01
 HT FLOW CONVERGENCE VALUE= .1250 CRITERION= .2096 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 55
 *** TIME = .865569E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .4542E-07 OSCILLATION LIMIT = .3583E-01
 *** AUTO TIME STEP: NEXT TIME INC = .40581E+06 DECREASED (FACTOR = .5144)

HT FLOW CONVERGENCE VALUE= 257.3 CRITERION= .2113
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6896
 HT FLOW CONVERGENCE VALUE= 1.205 CRITERION= .2099
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3926E-01
 HT FLOW CONVERGENCE VALUE= .5163E-01 CRITERION= .2100 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 57
 *** TIME = .906150E+07 TIME INC = 405813.
 *** RESPONSE EIGENVALUE = .4221E-07 OSCILLATION LIMIT = .1713E-01
 *** AUTO STEP TIME: NEXT TIME INC = .40581E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.4 CRITERION= .2109
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6660
 HT FLOW CONVERGENCE VALUE= 1.172 CRITERION= .2096
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3768E-01
 HT FLOW CONVERGENCE VALUE= .4936E-01 CRITERION= .2096 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 6 SUBSTEP 6 COMPLETED. CUM ITER = 59
 *** TIME = .946731E+07 TIME INC = 405813.
 *** RESPONSE EIGENVALUE = .4015E-07 OSCILLATION LIMIT = .1629E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 22:18:48 MAR 29, 1995 CP= 9123.030
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 257.5 CRITERION= .2112
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6453
 HT FLOW CONVERGENCE VALUE= 1.136 CRITERION= .2100
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3641E-01
 HT FLOW CONVERGENCE VALUE= .4758E-01 CRITERION= .2100 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 61
 *** TIME = .987312E+07 TIME INC = 405813.
 *** RESPONSE EIGENVALUE = .3821E-07 OSCILLATION LIMIT = .1551E-01
 *** AUTO STEP TIME: NEXT TIME INC = .40581E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.6 CRITERION= .2109
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6254
HT FLOW CONVERGENCE VALUE= 1.105 CRITERION= .2096
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3504E-01
HT FLOW CONVERGENCE VALUE= .4568E-01 CRITERION= .2097 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 63
*** TIME = .102789E+08 TIME INC = 405813.
*** RESPONSE EIGENVALUE = .3642E-07 OSCILLATION LIMIT = .1478E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.9441)

HT FLOW CONVERGENCE VALUE= 257.8 CRITERION= .2112
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.164
HT FLOW CONVERGENCE VALUE= 2.068 CRITERION= .2101
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7521E-01
HT FLOW CONVERGENCE VALUE= .9826E-01 CRITERION= .2101 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 65
*** TIME = .110679E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3384E-07 OSCILLATION LIMIT = .2670E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.1 CRITERION= .2108
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.102
HT FLOW CONVERGENCE VALUE= 1.961 CRITERION= .2099
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7040E-01
HT FLOW CONVERGENCE VALUE= .9169E-01 CRITERION= .2099 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 67
*** TIME = .118568E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3094E-07 OSCILLATION LIMIT = .2441E-01
*** AUTO TIME STEP: NEXT TIME INC = .76625E+06 DECREASED (FACTOR = .9712)

HT FLOW CONVERGENCE VALUE= 258.6 CRITERION= .2113
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.016
HT FLOW CONVERGENCE VALUE= 1.802 CRITERION= .2104
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6410E-01
HT FLOW CONVERGENCE VALUE= .8323E-01 CRITERION= .2104 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 69
*** TIME = .126231E+08 TIME INC = 766253.
*** RESPONSE EIGENVALUE = .2837E-07 OSCILLATION LIMIT = .2174E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 22:39:26 MAR 29, 1995 CP= 10337.640
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 259.1 CRITERION= .2110
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9678
HT FLOW CONVERGENCE VALUE= 1.719 CRITERION= .2101
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6052E-01
HT FLOW CONVERGENCE VALUE= .7830E-01 CRITERION= .2101 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 71
*** TIME = .133893E+08 TIME INC = 766253.
*** RESPONSE EIGENVALUE = .2613E-07 OSCILLATION LIMIT = .2002E-01
*** AUTO STEP TIME: NEXT TIME INC = .76625E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 259.6 CRITERION= .2114
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9242
HT FLOW CONVERGENCE VALUE= 1.637 CRITERION= .2106
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5747E-01
HT FLOW CONVERGENCE VALUE= .7418E-01 CRITERION= .2106 <<< CONVERGED


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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 73
*** TIME = .141556E+08 TIME INC = 766253.
*** RESPONSE EIGENVALUE = .2412E-07 OSCILLATION LIMIT = .1848E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0296)
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HT FLOW CONVERGENCE VALUE= 260.2 CRITERION= .2111
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9102
HT FLOW CONVERGENCE VALUE= 1.611 CRITERION= .2104
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5642E-01
HT FLOW CONVERGENCE VALUE= .7264E-01 CRITERION= .2104 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 75
*** TIME = .149445E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2229E-07 OSCILLATION LIMIT = .1759E-01
*** AUTO TIME STEP: NEXT TIME INC = .41716E+06 DECREASED (FACTOR = .5288)
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HT FLOW CONVERGENCE VALUE= 260.8 CRITERION= .2116
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4654
HT FLOW CONVERGENCE VALUE= .8170 CRITERION= .2108
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2506E-01
HT FLOW CONVERGENCE VALUE= .3202E-01 CRITERION= .2108 <<< CONVERGED
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 77
*** TIME = .153617E+08 TIME INC = 417157.
*** RESPONSE EIGENVALUE = .2116E-07 OSCILLATION LIMIT = .8825E-02
*** AUTO STEP TIME: NEXT TIME INC = .41716E+06 UNCHANGED
```

```
HT FLOW CONVERGENCE VALUE= 261.1 CRITERION= .2113
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4550
HT FLOW CONVERGENCE VALUE= .7998 CRITERION= .2105
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2436E-01
HT FLOW CONVERGENCE VALUE= .3109E-01 CRITERION= .2105 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 79
*** TIME = .157788E+08 TIME INC = 417157.
*** RESPONSE EIGENVALUE = .2034E-07 OSCILLATION LIMIT = .8485E-02
```

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 23:00:04 MAR 29, 1995 CP= 11553.450
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX
```

12 PWR MPC, 5 m Tunnel

```
HT FLOW CONVERGENCE VALUE= 261.4 CRITERION= .2117
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4458
HT FLOW CONVERGENCE VALUE= .7813 CRITERION= .2110
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2386E-01
HT FLOW CONVERGENCE VALUE= .3041E-01 CRITERION= .2110 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 81
*** TIME = .161960E+08 TIME INC = 417157.
*** RESPONSE EIGENVALUE = .1955E-07 OSCILLATION LIMIT = .8155E-02
*** AUTO STEP TIME: NEXT TIME INC = .41716E+06 UNCHANGED
```

```
HT FLOW CONVERGENCE VALUE= 261.7 CRITERION= .2114
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4366
HT FLOW CONVERGENCE VALUE= .7662 CRITERION= .2107
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2323E-01
HT FLOW CONVERGENCE VALUE= .2957E-01 CRITERION= .2107 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 83
*** TIME = .166131E+08 TIME INC = 417157.
*** RESPONSE EIGENVALUE = .1883E-07 OSCILLATION LIMIT = .7855E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.8912)
```

```

HT FLOW CONVERGENCE VALUE= 262.1    CRITERION= .2118
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8023
HT FLOW CONVERGENCE VALUE= 1.411    CRITERION= .2112
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4884E-01
HT FLOW CONVERGENCE VALUE= .6242E-01 CRITERION= .2112    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 85
*** TIME = .174021E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1769E-07    OSCILLATION LIMIT = .1396E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06    UNCHANGED

HT FLOW CONVERGENCE VALUE= 262.7    CRITERION= .2115
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7738
HT FLOW CONVERGENCE VALUE= 1.359    CRITERION= .2110
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4670E-01
HT FLOW CONVERGENCE VALUE= .5954E-01 CRITERION= .2109    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 87
*** TIME = .181910E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1654E-07    OSCILLATION LIMIT = .1305E-01
*** AUTO TIME STEP: NEXT TIME INC = .74357E+06    DECREASED (FACTOR = .9425)

HT FLOW CONVERGENCE VALUE= 263.2    CRITERION= .2120
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7047
HT FLOW CONVERGENCE VALUE= 1.233    CRITERION= .2114
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4188E-01
HT FLOW CONVERGENCE VALUE= .5326E-01 CRITERION= .2114    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 89
*** TIME = .189346E+08    TIME INC = 743567.
*** RESPONSE EIGENVALUE = .1553E-07    OSCILLATION LIMIT = .1155E-01

```

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 23:20:41 MAR 29, 1995 CP= 12770.580
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 263.8    CRITERION= .2117
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6832
HT FLOW CONVERGENCE VALUE= 1.194    CRITERION= .2112
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4027E-01
HT FLOW CONVERGENCE VALUE= .5111E-01 CRITERION= .2112    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 91
*** TIME = .196782E+08    TIME INC = 743567.
*** RESPONSE EIGENVALUE = .1465E-07    OSCILLATION LIMIT = .1089E-01
*** AUTO STEP TIME: NEXT TIME INC = .74357E+06    UNCHANGED

HT FLOW CONVERGENCE VALUE= 264.3    CRITERION= .2122
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6633
HT FLOW CONVERGENCE VALUE= 1.155    CRITERION= .2116
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3894E-01
HT FLOW CONVERGENCE VALUE= .4932E-01 CRITERION= .2116    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 93
*** TIME = .204217E+08    TIME INC = 743567.
*** RESPONSE EIGENVALUE = .1384E-07    OSCILLATION LIMIT = .1029E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06    INCREASED (FACTOR = 1.0610)

HT FLOW CONVERGENCE VALUE= 264.8    CRITERION= .2119
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6835
HT FLOW CONVERGENCE VALUE= 1.189    CRITERION= .2114
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4024E-01
HT FLOW CONVERGENCE VALUE= .5088E-01 CRITERION= .2114    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

```

*** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 95
 *** TIME = .212107E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1309E-07 OSCILLATION LIMIT = .1033E-01
 *** AUTO TIME STEP: NEXT TIME INC = .43984E+06 DECREASED (FACTOR = .5575)

HT FLOW CONVERGENCE VALUE= 265.4 CRITERION= .2124
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3728
 HT FLOW CONVERGENCE VALUE= .6425 CRITERION= .2118
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1935E-01
 HT FLOW CONVERGENCE VALUE= .2431E-01 CRITERION= .2118 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 97
 *** TIME = .216505E+08 TIME INC = 439843.
 *** RESPONSE EIGENVALUE = .1267E-07 OSCILLATION LIMIT = .5573E-02
 *** AUTO STEP TIME: NEXT TIME INC = .43984E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 265.6 CRITERION= .2121
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3668
 HT FLOW CONVERGENCE VALUE= .6328 CRITERION= .2115
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1893E-01
 HT FLOW CONVERGENCE VALUE= .2375E-01 CRITERION= .2115 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 99
 *** TIME = .220904E+08 TIME INC = 439843.
 *** RESPONSE EIGENVALUE = .1231E-07 OSCILLATION LIMIT = .5415E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 23:41:17 MAR 29, 1995 CP= 13987.260
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 265.9 CRITERION= .2125
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3613
 HT FLOW CONVERGENCE VALUE= .6220 CRITERION= .2119
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1865E-01
 HT FLOW CONVERGENCE VALUE= .2338E-01 CRITERION= .2119 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 101
 *** TIME = .225302E+08 TIME INC = 439843.
 *** RESPONSE EIGENVALUE = .1195E-07 OSCILLATION LIMIT = .5254E-02
 *** AUTO STEP TIME: NEXT TIME INC = .43984E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 266.2 CRITERION= .2122
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3561
 HT FLOW CONVERGENCE VALUE= .6140 CRITERION= .2116
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1828E-01
 HT FLOW CONVERGENCE VALUE= .2288E-01 CRITERION= .2116 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 103
 *** TIME = .229700E+08 TIME INC = 439843.
 *** RESPONSE EIGENVALUE = .1163E-07 OSCILLATION LIMIT = .5113E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.7937)

HT FLOW CONVERGENCE VALUE= 266.5 CRITERION= .2125
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6260
 HT FLOW CONVERGENCE VALUE= 1.081 CRITERION= .2121
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3624E-01
 HT FLOW CONVERGENCE VALUE= .4554E-01 CRITERION= .2121 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 105
 *** TIME = .237590E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1106E-07 OSCILLATION LIMIT = .8724E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 267.0 CRITERION= .2123

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6110
 HT FLOW CONVERGENCE VALUE= 1.054 CRITERION= .2118
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3508E-01
 HT FLOW CONVERGENCE VALUE= .4400E-01 CRITERION= .2118 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 107
 *** TIME = .245479E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1056E-07 OSCILLATION LIMIT = .8333E-02
 *** AUTO TIME STEP: NEXT TIME INC = .69819E+06 DECREASED (FACTOR = .8850)

HT FLOW CONVERGENCE VALUE= 267.4 CRITERION= .2127
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5286
 HT FLOW CONVERGENCE VALUE= .9069 CRITERION= .2122
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2956E-01
 HT FLOW CONVERGENCE VALUE= .3698E-01 CRITERION= .2122 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 109
 *** TIME = .252461E+08 TIME INC = 698194.
 *** RESPONSE EIGENVALUE = .1014E-07 OSCILLATION LIMIT = .7078E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 00:01:53 MAR 30, 1995 CP= 15203.220
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 267.8 CRITERION= .2124
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5178
 HT FLOW CONVERGENCE VALUE= .8872 CRITERION= .2120
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2876E-01
 HT FLOW CONVERGENCE VALUE= .3591E-01 CRITERION= .2120 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 111
 *** TIME = .259443E+08 TIME INC = 698194.
 *** RESPONSE EIGENVALUE = .9772E-08 OSCILLATION LIMIT = .6823E-02
 *** AUTO STEP TIME: NEXT TIME INC = .69819E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 268.2 CRITERION= .2128
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5075
 HT FLOW CONVERGENCE VALUE= .8657 CRITERION= .2124
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2811E-01
 HT FLOW CONVERGENCE VALUE= .3505E-01 CRITERION= .2124 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 113
 *** TIME = .266425E+08 TIME INC = 698194.
 *** RESPONSE EIGENVALUE = .9418E-08 OSCILLATION LIMIT = .6576E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.1300)

HT FLOW CONVERGENCE VALUE= 268.6 CRITERION= .2125
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5616
 HT FLOW CONVERGENCE VALUE= .9584 CRITERION= .2121
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3159E-01
 HT FLOW CONVERGENCE VALUE= .3936E-01 CRITERION= .2121 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 115
 *** TIME = .274314E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .9067E-08 OSCILLATION LIMIT = .7153E-02
 *** AUTO TIME STEP: NEXT TIME INC = .48522E+06 DECREASED (FACTOR = .6150)

HT FLOW CONVERGENCE VALUE= 269.0 CRITERION= .2129
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3397
 HT FLOW CONVERGENCE VALUE= .5751 CRITERION= .2125
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1728E-01
 HT FLOW CONVERGENCE VALUE= .2141E-01 CRITERION= .2125 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 117

```

*** TIME = .279167E+08    TIME INC = 485216.
*** RESPONSE EIGENVALUE = .8882E-08    OSCILLATION LIMIT = .4310E-02
*** AUTO STEP TIME: NEXT TIME INC = .48522E+06    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 269.2    CRITERION= .2126
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3352
    HT FLOW CONVERGENCE VALUE= .5681    CRITERION= .2122
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1696E-01
    HT FLOW CONVERGENCE VALUE= .2099E-01    CRITERION= .2122    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 119
*** TIME = .284019E+08    TIME INC = 485216.
*** RESPONSE EIGENVALUE = .8696E-08    OSCILLATION LIMIT = .4220E-02
    Apply loads and solve for 1 to 9 years

```

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

TIME= .31558E+08

```

SELECT    FOR ITEM=MAT COMPONENT=
IN RANGE  10 TO    10 STEP      1

```

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

```

1080 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

```

```

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION      1
755.827987 .000000000E+00 .000000000E+00 .000000000E+00

```

```

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE  1 TO    96 STEP      1

```

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

```

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE  1 TO   8979 STEP      1

```

7265 ELEMENTS (OF 7265 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

```

*** NOTE ***                      CP= 16419.720    TIME= 00:22:29
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.
1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303    VERSION=HP 9000/7XX    00:22:29 MAR 30, 1995 CP= 16419.720
FOR SUPPORT CALL SUPPORT PERSON    PHONE SUPPORT PHONE    FAX SUPPORT FAX

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12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

```

LOAD STEP NUMBER. . . . . 13
TIME AT END OF THE LOAD STEP. . . . . .31558E+08
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 10
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
  MINIMUM NUMBER OF SUBSTEPS . . . . . 4
  START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
  THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS

```

THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 269.4 CRITERION= .2130
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3312
 HT FLOW CONVERGENCE VALUE= .5599 CRITERION= .2125
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1676E-01
 HT FLOW CONVERGENCE VALUE= .2072E-01 CRITERION= .2125 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 121
 *** TIME = .288871E+08 TIME INC = 485216.
 *** RESPONSE EIGENVALUE = .8492E-08 OSCILLATION LIMIT = .4120E-02
 *** AUTO STEP TIME: NEXT TIME INC = .48522E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 269.7 CRITERION= .2127
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3273
 HT FLOW CONVERGENCE VALUE= .5545 CRITERION= .2123
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1647E-01
 HT FLOW CONVERGENCE VALUE= .2034E-01 CRITERION= .2123 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 123
 *** TIME = .293723E+08 TIME INC = 485216.
 *** RESPONSE EIGENVALUE = .8321E-08 OSCILLATION LIMIT = .4038E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.6260)

HT FLOW CONVERGENCE VALUE= 269.9 CRITERION= .2130
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5244
 HT FLOW CONVERGENCE VALUE= .8884 CRITERION= .2127
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2908E-01
 HT FLOW CONVERGENCE VALUE= .3599E-01 CRITERION= .2126 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 125
 *** TIME = .301612E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7999E-08 OSCILLATION LIMIT = .6310E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 270.2 CRITERION= .2128
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5153
 HT FLOW CONVERGENCE VALUE= .8720 CRITERION= .2124
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2834E-01
 HT FLOW CONVERGENCE VALUE= .3503E-01 CRITERION= .2124 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 127
 *** TIME = .309502E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7752E-08 OSCILLATION LIMIT = .6116E-02
 *** AUTO TIME STEP: NEXT TIME INC = .60745E+06 DECREASED (FACTOR = .7700)

HT FLOW CONVERGENCE VALUE= 270.6 CRITERION= .2131
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3909
 HT FLOW CONVERGENCE VALUE= .6570 CRITERION= .2127
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2039E-01
 HT FLOW CONVERGENCE VALUE= .2512E-01 CRITERION= .2127 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 129
 *** TIME = .315576E+08 TIME INC = 607448.
 *** RESPONSE EIGENVALUE = .7574E-08 OSCILLATION LIMIT = .4601E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

900-38303 VERSION=HP 9000/7XX 00:43:05 MAR 30, 1995 CP= 17636.000
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 270.8 CRITERION= .2128
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3858
HT FLOW CONVERGENCE VALUE= .6484 CRITERION= .2124
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1999E-01
HT FLOW CONVERGENCE VALUE= .2461E-01 CRITERION= .2124 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 131
*** TIME = .321651E+08 TIME INC = 607448.
*** RESPONSE EIGENVALUE = .7411E-08 OSCILLATION LIMIT = .4502E-02
*** AUTO STEP TIME: NEXT TIME INC = .60745E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 271.1 CRITERION= .2132
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3809
HT FLOW CONVERGENCE VALUE= .6380 CRITERION= .2128
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1973E-01
HT FLOW CONVERGENCE VALUE= .2425E-01 CRITERION= .2128 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 133
*** TIME = .327725E+08 TIME INC = 607448.
*** RESPONSE EIGENVALUE = .7238E-08 OSCILLATION LIMIT = .4397E-02
*** AUTO TIME STEP: NEXT TIME INC = .18223E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 271.3 CRITERION= .2128
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.115
HT FLOW CONVERGENCE VALUE= 1.875 CRITERION= .2126
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6900E-01
HT FLOW CONVERGENCE VALUE= .8381E-01 CRITERION= .2125 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 135
*** TIME = .345949E+08 TIME INC = .182234E+07
*** RESPONSE EIGENVALUE = .6860E-08 OSCILLATION LIMIT = .1250E-01
*** AUTO TIME STEP: NEXT TIME INC = .54670E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 272.0 CRITERION= .2129
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.148
HT FLOW CONVERGENCE VALUE= 5.221 CRITERION= .2134
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3864
HT FLOW CONVERGENCE VALUE= .4746 CRITERION= .2129
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9852E-02
HT FLOW CONVERGENCE VALUE= .1343E-01 CRITERION= .2129 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 138
*** TIME = .400619E+08 TIME INC = .546703E+07
*** RESPONSE EIGENVALUE = .6118E-08 OSCILLATION LIMIT = .3345E-01
*** AUTO STEP TIME: NEXT TIME INC = .54670E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 273.3 CRITERION= .2125
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.859
HT FLOW CONVERGENCE VALUE= 4.543 CRITERION= .2127
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2983
HT FLOW CONVERGENCE VALUE= .4010 CRITERION= .2123
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1283E-01
HT FLOW CONVERGENCE VALUE= .1602E-01 CRITERION= .2123 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 141
*** TIME = .455289E+08 TIME INC = .546703E+07
*** RESPONSE EIGENVALUE = .5299E-08 OSCILLATION LIMIT = .2897E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.4431)

HT FLOW CONVERGENCE VALUE= 273.6 CRITERION= .2123
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.838
HT FLOW CONVERGENCE VALUE= 6.614 CRITERION= .2126
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4477
HT FLOW CONVERGENCE VALUE= .7074 CRITERION= .2119

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1374E-01
 HT FLOW CONVERGENCE VALUE= .1547E-01 CRITERION= .2119 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 144
 *** TIME = .534183E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .4492E-08 OSCILLATION LIMIT = .3544E-01
 *** AUTO TIME STEP: NEXT TIME INC = .48484E+07 DECREASED (FACTOR = .6146)

HT FLOW CONVERGENCE VALUE= 273.1 CRITERION= .2115
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.202
 HT FLOW CONVERGENCE VALUE= 5.355 CRITERION= .2113
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1984
 HT FLOW CONVERGENCE VALUE= .4417 CRITERION= .2109
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1871E-01
 HT FLOW CONVERGENCE VALUE= .3134E-01 CRITERION= .2109 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 147
 *** TIME = .582668E+08 TIME INC = .484845E+07
 *** RESPONSE EIGENVALUE = .4062E-08 OSCILLATION LIMIT = .1969E-01
 *** AUTO STEP TIME: NEXT TIME INC = .48484E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 272.3 CRITERION= .2111
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.093
 HT FLOW CONVERGENCE VALUE= 4.613 CRITERION= .2109
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1794
 HT FLOW CONVERGENCE VALUE= .3405 CRITERION= .2106
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1228E-01
 HT FLOW CONVERGENCE VALUE= .1433E-01 CRITERION= .2106 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 150
 *** TIME = .631152E+08 TIME INC = .484845E+07
 *** RESPONSE EIGENVALUE = .3737E-08 OSCILLATION LIMIT = .1812E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 01:23:15 MAR 30, 1995 CP= 20011.540
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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HT FLOW CONVERGENCE VALUE= 271.3 CRITERION= .2101
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.989
 HT FLOW CONVERGENCE VALUE= 4.790 CRITERION= .2099
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1471
 HT FLOW CONVERGENCE VALUE= .2741 CRITERION= .2095
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1049E-01
 HT FLOW CONVERGENCE VALUE= .1141E-01 CRITERION= .2095 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 153
 *** TIME = .679637E+08 TIME INC = .484845E+07
 *** RESPONSE EIGENVALUE = .3451E-08 OSCILLATION LIMIT = .1673E-01
 *** AUTO STEP TIME: NEXT TIME INC = .48484E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 270.2 CRITERION= .2097
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.892
 HT FLOW CONVERGENCE VALUE= 3.905 CRITERION= .2094
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1339
 HT FLOW CONVERGENCE VALUE= .2296 CRITERION= .2091
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1021E-01
 HT FLOW CONVERGENCE VALUE= .9693E-02 CRITERION= .2091 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 156
 *** TIME = .728121E+08 TIME INC = .484845E+07
 *** RESPONSE EIGENVALUE = .3188E-08 OSCILLATION LIMIT = .1546E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6272)

HT FLOW CONVERGENCE VALUE= 268.9 CRITERION= .2084


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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.898
HT FLOW CONVERGENCE VALUE= 6.861 CRITERION= .2081
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2395
HT FLOW CONVERGENCE VALUE= .5583 CRITERION= .2074
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2321E-01
HT FLOW CONVERGENCE VALUE= .4682E-01 CRITERION= .2074 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 159
*** TIME = .807015E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2870E-08 OSCILLATION LIMIT = .2265E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 266.4 CRITERION= .2074
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.689
HT FLOW CONVERGENCE VALUE= 7.621 CRITERION= .2072
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2218
HT FLOW CONVERGENCE VALUE= .6482 CRITERION= .2064
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2416E-01
HT FLOW CONVERGENCE VALUE= .5981E-01 CRITERION= .2064 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 162
*** TIME = .885909E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2636E-08 OSCILLATION LIMIT = .2079E-01
*** AUTO TIME STEP: NEXT TIME INC = .60819E+07 DECREASED (FACTOR = .7709)

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HT FLOW CONVERGENCE VALUE= 264.0 CRITERION= .2059
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.941
HT FLOW CONVERGENCE VALUE= 4.337 CRITERION= .2054
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1360
HT FLOW CONVERGENCE VALUE= .1713 CRITERION= .2050 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 164
*** TIME = .946728E+08 TIME INC = .608190E+07
*** RESPONSE EIGENVALUE = .2406E-08 OSCILLATION LIMIT = .1463E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 01:49:55 MAR 30, 1995 CP= 21576.580
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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HT FLOW CONVERGENCE VALUE= 262.0 CRITERION= .2051
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.842
HT FLOW CONVERGENCE VALUE= 5.123 CRITERION= .2047
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1439
HT FLOW CONVERGENCE VALUE= .3241 CRITERION= .2043
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1135E-01
HT FLOW CONVERGENCE VALUE= .2937E-01 CRITERION= .2043 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 167
*** TIME = .100755E+09 TIME INC = .608190E+07
*** RESPONSE EIGENVALUE = .2195E-08 OSCILLATION LIMIT = .1335E-01
*** AUTO STEP TIME: NEXT TIME INC = .60819E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 260.0 CRITERION= .2038
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.752
HT FLOW CONVERGENCE VALUE= 5.924 CRITERION= .2034
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1414
HT FLOW CONVERGENCE VALUE= .3011 CRITERION= .2029
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1152E-01
HT FLOW CONVERGENCE VALUE= .2644E-01 CRITERION= .2029 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 170
*** TIME = .106837E+09 TIME INC = .608190E+07
*** RESPONSE EIGENVALUE = .2066E-08 OSCILLATION LIMIT = .1257E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2972)

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HT FLOW CONVERGENCE VALUE= 257.9 CRITERION= .2029
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.152
HT FLOW CONVERGENCE VALUE= 7.319 CRITERION= .2025
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1434
HT FLOW CONVERGENCE VALUE= .3801 CRITERION= .2019
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1306E-01
HT FLOW CONVERGENCE VALUE= .3079E-01 CRITERION= .2019 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 173
*** TIME = .114726E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1905E-08 OSCILLATION LIMIT = .1503E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 255.5 CRITERION= .2012
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.024
HT FLOW CONVERGENCE VALUE= 5.952 CRITERION= .2008
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1325
HT FLOW CONVERGENCE VALUE= .2656 CRITERION= .2003
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1239E-01
HT FLOW CONVERGENCE VALUE= .1993E-01 CRITERION= .2003 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 176
*** TIME = .122615E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1734E-08 OSCILLATION LIMIT = .1368E-01
*** AUTO TIME STEP: NEXT TIME INC = .36150E+07 DECREASED (FACTOR = .4582)

HT FLOW CONVERGENCE VALUE= 253.1 CRITERION= .2006
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8888
HT FLOW CONVERGENCE VALUE= 3.806 CRITERION= .2002
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7840E-01
HT FLOW CONVERGENCE VALUE= .2080 CRITERION= .2000
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5027E-02
HT FLOW CONVERGENCE VALUE= .1380E-01 CRITERION= .2000 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 179
*** TIME = .126230E+09 TIME INC = .361499E+07
*** RESPONSE EIGENVALUE = .1722E-08 OSCILLATION LIMIT = .6224E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=KP 9000/7XX 02:18:35 MAR 30, 1995 CP= 23231.760
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 251.9 CRITERION= .1996
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8665
HT FLOW CONVERGENCE VALUE= 3.413 CRITERION= .1993
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6425E-01
HT FLOW CONVERGENCE VALUE= .1378 CRITERION= .1991 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 181
*** TIME = .129845E+09 TIME INC = .361499E+07
*** RESPONSE EIGENVALUE = .1681E-08 OSCILLATION LIMIT = .6078E-02
*** AUTO STEP TIME: NEXT TIME INC = .36150E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 250.7 CRITERION= .1993
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8442
HT FLOW CONVERGENCE VALUE= 3.130 CRITERION= .1990
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5687E-01
HT FLOW CONVERGENCE VALUE= .1348 CRITERION= .1988 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 183
*** TIME = .133460E+09 TIME INC = .361499E+07
*** RESPONSE EIGENVALUE = .1599E-08 OSCILLATION LIMIT = .5781E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.1824)

HT FLOW CONVERGENCE VALUE= 249.5 CRITERION= .1981
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.777
HT FLOW CONVERGENCE VALUE= 7.248 CRITERION= .1978
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1279
HT FLOW CONVERGENCE VALUE= .3089 CRITERION= .1972
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8344E-02
HT FLOW CONVERGENCE VALUE= .2118E-01 CRITERION= .1972 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 186
*** TIME = .141350E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1515E-08 OSCILLATION LIMIT = .1195E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 247.1 CRITERION= .1972
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.686
HT FLOW CONVERGENCE VALUE= 6.111 CRITERION= .1968
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1219
HT FLOW CONVERGENCE VALUE= .3945 CRITERION= .1963
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9895E-02
HT FLOW CONVERGENCE VALUE= .3610E-01 CRITERION= .1963 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 189
*** TIME = .149239E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1409E-08 OSCILLATION LIMIT = .1112E-01
*** AUTO STEP TIME: NEXT TIME INC = .42744E+07 DECREASED (FACTOR = .5418)

HT FLOW CONVERGENCE VALUE= 244.9 CRITERION= .1959
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8760
HT FLOW CONVERGENCE VALUE= 3.908 CRITERION= .1956
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6075E-01
HT FLOW CONVERGENCE VALUE= .1391 CRITERION= .1953 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 191
*** TIME = .153514E+09 TIME INC = .427441E+07
*** RESPONSE EIGENVALUE = .1372E-08 OSCILLATION LIMIT = .5863E-02
*** AUTO STEP TIME: NEXT TIME INC = .42744E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 243.7 CRITERION= .1955
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8531
HT FLOW CONVERGENCE VALUE= 3.155 CRITERION= .1952
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6412E-01
HT FLOW CONVERGENCE VALUE= .1207 CRITERION= .1950 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 6 COMPLETED. CUM ITER = 193
*** TIME = .157788E+09 TIME INC = .427441E+07
*** RESPONSE EIGENVALUE = .1314E-08 OSCILLATION LIMIT = .5615E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 02:46:21 MAR 30, 1995 CP= 24868.410
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 242.5 CRITERION= .1946
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8334
HT FLOW CONVERGENCE VALUE= 5.711 CRITERION= .1945
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1171
HT FLOW CONVERGENCE VALUE= .5793 CRITERION= .1940
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1160E-01
HT FLOW CONVERGENCE VALUE= .7246E-01 CRITERION= .1941 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 196
*** TIME = .162062E+09 TIME INC = .427441E+07
*** RESPONSE EIGENVALUE = .1301E-08 OSCILLATION LIMIT = .5562E-02
*** AUTO STEP TIME: NEXT TIME INC = .42744E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 241.4 CRITERION= .1943
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8134
HT FLOW CONVERGENCE VALUE= 8.070 CRITERION= .1947
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1039
HT FLOW CONVERGENCE VALUE= .5588 CRITERION= .1938
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8527E-02
HT FLOW CONVERGENCE VALUE= .4871E-01 CRITERION= .1939 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 199
*** TIME = .166337E+09 TIME INC = .427441E+07
*** RESPONSE EIGENVALUE = .1499E-08 OSCILLATION LIMIT = .6405E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8457)

HT FLOW CONVERGENCE VALUE= 240.5 CRITERION= .1932
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.447
HT FLOW CONVERGENCE VALUE= 9.949 CRITERION= .1936
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1665
HT FLOW CONVERGENCE VALUE= .7751 CRITERION= .1926
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1662E-01
HT FLOW CONVERGENCE VALUE= .7557E-01 CRITERION= .1927 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 202
*** TIME = .174226E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1412E-08 OSCILLATION LIMIT = .1114E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 239.3 CRITERION= .1926
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.378
HT FLOW CONVERGENCE VALUE= 9.031 CRITERION= .1928
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1604
HT FLOW CONVERGENCE VALUE= .6350 CRITERION= .1921
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1407E-01
HT FLOW CONVERGENCE VALUE= .6157E-01 CRITERION= .1921 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 205
*** TIME = .182116E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1276E-08 OSCILLATION LIMIT = .1007E-01
*** AUTO TIME STEP: NEXT TIME INC = .72300E+07 DECREASED (FACTOR = .9164)

HT FLOW CONVERGENCE VALUE= 238.1 CRITERION= .1915
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.212
HT FLOW CONVERGENCE VALUE= 9.647 CRITERION= .1919
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1518
HT FLOW CONVERGENCE VALUE= 1.180 CRITERION= .1909
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2846E-01
HT FLOW CONVERGENCE VALUE= .2440 CRITERION= .1911
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6203E-02
HT FLOW CONVERGENCE VALUE= .5188E-01 CRITERION= .1910 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 209
*** TIME = .189346E+09 TIME INC = .722998E+07
*** RESPONSE EIGENVALUE = .1250E-08 OSCILLATION LIMIT = .9036E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 03:15:56 MAR 30, 1995 CP= 26614.020
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 237.0 CRITERION= .1911
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.169
HT FLOW CONVERGENCE VALUE= 14.29 CRITERION= .1924
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1890
HT FLOW CONVERGENCE VALUE= .7931 CRITERION= .1906
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1627E-01

HT FLOW CONVERGENCE VALUE= .7941E-01 CRITERION= .1906 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 212
 *** TIME = .196576E+09 TIME INC = .722998E+07
 *** RESPONSE EIGENVALUE = .1379E-08 OSCILLATION LIMIT = .9967E-02
 *** AUTO STEP TIME: NEXT TIME INC = .72300E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 236.0 CRITERION= .1900
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.124
 HT FLOW CONVERGENCE VALUE= 8.026 CRITERION= .1903
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1153
 HT FLOW CONVERGENCE VALUE= .4860 CRITERION= .1895
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1288E-01
 HT FLOW CONVERGENCE VALUE= .5730E-01 CRITERION= .1895 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 215
 *** TIME = .203806E+09 TIME INC = .722998E+07
 *** RESPONSE EIGENVALUE = .1319E-08 OSCILLATION LIMIT = .9536E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.0912)

HT FLOW CONVERGENCE VALUE= 234.9 CRITERION= .1895
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.179
 HT FLOW CONVERGENCE VALUE= 12.98 CRITERION= .1903
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2142
 HT FLOW CONVERGENCE VALUE= .9921 CRITERION= .1889
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2538E-01
 HT FLOW CONVERGENCE VALUE= .1093 CRITERION= .1890 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 218
 *** TIME = .211695E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1198E-08 OSCILLATION LIMIT = .9451E-02
 *** AUTO TIME STEP: NEXT TIME INC = .46041E+07 DECREASED (FACTOR = .5836)

HT FLOW CONVERGENCE VALUE= 233.5 CRITERION= .1885
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6661
 HT FLOW CONVERGENCE VALUE= 5.637 CRITERION= .1888
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4991E-01
 HT FLOW CONVERGENCE VALUE= .2597 CRITERION= .1882
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2738E-02
 HT FLOW CONVERGENCE VALUE= .1321E-01 CRITERION= .1882 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 221
 *** TIME = .216299E+09 TIME INC = .460412E+07
 *** RESPONSE EIGENVALUE = .1297E-08 OSCILLATION LIMIT = .5971E-02
 *** AUTO STEP TIME: NEXT TIME INC = .46041E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 233.0 CRITERION= .1884
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6513
 HT FLOW CONVERGENCE VALUE= 4.216 CRITERION= .1885
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4881E-01
 HT FLOW CONVERGENCE VALUE= .1694 CRITERION= .1881 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 223
 *** TIME = .220903E+09 TIME INC = .460412E+07
 *** RESPONSE EIGENVALUE = .1149E-08 OSCILLATION LIMIT = .5291E-02

***** ANSYS SOLVE COMMAND *****
 1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 03:42:46 MAR 30, 1995 CP= 28182.300
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 232.4 CRITERION= .1876
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6373
 HT FLOW CONVERGENCE VALUE= 3.721 CRITERION= .1877
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3778E-01

HT FLOW CONVERGENCE VALUE= .1494 CRITERION= .1874 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 225
 *** TIME = .225507E+09 TIME INC = .460412E+07
 *** RESPONSE EIGENVALUE = .1039E-08 OSCILLATION LIMIT = .4786E-02
 *** AUTO STEP TIME: NEXT TIME INC = .46041E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 231.9 CRITERION= .1876
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6334
 HT FLOW CONVERGENCE VALUE= 4.449 CRITERION= .1877
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6261E-01
 HT FLOW CONVERGENCE VALUE= .2434 CRITERION= .1873
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4789E-02
 HT FLOW CONVERGENCE VALUE= .1806E-01 CRITERION= .1873 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 228
 *** TIME = .230111E+09 TIME INC = .460412E+07
 *** RESPONSE EIGENVALUE = .1007E-08 OSCILLATION LIMIT = .4636E-02
 *** AUTO STEP TIME: NEXT TIME INC = .46041E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 231.3 CRITERION= .1869
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6301
 HT FLOW CONVERGENCE VALUE= 5.243 CRITERION= .1871
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5799E-01
 HT FLOW CONVERGENCE VALUE= .3363 CRITERION= .1866
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4367E-02
 HT FLOW CONVERGENCE VALUE= .2506E-01 CRITERION= .1866 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 231
 *** TIME = .234716E+09 TIME INC = .460412E+07
 *** RESPONSE EIGENVALUE = .1081E-08 OSCILLATION LIMIT = .4976E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.7136)

HT FLOW CONVERGENCE VALUE= 230.8 CRITERION= .1866
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.050
 HT FLOW CONVERGENCE VALUE= 10.35 CRITERION= .1876
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1641
 HT FLOW CONVERGENCE VALUE= 1.055 CRITERION= .1861
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2328E-01
 HT FLOW CONVERGENCE VALUE= .1353 CRITERION= .1862 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 234
 *** TIME = .242605E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1106E-08 OSCILLATION LIMIT = .8728E-02
 *** AUTO TIME STEP: NEXT TIME INC = .49279E+07 DECREASED (FACTOR = .6246)

HT FLOW CONVERGENCE VALUE= 229.7 CRITERION= .1857
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6333
 HT FLOW CONVERGENCE VALUE= 6.853 CRITERION= .1864
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8719E-01
 HT FLOW CONVERGENCE VALUE= .4641 CRITERION= .1853
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9962E-02
 HT FLOW CONVERGENCE VALUE= .4774E-01 CRITERION= .1854 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 237
 *** TIME = .247533E+09 TIME INC = .492793E+07
 *** RESPONSE EIGENVALUE = .1271E-08 OSCILLATION LIMIT = .6261E-02
 *** AUTO STEP TIME: NEXT TIME INC = .49279E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 228.9 CRITERION= .1856
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6182
 HT FLOW CONVERGENCE VALUE= 5.787 CRITERION= .1860
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5765E-01
 HT FLOW CONVERGENCE VALUE= .3836 CRITERION= .1852
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7012E-02
 HT FLOW CONVERGENCE VALUE= .3293E-01 CRITERION= .1852 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 6 COMPLETED. CUM ITER = 240
 *** TIME = .252461E+09 TIME INC = .492793E+07
 *** RESPONSE EIGENVALUE = .1297E-08 OSCILLATION LIMIT = .6392E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 04:14:59 MAR 30, 1995 CP= 30082.710
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 228.0      CRITERION= .1845
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6050
HT FLOW CONVERGENCE VALUE= 5.690      CRITERION= .1849
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6816E-01
HT FLOW CONVERGENCE VALUE= .3494      CRITERION= .1841
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5977E-02
HT FLOW CONVERGENCE VALUE= .3052E-01 CRITERION= .1841 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 243
*** TIME = .257389E+09 TIME INC = .492793E+07
*** RESPONSE EIGENVALUE = .1503E-08 OSCILLATION LIMIT = .7407E-02
*** AUTO STEP TIME: NEXT TIME INC = .49279E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 227.0      CRITERION= .1840
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5938
HT FLOW CONVERGENCE VALUE= 6.667      CRITERION= .1845
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7165E-01
HT FLOW CONVERGENCE VALUE= .4351      CRITERION= .1836
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5955E-02
HT FLOW CONVERGENCE VALUE= .3510E-01 CRITERION= .1837 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 246
*** TIME = .262317E+09 TIME INC = .492793E+07
*** RESPONSE EIGENVALUE = .1629E-08 OSCILLATION LIMIT = .8025E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6010)

HT FLOW CONVERGENCE VALUE= 225.9      CRITERION= .1826
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9052
HT FLOW CONVERGENCE VALUE= 8.494      CRITERION= .1833
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1002
HT FLOW CONVERGENCE VALUE= .4840      CRITERION= .1820
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7685E-02
HT FLOW CONVERGENCE VALUE= .3401E-01 CRITERION= .1821 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 249
*** TIME = .270206E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1509E-08 OSCILLATION LIMIT = .1190E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 224.2      CRITERION= .1817
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8719
HT FLOW CONVERGENCE VALUE= 6.596      CRITERION= .1819
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8129E-01
HT FLOW CONVERGENCE VALUE= .3946      CRITERION= .1811
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8702E-02
HT FLOW CONVERGENCE VALUE= .3024E-01 CRITERION= .1812 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 252
*** TIME = .278095E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1405E-08 OSCILLATION LIMIT = .1109E-01
*** AUTO TIME STEP: NEXT TIME INC = .59229E+07 DECREASED (FACTOR = .7507)

HT FLOW CONVERGENCE VALUE= 222.7      CRITERION= .1803
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6362
HT FLOW CONVERGENCE VALUE= 5.510      CRITERION= .1806
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5901E-01
HT FLOW CONVERGENCE VALUE= .2851      CRITERION= .1799
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3903E-02
HT FLOW CONVERGENCE VALUE= .1924E-01 CRITERION= .1800 <<< CONVERGED
  
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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 255
 *** TIME = .284018E+09 TIME INC = .592295E+07
 *** RESPONSE EIGENVALUE = .1338E-08 OSCILLATION LIMIT = .7927E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09
 TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 640.948474 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 8979 STEP 1

7265 ELEMENTS (OF 7265 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 31740.650 TIME= 04:43:11
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 04:43:11 MAR 30, 1995 CP= 31740.650
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
 TIME AT END OF THE LOAD STEP.31558E+09
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 221.7 CRITERION= .1799
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6227
 HT FLOW CONVERGENCE VALUE= 4.639 CRITERION= .1802
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4843E-01
 HT FLOW CONVERGENCE VALUE= .1740 CRITERION= .1795 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 257
 *** TIME = .289941E+09 TIME INC = .592295E+07
 *** RESPONSE EIGENVALUE = .1117E-08 OSCILLATION LIMIT = .6614E-02
 *** AUTO STEP TIME: NEXT TIME INC = .59229E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 220.7 CRITERION= .1789
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6084
 HT FLOW CONVERGENCE VALUE= 3.644 CRITERION= .1791
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4899E-01
 HT FLOW CONVERGENCE VALUE= .1472 CRITERION= .1785 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 259
 *** TIME = .295864E+09 TIME INC = .592295E+07
 *** RESPONSE EIGENVALUE = .1006E-08 OSCILLATION LIMIT = .5958E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.3320)

HT FLOW CONVERGENCE VALUE= 219.8 CRITERION= .1784
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7890
 HT FLOW CONVERGENCE VALUE= 6.631 CRITERION= .1788
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8502E-01
 HT FLOW CONVERGENCE VALUE= .4626 CRITERION= .1779
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6499E-02
 HT FLOW CONVERGENCE VALUE= .3599E-01 CRITERION= .1780 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 262
 *** TIME = .303754E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .9850E-09 OSCILLATION LIMIT = .7771E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 218.6 CRITERION= .1772
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7661
 HT FLOW CONVERGENCE VALUE= 5.688 CRITERION= .1776
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5113E-01
 HT FLOW CONVERGENCE VALUE= .2353 CRITERION= .1767
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3402E-02
 HT FLOW CONVERGENCE VALUE= .1319E-01 CRITERION= .1768 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 265
 *** TIME = .311643E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .9719E-09 OSCILLATION LIMIT = .7668E-02
 *** AUTO TIME STEP: NEXT TIME INC = .39329E+07 DECREASED (FACTOR = .4985)

HT FLOW CONVERGENCE VALUE= 217.6 CRITERION= .1769
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3738
 HT FLOW CONVERGENCE VALUE= 2.290 CRITERION= .1770
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1486E-01
 HT FLOW CONVERGENCE VALUE= .5129E-01 CRITERION= .1767 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 267
 *** TIME = .315576E+09 TIME INC = .393291E+07
 *** RESPONSE EIGENVALUE = .9603E-09 OSCILLATION LIMIT = .3777E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 05:06:54 MAR 30, 1995 CP= 33135.820
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 217.1 CRITERION= .1762
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3700
 HT FLOW CONVERGENCE VALUE= 2.463 CRITERION= .1763
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1370E-01
 HT FLOW CONVERGENCE VALUE= .7805E-01 CRITERION= .1760 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 269
 *** TIME = .319521E+09 TIME INC = .394470E+07
 *** RESPONSE EIGENVALUE = .8593E-09 OSCILLATION LIMIT = .3389E-02
 *** AUTO STEP TIME: NEXT TIME INC = .39447E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 216.5 CRITERION= .1761
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3653
 HT FLOW CONVERGENCE VALUE= 2.774 CRITERION= .1763
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1443E-01
 HT FLOW CONVERGENCE VALUE= .7055E-01 CRITERION= .1759 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 271
 *** TIME = .323465E+09 TIME INC = .394470E+07
 *** RESPONSE EIGENVALUE = .8319E-09 OSCILLATION LIMIT = .3282E-02
 *** AUTO TIME STEP: NEXT TIME INC = .11834E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 216.0 CRITERION= .1750
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.071
 HT FLOW CONVERGENCE VALUE= 6.141 CRITERION= .1753
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9421E-01
 HT FLOW CONVERGENCE VALUE= .3810 CRITERION= .1744
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7280E-02
 HT FLOW CONVERGENCE VALUE= .3313E-01 CRITERION= .1744 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 274
 *** TIME = .335300E+09 TIME INC = .118341E+08
 *** RESPONSE EIGENVALUE = .7727E-09 OSCILLATION LIMIT = .9144E-02
 *** AUTO STEP TIME: NEXT TIME INC = .11834E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 214.3 CRITERION= .1742
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.035
 HT FLOW CONVERGENCE VALUE= 8.187 CRITERION= .1742
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1653
 HT FLOW CONVERGENCE VALUE= .6402 CRITERION= .1736
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1680E-01
 HT FLOW CONVERGENCE VALUE= .6699E-01 CRITERION= .1736 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 277
 *** TIME = .347134E+09 TIME INC = .118341E+08
 *** RESPONSE EIGENVALUE = .8328E-09 OSCILLATION LIMIT = .9855E-02
 *** AUTO TIME STEP: NEXT TIME INC = .35502E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 212.8 CRITERION= .1714
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.924
 HT FLOW CONVERGENCE VALUE= 17.79 CRITERION= .1724
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3498
 HT FLOW CONVERGENCE VALUE= 1.685 CRITERION= .1697
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5533E-01
 HT FLOW CONVERGENCE VALUE= .2440 CRITERION= .1700
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8049E-02
 HT FLOW CONVERGENCE VALUE= .3521E-01 CRITERION= .1700 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 281
 *** TIME = .382636E+09 TIME INC = .355023E+08
 *** RESPONSE EIGENVALUE = .6987E-09 OSCILLATION LIMIT = .2480E-01
 *** AUTO STEP TIME: NEXT TIME INC = .35502E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 208.2 CRITERION= .1684
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.662
 HT FLOW CONVERGENCE VALUE= 20.02 CRITERION= .1702
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4005
 HT FLOW CONVERGENCE VALUE= 1.474 CRITERION= .1671
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3738E-01

HT FLOW CONVERGENCE VALUE= .1715 CRITERION= .1674
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4014E-02
 HT FLOW CONVERGENCE VALUE= .2066E-01 CRITERION= .1674 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 285
 *** TIME = .418138E+09 TIME INC = .355023E+08
 *** RESPONSE EIGENVALUE = .7155E-09 OSCILLATION LIMIT = .2540E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 204.9 CRITERION= .1628
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.564
 HT FLOW CONVERGENCE VALUE= 27.24 CRITERION= .1650
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7121
 HT FLOW CONVERGENCE VALUE= 4.648 CRITERION= .1604
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2237
 HT FLOW CONVERGENCE VALUE= .8227 CRITERION= .1611
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3168E-01
 HT FLOW CONVERGENCE VALUE= .1391 CRITERION= .1611 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 289
 *** TIME = .497032E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6791E-09 OSCILLATION LIMIT = .5357E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 199.5 CRITERION= .1572
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.415
 HT FLOW CONVERGENCE VALUE= 46.17 CRITERION= .1656
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.756
 HT FLOW CONVERGENCE VALUE= 5.148 CRITERION= .1576
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2610
 HT FLOW CONVERGENCE VALUE= 1.443 CRITERION= .1587
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6899E-01
 HT FLOW CONVERGENCE VALUE= .3123 CRITERION= .1586
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1652E-01
 HT FLOW CONVERGENCE VALUE= .9198E-01 CRITERION= .1587 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 294
 *** TIME = .575926E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1071E-08 OSCILLATION LIMIT = .8446E-01
 *** AUTO TIME STEP: NEXT TIME INC = .55226E+08 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 204.1 CRITERION= .1555
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.074
 HT FLOW CONVERGENCE VALUE= 13.26 CRITERION= .1566
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5723
 HT FLOW CONVERGENCE VALUE= 2.414 CRITERION= .1582
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8670E-01
 HT FLOW CONVERGENCE VALUE= .4315 CRITERION= .1586
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1478E-01
 HT FLOW CONVERGENCE VALUE= .1053 CRITERION= .1586 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 9 COMPLETED. CUM ITER = 298
 *** TIME = .631152E+09 TIME INC = .552258E+08
 *** RESPONSE EIGENVALUE = .9898E-09 OSCILLATION LIMIT = .5466E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 06:03:13 MAR 30, 1995 CP= 36461.490
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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HT FLOW CONVERGENCE VALUE= 213.5 CRITERION= .1569
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.603
 HT FLOW CONVERGENCE VALUE= 33.28 CRITERION= .1629
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5343
 HT FLOW CONVERGENCE VALUE= .8264 CRITERION= .1560

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EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4351E-01
HT FLOW CONVERGENCE VALUE= .9747E-01 CRITERION= .1561 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 301
*** TIME = .686378E+09 TIME INC = .552258E+08
*** RESPONSE EIGENVALUE = .6805E-09 OSCILLATION LIMIT = .3758E-01
*** AUTO STEP TIME: NEXT TIME INC = .55226E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.3 CRITERION= .1537
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.272
HT FLOW CONVERGENCE VALUE= 24.78 CRITERION= .1573
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4118
HT FLOW CONVERGENCE VALUE= 3.292 CRITERION= .1540
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8873E-01
HT FLOW CONVERGENCE VALUE= .8204 CRITERION= .1551
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2246E-01
HT FLOW CONVERGENCE VALUE= .2132 CRITERION= .1549
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5602E-02
HT FLOW CONVERGENCE VALUE= .6174E-01 CRITERION= .1549 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 306
*** TIME = .741604E+09 TIME INC = .552258E+08
*** RESPONSE EIGENVALUE = .8050E-09 OSCILLATION LIMIT = .4446E-01
*** AUTO STEP TIME: NEXT TIME INC = .55226E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 214.9 CRITERION= .1532
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.150
HT FLOW CONVERGENCE VALUE= 25.12 CRITERION= .1594
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3691
HT FLOW CONVERGENCE VALUE= .9034 CRITERION= .1548
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3271E-01
HT FLOW CONVERGENCE VALUE= .1480 CRITERION= .1549 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 309
*** TIME = .796829E+09 TIME INC = .552258E+08
*** RESPONSE EIGENVALUE = .6789E-09 OSCILLATION LIMIT = .3750E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 219.7 CRITERION= .1518
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.964
HT FLOW CONVERGENCE VALUE= 22.77 CRITERION= .1500
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5071
HT FLOW CONVERGENCE VALUE= 1.317 CRITERION= .1494
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5746E-01
HT FLOW CONVERGENCE VALUE= .2260 CRITERION= .1496
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8618E-02
HT FLOW CONVERGENCE VALUE= .5314E-01 CRITERION= .1496 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 313
*** TIME = .875723E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6169E-09 OSCILLATION LIMIT = .4867E-01
*** AUTO TIME STEP: NEXT TIME INC = .71005E+08 DECREASED (FACTOR = .9000)

HT FLOW CONVERGENCE VALUE= 213.8 CRITERION= .1474
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.402
HT FLOW CONVERGENCE VALUE= 33.18 CRITERION= .1490
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5892
HT FLOW CONVERGENCE VALUE= 5.518 CRITERION= .1425
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1232
HT FLOW CONVERGENCE VALUE= 1.881 CRITERION= .1443
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4596E-01
HT FLOW CONVERGENCE VALUE= .6038 CRITERION= .1440
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1917E-01
HT FLOW CONVERGENCE VALUE= .2169 CRITERION= .1442
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7770E-02
HT FLOW CONVERGENCE VALUE= .7639E-01 CRITERION= .1442 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
*** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 319
*** TIME = .946728E+09 TIME INC = .710046E+08
*** RESPONSE EIGENVALUE = .8698E-09 OSCILLATION LIMIT = .6176E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 06:40:29 MAR 30, 1995 CP= 38645.730
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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HT FLOW CONVERGENCE VALUE= 204.9      CRITERION= .1416
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.249
HT FLOW CONVERGENCE VALUE= 22.51      CRITERION= .1464
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4294
HT FLOW CONVERGENCE VALUE= 5.445      CRITERION= .1392
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1133
HT FLOW CONVERGENCE VALUE= 1.901      CRITERION= .1411
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3921E-01
HT FLOW CONVERGENCE VALUE= .6220      CRITERION= .1404
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1326E-01
HT FLOW CONVERGENCE VALUE= .2085      CRITERION= .1406
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4486E-02
HT FLOW CONVERGENCE VALUE= .6938E-01 CRITERION= .1406 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
*** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 325
*** TIME = .101773E+10 TIME INC = .710046E+08
*** RESPONSE EIGENVALUE = .6832E-09 OSCILLATION LIMIT = .4851E-01
*** AUTO STEP TIME: NEXT TIME INC = .71005E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 202.0      CRITERION= .1387
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.875
HT FLOW CONVERGENCE VALUE= 18.57      CRITERION= .1405
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4173
HT FLOW CONVERGENCE VALUE= 3.527      CRITERION= .1352
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1119
HT FLOW CONVERGENCE VALUE= 1.103      CRITERION= .1361
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3246E-01
HT FLOW CONVERGENCE VALUE= .3049      CRITERION= .1359
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9249E-02
HT FLOW CONVERGENCE VALUE= .9090E-01 CRITERION= .1359 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 330
*** TIME = .108874E+10 TIME INC = .710046E+08
*** RESPONSE EIGENVALUE = .5233E-09 OSCILLATION LIMIT = .3716E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 194.5      CRITERION= .1332
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.824
HT FLOW CONVERGENCE VALUE= 16.94      CRITERION= .1258
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3870
HT FLOW CONVERGENCE VALUE= .4779E-01 CRITERION= .1297 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 332
*** TIME = .116763E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7079E-09 OSCILLATION LIMIT = .5585E-01
*** AUTO TIME STEP: NEXT TIME INC = .47336E+08 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 184.9      CRITERION= .1285
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.773
HT FLOW CONVERGENCE VALUE= 25.33      CRITERION= .1341
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3305
HT FLOW CONVERGENCE VALUE= 1.590      CRITERION= .1257
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2613E-01
HT FLOW CONVERGENCE VALUE= .3036      CRITERION= .1262
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6789E-02
HT FLOW CONVERGENCE VALUE= .5892E-01 CRITERION= .1261 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 336
*** TIME = .121497E+10 TIME INC = .473364E+08
  
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*** RESPONSE EIGENVALUE = .8052E-09 OSCILLATION LIMIT = .3811E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 178.2 CRITERION= .1243
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.559
 HT FLOW CONVERGENCE VALUE= 11.28 CRITERION= .1210
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3656
 HT FLOW CONVERGENCE VALUE= 2.149 CRITERION= .1228
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7651E-01
 HT FLOW CONVERGENCE VALUE= .8303 CRITERION= .1231
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3057E-01
 HT FLOW CONVERGENCE VALUE= .3378 CRITERION= .1232
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1265E-01
 HT FLOW CONVERGENCE VALUE= .1403 CRITERION= .1232
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5300E-02
 HT FLOW CONVERGENCE VALUE= .5874E-01 CRITERION= .1232 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6

*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 342
 *** TIME = .126230E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .1079E-08 OSCILLATION LIMIT = .5105E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 07:20:38 MAR 30, 1995 CP= 41010.310
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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HT FLOW CONVERGENCE VALUE= 175.1 CRITERION= .1224
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.636
 HT FLOW CONVERGENCE VALUE= 6.718 CRITERION= .1208
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3171
 HT FLOW CONVERGENCE VALUE= .8070E-02 CRITERION= .1220 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 344
 *** TIME = .130964E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .6983E-09 OSCILLATION LIMIT = .3306E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 173.9 CRITERION= .1206
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.609
 HT FLOW CONVERGENCE VALUE= 14.52 CRITERION= .1235
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1890
 HT FLOW CONVERGENCE VALUE= 2.366 CRITERION= .1184
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3146E-01
 HT FLOW CONVERGENCE VALUE= .4643 CRITERION= .1192
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6513E-02
 HT FLOW CONVERGENCE VALUE= .1010 CRITERION= .1191 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 348
 *** TIME = .135698E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .4886E-09 OSCILLATION LIMIT = .2313E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 169.7 CRITERION= .1183
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.375
 HT FLOW CONVERGENCE VALUE= 13.81 CRITERION= .1208
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2322
 HT FLOW CONVERGENCE VALUE= .2151E-01 CRITERION= .1167 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 350
 *** TIME = .140431E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .5513E-09 OSCILLATION LIMIT = .2610E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 165.3 CRITERION= .1146
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.031

HT FLOW CONVERGENCE VALUE= 9.769 CRITERION= .1106
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2840
HT FLOW CONVERGENCE VALUE= .1504E-01 CRITERION= .1125 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 352
*** TIME = .148321E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5948E-09 OSCILLATION LIMIT = .4692E-01
*** AUTO TIME STEP: NEXT TIME INC = .47336E+08 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 159.4 CRITERION= .1117
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.346
HT FLOW CONVERGENCE VALUE= 12.87 CRITERION= .1108
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1617
HT FLOW CONVERGENCE VALUE= 2.254 CRITERION= .1096
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3686E-01
HT FLOW CONVERGENCE VALUE= .4275 CRITERION= .1103
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7415E-02
HT FLOW CONVERGENCE VALUE= .8606E-01 CRITERION= .1103 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 356
*** TIME = .153054E+10 TIME INC = .473364E+08
*** RESPONSE EIGENVALUE = .6639E-09 OSCILLATION LIMIT = .3143E-01
*** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 155.6 CRITERION= .1089
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.346
HT FLOW CONVERGENCE VALUE= 8.806 CRITERION= .1093
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1411
HT FLOW CONVERGENCE VALUE= 1.448 CRITERION= .1073
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3203E-01
HT FLOW CONVERGENCE VALUE= .3529 CRITERION= .1076
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7775E-02
HT FLOW CONVERGENCE VALUE= .8379E-01 CRITERION= .1076 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 26 SUBSTEP 6 COMPLETED. CUM ITER = 360
*** TIME = .157788E+10 TIME INC = .473364E+08
*** RESPONSE EIGENVALUE = .7478E-09 OSCILLATION LIMIT = .3540E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 07:54:49 MAR 30, 1995 CP= 43005.960
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 151.9 CRITERION= .1070
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.217
HT FLOW CONVERGENCE VALUE= 11.84 CRITERION= .1072
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2374
HT FLOW CONVERGENCE VALUE= .8352E-02 CRITERION= .1061 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 362
*** TIME = .162522E+10 TIME INC = .473364E+08
*** RESPONSE EIGENVALUE = .7286E-09 OSCILLATION LIMIT = .3449E-01
*** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 149.3 CRITERION= .1049
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.214
HT FLOW CONVERGENCE VALUE= .2159 CRITERION= .1041
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9316E-02
HT FLOW CONVERGENCE VALUE= .5365E-02 CRITERION= .1041 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 364
*** TIME = .167255E+10 TIME INC = .473364E+08
*** RESPONSE EIGENVALUE = .5302E-09 OSCILLATION LIMIT = .2510E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6667)

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HT FLOW CONVERGENCE VALUE= 147.0 CRITERION= .1030
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.801
HT FLOW CONVERGENCE VALUE= 14.09 CRITERION= .1013
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4298
HT FLOW CONVERGENCE VALUE= 2.020 CRITERION= .1009
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5898E-01
HT FLOW CONVERGENCE VALUE= .4752 CRITERION= .1014
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1407E-01
HT FLOW CONVERGENCE VALUE= .1108 CRITERION= .1013
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3301E-02
HT FLOW CONVERGENCE VALUE= .2611E-01 CRITERION= .1014 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 369
*** TIME = .175145E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5678E-09 OSCILLATION LIMIT = .4480E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 142.3 CRITERION= .9963E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.861
HT FLOW CONVERGENCE VALUE= 15.79 CRITERION= .1034
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2603
HT FLOW CONVERGENCE VALUE= .1005 CRITERION= .9825E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2577E-02
HT FLOW CONVERGENCE VALUE= .1705E-01 CRITERION= .9826E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 372
*** TIME = .183034E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5594E-09 OSCILLATION LIMIT = .4413E-01
*** AUTO TIME STEP: NEXT TIME INC = .63115E+08 DECREASED (FACTOR = .8000)

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HT FLOW CONVERGENCE VALUE= 138.4 CRITERION= .9741E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.258
HT FLOW CONVERGENCE VALUE= 7.385 CRITERION= .9474E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1839
HT FLOW CONVERGENCE VALUE= .7768E-02 CRITERION= .9611E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 374
*** TIME = .189346E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .6010E-09 OSCILLATION LIMIT = .3793E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 08:22:13 MAR 30, 1995 CP= 44578.600
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 134.8 CRITERION= .9490E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.360
HT FLOW CONVERGENCE VALUE= 11.48 CRITERION= .9689E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1784
HT FLOW CONVERGENCE VALUE= 1.359 CRITERION= .9374E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2230E-01
HT FLOW CONVERGENCE VALUE= .1797 CRITERION= .9407E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2929E-02
HT FLOW CONVERGENCE VALUE= .2342E-01 CRITERION= .9402E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 378
*** TIME = .195657E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .4817E-09 OSCILLATION LIMIT = .3040E-01
*** AUTO STEP TIME: NEXT TIME INC = .63115E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 132.3 CRITERION= .9341E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.158
HT FLOW CONVERGENCE VALUE= 1.868 CRITERION= .9296E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2857E-01
HT FLOW CONVERGENCE VALUE= .4560E-02 CRITERION= .9254E-01 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 380
*** TIME = .201969E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .4521E-09 OSCILLATION LIMIT = .2854E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 129.8 CRITERION= .9110E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.374
HT FLOW CONVERGENCE VALUE= 11.16 CRITERION= .8828E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3165
HT FLOW CONVERGENCE VALUE= 1.817 CRITERION= .8955E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3991E-01
HT FLOW CONVERGENCE VALUE= .5103 CRITERION= .9001E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9755E-02
HT FLOW CONVERGENCE VALUE= .1255 CRITERION= .9001E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2686E-02
HT FLOW CONVERGENCE VALUE= .3571E-01 CRITERION= .9004E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 385
*** TIME = .209858E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5693E-09 OSCILLATION LIMIT = .4491E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 126.8 CRITERION= .8920E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.485
HT FLOW CONVERGENCE VALUE= 8.151 CRITERION= .8971E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1873
HT FLOW CONVERGENCE VALUE= .1480 CRITERION= .8797E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5708E-02
HT FLOW CONVERGENCE VALUE= .4944E-01 CRITERION= .8800E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 388
*** TIME = .217747E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5720E-09 OSCILLATION LIMIT = .4512E-01
*** AUTO TIME STEP: NEXT TIME INC = .31558E+08 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 123.4 CRITERION= .8724E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5465
HT FLOW CONVERGENCE VALUE= 5.564 CRITERION= .8733E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8385E-01
HT FLOW CONVERGENCE VALUE= .4927 CRITERION= .8636E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7744E-02
HT FLOW CONVERGENCE VALUE= .4765E-01 CRITERION= .8645E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 391
*** TIME = .220903E+10 TIME INC = .315576E+08
*** RESPONSE EIGENVALUE = .5516E-09 OSCILLATION LIMIT = .1741E-01

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 08:53:26 MAR 30, 1995 CP= 46417.570
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 121.1 CRITERION= .8632E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5221
HT FLOW CONVERGENCE VALUE= 3.859 CRITERION= .8630E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4761E-01
HT FLOW CONVERGENCE VALUE= .2737 CRITERION= .8559E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3444E-02
HT FLOW CONVERGENCE VALUE= .2026E-01 CRITERION= .8564E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 394
*** TIME = .224059E+10 TIME INC = .315576E+08
*** RESPONSE EIGENVALUE = .5498E-09 OSCILLATION LIMIT = .1735E-01
*** AUTO STEP TIME: NEXT TIME INC = .31558E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 119.2 CRITERION= .8491E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5016
 HT FLOW CONVERGENCE VALUE= .8268 CRITERION= .8447E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9880E-02
 HT FLOW CONVERGENCE VALUE= .1060E-02 CRITERION= .8434E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 396
 *** TIME = .227215E+10 TIME INC = .315576E+08
 *** RESPONSE EIGENVALUE = .5060E-09 OSCILLATION LIMIT = .1597E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 117.5 CRITERION= .8357E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.202
 HT FLOW CONVERGENCE VALUE= 2.063 CRITERION= .8204E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5950E-01
 HT FLOW CONVERGENCE VALUE= .4375 CRITERION= .8237E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1284E-01
 HT FLOW CONVERGENCE VALUE= .9637E-01 CRITERION= .8243E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2833E-02
 HT FLOW CONVERGENCE VALUE= .2142E-01 CRITERION= .8245E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 400
 *** TIME = .235104E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4860E-09 OSCILLATION LIMIT = .3835E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 114.3 CRITERION= .8108E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.170
 HT FLOW CONVERGENCE VALUE= 13.81 CRITERION= .8232E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2141
 HT FLOW CONVERGENCE VALUE= .9492 CRITERION= .8002E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2227E-01
 HT FLOW CONVERGENCE VALUE= .1872 CRITERION= .8028E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4224E-02
 HT FLOW CONVERGENCE VALUE= .3477E-01 CRITERION= .8028E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 404
 *** TIME = .242994E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6195E-09 OSCILLATION LIMIT = .4888E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+08 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 112.0 CRITERION= .7994E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7421
 HT FLOW CONVERGENCE VALUE= 6.133 CRITERION= .8097E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7117E-01
 HT FLOW CONVERGENCE VALUE= .4665 CRITERION= .7956E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5658E-02
 HT FLOW CONVERGENCE VALUE= .3810E-01 CRITERION= .7967E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 407
 *** TIME = .247727E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .7086E-09 OSCILLATION LIMIT = .3354E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 111.2 CRITERION= .7873E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6846
 HT FLOW CONVERGENCE VALUE= 1.635 CRITERION= .7868E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1840E-01
 HT FLOW CONVERGENCE VALUE= .1573E-02 CRITERION= .7830E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 29 SUBSTEP 6 COMPLETED. CUM ITER = 409
 *** TIME = .252461E+10 TIME INC = .473364E+08
 *** RESPONSE EIGENVALUE = .6288E-09 OSCILLATION LIMIT = .2977E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 09:27:20 MAR 30, 1995 CP= 48412.480

FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 110.0      CRITERION= .7813E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6522
HT FLOW CONVERGENCE VALUE= .1088      CRITERION= .7770E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2716E-02
HT FLOW CONVERGENCE VALUE= .1013E-02 CRITERION= .7773E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 411
*** TIME = .257194E+10 TIME INC = .473364E+08
*** RESPONSE EIGENVALUE = .4516E-09 OSCILLATION LIMIT = .2138E-01
*** AUTO STEP TIME: NEXT TIME INC = .47336E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 108.8      CRITERION= .7698E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6388
HT FLOW CONVERGENCE VALUE= .9685E-01 CRITERION= .7650E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2426E-02
HT FLOW CONVERGENCE VALUE= .9442E-03 CRITERION= .7653E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 413
*** TIME = .261928E+10 TIME INC = .473364E+08
*** RESPONSE EIGENVALUE = .3866E-09 OSCILLATION LIMIT = .1830E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6667)

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HT FLOW CONVERGENCE VALUE= 107.5      CRITERION= .7606E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.041
HT FLOW CONVERGENCE VALUE= 2.804      CRITERION= .7487E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9009E-01
HT FLOW CONVERGENCE VALUE= .5439      CRITERION= .7526E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1804E-01
HT FLOW CONVERGENCE VALUE= .1123      CRITERION= .7533E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3750E-02
HT FLOW CONVERGENCE VALUE= .2351E-01 CRITERION= .7534E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 417
*** TIME = .269817E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .4079E-09 OSCILLATION LIMIT = .3218E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 105.5      CRITERION= .7428E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.017
HT FLOW CONVERGENCE VALUE= 4.507      CRITERION= .7393E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1073
HT FLOW CONVERGENCE VALUE= .7242      CRITERION= .7336E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1793E-01
HT FLOW CONVERGENCE VALUE= .1604      CRITERION= .7355E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3909E-02
HT FLOW CONVERGENCE VALUE= .3545E-01 CRITERION= .7351E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 421
*** TIME = .277707E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .4452E-09 OSCILLATION LIMIT = .3513E-01
*** AUTO TIME STEP: NEXT TIME INC = .63115E+08 DECREASED (FACTOR = .8000)

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HT FLOW CONVERGENCE VALUE= 103.3      CRITERION= .7320E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8035
HT FLOW CONVERGENCE VALUE= 8.992      CRITERION= .7447E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1278
HT FLOW CONVERGENCE VALUE= .8278      CRITERION= .7202E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1286E-01
HT FLOW CONVERGENCE VALUE= .8671E-01 CRITERION= .7224E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1362E-02
HT FLOW CONVERGENCE VALUE= .8955E-02 CRITERION= .7222E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 425
*** TIME = .284018E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .4924E-09 OSCILLATION LIMIT = .3108E-01

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Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
221.360946 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8979 STEP 1

7265 ELEMENTS (OF 7265 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 50162.170 TIME= 09:57:00
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 09:57:00 MAR 30, 1995 CP= 50162.170
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
TIME AT END OF THE LOAD STEP.31558E+10
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 100.5 CRITERION= .7141E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7653
HT FLOW CONVERGENCE VALUE= 4.224 CRITERION= .7011E-01

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7260E-01
HT FLOW CONVERGENCE VALUE= .4888 CRITERION= .7037E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9398E-02
HT FLOW CONVERGENCE VALUE= .6461E-01 CRITERION= .7046E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 428
*** TIME = .290330E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .4796E-09 OSCILLATION LIMIT = .3027E-01
*** AUTO STEP TIME: NEXT TIME INC = .63115E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 97.75 CRITERION= .7024E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7453
HT FLOW CONVERGENCE VALUE= 1.372 CRITERION= .6935E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2902E-01
HT FLOW CONVERGENCE VALUE= .1198E-02 CRITERION= .6961E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 430
*** TIME = .296641E+10 TIME INC = .631152E+08
*** RESPONSE EIGENVALUE = .4315E-09 OSCILLATION LIMIT = .2723E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 95.92 CRITERION= .6866E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9060
HT FLOW CONVERGENCE VALUE= .1391 CRITERION= .6796E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3887E-02
HT FLOW CONVERGENCE VALUE= .1276E-02 CRITERION= .6799E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 432
*** TIME = .304531E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .3806E-09 OSCILLATION LIMIT = .3003E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 93.95 CRITERION= .6764E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8830
HT FLOW CONVERGENCE VALUE= 6.817 CRITERION= .6852E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1163
HT FLOW CONVERGENCE VALUE= .6156 CRITERION= .6685E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1094E-01
HT FLOW CONVERGENCE VALUE= .6035E-01 CRITERION= .6698E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 435
*** TIME = .312420E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .3735E-09 OSCILLATION LIMIT = .2947E-01
*** AUTO TIME STEP: NEXT TIME INC = .31558E+08 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 92.02 CRITERION= .6642E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3465
HT FLOW CONVERGENCE VALUE= 2.992 CRITERION= .6669E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1803E-01
HT FLOW CONVERGENCE VALUE= .1476 CRITERION= .6611E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1167E-02
HT FLOW CONVERGENCE VALUE= .9046E-02 CRITERION= .6616E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 438
*** TIME = .315576E+10 TIME INC = .315576E+08
*** RESPONSE EIGENVALUE = .4250E-09 OSCILLATION LIMIT = .1341E-01
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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 10:22:20 MAR 30, 1995 CP= 51650.990
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 91.28 CRITERION= .6629E-01

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4276
HT FLOW CONVERGENCE VALUE= 3.758 CRITERION= .6641E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3021E-01
HT FLOW CONVERGENCE VALUE= .2390 CRITERION= .6593E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2128E-02
HT FLOW CONVERGENCE VALUE= .1602E-01 CRITERION= .6600E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 441
*** TIME = .319521E+10 TIME INC = .394470E+08
*** RESPONSE EIGENVALUE = .3566E-09 OSCILLATION LIMIT = .1407E-01
*** AUTO STEP TIME: NEXT TIME INC = .39447E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 90.43 CRITERION= .6553E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4209
HT FLOW CONVERGENCE VALUE= 2.860 CRITERION= .6572E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2132E-01
HT FLOW CONVERGENCE VALUE= .1213 CRITERION= .6528E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1034E-02
HT FLOW CONVERGENCE VALUE= .5946E-02 CRITERION= .6531E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 444
*** TIME = .323465E+10 TIME INC = .394470E+08
*** RESPONSE EIGENVALUE = .3331E-09 OSCILLATION LIMIT = .1314E-01
*** AUTO TIME STEP: NEXT TIME INC = .11834E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 89.79 CRITERION= .6510E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.227
HT FLOW CONVERGENCE VALUE= 4.345 CRITERION= .6435E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1960
HT FLOW CONVERGENCE VALUE= 1.214 CRITERION= .6465E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6133E-01
HT FLOW CONVERGENCE VALUE= .1443 CRITERION= .6482E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7626E-02
HT FLOW CONVERGENCE VALUE= .1318E-03 CRITERION= .6485E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 448
*** TIME = .335300E+10 TIME INC = .118341E+09
*** RESPONSE EIGENVALUE = .3012E-09 OSCILLATION LIMIT = .3565E-01
*** AUTO STEP TIME: NEXT TIME INC = .11834E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 89.04 CRITERION= .6404E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.181
HT FLOW CONVERGENCE VALUE= .1134 CRITERION= .6366E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3558E-02
HT FLOW CONVERGENCE VALUE= .1451E-02 CRITERION= .6370E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 450
*** TIME = .347134E+10 TIME INC = .118341E+09
*** RESPONSE EIGENVALUE = .2107E-09 OSCILLATION LIMIT = .2493E-01
*** AUTO TIME STEP: NEXT TIME INC = .35502E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 88.06 CRITERION= .6250E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.382
HT FLOW CONVERGENCE VALUE= 13.61 CRITERION= .6317E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5379
HT FLOW CONVERGENCE VALUE= 2.344 CRITERION= .5984E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1419
HT FLOW CONVERGENCE VALUE= .4981 CRITERION= .6044E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2788E-01
HT FLOW CONVERGENCE VALUE= .1592 CRITERION= .6029E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9103E-02
HT FLOW CONVERGENCE VALUE= .5174E-01 CRITERION= .6034E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 455
*** TIME = .382636E+10 TIME INC = .355023E+09
*** RESPONSE EIGENVALUE = .1874E-09 OSCILLATION LIMIT = .6652E-01
*** AUTO STEP TIME: NEXT TIME INC = .35502E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 81.82 CRITERION= .5852E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.006

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HT FLOW CONVERGENCE VALUE= 8.785 CRITERION= .5735E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2884
HT FLOW CONVERGENCE VALUE= .8214 CRITERION= .5692E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5329E-01
HT FLOW CONVERGENCE VALUE= .2183 CRITERION= .5702E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1439E-01
HT FLOW CONVERGENCE VALUE= .5279E-03 CRITERION= .5706E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 459
*** TIME = .418138E+10 TIME INC = .355023E+09
*** RESPONSE EIGENVALUE = .2186E-09 OSCILLATION LIMIT = .7759E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 77.66 CRITERION= .5404E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.040
HT FLOW CONVERGENCE VALUE= 17.36 CRITERION= .5604E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9882
HT FLOW CONVERGENCE VALUE= 2.987 CRITERION= .5080E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3187
HT FLOW CONVERGENCE VALUE= 1.641 CRITERION= .5175E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1657
HT FLOW CONVERGENCE VALUE= .7878 CRITERION= .5126E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8321E-01
HT FLOW CONVERGENCE VALUE= .4089 CRITERION= .5149E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4255E-01
HT FLOW CONVERGENCE VALUE= .2048 CRITERION= .5138E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2156E-01
HT FLOW CONVERGENCE VALUE= .1046 CRITERION= .5143E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1097E-01
HT FLOW CONVERGENCE VALUE= .5297E-01 CRITERION= .5140E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5573E-02
HT FLOW CONVERGENCE VALUE= .2696E-01 CRITERION= .5142E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 468
*** TIME = .497032E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .2207E-09 OSCILLATION LIMIT = .1742
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 70.23 CRITERION= .4784E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.029
HT FLOW CONVERGENCE VALUE= 10.91 CRITERION= .4736E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5864
HT FLOW CONVERGENCE VALUE= .2123E-01 CRITERION= .4522E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 470
*** TIME = .575926E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .2894E-09 OSCILLATION LIMIT = .2284
*** AUTO TIME STEP: NEXT TIME INC = .55226E+09 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 62.72 CRITERION= .4322E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.781
HT FLOW CONVERGENCE VALUE= 5.902 CRITERION= .4227E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2983
HT FLOW CONVERGENCE VALUE= .3561 CRITERION= .4162E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3399E-01
HT FLOW CONVERGENCE VALUE= .9644E-01 CRITERION= .4166E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9267E-02
HT FLOW CONVERGENCE VALUE= .2651E-01 CRITERION= .4168E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 32 SUBSTEP 9 COMPLETED. CUM ITER = 474
*** TIME = .631152E+10 TIME INC = .552258E+09
*** RESPONSE EIGENVALUE = .3912E-09 OSCILLATION LIMIT = .2160

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 11:26:45 MAR 30, 1995 CP= 55428.390
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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HT FLOW CONVERGENCE VALUE= 58.33 CRITERION= .4060E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.789
 HT FLOW CONVERGENCE VALUE= 5.022 CRITERION= .3968E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3630
 HT FLOW CONVERGENCE VALUE= .5550E-02 CRITERION= .3885E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 476
 *** TIME = .686378E+10 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .2130E-09 OSCILLATION LIMIT = .1176
 *** AUTO STEP TIME: NEXT TIME INC = .55226E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 53.28 CRITERION= .3836E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.528
 HT FLOW CONVERGENCE VALUE= 6.044 CRITERION= .3825E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3059
 HT FLOW CONVERGENCE VALUE= .7909 CRITERION= .3681E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5030E-01
 HT FLOW CONVERGENCE VALUE= .1841 CRITERION= .3701E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1155E-01
 HT FLOW CONVERGENCE VALUE= .4171E-01 CRITERION= .3696E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2626E-02
 HT FLOW CONVERGENCE VALUE= .9510E-02 CRITERION= .3697E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 481
 *** TIME = .741604E+10 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .1439E-09 OSCILLATION LIMIT = .7945E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55226E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 49.14 CRITERION= .3585E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.297
 HT FLOW CONVERGENCE VALUE= 4.782 CRITERION= .3598E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2386
 HT FLOW CONVERGENCE VALUE= .2656 CRITERION= .3511E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2043E-01
 HT FLOW CONVERGENCE VALUE= .1339E-01 CRITERION= .3515E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 484
 *** TIME = .796829E+10 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .1454E-09 OSCILLATION LIMIT = .8029E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 46.97 CRITERION= .3431E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.010
 HT FLOW CONVERGENCE VALUE= 4.206 CRITERION= .3405E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3469
 HT FLOW CONVERGENCE VALUE= .9167 CRITERION= .3316E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8299E-01
 HT FLOW CONVERGENCE VALUE= .2577 CRITERION= .3340E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2127E-01
 HT FLOW CONVERGENCE VALUE= .7245E-01 CRITERION= .3333E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5883E-02
 HT FLOW CONVERGENCE VALUE= .2168E-01 CRITERION= .3335E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 489
 *** TIME = .875723E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1307E-09 OSCILLATION LIMIT = .1031
 *** AUTO TIME STEP: NEXT TIME INC = .71005E+09 DECREASED (FACTOR = .9000)

HT FLOW CONVERGENCE VALUE= 43.98 CRITERION= .3201E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.448
 HT FLOW CONVERGENCE VALUE= 3.392 CRITERION= .3134E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2308
 HT FLOW CONVERGENCE VALUE= .1124 CRITERION= .3110E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7747E-02
 HT FLOW CONVERGENCE VALUE= .1386E-01 CRITERION= .3112E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 492

*** TIME = .946728E+10 TIME INC = .710046E+09
 *** RESPONSE EIGENVALUE = .1458E-09 OSCILLATION LIMIT = .1035

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 12:01:34 MAR 30, 1995 CP= 57367.730
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 41.09 CRITERION= .3082E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.264
 HT FLOW CONVERGENCE VALUE= 3.687 CRITERION= .3090E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2315
 HT FLOW CONVERGENCE VALUE= .4222E-02 CRITERION= .3017E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 494
 *** TIME = .101773E+11 TIME INC = .710046E+09
 *** RESPONSE EIGENVALUE = .1092E-09 OSCILLATION LIMIT = .7750E-01
 *** AUTO STEP TIME: NEXT TIME INC = .71005E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 38.85 CRITERION= .2925E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.100
 HT FLOW CONVERGENCE VALUE= 1.471 CRITERION= .2861E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1587
 HT FLOW CONVERGENCE VALUE= .2913 CRITERION= .2876E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3469E-01
 HT FLOW CONVERGENCE VALUE= .6608E-01 CRITERION= .2880E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7973E-02
 HT FLOW CONVERGENCE VALUE= .1027E-01 CRITERION= .2881E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 498
 *** TIME = .108874E+11 TIME INC = .710046E+09
 *** RESPONSE EIGENVALUE = .9728E-10 OSCILLATION LIMIT = .6908E-01
 *** AUTO STEP TIME: NEXT TIME INC = .71005E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 37.16 CRITERION= .2851E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.962
 HT FLOW CONVERGENCE VALUE= 3.383 CRITERION= .2834E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2513
 HT FLOW CONVERGENCE VALUE= .4640 CRITERION= .2787E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4157E-01
 HT FLOW CONVERGENCE VALUE= .8352E-01 CRITERION= .2796E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7385E-02
 HT FLOW CONVERGENCE VALUE= .1465E-01 CRITERION= .2794E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 502
 *** TIME = .115974E+11 TIME INC = .710046E+09
 *** RESPONSE EIGENVALUE = .9600E-10 OSCILLATION LIMIT = .6816E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 35.01 CRITERION= .2696E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.021
 HT FLOW CONVERGENCE VALUE= 1.017 CRITERION= .2645E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6847E-01
 HT FLOW CONVERGENCE VALUE= .1204 CRITERION= .2642E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1084E-01
 HT FLOW CONVERGENCE VALUE= .1924E-01 CRITERION= .2644E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 505
 *** TIME = .123864E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .9961E-10 OSCILLATION LIMIT = .7858E-01
 *** AUTO TIME STEP: NEXT TIME INC = .23668E+09 DECREASED (FACTOR = .3000)

HT FLOW CONVERGENCE VALUE= 32.84 CRITERION= .2654E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5763
 HT FLOW CONVERGENCE VALUE= .9375 CRITERION= .2630E-01

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3775E-01
HT FLOW CONVERGENCE VALUE= .3489E-01 CRITERION= .2643E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1516E-02
HT FLOW CONVERGENCE VALUE= .2398E-02 CRITERION= .2644E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 508
*** TIME = .126230E+11 TIME INC = .236682E+09
*** RESPONSE EIGENVALUE = .1064E-09 OSCILLATION LIMIT = .2519E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 12:31:35 MAR 30, 1995 CP= 59128.560
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 32.32 CRITERION= .2598E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5639
HT FLOW CONVERGENCE VALUE= 1.460 CRITERION= .2609E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4138E-01
HT FLOW CONVERGENCE VALUE= .1021 CRITERION= .2587E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3229E-02
HT FLOW CONVERGENCE VALUE= .7814E-02 CRITERION= .2589E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 511
*** TIME = .128597E+11 TIME INC = .236682E+09
*** RESPONSE EIGENVALUE = .9965E-10 OSCILLATION LIMIT = .2358E-01
*** AUTO STEP TIME: NEXT TIME INC = .23668E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 31.84 CRITERION= .2606E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5558
HT FLOW CONVERGENCE VALUE= 1.158 CRITERION= .2618E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3371E-01
HT FLOW CONVERGENCE VALUE= .5621E-01 CRITERION= .2598E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1540E-02
HT FLOW CONVERGENCE VALUE= .3099E-02 CRITERION= .2600E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 514
*** TIME = .130964E+11 TIME INC = .236682E+09
*** RESPONSE EIGENVALUE = .9579E-10 OSCILLATION LIMIT = .2267E-01
*** AUTO STEP TIME: NEXT TIME INC = .71005E+09 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 31.47 CRITERION= .2527E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.624
HT FLOW CONVERGENCE VALUE= 1.488 CRITERION= .2501E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1670
HT FLOW CONVERGENCE VALUE= .3158 CRITERION= .2507E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3879E-01
HT FLOW CONVERGENCE VALUE= .2841E-01 CRITERION= .2511E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3500E-02
HT FLOW CONVERGENCE VALUE= .3818E-04 CRITERION= .2511E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 518
*** TIME = .138065E+11 TIME INC = .710046E+09
*** RESPONSE EIGENVALUE = .8874E-10 OSCILLATION LIMIT = .6301E-01
*** AUTO STEP TIME: NEXT TIME INC = .71005E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 30.38 CRITERION= .2499E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.567
HT FLOW CONVERGENCE VALUE= 1.510 CRITERION= .2487E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1857
HT FLOW CONVERGENCE VALUE= .3456 CRITERION= .2473E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4620E-01
HT FLOW CONVERGENCE VALUE= .9297E-01 CRITERION= .2476E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1218E-01
HT FLOW CONVERGENCE VALUE= .2403E-01 CRITERION= .2475E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

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*** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 522
*** TIME = .145165E+11 TIME INC = .710046E+09
*** RESPONSE EIGENVALUE = .7885E-10 OSCILLATION LIMIT = .5599E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 28.99 CRITERION= .2399E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.642
HT FLOW CONVERGENCE VALUE= 3.693 CRITERION= .2420E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2871
HT FLOW CONVERGENCE VALUE= .5128 CRITERION= .2351E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4708E-01
HT FLOW CONVERGENCE VALUE= .8402E-01 CRITERION= .2361E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7720E-02
HT FLOW CONVERGENCE VALUE= .1300E-01 CRITERION= .2360E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 526
*** TIME = .153054E+11 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .8603E-10 OSCILLATION LIMIT = .6787E-01
*** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 26.92 CRITERION= .2362E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9240
HT FLOW CONVERGENCE VALUE= 2.093 CRITERION= .2354E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1039
HT FLOW CONVERGENCE VALUE= .1528 CRITERION= .2345E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8318E-02
HT FLOW CONVERGENCE VALUE= .1303E-01 CRITERION= .2348E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 35 SUBSTEP 6 COMPLETED. CUM ITER = 529
*** TIME = .157788E+11 TIME INC = .473364E+09
*** RESPONSE EIGENVALUE = .1030E-09 OSCILLATION LIMIT = .4874E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 13:10:33 MAR 30, 1995 CP= 61397.130
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 25.93 CRITERION= .2293E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8798
HT FLOW CONVERGENCE VALUE= 1.067 CRITERION= .2301E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5379E-01
HT FLOW CONVERGENCE VALUE= .7303E-01 CRITERION= .2289E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3776E-02
HT FLOW CONVERGENCE VALUE= .5196E-02 CRITERION= .2290E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 532
*** TIME = .162522E+11 TIME INC = .473364E+09
*** RESPONSE EIGENVALUE = .9361E-10 OSCILLATION LIMIT = .4431E-01
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.33 CRITERION= .2296E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8446
HT FLOW CONVERGENCE VALUE= 1.242 CRITERION= .2296E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7448E-01
HT FLOW CONVERGENCE VALUE= .1388 CRITERION= .2290E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1094E-01
HT FLOW CONVERGENCE VALUE= .1894E-01 CRITERION= .2291E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 535
*** TIME = .167255E+11 TIME INC = .473364E+09
*** RESPONSE EIGENVALUE = .8938E-10 OSCILLATION LIMIT = .4231E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 24.69 CRITERION= .2222E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.339

HT FLOW CONVERGENCE VALUE= 3.006 CRITERION= .2289E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1749
 HT FLOW CONVERGENCE VALUE= .1967 CRITERION= .2219E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1257E-01
 HT FLOW CONVERGENCE VALUE= .2355E-01 CRITERION= .2224E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1477E-02
 HT FLOW CONVERGENCE VALUE= .2744E-02 CRITERION= .2223E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 539
 *** TIME = .175145E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .8982E-10 OSCILLATION LIMIT = .7086E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.86 CRITERION= .2213E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.261
 HT FLOW CONVERGENCE VALUE= 2.551 CRITERION= .2263E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1405
 HT FLOW CONVERGENCE VALUE= .7813 CRITERION= .2218E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5222E-01
 HT FLOW CONVERGENCE VALUE= .3336 CRITERION= .2233E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2114E-01
 HT FLOW CONVERGENCE VALUE= .1279 CRITERION= .2226E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8280E-02
 HT FLOW CONVERGENCE VALUE= .5118E-01 CRITERION= .2229E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3286E-02
 HT FLOW CONVERGENCE VALUE= .2014E-01 CRITERION= .2228E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 545
 *** TIME = .183034E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 23.57 CRITERION= .2169E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9560
 HT FLOW CONVERGENCE VALUE= 5.465 CRITERION= .2334E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1644
 HT FLOW CONVERGENCE VALUE= .6356 CRITERION= .2177E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2135E-01
 HT FLOW CONVERGENCE VALUE= .9313E-01 CRITERION= .2191E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3072E-02
 HT FLOW CONVERGENCE VALUE= .1316E-01 CRITERION= .2189E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 549
 *** TIME = .189346E+11 TIME INC = .631152E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 13:46:34 MAR 30, 1995 CP= 63511.680
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 23.63 CRITERION= .2195E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9158
 HT FLOW CONVERGENCE VALUE= 1.435 CRITERION= .2252E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6047E-01
 HT FLOW CONVERGENCE VALUE= .6064E-01 CRITERION= .2221E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7819E-02
 HT FLOW CONVERGENCE VALUE= .8028E-02 CRITERION= .2221E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 552
 *** TIME = .195657E+11 TIME INC = .631152E+09
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.94 CRITERION= .2172E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8746
 HT FLOW CONVERGENCE VALUE= .9721E-01 CRITERION= .2188E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1059E-01

HT FLOW CONVERGENCE VALUE= .1006E-03 CRITERION= .2189E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 554
 *** TIME = .201969E+11 TIME INC = .631152E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 23.88 CRITERION= .2189E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.038
 HT FLOW CONVERGENCE VALUE= 1.838 CRITERION= .2218E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1651
 HT FLOW CONVERGENCE VALUE= .2032 CRITERION= .2192E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1957E-01
 HT FLOW CONVERGENCE VALUE= .2582E-01 CRITERION= .2195E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2466E-02
 HT FLOW CONVERGENCE VALUE= .3226E-02 CRITERION= .2195E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 558
 *** TIME = .209858E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.31 CRITERION= .2143E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9900
 HT FLOW CONVERGENCE VALUE= .8126 CRITERION= .2150E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5324E-01
 HT FLOW CONVERGENCE VALUE= .3483E-01 CRITERION= .2146E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2885E-02
 HT FLOW CONVERGENCE VALUE= .2685E-02 CRITERION= .2146E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 561
 *** TIME = .217747E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+09 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 22.64 CRITERION= .2162E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3838
 HT FLOW CONVERGENCE VALUE= .2243 CRITERION= .2161E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1043E-01
 HT FLOW CONVERGENCE VALUE= .9236E-02 CRITERION= .2163E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 563
 *** TIME = .220903E+11 TIME INC = .315576E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 14:13:44 MAR 30, 1995 CP= 65099.580
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 22.40 CRITERION= .2130E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3776
 HT FLOW CONVERGENCE VALUE= .1587 CRITERION= .2131E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7808E-02
 HT FLOW CONVERGENCE VALUE= .9023E-04 CRITERION= .2132E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 565
 *** TIME = .224059E+11 TIME INC = .315576E+09
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.16 CRITERION= .2150E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3717
 HT FLOW CONVERGENCE VALUE= .3221E-01 CRITERION= .2151E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9841E-03
 HT FLOW CONVERGENCE VALUE= .7627E-04 CRITERION= .2151E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 567
 *** TIME = .227215E+11 TIME INC = .315576E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.5000)

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HT FLOW CONVERGENCE VALUE= 21.93      CRITERION= .2107E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9059
HT FLOW CONVERGENCE VALUE= .4796      CRITERION= .2114E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5031E-01
HT FLOW CONVERGENCE VALUE= .2018      CRITERION= .2106E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2315E-01
HT FLOW CONVERGENCE VALUE= .1006      CRITERION= .2110E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1113E-01
HT FLOW CONVERGENCE VALUE= .4666E-01 CRITERION= .2108E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5252E-02
HT FLOW CONVERGENCE VALUE= .2239E-01 CRITERION= .2109E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2500E-02
HT FLOW CONVERGENCE VALUE= .1057E-01 CRITERION= .2109E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6

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*** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 573
*** TIME = .235104E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 21.20      CRITERION= .2114E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8735
HT FLOW CONVERGENCE VALUE= 3.627      CRITERION= .2192E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1759
HT FLOW CONVERGENCE VALUE= .3767      CRITERION= .2106E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2138E-01
HT FLOW CONVERGENCE VALUE= .5164E-01 CRITERION= .2113E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2944E-02
HT FLOW CONVERGENCE VALUE= .6921E-02 CRITERION= .2112E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

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*** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 577
*** TIME = .242994E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

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HT FLOW CONVERGENCE VALUE= 20.36      CRITERION= .2076E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5072
HT FLOW CONVERGENCE VALUE= .9881      CRITERION= .2100E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2524E-01
HT FLOW CONVERGENCE VALUE= .6172E-01 CRITERION= .2077E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1737E-02
HT FLOW CONVERGENCE VALUE= .4162E-02 CRITERION= .2078E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

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*** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 580
*** TIME = .247727E+11 TIME INC = .473364E+09
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 19.96      CRITERION= .2091E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4941
HT FLOW CONVERGENCE VALUE= .7637      CRITERION= .2109E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1882E-01
HT FLOW CONVERGENCE VALUE= .4213E-01 CRITERION= .2094E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1064E-02
HT FLOW CONVERGENCE VALUE= .2405E-02 CRITERION= .2095E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

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*** LOAD STEP 38 SUBSTEP 6 COMPLETED. CUM ITER = 583
*** TIME = .252461E+11 TIME INC = .473364E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303      VERSION=HP 9000/7XX 14:51:12 MAR 30, 1995 CP= 67279.830
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 19.69      CRITERION= .2063E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4824
HT FLOW CONVERGENCE VALUE= .1684      CRITERION= .2068E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1303E-01

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HT FLOW CONVERGENCE VALUE= .7408E-02 CRITERION= .2068E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 585
 *** TIME = .257194E+11 TIME INC = .473364E+09
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 19.45 CRITERION= .2082E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4702
 HT FLOW CONVERGENCE VALUE= .1402 CRITERION= .2086E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1313E-01
 HT FLOW CONVERGENCE VALUE= .7067E-02 CRITERION= .2087E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 587
 *** TIME = .261928E+11 TIME INC = .473364E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 19.24 CRITERION= .2050E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7566
 HT FLOW CONVERGENCE VALUE= .7619E-01 CRITERION= .2057E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5379E-02
 HT FLOW CONVERGENCE VALUE= .9699E-04 CRITERION= .2057E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 589
 *** TIME = .269817E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 18.81 CRITERION= .2066E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7261
 HT FLOW CONVERGENCE VALUE= .6400E-01 CRITERION= .2071E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1281E-02
 HT FLOW CONVERGENCE VALUE= .1011E-03 CRITERION= .2071E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 591
 *** TIME = .277707E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 18.35 CRITERION= .2038E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5623
 HT FLOW CONVERGENCE VALUE= .5136E-01 CRITERION= .2041E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9496E-03
 HT FLOW CONVERGENCE VALUE= .7722E-04 CRITERION= .2042E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 593
 *** TIME = .284018E+11 TIME INC = .631152E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 15:12:16 MAR 30, 1995 CP= 68511.900
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 17.95 CRITERION= .2055E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5472
 HT FLOW CONVERGENCE VALUE= .2633 CRITERION= .2059E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2786E-01
 HT FLOW CONVERGENCE VALUE= .2526E-01 CRITERION= .2057E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2764E-02
 HT FLOW CONVERGENCE VALUE= .2552E-02 CRITERION= .2057E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 596
 *** TIME = .290330E+11 TIME INC = .631152E+09
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 17.52 CRITERION= .2028E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5333
 HT FLOW CONVERGENCE VALUE= 1.103 CRITERION= .2057E-01

```
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3790E-01
HT FLOW CONVERGENCE VALUE= .8263E-01 CRITERION= .2028E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2672E-02
HT FLOW CONVERGENCE VALUE= .6452E-02 CRITERION= .2030E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 599
*** TIME = .296641E+11 TIME INC = .631152E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 17.10 CRITERION= .2041E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6487
HT FLOW CONVERGENCE VALUE= 1.208 CRITERION= .2078E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3683E-01
HT FLOW CONVERGENCE VALUE= .8028E-01 CRITERION= .2045E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2352E-02
HT FLOW CONVERGENCE VALUE= .5549E-02 CRITERION= .2047E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 602
*** TIME = .304531E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 16.74 CRITERION= .2016E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6296
HT FLOW CONVERGENCE VALUE= .8538 CRITERION= .2047E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2118E-01
HT FLOW CONVERGENCE VALUE= .4565E-01 CRITERION= .2023E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1155E-02
HT FLOW CONVERGENCE VALUE= .2524E-02 CRITERION= .2024E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 605
*** TIME = .312420E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .31558E+09 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 16.49 CRITERION= .2041E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2537
HT FLOW CONVERGENCE VALUE= .2247 CRITERION= .2050E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2267E-02
HT FLOW CONVERGENCE VALUE= .4476E-04 CRITERION= .2044E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 607
*** TIME = .315576E+11 TIME INC = .315576E+09
```

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 70095.870

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12x5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 15:39:45 MAR 30, 1995 CP= 70106.370
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 57.85637
PARAMETER WPSID(JINC) = 57.77967
PARAMETER WPBOT(JINC) = 57.67526
PARAMETER DFTOP(JINC) = 26.13910
PARAMETER DFSID(JINC) = 26.13914
PARAMETER DFEDG(JINC) = 26.13880
PARAMETER DFBOT(JINC) = 26.16070
PARAMETER WPTOP(JINC,0) = 31.55760
PARAMETER WPSID(JINC,0) = 31.55760
PARAMETER WPBOT(JINC,0) = 31.55760
PARAMETER DFTOP(JINC,0) = 31.55760
PARAMETER DFSID(JINC,0) = 31.55760
PARAMETER DFEDG(JINC,0) = 31.55760
PARAMETER DFBOT(JINC,0) = 31.55760
PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 129
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 110.9439
PARAMETER WPSID(JINC) = 111.5944
PARAMETER WPBOT(JINC) = 113.0817
PARAMETER DFTOP(JINC) = 87.44737
PARAMETER DFSID(JINC) = 87.90678
PARAMETER DFEDG(JINC) = 85.71885
PARAMETER DFBOT(JINC) = 78.02516
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08

PARAMETER DFTOP(JINC,0) = .3155763E+08

PARAMETER DFSID(JINC,0) = .3155763E+08

PARAMETER DFEDG(JINC,0) = .3155763E+08

PARAMETER DFBOT(JINC,0) = .3155763E+08

PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 267
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 156.3981

PARAMETER WPSID(JINC) = 156.8819

PARAMETER WPBOT(JINC) = 158.0169

PARAMETER DFTOP(JINC) = 142.3657

PARAMETER DFSID(JINC) = 142.8646

PARAMETER DFEDG(JINC) = 141.1578

PARAMETER DFBOT(JINC) = 133.4045

PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09

PARAMETER WPBOT(JINC,0) = .3155760E+09

PARAMETER DFTOP(JINC,0) = .3155760E+09

PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 438
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 180.3184

PARAMETER WPSID(JINC) = 180.4821

PARAMETER WPBOT(JINC) = 180.8467

PARAMETER DFTOP(JINC) = 176.2636
PARAMETER DFSID(JINC) = 176.5013
PARAMETER DFEDG(JINC) = 175.9293
PARAMETER DFBOT(JINC) = 172.9706
PARAMETER WPTOP(JINC,0) = .3155760E+10
PARAMETER WPSID(JINC,0) = .3155760E+10
PARAMETER WPBOT(JINC,0) = .3155760E+10
PARAMETER DFTOP(JINC,0) = .3155760E+10
PARAMETER DFSID(JINC,0) = .3155760E+10
PARAMETER DFEDG(JINC,0) = .3155760E+10
PARAMETER DFBOT(JINC,0) = .3155760E+10
PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 71643.580

*** NOTE *** CP= 71643.600 TIME= 16:06:36
Write parameters to file= c12x5a.parm.

*** NOTE *** CP= 71643.680 TIME= 16:06:36
Parameters written. Lines= 770.

*** WARNING *** CP= 71643.690 TIME= 16:06:36
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c12x5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
900-38303 VERSION=HP 9000/7XX 16:06:37 MAR 30, 1995 CP= 71643.740
FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 21.23

DISTANCE MULTIPLIER FOR WINDOW 1 1.250

DISTANCE FOR WINDOW 1 26.54

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

3632 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16

ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE MULTIPLIER FOR WINDOW 1 .8000

DISTANCE FOR WINDOW 1 21.23

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

3632 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view
Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 12.18

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

3632 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71666.500 TIME= 16:07:09
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 79
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71684.540 TIME= 16:07:29
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 129
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71702.570 TIME= 16:07:48
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 6 CUMULATIVE ITERATION= 193
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71720.580 TIME= 16:08:08
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 267
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71738.570 TIME= 16:08:27
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 360
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71756.520 TIME= 16:08:47
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 438
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71774.410 TIME= 16:09:05
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 6 CUMULATIVE ITERATION= 529
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71792.310 TIME= 16:09:23
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 607
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71810.210 TIME= 16:09:41
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 7.622

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .000000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .000000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1816 ELEMENTS (OF 7265 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71828.840 TIME= 16:10:00
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 79
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71843.690 TIME= 16:10:15
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 129
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71858.520 TIME= 16:10:30
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 6 CUMULATIVE ITERATION= 193
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71873.390 TIME= 16:10:45
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 267
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71888.230 TIME= 16:11:00
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 360
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71903.070 TIME= 16:11:15
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 438
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71917.910 TIME= 16:11:30
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 6 CUMULATIVE ITERATION= 529
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71932.750 TIME= 16:11:44
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 607
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 71947.590 TIME= 16:11:59
 The selected element set contains mixed materials.
 This could invalidate error estimation.
 View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
 - GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
 DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 71952.120

 Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:04 MAR 30, 1995 CP= 71952.140
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

 * Waste Package Surface Temperatures *

 wmidside = midlength side surface
 wwpeside = end of WP side surface
 wmidtop = midlength top surface
 wwpetop = end of WP top surface
 wmidbot = midlength bottom surface
 wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
 VARIABLE 3 IS AT NODE 1804 ITEM= TEMP COMP= NAME= wwpeside
 VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
 VARIABLE 5 IS AT NODE 1810 ITEM= TEMP COMP= NAME= wwpetop
 VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
 VARIABLE 7 IS AT NODE 1803 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	123 TEMP	wmidside	26.14	.1000E-05	184.4	.1893E+10

3 NSOL	1804 TEMP	wwpeside	26.14	.1000E-05	182.6	.1893E+10
4 NSOL	129 TEMP	wmidtop	26.13	.1000E-05	184.2	.1893E+10
5 NSOL	1810 TEMP	wwpetop	26.14	.1000E-05	182.5	.1893E+10
6 NSOL	122 TEMP	wmidbot	26.14	.1000E-05	184.9	.1893E+10
7 NSOL	1803 TEMP	wwpebot	26.14	.1000E-05	182.8	.1893E+10

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:07 MAR 30, 1995 CP= 71953.830
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1804 TEMP wwpeside	129 TEMP wmidtop	1810 TEMP wwpetop	122 TEMP wmidbot	1803 TEMP wwpebot
.10000E-05	26.1385	26.1388	26.1334	26.1351	26.1427	26.1416
.20000E-05	57.7797	52.3316	57.8564	52.5241	57.6753	52.2116
31.558	57.7797	52.3316	57.8564	52.5241	57.6753	52.2116
.31558E+07	82.5052	75.7242	81.7957	75.5813	84.0359	76.3297
.63116E+07	89.7043	83.1047	89.0017	82.9625	91.2541	83.7277
.94673E+07	94.4723	88.0134	93.7797	87.8745	96.0155	88.6374
.12623E+08	98.1607	91.8122	97.4767	91.6767	99.6925	92.4330
.15779E+08	101.188	94.9320	100.512	94.7992	102.716	95.5537
.18935E+08	103.765	97.5895	103.096	97.4587	105.283	98.2074
.22090E+08	106.025	99.9209	105.362	99.7915	107.538	100.538
.25246E+08	108.052	102.011	107.393	101.883	109.555	102.624
.28402E+08	109.894	103.912	109.239	103.784	111.390	104.524
.31558E+08	111.594	105.667	110.944	105.540	113.082	106.275
.63115E+08	123.123	117.608	122.484	117.469	124.571	118.209
.94673E+08	130.518	125.261	129.900	125.126	131.908	125.835
.12623E+09	136.546	131.503	135.957	131.379	137.874	132.045
.15779E+09	141.698	136.854	141.134	136.738	142.984	137.374
.18935E+09	146.046	141.370	145.504	141.261	147.298	141.880
.22090E+09	149.572	145.044	149.037	144.931	150.797	145.543
.25246E+09	152.802	148.396	152.289	148.294	153.998	148.882
.28402E+09	154.999	150.749	154.501	150.649	156.163	151.224
.31558E+09	156.882	152.750	156.398	152.654	158.017	153.214
.63115E+09	170.581	167.291	170.181	167.205	171.495	167.658
.94673E+09	179.559	176.834	179.223	176.761	180.323	177.139
.12623E+10	182.948	180.642	182.662	180.578	183.600	180.902
.15779E+10	184.165	182.149	183.913	182.092	184.736	182.376
.18935E+10	184.383	182.583	184.159	182.533	184.891	182.784
.22090E+10	183.916	182.283	183.710	182.235	184.380	182.468
.25246E+10	182.681	181.197	182.495	181.155	183.102	181.365
.28402E+10	181.561	180.184	181.386	180.143	181.950	180.338
.31558E+10	180.482	179.194	180.318	179.156	180.847	179.340
.63115E+10	174.139	173.328	174.033	173.302	174.367	173.418
.94673E+10	169.068	168.416	168.983	168.395	169.252	168.490
.12623E+11	166.373	165.817	166.299	165.798	166.529	165.879
.15779E+11	164.631	164.145	164.565	164.126	164.769	164.200
.18935E+11	162.613	162.187	162.553	162.169	162.735	162.236
.22090E+11	160.308	159.925	160.254	159.910	160.416	159.969
.25246E+11	157.819	157.471	157.771	157.457	157.916	157.510
.28402E+11	155.429	155.108	155.386	155.096	155.519	155.145
.31558E+11	153.274	152.974	153.234	152.963	153.356	153.006

 * Waste Package Inside Shell Temperatures *

 smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 71954.090 TIME= 16:12:08
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 992 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1142 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 957 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	8 TEMP	smidside	26.14	.1000E-05	184.6	.1893E+10
3 NSOL	992 TEMP	swpeside	26.14	.1000E-05	182.8	.1893E+10
4 NSOL	38 TEMP	smidtop	26.13	.1000E-05	184.4	.1893E+10
5 NSOL	1142 TEMP	swpetop	26.14	.1000E-05	182.7	.1893E+10
6 NSOL	2 TEMP	smidbot	26.14	.1000E-05	185.1	.1893E+10
7 NSOL	957 TEMP	swpebot	26.14	.1000E-05	183.0	.1893E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:09 MAR 30, 1995 CP= 71955.510
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	992 TEMP swpeside	38 TEMP smidtop	1142 TEMP swpetop	2 TEMP smidbot	957 TEMP swpebot
.10000E-05	26.1385	26.1387	26.1335	26.1352	26.1426	26.1415
.20000E-05	58.3378	52.8695	58.4149	53.0606	58.2336	52.7425
31.558	58.3378	52.8695	58.4149	53.0606	58.2337	52.7425
.31558E+07	83.0550	76.2778	82.3492	76.1309	84.5384	76.8560
.63116E+07	90.2553	83.6565	89.5563	83.5103	91.7568	84.2511
.94673E+07	95.0228	88.5625	94.3336	88.4194	96.5179	89.1578
.12623E+08	98.7107	92.3588	98.0298	92.2189	100.195	92.9510
.15779E+08	101.737	95.4764	101.065	95.3392	103.217	96.0693
.18935E+08	104.314	98.1319	103.648	97.9967	105.784	98.7213
.22090E+08	106.573	100.461	105.913	100.328	108.038	101.050
.25246E+08	108.599	102.550	107.943	102.417	110.054	103.134
.28402E+08	110.440	104.449	109.789	104.317	111.889	105.032
.31558E+08	112.139	106.202	111.492	106.071	113.580	106.782
.63115E+08	123.658	118.127	123.023	117.985	125.060	118.701
.94673E+08	131.044	125.767	130.429	125.630	132.390	126.315
.12623E+09	137.062	131.998	136.477	131.872	138.348	132.516
.15779E+09	142.206	137.338	141.645	137.221	143.450	137.835
.18935E+09	146.545	141.845	146.007	141.734	147.757	142.331
.22090E+09	150.064	145.510	149.532	145.395	151.250	145.986
.25246E+09	153.288	148.854	152.777	148.750	154.445	149.318
.28402E+09	155.473	151.195	154.978	151.093	156.598	151.648
.31558E+09	157.346	153.186	156.865	153.088	158.444	153.629
.63115E+09	170.974	167.655	170.576	167.568	171.857	168.006
.94673E+09	179.897	177.145	179.564	177.072	180.637	177.437
.12623E+10	183.239	180.908	182.955	180.845	183.870	181.157
.15779E+10	184.420	182.382	184.171	182.326	184.972	182.600
.18935E+10	184.611	182.792	184.389	182.742	185.103	182.985

.22090E+10	184.124	182.472	183.919	182.425	184.572	182.649
.25246E+10	182.869	181.368	182.683	181.326	183.275	181.528
.28402E+10	181.733	180.342	181.561	180.302	182.110	180.490
.31558E+10	180.643	179.342	180.481	179.304	180.995	179.481
.63115E+10	174.237	173.418	174.133	173.393	174.458	173.505
.94673E+10	169.146	168.488	169.061	168.467	169.323	168.558
.12623E+11	166.438	165.878	166.365	165.859	166.589	165.937
.15779E+11	164.688	164.197	164.622	164.179	164.821	164.250
.18935E+11	162.662	162.233	162.603	162.215	162.780	162.280
.22090E+11	160.351	159.966	160.298	159.951	160.456	160.008
.25246E+11	157.858	157.507	157.810	157.494	157.952	157.545
.28402E+11	155.465	155.142	155.422	155.130	155.552	155.177
.31558E+11	153.307	153.005	153.267	152.994	153.387	153.036

 * Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 71955.780 TIME= 16:12:09
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 962 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1683 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2710 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2698 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	1 TEMP	wmidcent	26.14	.1000E-05	213.9	.9467E+09
3 NSOL	962 TEMP	shellcnt	26.14	.1000E-05	184.3	.1893E+10
4 NSOL	1683 TEMP	wwpecent	26.14	.1000E-05	184.1	.1893E+10
5 NSOL	147 TEMP	imidbot	26.16	.2000E-05	175.4	.2209E+10
6 NSOL	2710 TEMP	iwpebot	26.16	.2000E-05	174.7	.2209E+10
7 NSOL	2698 TEMP	idfebot	26.16	.2000E-05	174.3	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:11 MAR 30, 1995 CP= 71957.200
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	962 TEMP shellcnt	1683 TEMP wwpecent	147 TEMP imidbot	2710 TEMP iwpebot	2698 TEMP idfebot
.10000E-05	26.1383	26.1386	26.1387	26.1697	26.1698	26.1697
.20000E-05	114.634	57.0367	56.5981	26.1607	26.1607	26.1607
31.558	114.634	57.0368	56.5981	26.1607	26.1607	26.1607
.31558E+07	138.729	80.2378	79.7921	48.7312	45.1162	42.8834

.63116E+07	146.024	87.5989	87.1554	57.1906	53.6729	51.4709
.94673E+07	150.765	92.4934	92.0501	62.7872	59.3898	57.2681
.12623E+08	154.400	96.2859	95.8401	67.1117	63.8119	61.7566
.15779E+08	157.340	99.3867	98.9438	70.6620	67.4422	65.4413
.18935E+08	159.827	102.037	101.593	73.6839	70.5314	68.5757
.22090E+08	161.984	104.351	103.909	76.3262	73.2317	71.3149
.25246E+08	163.919	106.434	105.990	78.6876	75.6438	73.7609
.28402E+08	165.653	108.318	107.877	80.8320	77.8340	75.9817
.31558E+08	167.257	110.065	109.623	82.8064	79.8499	78.0252
.63115E+08	177.759	121.898	121.463	96.4444	93.9244	92.3113
.94673E+08	184.159	129.448	129.021	105.018	102.552	101.055
.12623E+09	189.245	135.602	135.180	111.897	109.538	108.102
.15779E+09	193.515	140.870	140.455	117.867	115.565	114.154
.18935E+09	197.014	145.307	144.900	123.016	120.836	119.514
.22090E+09	199.740	148.913	148.510	127.207	125.137	123.881
.25246E+09	202.319	152.209	151.810	130.942	128.947	127.741
.28402E+09	203.228	154.455	154.069	133.921	132.006	130.850
.31558E+09	204.162	156.384	156.002	136.367	134.519	133.404
.63115E+09	210.508	170.327	170.005	153.820	152.392	151.537
.94673E+09	213.937	179.436	179.155	165.471	164.311	163.619
.12623E+10	212.478	182.869	182.629	170.962	169.989	169.409
.15779E+10	210.118	184.104	183.893	173.666	172.819	172.315
.18935E+10	207.587	184.333	184.143	174.996	174.243	173.795
.22090E+10	204.936	183.865	183.695	175.424	174.740	174.334
.25246E+10	201.679	182.628	182.475	174.973	174.353	173.984
.28402E+10	199.107	181.510	181.366	174.431	173.856	173.513
.31558E+10	196.813	180.426	180.294	173.830	173.291	172.971
.63115E+10	184.156	174.088	174.006	170.002	169.662	169.459
.94673E+10	176.947	169.013	168.950	165.775	165.500	165.337
.12623E+11	173.011	166.324	166.269	163.587	163.352	163.212
.15779E+11	170.404	164.586	164.538	162.212	162.006	161.883
.18935E+11	167.627	162.567	162.528	160.508	160.327	160.219
.22090E+11	164.760	160.267	160.230	158.428	158.265	158.168
.25246E+11	161.827	157.778	157.745	156.107	155.959	155.870
.28402E+11	159.088	155.386	155.358	153.848	153.711	153.629
.31558E+11	156.662	153.235	153.207	151.798	151.669	151.592

 * Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 71957.470 TIME= 16:12:11
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2716 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2702 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2751 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2741 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
 VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2 NSOL	151 TEMP	imidcent	26.14	.2000E-05	181.8	.1893E+10
3 NSOL	2716 TEMP	iwpecent	26.14	.2000E-05	180.2	.1893E+10

4 NSOL	2702 TEMP	idfecent	26.14	.2000E-05	179.2	.2209E+10
5 NSOL	157 TEMP	imidedge	26.14	.2000E-05	179.8	.1893E+10
6 NSOL	2751 TEMP	iwpeedge	26.14	.2000E-05	178.6	.2209E+10
7 NSOL	2741 TEMP	idfeedge	26.14	.2000E-05	178.2	.2209E+10

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:13 MAR 30, 1995 CP= 71958.880
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2716 TEMP iwpecent	2702 TEMP idfecent	157 TEMP imidedge	2751 TEMP iwpeedge	2741 TEMP idfeedge
.10000E-05	26.1479	26.1476	26.1466	26.1515	26.1538	26.1544
.20000E-05	26.1380	26.1380	26.1380	26.1380	26.1380	26.1380
31.558	26.1475	26.1425	26.1403	26.1407	26.1393	26.1388
.31558E+07	66.9219	59.1865	54.2877	58.0077	52.2310	49.6559
.63116E+07	75.2405	67.8791	63.2428	66.6231	61.0187	58.5366
.94673E+07	80.7071	73.6056	69.1568	72.3276	66.8842	64.4899
.12623E+08	84.9117	78.0078	73.7006	76.7258	71.4111	69.0857
.15779E+08	88.3430	81.6023	77.4103	80.3248	75.1182	72.8498
.18935E+08	91.2619	84.6569	80.5604	83.3874	78.2726	76.0521
.22090E+08	93.8090	87.3223	83.3084	86.0631	81.0294	78.8508
.25246E+08	96.0898	89.7059	85.7637	88.4579	83.4955	81.3536
.28402E+08	98.1566	91.8667	87.9896	90.6306	85.7341	83.6257
.31558E+08	100.063	93.8577	90.0392	92.6336	87.7969	85.7188
.63115E+08	112.969	107.580	103.966	106.189	101.828	99.9832
.94673E+08	121.163	115.908	112.728	114.837	110.707	108.976
.12623E+09	127.789	122.811	119.816	121.829	117.885	116.228
.15779E+09	133.447	128.707	125.867	127.775	124.009	122.444
.18935E+09	138.221	133.695	130.994	132.788	129.184	127.694
.22090E+09	142.099	137.747	135.157	136.867	133.403	131.977
.25246E+09	145.611	141.408	138.913	140.550	137.197	135.820
.28402E+09	148.128	144.096	141.707	143.268	140.050	138.732
.31558E+09	150.252	146.350	144.042	145.547	142.431	141.158
.63115E+09	165.543	162.518	160.748	161.895	159.474	158.498
.94673E+09	175.510	173.048	171.617	172.539	170.564	169.775
.12623E+10	179.562	177.495	176.298	177.068	175.411	174.751
.15779E+10	181.218	179.419	178.379	179.047	177.606	177.033
.18935E+10	181.756	180.153	179.228	179.821	178.538	178.028
.22090E+10	181.532	180.079	179.240	179.779	178.618	178.157
.25246E+10	180.508	179.188	178.426	178.915	177.861	177.442
.28402E+10	179.540	178.315	177.608	178.063	177.086	176.698
.31558E+10	178.587	177.440	176.778	177.205	176.292	175.929
.63115E+10	172.927	172.202	171.783	172.056	171.482	171.254
.94673E+10	168.080	167.494	167.155	167.377	166.916	166.731
.12623E+11	165.526	165.026	164.736	164.927	164.534	164.376
.15779E+11	163.888	163.449	163.194	163.363	163.019	162.882
.18935E+11	161.958	161.572	161.348	161.498	161.197	161.076
.22090E+11	159.717	159.371	159.169	159.304	159.034	158.926
.25246E+11	157.276	156.960	156.776	156.899	156.653	156.554
.28402E+11	154.923	154.631	154.460	154.574	154.346	154.254
.31558E+11	152.798	152.524	152.364	152.470	152.257	152.171

* Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 71959.160 TIME= 16:12:13
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2814 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2786 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 2937 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 2915 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	180.4	.1893E+10
3	NSOL	2814 TEMP	dwpeside	26.14	.2000E-05	179.3	.2209E+10
4	NSOL	2786 TEMP	ddfeside	26.14	.2000E-05	178.9	.2209E+10
5	NSOL	229 TEMP	dmidtop	26.12	.1000E-05	179.9	.1893E+10
6	NSOL	2937 TEMP	dwpetop	26.12	.1000E-05	178.9	.2209E+10
7	NSOL	2915 TEMP	ddfetop	26.12	.1000E-05	178.6	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:14 MAR 30, 1995 CP= 71960.570
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2814 TEMP dwpeside	2786 TEMP ddfeside	229 TEMP dmidtop	2937 TEMP dwpetop	2915 TEMP ddfetop
.10000E-05	26.1380	26.1389	26.1391	26.1238	26.1200	26.1188
.20000E-05	26.1380	26.1380	26.1380	26.1380	26.1380	26.1380
31.558	26.1415	26.1397	26.1391	26.1411	26.1396	26.1391
.31558E+07	59.8546	54.1070	51.8060	58.1768	53.2809	51.3481
.63116E+07	68.4968	62.9657	60.7653	66.8464	62.1394	60.2938
.94673E+07	74.1965	68.8449	66.7282	72.5894	68.0397	66.2665
.12623E+08	78.5808	73.3686	71.3163	77.0138	72.5878	70.8708
.15779E+08	82.1640	77.0680	75.0688	80.6297	76.3059	74.6348
.18935E+08	85.2123	80.2153	78.2608	83.7032	79.4645	77.8313
.22090E+08	87.8755	82.9665	81.0513	86.3857	82.2204	80.6201
.25246E+08	90.2599	85.4292	83.5486	88.7845	84.6828	83.1107
.28402E+08	92.4233	87.6651	85.8165	90.9594	86.9154	85.3688
.31558E+08	94.4183	89.7265	87.9068	92.9633	88.9710	87.4474
.63115E+08	107.847	103.637	102.034	106.446	102.832	101.486
.94673E+08	116.468	112.507	111.002	115.078	111.676	110.404
.12623E+09	123.424	119.683	118.271	122.110	118.853	117.651
.15779E+09	129.318	125.787	124.457	128.065	124.987	123.848
.18935E+09	134.278	130.901	129.629	133.095	130.144	129.058
.22090E+09	138.311	135.075	133.861	137.139	134.298	133.257
.25246E+09	141.959	138.829	137.658	140.847	138.116	137.116
.28402E+09	144.619	141.616	140.495	143.548	140.928	139.971
.31558E+09	146.855	143.948	142.865	145.822	143.289	142.366
.63115E+09	162.984	160.770	159.952	162.110	160.131	159.420
.94673E+09	173.446	171.654	170.996	172.718	171.106	170.531
.12623E+10	177.834	176.335	175.786	177.216	175.862	175.381
.15779E+10	179.717	178.415	177.938	179.176	177.999	177.581
.18935E+10	180.421	179.262	178.838	179.940	178.892	178.521
.22090E+10	180.319	179.269	178.886	179.879	178.927	178.591

.25246E+10	179.408	178.455	178.106	179.007	178.143	177.837
.28402E+10	178.518	177.634	177.311	178.145	177.343	177.059
.31558E+10	177.630	176.803	176.501	177.279	176.529	176.264
.63115E+10	172.320	171.800	171.610	172.095	171.620	171.453
.94673E+10	167.588	167.168	167.014	167.405	167.023	166.887
.12623E+11	165.104	164.746	164.614	164.947	164.620	164.504
.15779E+11	163.515	163.201	163.085	163.374	163.086	162.984
.18935E+11	161.629	161.353	161.252	161.502	161.249	161.158
.22090E+11	159.421	159.174	159.083	159.308	159.080	158.999
.25246E+11	157.007	156.781	156.698	156.904	156.697	156.623
.28402E+11	154.674	154.465	154.388	154.581	154.389	154.320
.31558E+11	152.566	152.370	152.297	152.478	152.299	152.235

* 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 71960.840 TIME= 16:12:15

NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2776 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 2905 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2774 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	167 TEMP	1midside	26.14	.2000E-05	174.2 .2209E+10
3	NSOL	2776 TEMP	1dfeside	26.14	.2000E-05	173.5 .2209E+10
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	173.1 .2209E+10
5	NSOL	2905 TEMP	1dfetop	26.09	.1000E-05	172.5 .2209E+10
6	NSOL	165 TEMP	1midbot	26.18	.2000E-05	170.4 .2525E+10
7	NSOL	2774 TEMP	1dfebot	26.18	.2000E-05	169.9 .2525E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:16 MAR 30, 1995 CP= 71962.250
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2776 TEMP 1dfeside	219 TEMP 1midtop	2905 TEMP 1dfetop	165 TEMP 1midbot	2774 TEMP 1dfebot
.10000E-05	26.1395	26.1399	26.0968	26.0950	26.1903	26.1905
.20000E-05	26.1393	26.1393	26.1083	26.1083	26.1823	26.1823
31.558	26.1393	26.1393	26.1083	26.1083	26.1823	26.1823
.31558E+07	42.6750	39.3447	41.9157	39.0757	37.4836	35.0644
.63116E+07	50.7618	47.4110	49.9223	47.0692	44.9511	42.4076

.94673E+07	56.2910	53.0391	55.4624	52.6957	50.2091	47.7328
.12623E+08	60.5965	57.4341	59.7991	57.1119	54.3705	51.9652
.15779E+08	64.1557	61.0685	63.3792	60.7584	57.8334	55.4886
.18935E+08	67.2088	64.1857	66.4352	63.8702	60.8052	58.5115
.22090E+08	69.9002	66.9332	69.1128	66.5957	63.4187	61.1690
.25246E+08	72.3226	69.4054	71.5082	69.0328	65.7622	63.5508
.28402E+08	74.5372	71.6655	73.6867	71.2486	67.8977	65.7208
.31558E+08	76.5866	73.7566	75.6939	73.2896	69.8679	67.7222
.63115E+08	90.9224	88.4950	89.6369	87.5634	83.9702	82.1163
.94673E+08	99.9828	97.6310	98.4209	96.4767	92.8973	91.1731
.12623E+09	107.159	104.894	105.548	103.601	99.7723	98.1028
.15779E+09	113.288	111.130	111.661	109.810	105.705	104.048
.18935E+09	118.520	116.454	117.044	115.201	110.948	109.337
.22090E+09	122.868	120.921	121.208	119.485	115.320	113.809
.25246E+09	126.712	124.832	125.222	123.595	119.206	117.755
.28402E+09	129.769	127.965	128.312	126.752	122.533	121.130
.31558E+09	132.293	130.553	130.900	129.402	125.216	123.877
.63115E+09	151.076	149.753	149.301	148.141	144.260	143.236
.94673E+09	163.302	162.233	161.647	160.705	157.217	156.386
.12623E+10	169.161	168.266	167.676	166.887	163.862	163.165
.15779E+10	172.110	171.333	170.780	170.094	167.419	166.813
.18935E+10	173.626	172.935	172.442	171.831	169.401	168.862
.22090E+10	174.167	173.542	173.056	172.502	170.368	169.880
.25246E+10	173.849	173.281	172.838	172.336	170.391	169.948
.28402E+10	173.385	172.858	172.437	171.970	170.204	169.792
.31558E+10	172.850	172.357	171.959	171.522	169.896	169.511
.63115E+10	169.388	169.078	168.802	168.526	167.587	167.344
.94673E+10	165.274	165.024	164.810	164.587	163.880	163.684
.12623E+11	163.153	162.939	162.750	162.559	161.995	161.828
.15779E+11	161.817	161.630	161.446	161.278	160.839	160.692
.18935E+11	160.153	159.989	159.813	159.666	159.323	159.194
.22090E+11	158.111	157.963	157.806	157.673	157.374	157.258
.25246E+11	155.825	155.690	155.557	155.436	155.153	155.047
.28402E+11	153.594	153.469	153.355	153.244	152.972	152.874
.31558E+11	151.564	151.447	151.347	151.242	150.982	150.890

 * 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 71962.520 TIME= 16:12:16
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 3293 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 3465 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3290 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	167.3	.2840E+10
3	NSOL	3293 TEMP	3dfeside	26.14	.1000E-05	167.2	.2840E+10
4	NSOL	309 TEMP	3midtop	26.05	.1000E-05	164.7	.3156E+10

5 NSOL	3465 TEMP	3dfetop	26.05	.1000E-05	164.6	.3156E+10
6 NSOL	276 TEMP	3midbot	26.22	.2000E-05	163.7	.6312E+10
7 NSOL	3290 TEMP	3dfebot	26.22	.2000E-05	163.7	.6312E+10

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:18 MAR 30, 1995 CP= 71963.940
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3293 TEMP 3dfeside	309 TEMP 3midtop	3465 TEMP 3dfetop	276 TEMP 3midbot	3290 TEMP 3dfebot
.10000E-05	26.1405	26.1405	26.0538	26.0535	26.2301	26.2301
.20000E-05	26.1406	26.1406	26.0623	26.0623	26.2238	26.2238
31.558	26.1406	26.1406	26.0623	26.0623	26.2238	26.2238
.31558E+07	29.0937	28.6650	28.6778	28.3378	27.9700	27.7030
.63116E+07	33.9922	33.3889	33.3500	32.8589	31.9273	31.4815
.94673E+07	38.1326	37.5208	37.4517	36.9503	35.6352	35.1700
.12623E+08	41.6403	41.0423	40.9537	40.4634	38.8868	38.4301
.15779E+08	44.7017	44.1182	43.9834	43.5055	41.7443	41.2988
.18935E+08	47.4388	46.8681	46.6498	46.1827	44.2856	43.8502
.22090E+08	49.9316	49.3720	49.0366	48.5788	46.5767	46.1501
.25246E+08	52.2331	51.6834	51.2054	50.7557	48.6695	48.2505
.28402E+08	54.3811	53.8401	53.2027	52.7601	50.6040	50.1917
.31558E+08	56.4011	55.8682	55.0619	54.6258	52.4100	52.0038
.63115E+08	71.7920	71.3371	69.0123	68.6381	66.2100	65.8576
.94673E+08	82.0678	81.6301	78.4832	78.1423	75.6908	75.3686
.12623E+09	89.7134	89.3345	85.8526	85.5066	83.0556	82.7558
.15779E+09	95.7436	95.3420	91.8792	91.5498	89.0760	88.7929
.18935E+09	100.533	100.138	96.9769	96.6940	94.1290	93.8422
.22090E+09	104.888	104.509	100.932	100.620	98.1313	97.8542
.25246E+09	108.651	108.286	105.009	104.702	101.970	101.691
.28402E+09	111.950	111.595	108.437	108.140	105.417	105.144
.31558E+09	114.764	114.428	111.316	111.039	108.321	108.060
.63115E+09	137.035	136.787	132.131	131.923	129.281	129.087
.94673E+09	151.323	151.120	146.680	146.511	144.120	143.964
.12623E+10	158.912	158.745	154.712	154.571	152.518	152.386
.15779E+10	163.117	162.972	159.342	159.219	157.406	157.292
.18935E+10	165.589	165.457	162.215	162.105	160.421	160.319
.22090E+10	166.895	166.778	163.743	163.643	162.250	162.158
.25246E+10	167.278	167.171	164.407	164.317	163.022	162.939
.28402E+10	167.316	167.216	164.631	164.547	163.409	163.332
.31558E+10	167.203	167.111	164.682	164.604	163.573	163.501
.63115E+10	165.926	165.867	164.284	164.235	163.702	163.657
.94673E+10	162.550	162.503	161.259	161.219	160.849	160.812
.12623E+11	160.853	160.813	159.743	159.709	159.453	159.422
.15779E+11	159.817	159.782	158.804	158.774	158.653	158.625
.18935E+11	158.418	158.388	157.498	157.472	157.441	157.416
.22090E+11	156.568	156.540	155.746	155.722	155.701	155.679
.25246E+11	154.435	154.410	153.711	153.689	153.636	153.616
.28402E+11	152.326	152.303	151.679	151.659	151.580	151.562
.31558E+11	150.387	150.365	149.798	149.780	149.686	149.669

 * Upper Rock Layer Interface Temperatures *

surfTCW = center ground surface
 TCwPTn = center TCw and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 771 ITEM= TEMP COMP= NAME= surfTCW

*** WARNING *** CP= 71964.210 TIME= 16:12:18
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 750 ITEM= TEMP COMP= NAME= TCwPTn
 VARIABLE 4 IS AT NODE 693 ITEM= TEMP COMP= NAME= PTnTSw1
 VARIABLE 5 IS AT NODE 528 ITEM= TEMP COMP= NAME= TSw1TSw2
 VARIABLE 6 IS AT NODE 436 ITEM= TEMP COMP= NAME= upmodel
 VARIABLE 7 IS AT NODE 402 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	771 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	750 TEMP	TCwPTn	19.53	.1000E-05	30.58	.3156E+11
4	NSOL	693 TEMP	PTnTSw1	21.24	.1000E-05	55.73	.3156E+11
5	NSOL	528 TEMP	TSw1TSw2	24.25	.1000E-05	107.3	.3156E+11
6	NSOL	436 TEMP	upmodel	25.95	.1000E-05	155.7	.6312E+10
7	NSOL	402 TEMP	middrift	26.14	.1000E-05	162.9	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:19 MAR 30, 1995 CP= 71965.620
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	771 TEMP surfTCw	750 TEMP TCwPTn	693 TEMP PTnTSw1	528 TEMP TSw1TSw2	436 TEMP upmodel	402 TEMP middrift
.10000E-05	18.7000	19.5283	21.2404	24.2521	25.9453	26.1409
.20000E-05	18.7000	19.5290	21.2424	24.2564	25.9515	26.1413
31.558	18.7000	19.5290	21.2424	24.2564	25.9515	26.1413
.31558E+07	18.7000	19.5290	21.2424	24.2564	25.9580	26.1616
.63116E+07	18.7000	19.5290	21.2424	24.2564	26.0728	26.4722
.94673E+07	18.7000	19.5290	21.2424	24.2564	26.4318	27.3276
.12623E+08	18.7000	19.5290	21.2424	24.2564	27.0310	28.6364
.15779E+08	18.7000	19.5290	21.2424	24.2564	27.8015	30.2307
.18935E+08	18.7000	19.5290	21.2424	24.2564	28.6778	31.9823
.22090E+08	18.7000	19.5290	21.2424	24.2564	29.6138	33.8082
.25246E+08	18.7000	19.5290	21.2424	24.2564	30.5805	35.6571
.28402E+08	18.7000	19.5290	21.2424	24.2564	31.5604	37.4976
.31558E+08	18.7000	19.5290	21.2424	24.2564	32.5437	39.3110
.63115E+08	18.7000	19.5290	21.2424	24.2564	41.9507	54.9360
.94673E+08	18.7000	19.5290	21.2424	24.2564	50.1558	66.3181
.12623E+09	18.7000	19.5290	21.2424	24.2564	57.2212	74.9561
.15779E+09	18.7000	19.5290	21.2424	24.2564	63.3477	81.8323
.18935E+09	18.7000	19.5290	21.2424	24.2564	68.7067	87.3749
.22090E+09	18.7000	19.5290	21.2424	24.2566	73.2874	91.6885
.25246E+09	18.7000	19.5290	21.2424	24.2571	77.3740	94.5278
.28402E+09	18.7000	19.5290	21.2424	24.2583	80.8409	96.5851
.31558E+09	18.7000	19.5290	21.2424	24.2606	83.8464	98.9801
.63115E+09	18.7000	19.5290	21.2424	24.5331	103.155	124.573
.94673E+09	18.7000	19.5290	21.2424	25.7141	119.892	140.709
.12623E+10	18.7000	19.5290	21.2426	27.8497	130.953	149.837
.15779E+10	18.7000	19.5290	21.2443	30.6324	138.170	155.152
.18935E+10	18.7000	19.5291	21.2511	33.7677	143.205	158.477
.22090E+10	18.7000	19.5297	21.2693	37.0443	146.343	160.458
.25246E+10	18.7000	19.5313	21.3073	40.3264	148.583	161.462

.28402E+10	18.7000	19.5351	21.3742	43.5293	149.942	161.951
.31558E+10	18.7000	19.5427	21.4779	46.6071	150.977	162.211
.63115E+10	18.7000	20.1768	24.9989	69.1661	155.655	162.869
.94673E+10	18.7000	21.9246	31.2142	81.5540	154.526	160.149
.12623E+11	18.7000	23.9825	37.4149	89.0906	154.040	158.826
.15779E+11	18.7000	25.8158	42.6112	94.1709	153.784	158.055
.18935E+11	18.7000	27.2967	46.7131	98.0248	153.081	156.890
.22090E+11	18.7000	28.4528	49.8949	101.350	151.810	155.209
.25246E+11	18.7000	29.3485	52.3489	103.920	150.186	153.212
.28402E+11	18.7000	30.0389	54.2429	105.869	148.483	151.210
.31558E+11	18.7000	30.5771	55.7296	107.334	146.852	149.353

 * Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP
 TSw2TSw3 = center TSw2 and TSw3 interface
 TSw3CHnv = center TSw3 and CHn1v interface
 CHnvCHnz = center CHn1v and CHn1z interface
 CHnzCHn2 = center CHn1z and CHn2 interface
 CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 71965.890 TIME= 16:12:20
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 612 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 4 IS AT NODE 792 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 5 IS AT NODE 812 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 6 IS AT NODE 831 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 888 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.33	.2000E-05	155.6	.6312E+10
3	NSOL	612 TEMP	TSw2TSw3	27.68	.3156E+07	117.8	.3156E+11
4	NSOL	792 TEMP	TSw3CHnv	28.15	.2000E-05	107.5	.3156E+11
5	NSOL	812 TEMP	CHnvCHnz	28.31	.2000E-05	104.0	.3156E+11
6	NSOL	831 TEMP	CHnzCHn2	31.42	.9467E+08	66.02	.3156E+11
7	NSOL	888 TEMP	CHn2bot	31.86	.2000E-05	62.12	.3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 900-38303 VERSION=HP 9000/7XX 16:12:21 MAR 30, 1995 CP= 71967.310
 FOR SUPPORT CALL SUPPORT PERSON PHONE SUPPORT PHONE FAX SUPPORT FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	612 TEMP TSw2TSw3	792 TEMP TSw3CHnv	812 TEMP CHnvCHnz	831 TEMP CHnzCHn2	888 TEMP CHn2bot
.10000E-05	26.3374	27.6795	28.1509	28.3164	31.4198	31.8644
.20000E-05	26.3327	27.6754	28.1469	28.3125	31.4164	31.8610
.31558E+07	26.3327	27.6754	28.1469	28.3125	31.4164	31.8610
.31558E+07	26.3371	27.6754	28.1469	28.3125	31.4164	31.8610
.63116E+07	26.4272	27.6754	28.1469	28.3125	31.4164	31.8610
.94673E+07	26.7316	27.6754	28.1469	28.3125	31.4164	31.8610

.12623E+08	27.2592	27.6754	28.1469	28.3125	31.4164	31.8610
.15779E+08	27.9521	27.6754	28.1469	28.3125	31.4164	31.8610
.18935E+08	28.7510	27.6754	28.1469	28.3125	31.4164	31.8610
.22090E+08	29.6132	27.6754	28.1469	28.3125	31.4164	31.8610
.25246E+08	30.5109	27.6754	28.1469	28.3125	31.4164	31.8610
.28402E+08	31.4273	27.6754	28.1469	28.3125	31.4164	31.8610
.31558E+08	32.3521	27.6754	28.1469	28.3125	31.4164	31.8610
.63115E+08	41.3780	27.6754	28.1469	28.3125	31.4164	31.8610
.94673E+08	49.4065	27.6754	28.1469	28.3125	31.4164	31.8610
.12623E+09	56.3618	27.6755	28.1469	28.3125	31.4164	31.8610
.15779E+09	62.4124	27.6758	28.1470	28.3125	31.4164	31.8610
.18935E+09	67.7095	27.6772	28.1470	28.3125	31.4164	31.8610
.22090E+09	72.3191	27.6810	28.1471	28.3125	31.4164	31.8610
.25246E+09	76.3402	27.6895	28.1475	28.3126	31.4164	31.8610
.28402E+09	79.8280	27.7056	28.1484	28.3127	31.4164	31.8610
.31558E+09	82.8439	27.7324	28.1503	28.3131	31.4164	31.8610
.63115E+09	101.988	29.0879	28.4040	28.4213	31.4164	31.8610
.94673E+09	118.438	32.4673	29.5271	29.0858	31.4164	31.8610
.12623E+10	129.777	36.9108	31.5702	30.5218	31.4164	31.8610
.15779E+10	137.098	41.7036	34.2403	32.5826	31.4171	31.8612
.18935E+10	142.098	46.4655	37.2578	35.0505	31.4199	31.8619
.22090E+10	145.654	51.0000	40.4184	37.7426	31.4278	31.8643
.25246E+10	147.866	55.2246	43.5877	40.5248	31.4453	31.8702
.28402E+10	149.430	59.1017	46.6805	43.3061	31.4776	31.8825
.31558E+10	150.547	62.6387	49.6487	46.0271	31.5300	31.9044
.63115E+10	155.615	84.6499	71.1227	66.8653	33.6996	33.1981
.94673E+10	154.599	94.9437	82.7640	78.7814	38.1963	36.5203
.12623E+11	154.228	102.455	90.7276	86.9319	43.3167	40.7487
.15779E+11	154.180	108.830	96.6082	92.9857	48.2998	45.1120
.18935E+11	153.592	113.143	100.420	96.4751	52.9109	49.3133
.22090E+11	152.277	115.388	102.861	98.8575	56.9546	53.1399
.25246E+11	150.526	116.612	104.909	101.099	60.4505	56.5331
.28402E+11	148.722	117.323	106.354	102.718	63.4429	59.5134
.31558E+11	147.024	117.751	107.467	104.019	66.0216	62.1178

***** ROUTINE COMPLETED ***** CP = 71967.320

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12x5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 52
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```

*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|               REV. 5.0 A               |               HP 9000/7XX               |
| CP TIME      (sec) = 71974.950          | TIME = 16:12:35          |
| ELAPSED TIME (sec) = 73755.000          | DATE = 03/30/95         |
|-----|
*-----*
  
```

WELCOME TO THE ANSYS PROGRAM

***** ANSYS COMMAND LINE ARGUMENTS *****

JOB NAME = c12b5a
 MEMORY REQUESTED (MB) = 64.0
 BATCH MODE REQUESTED
 start.ans FILE

***** ANSYS DYNAMIC MEMORY ALLOCATION *****

WORK SPACE REQUESTED	=	16777216	64.000	MB	COMMAND LINE
MINIMUM WORK SPACE REQUIRED	=	4718592	18.000	MB	
MINIMUM WORK SPACE RECOMMENDED	=	6702496	25.568	MB	
WORK SPACE OBTAINED	=	16777214	64.000	MB	
BYTES PER WORD	=	4			

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 RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
 ENTER /MENU,ON TO START THE ANSYS MENU SYSTEM
 ENTER HELP FOR GENERAL ANSYS HELP INFORMATION

```

1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 12/23/1994
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c12b5a.inp
7 /COM, *
8 /COM, * 12 PWR WP/MPC (10 cm overpack)
9 /COM, * Average SNF: 22 years old, 42.2 Gwd/MTU burnup
10 /COM, * 5.0 m Diameter Drift with Concrete Invert
11 /COM, * 83 MTU/acre (20.5 kgU/m^2) AML (High Thermal Loading)
12 /COM, * Drift spacing = 22.5 m (11.25 m model half width)
13 /COM, * WP c/c spacing = 11.129 m
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat
16 /COM, * SNF Heat Loads file: snf2242.dat
17 /COM, *
18 /COM, *****
    
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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,12 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.76525,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.647,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,11.129,
42 *SET,WPNUM,12.0,
43 *SET,MODEL,11.25,
44 *SET,OFFST,0.27255,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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```

89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4*6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM, Model is 6 elements wide
      (3+7=10 divisions)
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 3,
378 /COM, Extrude WP 5 elements
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM, 1 element thick steel
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM, Extrude drift 5 elements with smallest
386 /COM, elements at WP mid-length
387 LESIZE, 58,,, 5,3.5,
388 LESIZE, 59,,, 5,3.5,
389 /COM, *****
390 /COM, Set element sizes in rock layers
391 /COM, 3 element thick TCW
392 LESIZE, 24,,, 3,
393 /COM, 3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM, 9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM, 12 elements above and below near field
398 /COM, with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,,12,0.3,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,,12,3,
403 LSEL,ALL,
404 /COM, 3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM, 2 element thick CHn1v
407 LESIZE, 46,,, 2,
408 /COM, 7 element thick CHn1z
409 LESIZE, 49,,, 7,
410 /COM, 12 element thick CHN2 with smaller elements
411 /COM, near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM, Concatenate lines for mapped meshing
417 /COM, (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM, Mesh 2-D areas
426 /COM, (first WP, then invert, DF wall and rock layers)
427 /COM, Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM, Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM, Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSu1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSu3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatenated lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,58,
512 /COM,      Rock around drift
513 /COM,      (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,58,
517 TYPE,1,
518 VDRAG,31,  ,,,,58,
519 TYPE,2,
520 VDRAG,32,  ,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,58,
523 TYPE,1,
524 VDRAG,35,  ,,,,58,
525 TYPE,2,
526 VDRAG,36,  ,,,,58,
527 VMESH,41,
528 /COM,      Mid-drift rock
529 /COM,      (V's 43,44,45,46)
530 VDRAG,37,38,,,,58,
531 TYPE,1,
532 VDRAG,39,  ,,,,58,
533 TYPE,2,
534 VDRAG,40,  ,,,,58,
535 /COM,      Concatenate to mesh volume 45
536 /COM,      (L's 311,312 used and freed up)
537 /COM,      (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,      Extrude rest of TSw2
546 /COM,      (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,      Extrude TSw1
549 /COM,      (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,58,
552 /COM,      Extrude PTn
553 /COM,      (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,58,
556 /COM,      Extrude TCw
557 /COM,      (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,58,
560 /COM,      Extrude TSw3
561 /COM,      (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,58,
564 /COM,      Extrude CHn1v
565 /COM,      (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,58,
568 /COM,      Extrude CHn1z
569 /COM,      (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,58,
572 /COM,      Extrude CHn2
573 /COM,      (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,      *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundary condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TMI100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM,          *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TMI0,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD), 0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0)))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0)))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0)))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0)))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TMI1,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD), 0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0)))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0)))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0)))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0)))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TMI10,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD), 0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0)))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0)))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0)))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0)))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TM1100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0)))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0)))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0)))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0)))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAV,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT , 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT , 1,
980 /WIND,1, -1.0000 , 1.00000 , -1.0000 , 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326 , .88818E-15,
983 /DIST,1, 21.233,
984 /DIST,1,1.25,1
985 /VCON,1, 25.000,
986 /TYPE,1,HIDP,
987 /SHADE,,GOUR,
988 /GLINE,,0,
989 /TITLE,
990 VSEL,S,LOC,Z,0,100
991 ESLV,S
992 /SHOW,meshdrift,grph,0,8,
993 EPLOT
994 /COM,          View model meshing for side cut-away
995 /ANGLE, 1,+90 ,YS,1
996 /DIST,1,0.8,1
997 VSEL,S,LOC,X,-100,0
998 ESLV,S

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999 /SHOW,meshside,grph,0,8,
1000 EPLOT
1001 /COM, *****
1002 /COM, Create color temp. contour plots for WP end view
1003 /COM,
1004 /COM, Set view settings
1005 /RESET
1006 /DEVICE,VECT,OFF
1007 /NUM, 1,
1008 /TRIAD,OFF,
1009 /PNUM,MAT, 1,
1010 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1011 /VIEW,1, -.36934, .15899, -.91559,
1012 /FOC, 1, 2.7776, -.97308, 7.5978,
1013 /DIST,1, 12.182,
1014 /DIST,1,1.5,1
1015 /ANG, 1, 5.1088, ,ZS,
1016 /VCON,1, 25.000,
1017 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1018 /TYPE,,HIDP,
1019 /GLIN,1,-1,
1020 /CVAL,,40,50,60,70,80,90,100,300,
1021 /COM, Select end view of WP
1022 VSEL,S,LOC,Z,0,100,
1023 ESLV,S,
1024 /COM, Select load steps and plot temperatures
1025 SET,3,
1026 /TITLE,
1027 /SHOW,near0, 100.grph,0,8,
1028 PLNSOL,TEMP,
1029 SET,8,
1030 /TITLE,
1031 /SHOW,near05, 100.grph,0,8,
1032 PLNSOL,TEMP,
1033 SET,13,
1034 /TITLE,
1035 /SHOW,near1, 100.grph,0,8,
1036 PLNSOL,TEMP,
1037 SET,17,
1038 /TITLE,
1039 /SHOW,near5, 100.grph,0,8,
1040 PLNSOL,TEMP,
1041 SET,22,
1042 /TITLE,
1043 /SHOW,near10, 100.grph,0,8,
1044 PLNSOL,TEMP,
1045 SET,26,
1046 /TITLE,
1047 /SHOW,near50, 100.grph,0,8,
1048 PLNSOL,TEMP,
1049 SET,31,
1050 /TITLE,
1051 /SHOW,near100, 100.grph,0,8,
1052 PLNSOL,TEMP,
1053 SET,35,
1054 /TITLE,
1055 /SHOW,near500, 100.grph,0,8,
1056 PLNSOL,TEMP,
1057 SET,40,
1058 /TITLE,
1059 /SHOW,near1k, 100.grph,0,8,
1060 PLNSOL,TEMP,
1061 /COM, View mesh for closeup end of model
1062 /GLINE,,0,
1063 /TYPE,,HIDP,
1064 /SHADE,,GOUR,
1065 /SHOW,meshnear,grph,0,8,
1066 EPLOT
1067 /COM, *****
1068 /COM, Create color temp. contour plots for WP corner view

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1069 /COM,
1070 /COM,          Set view settings
1071 /RESET
1072 /DEVICE,VECT,OFF,
1073 /NUM, 1,
1074 /TRIAD,OFF,
1075 /PNUM,MAT , 1,
1076 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1077 /VIEW,1, .64865, .48519E-01, -.75954,
1078 /FOC, 1, -.21216E-01, .39180, 2.3739,
1079 /DIST,1, 7.6223,
1080 /DIST,1,1.5,1
1081 /ANG, 1, -.52088,ZS,
1082 /VCON,1, 25.000,
1083 /LIG,1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1084 /TYPE,1,HIDP,
1085 /GLIN,1,-1,
1086 /CVAL,,40,50,60,70,80,90,100,300,
1087 /COM,          Select corner view of WP
1088 VSEL,S,LOC,X,-100,0,
1089 VSEL,R,LOC,Z,0,100,
1090 ESLV,S,
1091 /COM,          Select load steps and plot temperatures
1092 SET,3,
1093 /TITLE,
1094 /SHOW,corn0 ,100.grph,0,8,
1095 PLNSOL,TEMP,
1096 SET,8,
1097 /TITLE,
1098 /SHOW,corn05 ,100.grph,0,8,
1099 PLNSOL,TEMP,
1100 SET,13,
1101 /TITLE,
1102 /SHOW,corn1 ,100.grph,0,8,
1103 PLNSOL,TEMP,
1104 SET,17,
1105 /TITLE,
1106 /SHOW,corn5 ,100.grph,0,8,
1107 PLNSOL,TEMP,
1108 SET,22,
1109 /TITLE,
1110 /SHOW,corn10 ,100.grph,0,8,
1111 PLNSOL,TEMP,
1112 SET,26,
1113 /TITLE,
1114 /SHOW,corn50 ,100.grph,0,8,
1115 PLNSOL,TEMP,
1116 SET,31,
1117 /TITLE,
1118 /SHOW,corn100 ,100.grph,0,8,
1119 PLNSOL,TEMP,
1120 SET,35,
1121 /TITLE,
1122 /SHOW,corn500 ,100.grph,0,8,
1123 PLNSOL,TEMP,
1124 SET,40,
1125 /TITLE,
1126 /SHOW,corn1k ,100.grph,0,8,
1127 PLNSOL,TEMP,
1128 /COM,          View mesh for corner of model
1129 /GLINE,,0,
1130 /TYPE,,HIDP,
1131 /SHADE,,GOUR,
1132 /SHOW,meshcorn,grph,0,8,
1133 EPLOT
1134 FINISH
1135 /COM, *****
1136 /COM,          Print time/temperature output at specific locations
1137 /POST26,
1138 /COM,

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1139 /COM, *****
1140 /COM, *      Waste Package Surface Temperatures      *
1141 /COM, *****
1142 /COM,      wmidside = midlength side surface
1143 /COM,      wwpeside = end of WP side surface
1144 /COM,      wmidtop = midlength top surface
1145 /COM,      wwpetop = end of WP top surface
1146 /COM,      wmidbot = midlength bottom surface
1147 /COM,      wwpebot = end of WP bottom surface
1148 NSOL,2,(NODE( WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1149 NSOL,3,(NODE( WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpeside,
1150 NSOL,4,(NODE(      0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1151 NSOL,5,(NODE(      0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1152 NSOL,6,(NODE(      0.0,(0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1153 NSOL,7,(NODE(      0.0,(0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1154 PRVAR,2,3,4,5,6,7,
1155 /COM,
1156 /COM, *****
1157 /COM, *      Waste Package Inside Shell Temperatures      *
1158 /COM, *****
1159 /COM,      smidside = midlength side inside shell
1160 /COM,      swpeside = end of WP side inside shell
1161 /COM,      smidtop = midlength top inside shell
1162 /COM,      swpetop = end of WP top inside shell
1163 /COM,      smidbot = midlength bottom inside shell
1164 /COM,      swpebot = end of WP bottom inside shell
1165 NSOL,2,(NODE((WPRAD-WPWLL),      0.0,      0.0)),TEMP,,smidside,
1166 NSOL,3,(NODE((WPRAD-WPWLL),      0.0,(WPLEN/2.0-WPWLL))),TEMP,,swpeside,
1167 NSOL,4,(NODE(0.0,      (WPRAD-WPWLL),      0.0)),TEMP,,smidtop,
1168 NSOL,5,(NODE(0.0,      (WPRAD-WPWLL),(WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1169 NSOL,6,(NODE(0.0,(0.0-WPRAD+WPWLL),      0.0)),TEMP,,smidbot,
1170 NSOL,7,(NODE(0.0,(0.0-WPRAD+WPWLL),(WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1171 PRVAR,2,3,4,5,6,7,
1172 /COM,
1173 /COM, *****
1174 /COM, *      Waste Package Center and Bottom of Invert      *
1175 /COM, *****
1176 /COM,      wmidcent = midlength center of WP
1177 /COM,      shellcnt = end of WP center inside shell
1178 /COM,      wwpecent = end of WP center surface
1179 /COM,      imidbot = midlength bottom of invert
1180 /COM,      iwpebot = end of WP bottom of invert
1181 /COM,      idfebot = end of drift bottom of invert
1182 NSOL,2,(NODE(      0.0,      0.0,      0.0)),TEMP,,wmidcent,
1183 NSOL,3,(NODE(      0.0,      0.0,(WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1184 NSOL,4,(NODE(      0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1185 NSOL,5,(NODE(      0.0,(DFCENT-DFRAD),      0.0)),TEMP,,imidbot,
1186 NSOL,6,(NODE(      0.0,(DFCENT-DFRAD),      (WPLEN/2.0))),TEMP,,iwpebot,
1187 NSOL,7,(NODE(      0.0,(DFCENT-DFRAD),      (WPSPC/2.0))),TEMP,,idfebot,
1188 PRVAR,2,3,4,5,6,7,
1189 /COM,
1190 /COM, *****
1191 /COM, *      Surface Temperature of Invert      *
1192 /COM, *****
1193 /COM,      imidcent = midlength center of invert surface
1194 /COM,      iwpecent = end of WP center of invert surface
1195 /COM,      idfecent = end of drift center of invert surface
1196 /COM,      imidedge = midlength corner of invert surface
1197 /COM,      iwpeedge = end of WP corner of invert surface
1198 /COM,      idfeedge = end of drift corner of invert surface
1199 NSOL,2,(NODE(      0.0,      YYY,      0.0)),TEMP,,imidcent,
1200 NSOL,3,(NODE(      0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1201 NSOL,4,(NODE(      0.0,      YYY,      (WPSPC/2.0))),TEMP,,idfecent,
1202 NSOL,5,(NODE(      XXX,      YYY,      0.0)),TEMP,,imidedge,
1203 NSOL,6,(NODE(      XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1204 NSOL,7,(NODE(      XXX,      YYY,      (WPSPC/2.0))),TEMP,,idfeedge,
1205 PRVAR,2,3,4,5,6,7,
1206 /COM,
1207 /COM, *****
1208 /COM, *      Drift Wall Surface Temperatures      *

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1209 /COM, *****
1210 /COM,      dmidside = midlength drift wall side surface
1211 /COM,      dwpside = end of WP drift wall side surface
1212 /COM,      ddfeside = end of drift side surface
1213 /COM,      dmidtopy = midlength drift wall top surface
1214 /COM,      dwpetopy = end of WP drift wall top surface
1215 /COM,      ddfetopy = end of drift top surface
1216 NSOL,2,(NODE( DFRAD,      DFCENT,      0.0)),TEMP,,dmidside,
1217 NSOL,3,(NODE( DFRAD,      DFCENT,      (WPLEN/2.0))),TEMP,,dwpside,
1218 NSOL,4,(NODE( DFRAD,      DFCENT,      (WSPC/2.0))),TEMP,,ddfeside,
1219 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),      0.0)),TEMP,, dmidtopy,
1220 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),      (WPLEN/2.0))),TEMP,, dwpetopy,
1221 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),      (WSPC/2.0))),TEMP,, ddfetopy,
1222 PRVAR,2,3,4,5,6,7,
1223 /COM, *****
1224 /COM, *      1 meter Rock Temperatures      *
1225 /COM, *****
1226 /COM,      1midside = midlength 1 meter from drift side
1227 /COM,      1dfeside = end of drift 1 meter from drift side
1228 /COM,      1midtopy = midlength 1 meter above drift top
1229 /COM,      1dfetopy = end of drift 1 meter above drift top
1230 /COM,      1midbot = midlength 1 meter below drift cut
1231 /COM,      1dfebot = end of drift 1 meter below drift cut
1232 NSOL,2,(NODE((DFRAD+1),      DFCENT,      0.0)),TEMP,,1midside,
1233 NSOL,3,(NODE((DFRAD+1),      DFCENT,      (WSPC/2.0))),TEMP,,1dfeside,
1234 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),      0.0)),TEMP,, 1midtopy,
1235 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),      (WSPC/2.0))),TEMP,, 1dfetopy,
1236 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),      0.0)),TEMP,, 1midbot,
1237 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),      (WSPC/2.0))),TEMP,, 1dfebot,
1238 PRVAR,2,3,4,5,6,7,
1239 /COM, *****
1240 /COM, *      3 meter Rock Temperatures      *
1241 /COM, *****
1242 /COM,      3midside = midlength 3 meter from drift side
1243 /COM,      3dfeside = end of drift 3 meter from drift side
1244 /COM,      3midtopy = midlength 3 meter above drift top
1245 /COM,      3dfetopy = end of drift 3 meter above drift top
1246 /COM,      3midbot = midlength 3 meter below drift cut
1247 /COM,      3dfebot = end of drift 3 meter below drift cut
1248 NSOL,2,(NODE((DFRAD+3),      DFCENT,      0.0)),TEMP,,3midside,
1249 NSOL,3,(NODE((DFRAD+3),      DFCENT,      (WSPC/2.0))),TEMP,,3dfeside,
1250 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),      0.0)),TEMP,, 3midtopy,
1251 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),      (WSPC/2.0))),TEMP,, 3dfetopy,
1252 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),      0.0)),TEMP,, 3midbot,
1253 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),      (WSPC/2.0))),TEMP,, 3dfebot,
1254 PRVAR,2,3,4,5,6,7,
1255 /COM, *****
1256 /COM, *      Upper Rock Layer Interface Temperatures      *
1257 /COM, *****
1258 /COM,      surfTCw = center ground surface
1259 /COM,      TCwPTn = center TCw and PTn interface
1260 /COM,      PTnTSw1 = center PTn and TSw1 interface
1261 /COM,      TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,      upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,      middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,      GSURF,      0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0,      (GSURF-36.00),      0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0,      (GSURF-74.10),      0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0,      (GSURF-204.2),      0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),      0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,      DFCENT,      0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM, *****
1272 /COM, *      Lower Rock Layer Interface Temperatures      *
1273 /COM, *****
1274 /COM,      dwnmodel = center TSw2 1/2 drift spacing below WP

```

```

1279 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1280 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1281 /COM,          CHnvCHnz = center CHn1v and CHn1z interface
1282 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1283 /COM,          CHn2bot = center actual lower contact of CHn2
1284 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1285 NSOL,5,(NODE( 0.0,(GSURF-393.5), 0.0)),TEMP,,TSw2TSw3,
1286 NSOL,6,(NODE( 0.0,(GSURF-409.3), 0.0)),TEMP,,TSw3CHnv,
1287 NSOL,7,(NODE( 0.0,(GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1288 NSOL,7,(NODE( 0.0,(GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1289 NSOL,7,(NODE( 0.0,(GSURF-535.2), 0.0)),TEMP,,CHn2bot,
1290 PRVAR,2,3,4,5,6,7,
1291 FINISH
1292 /EXIT,
1293 /COM,          *****
1294 /COM,          End of batch input file
1295 /COM,          *****
1296 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,

```

```

ABBREVIATION= X11      /show,x11,
ABBREVIATION= VEC      /show,,1,
ABBREVIATION= RAS      /show,,0,
ABBREVIATION= ON       /menu,on,
ABBREVIATION= OFF      /menu,off,
ABBREVIATION= NVP      /config,nvpag,512,
ABBREVIATION= QUIT     /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

```

VIEW CONE ANGLE FOR WINDOW 1 25.00

```

*****
END start.ans
*****

```

To start ANSYS menu:

```

type:  x3d  for console
       x11  for X-term

```

type: on

```

*****
*****
ANSYS REVISION  5.0A                      12/23/1994
3-D Model of Waste Package Drift Emplacement  R.Bahney III
*****
*
* File name: c12b5a.inp
*
* 12 PWR WP/MPC (10 cm overpack)
* Average SNF: 22 years old, 42.2 Gwd/MTU burnup
* 5.0 m Diameter Drift with Concrete Invert
* 83 MTU/acre (20.5 kgU/m^2) AML (High Thermal Loading)
* Drift spacing = 22.5 m (11.25 m model half width)
* WP c/c spacing = 11.129 m
*
* Material Properties file: Proprep.dat
* SNF Heat Loads file: snf2242.dat
*
*****

```

Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

```

*****

```

TITLE=

12 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

```

LENGTH    = METERS(M)
MASS       = KILOGRAMS(KG)
TIME       = SECONDS(SEC)
TEMPERATURE = CENTIGRADE
CURRENT    = AMPS

```

```

*****

```

Define emplacement parameters

```

WPRAD = radius of waste package (m)
DFRAD = radius of drift (m)
INVRT = height of invert backfill floor (m)
WPLEN = length of waste package (m)
WPWLL = thickness of outer barrier (m)
WPSPC = waste package c/c spacing (m)

```

WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .7652500
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.647000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 11.12900
 PARAMETER WPNUM = 12.00000
 PARAMETER MODEL = 11.25000
 PARAMETER OFFST = .2725500

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1
 PARAMETER GSURF = 308.7726

PARAMETER DFCENT = .2725500
 PARAMETER XXX = 1.734935
 PARAMETER YYY = -1.527450
 PARAMETER WPVOL = 7.573152
 PARAMETER TM_START = 31.55760
 PARAMETER TM10 = 3155760.
 PARAMETER TM11 = .3155760E+08
 PARAMETER TM110 = .3155760E+09
 PARAMETER TM1100 = .3155760E+10
 PARAMETER TM11000 = .3155760E+11
 PARAMETER TME0 = .2840187E+08
 PARAMETER TME1 = .3155763E+08
 PARAMETER TME9 = .2840184E+09
 PARAMETER TME10 = .3155760E+09
 PARAMETER TME90 = .2840184E+10
 PARAMETER TME100 = .3155760E+10
 PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:00:47 JAN 04, 1995 CP= .820
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **
** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCW	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smearred Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **
** Emissivity EMIS **
** Conductivity: KXX (W/m/K) **
** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***
SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C MAT= 4 NUM. POINTS= 8
SLOC= 5 .1046900E+08 .1019840E+08 2006500. 2111400.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 11
SLOC= 9 2191200. 2269200. 2341000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 4
SLOC= 1 1844300. 2031500. 2283100. 4559000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 8
SLOC= 5 4518800. 4480000. 2295300. 2448900.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 11
SLOC= 9 2574000. 2679200. 2770200.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 4
SLOC= 1 2443600. 2555700. 2696000. .3660130E+08

PROPERTY TABLE C MAT= 6 NUM. POINTS= 8
SLOC= 5 .3532630E+08 .3417640E+08 1501300. 1601800.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 11
SLOC= 9 1683600. 1752500. 1812000.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 4
SLOC= 1 2603200. 2664700. 2744700. .3660690E+08

PROPERTY TABLE C MAT= 7 NUM. POINTS= 8
SLOC= 5 .3534400E+08 .3420530E+08 2791400. 2741900.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 11
SLOC= 9 2670700. 1581400. 1632000.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 4
SLOC= 1 2430900. 2538500. 2680250. .2798690E+08

PROPERTY TABLE C MAT= 8 NUM. POINTS= 8
SLOC= 5 .2705530E+08 .2621460E+08 2564400. 2593500.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 11
SLOC= 9 2598500. 1981950. 2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
SLOC= 1 21.11000 37.78000 65.56000
93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
SLOC= 7 176.6700 204.4400 232.2200
260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
SLOC= 13 343.3300 371.1100 398.8900
426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
 SLOC= 19 510.0000 537.7800 565.5600
 593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

```

PARAMETER ASSY(7,1) =    480.8000    479.8000    478.9000    477.9000
                        477.0000    467.8000
PARAMETER ASSY(13,1) =   459.2000    451.1000    443.5000    436.2000
                        429.3000    423.7000
PARAMETER ASSY(19,1) =   412.6000    404.5000    341.6000    294.1000
                        252.6000    222.0000
PARAMETER ASSY(25,1) =   198.5000    179.8000    162.5000    150.1000
                        139.7000    85.70000
PARAMETER ASSY(31,1) =    67.40000    56.80000    49.40000    42.90000
                        38.10000    34.30000
PARAMETER ASSY(37,1) =    31.30000    29.00000    15.50000    12.80000
                        11.10000    10.00000
PARAMETER ASSY(43,1) =     9.200000    8.600000    8.000000    7.600000
                        7.200000
PARAMETER ASSY(1,0) =    .1000000E-05    .1000000    .2000000    .3000000
                        .4000000    .5000000
PARAMETER ASSY(7,0) =     .6000000    .7000000    .8000000    .9000000
                        1.000000    2.000000
PARAMETER ASSY(13,0) =     3.000000    4.000000    5.000000    6.000000
                        7.000000    8.000000
PARAMETER ASSY(19,0) =     9.000000    10.00000    20.00000    30.00000
                        40.00000    50.00000
PARAMETER ASSY(25,0) =    60.00000    70.00000    80.00000    90.00000
                        100.0000    200.0000
PARAMETER ASSY(31,0) =    300.0000    400.0000    500.0000    600.0000
                        700.0000    800.0000
PARAMETER ASSY(37,0) =    900.0000    1000.000    2000.000    3000.000
                        4000.000    5000.000
PARAMETER ASSY(43,0) =    6000.000    7000.000    8000.000    9000.000
                        10000.00
PARAMETER ASSY(0,1) =     1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.5845
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
  WPHOT(1) = COPY ASSY(1)
SCALE FACTORS RESULT= 1.5845 INPUT= 1.0000
VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) =     1.000000
PARAMETER WPTOP(0,1) =     1.000000

```

PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)

(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)

(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-11.2500	308.773	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.773	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	11.2500	308.773	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	-11.2500	272.773	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.773	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	11.2500	272.773	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	-11.2500	234.673	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.673	.000000E+00	IN CSYS= 0
KEYPOINT	9	X,Y,Z=	11.2500	234.673	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	-11.2500	104.573	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.573	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	11.2500	104.573	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	-11.2500	11.5226	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.000000E+00	11.5226	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	11.2500	11.5226	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	-11.2500	.272550	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	11.2500	.272550	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	-11.2500	-10.9775	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.000000E+00	-10.9775	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	11.2500	-10.9775	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	-11.2500	-84.7274	.000000E+00	IN CSYS= 0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.7274	.000000E+00	IN CSYS= 0
KEYPOINT	23	X,Y,Z=	11.2500	-84.7274	.000000E+00	IN CSYS= 0
KEYPOINT	24	X,Y,Z=	-11.2500	-100.527	.000000E+00	IN CSYS= 0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.527	.000000E+00	IN CSYS= 0
KEYPOINT	26	X,Y,Z=	11.2500	-100.527	.000000E+00	IN CSYS= 0
KEYPOINT	27	X,Y,Z=	-11.2500	-105.727	.000000E+00	IN CSYS= 0

KEYPOINT	28	X,Y,Z=	.000000E+00	-105.727	.000000E+00	IN CSYS= 0
KEYPOINT	29	X,Y,Z=	11.2500	-105.727	.000000E+00	IN CSYS= 0
KEYPOINT	30	X,Y,Z=	-11.2500	-209.727	.000000E+00	IN CSYS= 0
KEYPOINT	31	X,Y,Z=	.000000E+00	-209.727	.000000E+00	IN CSYS= 0
KEYPOINT	32	X,Y,Z=	11.2500	-209.727	.000000E+00	IN CSYS= 0
KEYPOINT	33	X,Y,Z=	-11.2500	-991.227	.000000E+00	IN CSYS= 0
KEYPOINT	34	X,Y,Z=	.000000E+00	-991.227	.000000E+00	IN CSYS= 0
KEYPOINT	35	X,Y,Z=	11.2500	-991.227	.000000E+00	IN CSYS= 0

Define lines connecting rock layers
(L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
(36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
(52,53)

LINE CONNECTS KEYPOINTS		1	2			
LINE NO.=	1	KP1=	1	TAN1=	-1.0000	.0000 .0000
		KP2=	2	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		2	3			
LINE NO.=	2	KP1=	2	TAN1=	-1.0000	.0000 .0000
		KP2=	3	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		4	5			
LINE NO.=	3	KP1=	4	TAN1=	-1.0000	.0000 .0000
		KP2=	5	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		5	6			
LINE NO.=	4	KP1=	5	TAN1=	-1.0000	.0000 .0000
		KP2=	6	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		7	8			
LINE NO.=	5	KP1=	7	TAN1=	-1.0000	.0000 .0000
		KP2=	8	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		8	9			
LINE NO.=	6	KP1=	8	TAN1=	-1.0000	.0000 .0000
		KP2=	9	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		10	11			
LINE NO.=	7	KP1=	10	TAN1=	-1.0000	.0000 .0000
		KP2=	11	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		11	12			
LINE NO.=	8	KP1=	11	TAN1=	-1.0000	.0000 .0000
		KP2=	12	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		13	14			
LINE NO.=	9	KP1=	13	TAN1=	-1.0000	.0000 .0000
		KP2=	14	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		14	15			
LINE NO.=	10	KP1=	14	TAN1=	-1.0000	.0000 .0000
		KP2=	15	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		18	19			
LINE NO.=	11	KP1=	18	TAN1=	-1.0000	.0000 .0000
		KP2=	19	TAN2=	1.0000	.0000 .0000
LINE CONNECTS KEYPOINTS		19	20			
LINE NO.=	12	KP1=	19	TAN1=	-1.0000	.0000 .0000
		KP2=	20	TAN2=	1.0000	.0000 .0000

LINE CONNECTS KEYPOINTS	21	22			
LINE NO.= 13 KP1=	21	TAN1=	-1.0000	.0000	.0000
KP2=	22	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000

	KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	31	KP1=	9	TAN1=	.0000	1.0000
		KP2=	12	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	32	KP1=	10	TAN1=	.0000	1.0000
		KP2=	13	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	33	KP1=	11	TAN1=	.0000	1.0000
		KP2=	14	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	34	KP1=	12	TAN1=	.0000	1.0000
		KP2=	15	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	35	KP1=	13	TAN1=	.0000	1.0000
		KP2=	16	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	36	KP1=	15	TAN1=	.0000	1.0000
		KP2=	17	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	37	KP1=	16	TAN1=	.0000	1.0000
		KP2=	18	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	38	KP1=	17	TAN1=	.0000	1.0000
		KP2=	20	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	39	KP1=	18	TAN1=	.0000	1.0000
		KP2=	21	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	40	KP1=	19	TAN1=	.0000	1.0000
		KP2=	22	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	41	KP1=	20	TAN1=	.0000	1.0000
		KP2=	23	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	42	KP1=	21	TAN1=	.0000	1.0000
		KP2=	24	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	43	KP1=	22	TAN1=	.0000	1.0000
		KP2=	25	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	44	KP1=	23	TAN1=	.0000	1.0000
		KP2=	26	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	45	KP1=	24	TAN1=	.0000	1.0000
		KP2=	27	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	46	KP1=	25	TAN1=	.0000	1.0000
		KP2=	28	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS						
LINE NO.=	47	KP1=	26	TAN1=	.0000	1.0000
		KP2=	29	TAN2=	.0000	-1.0000

```

LINE CONNECTS KEYPOINTS      27   30
LINE NO.=    48 KP1=    27 TAN1=    .0000    1.0000    .0000
              KP2=    30 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS      28   31
LINE NO.=    49 KP1=    28 TAN1=    .0000    1.0000    .0000
              KP2=    31 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS      29   32
LINE NO.=    50 KP1=    29 TAN1=    .0000    1.0000    .0000
              KP2=    32 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS      30   33
LINE NO.=    51 KP1=    30 TAN1=    .0000    1.0000    .0000
              KP2=    33 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS      31   34
LINE NO.=    52 KP1=    31 TAN1=    .0000    1.0000    .0000
              KP2=    34 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS      32   35
LINE NO.=    53 KP1=    32 TAN1=    .0000    1.0000    .0000
              KP2=    35 TAN2=    .0000   -1.0000    .0000

```

Define areas in rock layers
(A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    23    3    24    1
            (TRAVERSED IN SAME DIRECTION AS LINE    23)

```

AREA NUMBER = 1

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    24    4    25    2
            (TRAVERSED IN SAME DIRECTION AS LINE    24)

```

AREA NUMBER = 2

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    26    5    27    3
            (TRAVERSED IN SAME DIRECTION AS LINE    26)

```

AREA NUMBER = 3

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    27    6    28    4
            (TRAVERSED IN SAME DIRECTION AS LINE    27)

```

AREA NUMBER = 4

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    29    7    30    5
            (TRAVERSED IN SAME DIRECTION AS LINE    29)

```

AREA NUMBER = 5

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    30    8    31    6
            (TRAVERSED IN SAME DIRECTION AS LINE    30)

```

AREA NUMBER = 6

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    32    9    33    7
            (TRAVERSED IN SAME DIRECTION AS LINE    32)

```

AREA NUMBER = 7

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    33   10   34    8

```

```

      (TRAVERSED IN SAME DIRECTION AS LINE 33)
      AREA NUMBER =      8
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      39  13  40  11
      (TRAVERSED IN SAME DIRECTION AS LINE 39)
      AREA NUMBER =      9
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      40  14  41  12
      (TRAVERSED IN SAME DIRECTION AS LINE 40)
      AREA NUMBER =     10
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      42  15  43  13
      (TRAVERSED IN SAME DIRECTION AS LINE 42)
      AREA NUMBER =     11
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      43  16  44  14
      (TRAVERSED IN SAME DIRECTION AS LINE 43)
      AREA NUMBER =     12
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      45  17  46  15
      (TRAVERSED IN SAME DIRECTION AS LINE 45)
      AREA NUMBER =     13
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      46  18  47  16
      (TRAVERSED IN SAME DIRECTION AS LINE 46)
      AREA NUMBER =     14
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      48  19  49  17
      (TRAVERSED IN SAME DIRECTION AS LINE 48)
      AREA NUMBER =     15
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      49  20  50  18
      (TRAVERSED IN SAME DIRECTION AS LINE 49)
      AREA NUMBER =     16
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      51  21  52  19
      (TRAVERSED IN SAME DIRECTION AS LINE 51)
      AREA NUMBER =     17
      DEFINE AREA BY LIST OF LINES
      LINE LIST =      52  22  53  20
      (TRAVERSED IN SAME DIRECTION AS LINE 52)
      AREA NUMBER =     18
      *****
      Define center and axis keypoints for drift
      (K's 36,37,38,39,40,41,42,43)
      KEYPOINT  36  X,Y,Z=  .000000E+00  .000000E+00  .000000E+00  IN CSYS=  0
      KEYPOINT  37  X,Y,Z=  .000000E+00  .000000E+00  2.72350    IN CSYS=  0
  
```

KEYPOINT 38 X,Y,Z= .000000E+00 .000000E+00 2.82350 IN CSYS= 0
 KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.72350 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.82350 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .272550 5.56450 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .272550 -5.56450 IN CSYS= 0
 Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000
 Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .6653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .7653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.22745 .000000E+00 IN CSYS= 0

KEYPOINT 53 X,Y,Z= 1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 55 X,Y,Z= .000000E+00 2.77255 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.52745 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44

LINE NO.=	82	KP1=	36	TAN1=	.0000	1.0000	.0000
		KP2=	44	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 36 45							
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 36 46							
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000	.0000
		KP2=	46	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 36 47							
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 44 48							
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000	.0000
		KP2=	48	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 45 49							
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 46 50							
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000	.0000
		KP2=	50	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 47 51							
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 50 55							
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000	.0000
		KP2=	55	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 48 58							
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000	.0000
		KP2=	58	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 58 52							
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000	.0000
		KP2=	52	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 57 58							
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 58 53							
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 52 59							
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000	.0000
		KP2=	59	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 54 60							
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 55 61							
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000	.0000
		KP2=	61	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 56 62							
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS 59 63							
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000	.0000
		KP2=	63	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 60 64
 LINE NO.= 100 KP1= 60 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 61 65
 LINE NO.= 101 KP1= 61 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 62 66
 LINE NO.= 102 KP1= 62 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= -1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 63 19
 LINE NO.= 103 KP1= 63 TAN1= .0000 1.0000 .0000
 KP2= 19 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 64 17
 LINE NO.= 104 KP1= 64 TAN1= -1.0000 .0000 .0000
 KP2= 17 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 65 14
 LINE NO.= 105 KP1= 65 TAN1= .0000 -1.0000 .0000
 KP2= 14 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 66 16
 LINE NO.= 106 KP1= 66 TAN1= 1.0000 .0000 .0000
 KP2= 16 TAN2= -1.0000 .0000 .0000

Define areas around drift
 (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
 (35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 82 60 83
 (TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
 LINE LIST = 83 61 84
 (TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
 LINE LIST = 85 84 62
 (TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
 LINE LIST = 63 82 85
 (TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
 LINE LIST = 86 64 87 60
 (TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
 LINE LIST = 61 87 65 88
 (TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
 LINE LIST = 89 62 88 66

(TRAVERSED IN SAME DIRECTION AS LINE 89)
AREA NUMBER = 25
DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)
AREA NUMBER = 26
DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)
AREA NUMBER = 27
DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)
AREA NUMBER = 28
DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)
AREA NUMBER = 29
DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)
AREA NUMBER = 30
DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)
AREA NUMBER = 31
DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)
AREA NUMBER = 32
DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)
AREA NUMBER = 33
DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)
AREA NUMBER = 34
DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)
AREA NUMBER = 35
DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)
AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES

LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 68 TO 68 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 73 TO 73 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 69 TO 69 STEP 1

1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 72 TO 72 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 70 TO 71 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 74 TO 81 STEP 1

10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 10, SPACING RATIO = 1.000

2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)

TO NDIV = 2, SPACING RATIO = 1.000

2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 95 TO 98 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 2, SPACING RATIO = 1.000

3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 99 TO 102 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 3, SPACING RATIO = 1.000

Model is 6 elements wide

(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 3.500

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 3.500

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000

12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = .300

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 3.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TSW3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHN1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHN1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES

LINES = 36 10
 COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14
 CONCATENATE LINES
 LINES = 9 35
 COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16
 CONCATENATE LINES
 LINES = 37 11
 COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

 Mesh 2-D areas
 (first WP, then invert, DF wall and rock layers)
 Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10
 ELEMENT TYPE SET TO 1
 GENERATE NODES AND ELEMENTS
 IN AREAS 19 TO 22 IN STEPS OF 1
 NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 121
 MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13
 GENERATE NODES AND ELEMENTS
 IN AREAS 23 TO 26 IN STEPS OF 1
 NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 145
 MAXIMUM ELEMENT NUMBER = 132
 Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
 OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11
 GENERATE NODES AND ELEMENTS
 IN AREAS 27 TO 28 IN STEPS OF 1
 ** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
 ** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
 NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 164
 MAXIMUM ELEMENT NUMBER = 144
 Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4
 GENERATE NODES AND ELEMENTS
 IN AREAS 29 TO 32 IN STEPS OF 3
 NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 218
 MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 275
MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 395
MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
IN AREAS 37 TO 40 IN STEPS OF 1

*** WARNING *** CP= 7.190 TIME= 17:01:12
Meshing of area 37 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.190 TIME= 17:01:12
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
353

*** WARNING *** CP= 7.260 TIME= 17:01:12
Meshing of area 38 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.260 TIME= 17:01:12
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
398

*** WARNING *** CP= 7.320 TIME= 17:01:12
Meshing of area 39 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.330 TIME= 17:01:12
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
432

*** WARNING *** CP= 7.390 TIME= 17:01:12
Meshing of area 40 produced 1 poorly shaped elements.

*** NOTE *** CP= 7.390 TIME= 17:01:12
Worst shape angle is 41 degrees.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
442

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 515
MAXIMUM ELEMENT NUMBER = 464

GENERATE NODES AND ELEMENTS
IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 683
MAXIMUM ELEMENT NUMBER = 608

TSW1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 746
MAXIMUM ELEMENT NUMBER = 662
PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 767
MAXIMUM ELEMENT NUMBER = 680
TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 788
MAXIMUM ELEMENT NUMBER = 698
TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 809
MAXIMUM ELEMENT NUMBER = 716
CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 823
MAXIMUM ELEMENT NUMBER = 728
CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 872
MAXIMUM ELEMENT NUMBER = 770
CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 8.470 TIME= 17:01:16
Meshing of area 17 produced 12 poorly shaped elements.

*** NOTE *** CP= 8.470 TIME= 17:01:16
Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

779	780	781	782	791	792	793	794	803	804
805	806								

*** WARNING ***

CP= 8.550 TIME= 17:01:16
 Meshing of area 18 produced 12 poorly shaped elements.

*** NOTE ***

CP= 8.550 TIME= 17:01:16
 Worst aspect ratio is 42.8347973 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***

815	816	817	818	827	828	829	830	839	840
841	842								

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 956
 MAXIMUM ELEMENT NUMBER = 842

Delete concatenated lines
 (L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
 (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 54,

DRAG AREAS
 23, 24, 25, 26,
 ALONG LINES
 54,

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 56,

DRAG AREAS
 23, 24, 25, 26,

ALONG LINES

56,
(plot area numbers before next drag commands)

DRAG AREAS

44, 47, 50, 52,
ALONG LINES
55,

DRAG AREAS

57, 61, 65, 68,
ALONG LINES
55,

DRAG AREAS

72, 75, 78, 80,
ALONG LINES
57,

DRAG AREAS

85, 89, 93, 96,
ALONG LINES
57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117
LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172
LINE	175 USED FOR LINE(S)	187
LINE	176 USED FOR LINE(S)	193
LINE	177 USED FOR LINE(S)	192
LINE	179 USED FOR LINE(S)	194
LINE	180 USED FOR LINE(S)	195

LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151
 Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1561
 MAXIMUM ELEMENT NUMBER = 1382

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1681
 MAXIMUM ELEMENT NUMBER = 1502

GENERATE NODES AND ELEMENTS
 IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 1826
 MAXIMUM ELEMENT NUMBER = 1634

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
 IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 2431
 MAXIMUM ELEMENT NUMBER = 2174

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2551
MAXIMUM ELEMENT NUMBER = 2294

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2696
MAXIMUM ELEMENT NUMBER = 2426

Extrude 2-D rock into front half 3-D

Invert

(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2791
MAXIMUM ELEMENT NUMBER = 2486
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3106
MAXIMUM ELEMENT NUMBER = 2686

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3271
MAXIMUM ELEMENT NUMBER = 2786

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3436
MAXIMUM ELEMENT NUMBER = 2886

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3856
MAXIMUM ELEMENT NUMBER = 3186

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4076
MAXIMUM ELEMENT NUMBER = 3336

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4296
MAXIMUM ELEMENT NUMBER = 3486
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 29.080 TIME= 17:02:03
Meshing of volume 43 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3517 3518 3519 3520 3521 3522 3523 3524
3525 3526 3527 3528 3529 3530 3531

*** WARNING *** CP= 29.610 TIME= 17:02:04
Meshing of volume 44 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
3742 3743 3744 3745 3746 3747 3748 3749
3750 3751 3752 3753 3754 3755 3756

MAXIMUM NODE NUMBER = 4716
MAXIMUM ELEMENT NUMBER = 3786

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,

ALONG LINES
58,

*** WARNING *** CP= 30.280 TIME= 17:02:05
Meshing of volume 46 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
3822 3823 3824 3825 3826 3872 3873 3874
3875 3876 3922 3923 3924 3925 3926

MAXIMUM NODE NUMBER = 4936
MAXIMUM ELEMENT NUMBER = 3936
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 30.710 TIME= 17:02:06
Meshing of area 200 produced 1 poorly shaped faces.

*** NOTE *** CP= 30.710 TIME= 17:02:06
Worst shape angle is 41 degrees.

*** WARNING *** CP= 31.100 TIME= 17:02:06
Meshing of volume 45 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
4042 4043 4044 4045 4046 4047 4048 4049
4050 4051 4052 4053 4054 4055 4056

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 5156
MAXIMUM ELEMENT NUMBER = 4086

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of Tsw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,

ALONG LINES
58,

MAXIMUM NODE NUMBER = 6066
MAXIMUM ELEMENT NUMBER = 4806
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6416
MAXIMUM ELEMENT NUMBER = 5076
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6556
MAXIMUM ELEMENT NUMBER = 5166
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6696
MAXIMUM ELEMENT NUMBER = 5256
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6836
MAXIMUM ELEMENT NUMBER = 5346
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6941
MAXIMUM ELEMENT NUMBER = 5406
Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7221
MAXIMUM ELEMENT NUMBER = 5616
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 36.200 TIME= 17:02:19
Meshing of volume 63 produced 78 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***

5642	5647	5648	5652	5653	5654	5657	5658
5659	5660	5661	5662	5663	5664	5665	5666
5667	5668	5669	5670	5671	5672	5673	5674
5675	5676	5702	5707	5708	5712	5713	5714
5717	5718	5719	5720	5721	5722	5723	5724
5725	5726	5727	5728	5729	5730	5731	5732
5733	5734	5735	5736	5762	5767	5768	5772
5773	5774	5777	5778	5779	5780	5781	5782
5783	5784	5785	5786	5787	5788	5789	5790
5791	5792	5793	5794	5795	5796		

*** WARNING *** CP= 36.580 TIME= 17:02:20
Meshing of volume 64 produced 78 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***

5822	5827	5828	5832	5833	5834	5837	5838
5839	5840	5841	5842	5843	5844	5845	5846
5847	5848	5849	5850	5851	5852	5853	5854
5855	5856	5882	5887	5888	5892	5893	5894
5897	5898	5899	5900	5901	5902	5903	5904
5905	5906	5907	5908	5909	5910	5911	5912
5913	5914	5915	5916	5942	5947	5948	5952
5953	5954	5957	5958	5959	5960	5961	5962
5963	5964	5965	5966	5967	5968	5969	5970
5971	5972	5973	5974	5975	5976		

MAXIMUM NODE NUMBER = 7676
MAXIMUM ELEMENT NUMBER = 5976

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE	5613	USED FOR NODES	6697
NODE	6698	USED FOR NODES	6837
NODE	6108	USED FOR NODES	6442
NODE	6943	USED FOR NODES	7222
NODE	5672	USED FOR NODES	6713
NODE	5673	USED FOR NODES	6714
NODE	5674	USED FOR NODES	6715
NODE	6109	USED FOR NODES	6443
NODE	5675	USED FOR NODES	6716
NODE	6721	USED FOR NODES	6849
NODE	6722	USED FOR NODES	6850
NODE	6723	USED FOR NODES	6851
NODE	4765	USED FOR NODES	5664
NODE	6724	USED FOR NODES	6852
NODE	4766	USED FOR NODES	5665

NODE	4767	USED FOR NODES	5666
NODE	4768	USED FOR NODES	5667
NODE	6982	USED FOR NODES	7274
NODE	6983	USED FOR NODES	7275
NODE	6984	USED FOR NODES	7276
NODE	6985	USED FOR NODES	7277
NODE	6110	USED FOR NODES	6444
NODE	4761	USED FOR NODES	4938
NODE	4762	USED FOR NODES	4939
NODE	6067	USED FOR NODES	6418
NODE	5157	USED FOR NODES	6068
NODE	4763	USED FOR NODES	4940
NODE	4764	USED FOR NODES	4941
NODE	6838	USED FOR NODES	6942
NODE	6433	USED FOR NODES	6581
NODE	6434	USED FOR NODES	6582
NODE	6435	USED FOR NODES	6583
NODE	6857	USED FOR NODES	6974
NODE	6858	USED FOR NODES	6975
NODE	6859	USED FOR NODES	6976
NODE	6417	USED FOR NODES	6558
NODE	6860	USED FOR NODES	6977
NODE	6107	USED FOR NODES	6441
NODE	5209	USED FOR NODES	6115
NODE	5210	USED FOR NODES	6116
NODE	5211	USED FOR NODES	6117
NODE	5212	USED FOR NODES	6118
NODE	6436	USED FOR NODES	6584
NODE	4958	USED FOR NODES	5217
NODE	4959	USED FOR NODES	5218
NODE	4960	USED FOR NODES	5219
NODE	4961	USED FOR NODES	5220
NODE	4957	USED FOR NODES	5158
NODE	4718	USED FOR NODES	5612
NODE	4717	USED FOR NODES	4937
NODE	4861	USED FOR NODES	4953
NODE	4862	USED FOR NODES	4954
NODE	4863	USED FOR NODES	4955
NODE	4864	USED FOR NODES	4956
NODE	4742	USED FOR NODES	4944
NODE	6126	USED FOR NODES	6460
NODE	6702	USED FOR NODES	6845
NODE	5626	USED FOR NODES	6707
NODE	6951	USED FOR NODES	7250
NODE	4997	USED FOR NODES	5171
NODE	5688	USED FOR NODES	6729
NODE	5689	USED FOR NODES	6730
NODE	5690	USED FOR NODES	6731
NODE	5691	USED FOR NODES	6732
NODE	5185	USED FOR NODES	6078
NODE	6737	USED FOR NODES	6865
NODE	6738	USED FOR NODES	6866
NODE	6739	USED FOR NODES	6867
NODE	6740	USED FOR NODES	6868
NODE	4999	USED FOR NODES	5233
NODE	5000	USED FOR NODES	5234
NODE	5001	USED FOR NODES	5235
NODE	5002	USED FOR NODES	5236
NODE	6998	USED FOR NODES	7290
NODE	6999	USED FOR NODES	7291
NODE	7000	USED FOR NODES	7292
NODE	7001	USED FOR NODES	7293
NODE	6427	USED FOR NODES	6562
NODE	6841	USED FOR NODES	6960
NODE	6449	USED FOR NODES	6597
NODE	6450	USED FOR NODES	6598
NODE	4781	USED FOR NODES	5680
NODE	6451	USED FOR NODES	6599
NODE	4782	USED FOR NODES	5681
NODE	6089	USED FOR NODES	6422

NODE 6452	USED FOR NODES	6600		
NODE 4783	USED FOR NODES	5682		
NODE 4784	USED FOR NODES	5683		
NODE 6873	USED FOR NODES	6990		
NODE 6874	USED FOR NODES	6991		
NODE 6875	USED FOR NODES	6992		
NODE 6876	USED FOR NODES	6993		
NODE 6123	USED FOR NODES	6457		
NODE 6124	USED FOR NODES	6458		
NODE 6125	USED FOR NODES	6459		
NODE 5225	USED FOR NODES	6131		
NODE 5226	USED FOR NODES	6132		
NODE 5227	USED FOR NODES	6133		
NODE 5228	USED FOR NODES	6134		
NODE 4726	USED FOR NODES	5640		
NODE 4860	USED FOR NODES	4952		
NODE 4858	USED FOR NODES	4950		
NODE 4857	USED FOR NODES	4949		
NODE 4741	USED FOR NODES	4943		
NODE 4859	USED FOR NODES	4951		
NODE 3913	USED FOR NODES	4078	4777	4945
NODE 3914	USED FOR NODES	4079	4778	4946
NODE 3915	USED FOR NODES	4080	4779	4947
NODE 3916	USED FOR NODES	4081	4780	4948
NODE 3857	USED FOR NODES	4077	4731	4942
NODE 4111	USED FOR NODES	5063		
NODE 4112	USED FOR NODES	5064		
NODE 4113	USED FOR NODES	5065		
NODE 4114	USED FOR NODES	5066		
NODE 4102	USED FOR NODES	5030		
NODE 3956	USED FOR NODES	4816		
NODE 3859	USED FOR NODES	4732		
NODE 3953	USED FOR NODES	4813		
NODE 3954	USED FOR NODES	4814		
NODE 3955	USED FOR NODES	4815		
NODE 4103	USED FOR NODES	5029		
NODE 3860	USED FOR NODES	4733		
NODE 3957	USED FOR NODES	4817		
NODE 3958	USED FOR NODES	4818		
NODE 3959	USED FOR NODES	4819		
NODE 3960	USED FOR NODES	4820		
NODE 4115	USED FOR NODES	5059		
NODE 4116	USED FOR NODES	5060		
NODE 4117	USED FOR NODES	5061		
NODE 4118	USED FOR NODES	5062		
NODE 4104	USED FOR NODES	5028		
NODE 3861	USED FOR NODES	4734		
NODE 4119	USED FOR NODES	5055		
NODE 4120	USED FOR NODES	5056		
NODE 4121	USED FOR NODES	5057		
NODE 3961	USED FOR NODES	4821		
NODE 3962	USED FOR NODES	4822		
NODE 3963	USED FOR NODES	4823		
NODE 3964	USED FOR NODES	4824		
NODE 4122	USED FOR NODES	5058		
NODE 4001	USED FOR NODES	4093		
NODE 3882	USED FOR NODES	4084		
NODE 4002	USED FOR NODES	4094		
NODE 4003	USED FOR NODES	4095		
NODE 4004	USED FOR NODES	4096		
NODE 4105	USED FOR NODES	5027		
NODE 3862	USED FOR NODES	4735		
NODE 4123	USED FOR NODES	5051		
NODE 4124	USED FOR NODES	5052		
NODE 4125	USED FOR NODES	5053		
NODE 4126	USED FOR NODES	5054		
NODE 3965	USED FOR NODES	4825		
NODE 3966	USED FOR NODES	4826		
NODE 3967	USED FOR NODES	4827		
NODE 3968	USED FOR NODES	4828		

NODE 3881	USED FOR NODES	4083		
NODE 3997	USED FOR NODES	4089		
NODE 3998	USED FOR NODES	4090		
NODE 3999	USED FOR NODES	4091		
NODE 4000	USED FOR NODES	4092		
NODE 4127	USED FOR NODES	5047		
NODE 4128	USED FOR NODES	5048		
NODE 4129	USED FOR NODES	5049		
NODE 4130	USED FOR NODES	5050		
NODE 4106	USED FOR NODES	5026		
NODE 3970	USED FOR NODES	4830		
NODE 3863	USED FOR NODES	4736		
NODE 3969	USED FOR NODES	4829		
NODE 3971	USED FOR NODES	4831		
NODE 3972	USED FOR NODES	4832		
NODE 5006	USED FOR NODES	5240		
NODE 5003	USED FOR NODES	5237		
NODE 5005	USED FOR NODES	5239		
NODE 4998	USED FOR NODES	5172		
NODE 5004	USED FOR NODES	5238		
NODE 5186	USED FOR NODES	6079		
NODE 6455	USED FOR NODES	6603		
NODE 6880	USED FOR NODES	6997		
NODE 6090	USED FOR NODES	6423		
NODE 6130	USED FOR NODES	6464		
NODE 6703	USED FOR NODES	6846		
NODE 5692	USED FOR NODES	6733		
NODE 6744	USED FOR NODES	6872		
NODE 5695	USED FOR NODES	6736		
NODE 4727	USED FOR NODES	5641		
NODE 4787	USED FOR NODES	5686		
NODE 6127	USED FOR NODES	6461		
NODE 6454	USED FOR NODES	6602		
NODE 6878	USED FOR NODES	6995		
NODE 6742	USED FOR NODES	6870		
NODE 7004	USED FOR NODES	7296		
NODE 6456	USED FOR NODES	6604		
NODE 6743	USED FOR NODES	6871		
NODE 6952	USED FOR NODES	7251		
NODE 5694	USED FOR NODES	6735		
NODE 5627	USED FOR NODES	6708		
NODE 6879	USED FOR NODES	6996		
NODE 7002	USED FOR NODES	7294		
NODE 4788	USED FOR NODES	5687		
NODE 6128	USED FOR NODES	6462		
NODE 5229	USED FOR NODES	6135		
NODE 7005	USED FOR NODES	7297		
NODE 4786	USED FOR NODES	5685		
NODE 5230	USED FOR NODES	6136		
NODE 6129	USED FOR NODES	6463		
NODE 5231	USED FOR NODES	6137		
NODE 6877	USED FOR NODES	6994		
NODE 5693	USED FOR NODES	6734		
NODE 4785	USED FOR NODES	5684		
NODE 5232	USED FOR NODES	6138		
NODE 7003	USED FOR NODES	7295		
NODE 6741	USED FOR NODES	6869		
NODE 6453	USED FOR NODES	6601		
NODE 6428	USED FOR NODES	6563		
NODE 6842	USED FOR NODES	6961		
NODE 3156	USED FOR NODES	3273	3905	4085
NODE 3157	USED FOR NODES	3274	3906	4086
NODE 3158	USED FOR NODES	3275	3907	4087
NODE 3159	USED FOR NODES	3276	3908	4088
NODE 3107	USED FOR NODES	3272	3871	4082
NODE 3301	USED FOR NODES	4203		
NODE 3302	USED FOR NODES	4204		
NODE 3303	USED FOR NODES	4205		
NODE 3304	USED FOR NODES	4206		
NODE 3292	USED FOR NODES	4170		

NODE	3192	USED FOR NODES	3917
NODE	3109	USED FOR NODES	3872
NODE	3193	USED FOR NODES	3918
NODE	3195	USED FOR NODES	3920
NODE	3194	USED FOR NODES	3919
NODE	3305	USED FOR NODES	4199
NODE	3306	USED FOR NODES	4200
NODE	3307	USED FOR NODES	4201
NODE	3308	USED FOR NODES	4202
NODE	3293	USED FOR NODES	4169
NODE	3197	USED FOR NODES	3922
NODE	3196	USED FOR NODES	3921
NODE	3199	USED FOR NODES	3924
NODE	3198	USED FOR NODES	3923
NODE	3110	USED FOR NODES	3873
NODE	4107	USED FOR NODES	5025
NODE	4131	USED FOR NODES	5043
NODE	3864	USED FOR NODES	4737
NODE	4132	USED FOR NODES	5044
NODE	4133	USED FOR NODES	5045
NODE	4134	USED FOR NODES	5046
NODE	3973	USED FOR NODES	4833
NODE	3974	USED FOR NODES	4834
NODE	3975	USED FOR NODES	4835
NODE	3976	USED FOR NODES	4836
NODE	3200	USED FOR NODES	3925
NODE	3201	USED FOR NODES	3926
NODE	3202	USED FOR NODES	3927
NODE	3203	USED FOR NODES	3928
NODE	3111	USED FOR NODES	3874
NODE	3294	USED FOR NODES	4168
NODE	3309	USED FOR NODES	4195
NODE	3310	USED FOR NODES	4196
NODE	3311	USED FOR NODES	4197
NODE	3312	USED FOR NODES	4198
NODE	3235	USED FOR NODES	3286
NODE	3130	USED FOR NODES	3278
NODE	3234	USED FOR NODES	3285
NODE	3232	USED FOR NODES	3283
NODE	3233	USED FOR NODES	3284
NODE	3313	USED FOR NODES	4191
NODE	3314	USED FOR NODES	4192
NODE	3315	USED FOR NODES	4193
NODE	3316	USED FOR NODES	4194
NODE	3295	USED FOR NODES	4167
NODE	3112	USED FOR NODES	3875
NODE	3206	USED FOR NODES	3931
NODE	3204	USED FOR NODES	3929
NODE	3205	USED FOR NODES	3930
NODE	3207	USED FOR NODES	3932
NODE	3124	USED FOR NODES	3277
NODE	3144	USED FOR NODES	3279
NODE	3145	USED FOR NODES	3280
NODE	3146	USED FOR NODES	3281
NODE	3147	USED FOR NODES	3282
NODE	4135	USED FOR NODES	5039
NODE	4136	USED FOR NODES	5040
NODE	4137	USED FOR NODES	5041
NODE	4138	USED FOR NODES	5042
NODE	4108	USED FOR NODES	5024
NODE	3865	USED FOR NODES	4738
NODE	3980	USED FOR NODES	4840
NODE	3977	USED FOR NODES	4837
NODE	3978	USED FOR NODES	4838
NODE	3979	USED FOR NODES	4839
NODE	3317	USED FOR NODES	4187
NODE	3318	USED FOR NODES	4188
NODE	3319	USED FOR NODES	4189
NODE	3320	USED FOR NODES	4190
NODE	3296	USED FOR NODES	4166

NODE	3208	USED	FOR	NODES	3933
NODE	3113	USED	FOR	NODES	3876
NODE	3210	USED	FOR	NODES	3935
NODE	3211	USED	FOR	NODES	3936
NODE	3209	USED	FOR	NODES	3934
NODE	3321	USED	FOR	NODES	4183
NODE	3322	USED	FOR	NODES	4184
NODE	3323	USED	FOR	NODES	4185
NODE	3324	USED	FOR	NODES	4186
NODE	3297	USED	FOR	NODES	4165
NODE	3212	USED	FOR	NODES	3937
NODE	3214	USED	FOR	NODES	3939
NODE	3215	USED	FOR	NODES	3940
NODE	3213	USED	FOR	NODES	3938
NODE	3114	USED	FOR	NODES	3877
NODE	2715	USED	FOR	NODES	3151
NODE	2712	USED	FOR	NODES	3148
NODE	2713	USED	FOR	NODES	3149
NODE	2697	USED	FOR	NODES	3120
NODE	2714	USED	FOR	NODES	3150
NODE	4139	USED	FOR	NODES	5035
NODE	4140	USED	FOR	NODES	5036
NODE	4141	USED	FOR	NODES	5037
NODE	4142	USED	FOR	NODES	5038
NODE	4109	USED	FOR	NODES	5023
NODE	3984	USED	FOR	NODES	4844
NODE	3983	USED	FOR	NODES	4843
NODE	3866	USED	FOR	NODES	4739
NODE	3981	USED	FOR	NODES	4841
NODE	3982	USED	FOR	NODES	4842
NODE	3325	USED	FOR	NODES	4179
NODE	3326	USED	FOR	NODES	4180
NODE	3327	USED	FOR	NODES	4181
NODE	3328	USED	FOR	NODES	4182
NODE	3216	USED	FOR	NODES	3941
NODE	3217	USED	FOR	NODES	3942
NODE	3218	USED	FOR	NODES	3943
NODE	3219	USED	FOR	NODES	3944
NODE	3115	USED	FOR	NODES	3878
NODE	3298	USED	FOR	NODES	4164
NODE	2699	USED	FOR	NODES	3121
NODE	2723	USED	FOR	NODES	3183
NODE	2720	USED	FOR	NODES	3180
NODE	2721	USED	FOR	NODES	3181
NODE	2722	USED	FOR	NODES	3182
NODE	3329	USED	FOR	NODES	4175
NODE	3330	USED	FOR	NODES	4176
NODE	3331	USED	FOR	NODES	4177
NODE	3332	USED	FOR	NODES	4178
NODE	3220	USED	FOR	NODES	3945
NODE	3221	USED	FOR	NODES	3946
NODE	3222	USED	FOR	NODES	3947
NODE	3223	USED	FOR	NODES	3948
NODE	3116	USED	FOR	NODES	3879
NODE	3299	USED	FOR	NODES	4163
NODE	2724	USED	FOR	NODES	3184
NODE	2700	USED	FOR	NODES	3122
NODE	2725	USED	FOR	NODES	3185
NODE	2726	USED	FOR	NODES	3186
NODE	2727	USED	FOR	NODES	3187
NODE	4143	USED	FOR	NODES	5031
NODE	4144	USED	FOR	NODES	5032
NODE	4145	USED	FOR	NODES	5033
NODE	4146	USED	FOR	NODES	5034
NODE	4110	USED	FOR	NODES	5022
NODE	3986	USED	FOR	NODES	4846
NODE	3985	USED	FOR	NODES	4845
NODE	3987	USED	FOR	NODES	4847
NODE	3988	USED	FOR	NODES	4848
NODE	3867	USED	FOR	NODES	4740

NODE	3333	USED FOR NODES	4171
NODE	3334	USED FOR NODES	4172
NODE	3335	USED FOR NODES	4173
NODE	3336	USED FOR NODES	4174
NODE	3300	USED FOR NODES	4162
NODE	3225	USED FOR NODES	3950
NODE	3117	USED FOR NODES	3880
NODE	3224	USED FOR NODES	3949
NODE	3226	USED FOR NODES	3951
NODE	3227	USED FOR NODES	3952
NODE	2731	USED FOR NODES	3191
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*** WARNING ***

CP= 55.340 TIME= 17:02:53

Same node numbers associated with more than one solid model entity.

Future mesh clearing operations could produce unexpected results.

NUMMRG,KP could correct this problem.

```

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
KEYPOINT 67 USED FOR KEYPOINT(S) 115
KEYPOINT 72 USED FOR KEYPOINT(S) 78 114
KEYPOINT 76 USED FOR KEYPOINT(S) 89
KEYPOINT 80 USED FOR KEYPOINT(S) 111 119 131
KEYPOINT 85 USED FOR KEYPOINT(S) 122
KEYPOINT 91 USED FOR KEYPOINT(S) 102 124 128
KEYPOINT 93 USED FOR KEYPOINT(S) 104
KEYPOINT 98 USED FOR KEYPOINT(S) 117
KEYPOINT 101 USED FOR KEYPOINT(S) 106 125 132
KEYPOINT 120 USED FOR KEYPOINT(S) 130 133 149
KEYPOINT 121 USED FOR KEYPOINT(S) 137
KEYPOINT 123 USED FOR KEYPOINT(S) 127 140 145
KEYPOINT 126 USED FOR KEYPOINT(S) 129 141 150
KEYPOINT 134 USED FOR KEYPOINT(S) 148 160
KEYPOINT 135 USED FOR KEYPOINT(S) 162
KEYPOINT 138 USED FOR KEYPOINT(S) 155
KEYPOINT 139 USED FOR KEYPOINT(S) 144 153
KEYPOINT 142 USED FOR KEYPOINT(S) 146
KEYPOINT 143 USED FOR KEYPOINT(S) 152
KEYPOINT 147 USED FOR KEYPOINT(S) 157
KEYPOINT 151 USED FOR KEYPOINT(S) 164
KEYPOINT 154 USED FOR KEYPOINT(S) 165
KEYPOINT 156 USED FOR KEYPOINT(S) 167
KEYPOINT 158 USED FOR KEYPOINT(S) 181
KEYPOINT 159 USED FOR KEYPOINT(S) 184
KEYPOINT 161 USED FOR KEYPOINT(S) 186
KEYPOINT 163 USED FOR KEYPOINT(S) 170
KEYPOINT 166 USED FOR KEYPOINT(S) 171
KEYPOINT 168 USED FOR KEYPOINT(S) 173
KEYPOINT 169 USED FOR KEYPOINT(S) 176
KEYPOINT 172 USED FOR KEYPOINT(S) 177
KEYPOINT 174 USED FOR KEYPOINT(S) 179
KEYPOINT 182 USED FOR KEYPOINT(S) 187
KEYPOINT 183 USED FOR KEYPOINT(S) 190
KEYPOINT 185 USED FOR KEYPOINT(S) 192
KEYPOINT 188 USED FOR KEYPOINT(S) 193
KEYPOINT 189 USED FOR KEYPOINT(S) 196
KEYPOINT 191 USED FOR KEYPOINT(S) 198
KEYPOINT 194 USED FOR KEYPOINT(S) 199
KEYPOINT 195 USED FOR KEYPOINT(S) 202
KEYPOINT 197 USED FOR KEYPOINT(S) 204
LINE 108 USED FOR LINE(S) 240
LINE 121 USED FOR LINE(S) 241
LINE 126 USED FOR LINE(S) 154 239
LINE 134 USED FOR LINE(S) 174
LINE 137 USED FOR LINE(S) 172
LINE 141 USED FOR LINE(S) 238
LINE 159 USED FOR LINE(S) 236 246 270
LINE 160 USED FOR LINE(S) 252
LINE 161 USED FOR LINE(S) 251
LINE 187 USED FOR LINE(S) 257
LINE 192 USED FOR LINE(S) 220 256 264
LINE 193 USED FOR LINE(S) 225
LINE 194 USED FOR LINE(S) 226
LINE 200 USED FOR LINE(S) 244
LINE 203 USED FOR LINE(S) 243
LINE 205 USED FOR LINE(S) 233 259 272
LINE 207 USED FOR LINE(S) 265
LINE 228 USED FOR LINE(S) 271
LINE 245 USED FOR LINE(S) 269
LINE 247 USED FOR LINE(S) 268 275 307
LINE 248 USED FOR LINE(S) 283
LINE 249 USED FOR LINE(S) 282
LINE 253 USED FOR LINE(S) 290
LINE 254 USED FOR LINE(S) 262 289 299
LINE 255 USED FOR LINE(S) 263
LINE 258 USED FOR LINE(S) 273
LINE 260 USED FOR LINE(S) 267 292 309

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LINE	343	USED FOR LINE(S)	354	
LINE	344	USED FOR LINE(S)	353	
LINE	348	USED FOR LINE(S)	359	
LINE	349	USED FOR LINE(S)	358	
LINE	351	USED FOR LINE(S)	365	
LINE	356	USED FOR LINE(S)	367	
LINE	357	USED FOR LINE(S)	366	
LINE	361	USED FOR LINE(S)	372	
LINE	362	USED FOR LINE(S)	371	
LINE	378	USED FOR LINE(S)	390	
LINE	379	USED FOR LINE(S)	396	
LINE	380	USED FOR LINE(S)	395	
LINE	384	USED FOR LINE(S)	401	
LINE	385	USED FOR LINE(S)	400	
LINE	391	USED FOR LINE(S)	403	
LINE	392	USED FOR LINE(S)	409	
LINE	393	USED FOR LINE(S)	408	
LINE	397	USED FOR LINE(S)	414	
LINE	398	USED FOR LINE(S)	413	
LINE	404	USED FOR LINE(S)	416	
LINE	405	USED FOR LINE(S)	422	
LINE	406	USED FOR LINE(S)	421	
LINE	410	USED FOR LINE(S)	427	
LINE	411	USED FOR LINE(S)	426	
AREA	56	USED FOR AREA(S)	161	
AREA	84	USED FOR AREA(S)	123	
AREA	95	USED FOR AREA(S)	160	
AREA	112	USED FOR AREA(S)	168	
AREA	142	USED FOR AREA(S)	172	
AREA	148	USED FOR AREA(S)	156	
AREA	154	USED FOR AREA(S)	163	
AREA	155	USED FOR AREA(S)	177	
AREA	159	USED FOR AREA(S)	181	
AREA	165	USED FOR AREA(S)	180	
AREA	166	USED FOR AREA(S)	188	
AREA	170	USED FOR AREA(S)	193	
AREA	171	USED FOR AREA(S)	176	
AREA	174	USED FOR AREA(S)	182	
AREA	175	USED FOR AREA(S)	199	
AREA	179	USED FOR AREA(S)	204	
AREA	184	USED FOR AREA(S)	203	
AREA	185	USED FOR AREA(S)	223	
AREA	191	USED FOR AREA(S)	212	

AREA 192 USED FOR AREA(S) 198
AREA 195 USED FOR AREA(S) 205
AREA 197 USED FOR AREA(S) 208
AREA 202 USED FOR AREA(S) 219
AREA 210 USED FOR AREA(S) 226
AREA 214 USED FOR AREA(S) 230
AREA 217 USED FOR AREA(S) 255
AREA 221 USED FOR AREA(S) 259
AREA 228 USED FOR AREA(S) 235
AREA 232 USED FOR AREA(S) 239
AREA 237 USED FOR AREA(S) 244
AREA 241 USED FOR AREA(S) 248
AREA 253 USED FOR AREA(S) 264
AREA 257 USED FOR AREA(S) 268
AREA 262 USED FOR AREA(S) 273
AREA 266 USED FOR AREA(S) 277
AREA 271 USED FOR AREA(S) 282
AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
Invert
(V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7771
MAXIMUM ELEMENT NUMBER = 6036
Rock around drift
(V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8086
MAXIMUM ELEMENT NUMBER = 6236

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8251
MAXIMUM ELEMENT NUMBER = 6336

GENERATE NODES AND ELEMENTS

IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 8416
 MAXIMUM ELEMENT NUMBER = 6436

DRAG AREAS
 33, 34,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 8836
 MAXIMUM ELEMENT NUMBER = 6736

ELEMENT TYPE SET TO 1

DRAG AREAS
 35,
 ALONG LINES
 59,

ELEMENT TYPE SET TO 2

DRAG AREAS
 36,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 9056
 MAXIMUM ELEMENT NUMBER = 6886

GENERATE NODES AND ELEMENTS
 IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 9276
 MAXIMUM ELEMENT NUMBER = 7036
 Mid-drift rock
 (V's 75,76,77,78)

DRAG AREAS
 37, 38,
 ALONG LINES
 59,

*** WARNING *** CP= 64.080 TIME= 17:03:08
 Meshing of volume 75 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
 7067 7068 7069 7070 7071 7072 7073 7074
 7075 7076 7077 7078 7079 7080 7081

*** WARNING *** CP= 64.570 TIME= 17:03:08
 Meshing of volume 76 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
 7292 7293 7294 7295 7296 7297 7298 7299
 7300 7301 7302 7303 7304 7305 7306

MAXIMUM NODE NUMBER = 9696
 MAXIMUM ELEMENT NUMBER = 7336

ELEMENT TYPE SET TO 1

DRAG AREAS
 39,
 ALONG LINES
 59,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
59,

*** WARNING *** CP= 65.350 TIME= 17:03:11
Meshing of volume 78 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
7372 7373 7374 7375 7376 7422 7423 7424
7425 7426 7472 7473 7474 7475 7476

MAXIMUM NODE NUMBER = 9916
MAXIMUM ELEMENT NUMBER = 7486
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 65.800 TIME= 17:03:12
Meshing of area 314 produced 1 poorly shaped faces.

*** NOTE *** CP= 65.800 TIME= 17:03:12
Worst shape angle is 41 degrees.

*** WARNING *** CP= 66.230 TIME= 17:03:13
Meshing of volume 77 produced 15 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
7592 7593 7594 7595 7596 7597 7598 7599
7600 7601 7602 7603 7604 7605 7606

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 10136
MAXIMUM ELEMENT NUMBER = 7636

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS

Extrude rest of TSw2
(V's 79,80,81,82)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11046
MAXIMUM ELEMENT NUMBER = 8356
Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11396
MAXIMUM ELEMENT NUMBER = 8626
Extrude PTn
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11536
MAXIMUM ELEMENT NUMBER = 8716
Extrude TCw
(V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11676
MAXIMUM ELEMENT NUMBER = 8806
Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11816
MAXIMUM ELEMENT NUMBER = 8896
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11921
MAXIMUM ELEMENT NUMBER = 8956

Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12201
MAXIMUM ELEMENT NUMBER = 9166
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 72.300 TIME= 17:03:26
Meshing of volume 95 produced 78 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

9192	9197	9198	9202	9203	9204	9207	9208
9209	9210	9211	9212	9213	9214	9215	9216
9217	9218	9219	9220	9221	9222	9223	9224
9225	9226	9252	9257	9258	9262	9263	9264
9267	9268	9269	9270	9271	9272	9273	9274
9275	9276	9277	9278	9279	9280	9281	9282
9283	9284	9285	9286	9312	9317	9318	9322
9323	9324	9327	9328	9329	9330	9331	9332
9333	9334	9335	9336	9337	9338	9339	9340
9341	9342	9343	9344	9345	9346		

*** WARNING *** CP= 72.850 TIME= 17:03:27
Meshing of volume 96 produced 78 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

9372	9377	9378	9382	9383	9384	9387	9388
9389	9390	9391	9392	9393	9394	9395	9396
9397	9398	9399	9400	9401	9402	9403	9404
9405	9406	9432	9437	9438	9442	9443	9444
9447	9448	9449	9450	9451	9452	9453	9454
9455	9456	9457	9458	9459	9460	9461	9462
9463	9464	9465	9466	9492	9497	9498	9502
9503	9504	9507	9508	9509	9510	9511	9512
9513	9514	9515	9516	9517	9518	9519	9520
9521	9522	9523	9524	9525	9526		

MAXIMUM NODE NUMBER = 12656
MAXIMUM ELEMENT NUMBER = 9526

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 10593 USED FOR NODES 11677
NODE 11678 USED FOR NODES 11817
NODE 11818 USED FOR NODES 11922
NODE 11701 USED FOR NODES 11829
NODE 11702 USED FOR NODES 11830
NODE 11703 USED FOR NODES 11831
NODE 11704 USED FOR NODES 11832
NODE 11837 USED FOR NODES 11954
NODE 11838 USED FOR NODES 11955
NODE 11839 USED FOR NODES 11956

NODE 11840 USED FOR NODES 11957
NODE 11923 USED FOR NODES 12202
NODE 11962 USED FOR NODES 12254
NODE 11963 USED FOR NODES 12255
NODE 11964 USED FOR NODES 12256
NODE 11965 USED FOR NODES 12257
NODE 9697 USED FOR NODES 9917
NODE 9698 USED FOR NODES 10592
NODE 9741 USED FOR NODES 9918
NODE 9742 USED FOR NODES 9919
NODE 9743 USED FOR NODES 9920
NODE 9744 USED FOR NODES 9921
NODE 9745 USED FOR NODES 10644
NODE 9746 USED FOR NODES 10645
NODE 9747 USED FOR NODES 10646
NODE 9748 USED FOR NODES 10647
NODE 10652 USED FOR NODES 11693
NODE 11047 USED FOR NODES 11398
NODE 10137 USED FOR NODES 11048
NODE 10653 USED FOR NODES 11694
NODE 10654 USED FOR NODES 11695
NODE 10655 USED FOR NODES 11696
NODE 11087 USED FOR NODES 11421
NODE 11088 USED FOR NODES 11422
NODE 11089 USED FOR NODES 11423
NODE 11090 USED FOR NODES 11424
NODE 10189 USED FOR NODES 11095
NODE 10190 USED FOR NODES 11096
NODE 10191 USED FOR NODES 11097
NODE 10192 USED FOR NODES 11098
NODE 9937 USED FOR NODES 10138
NODE 9938 USED FOR NODES 10197
NODE 9939 USED FOR NODES 10198
NODE 9940 USED FOR NODES 10199
NODE 9941 USED FOR NODES 10200
NODE 11397 USED FOR NODES 11538
NODE 11413 USED FOR NODES 11561
NODE 11414 USED FOR NODES 11562
NODE 11415 USED FOR NODES 11563
NODE 11416 USED FOR NODES 11564
NODE 9842 USED FOR NODES 9934
NODE 9843 USED FOR NODES 9935
NODE 9841 USED FOR NODES 9933
NODE 9722 USED FOR NODES 9924
NODE 9844 USED FOR NODES 9936
NODE 11821 USED FOR NODES 11940
NODE 11682 USED FOR NODES 11825
NODE 11717 USED FOR NODES 11845
NODE 11718 USED FOR NODES 11846
NODE 11719 USED FOR NODES 11847
NODE 11720 USED FOR NODES 11848
NODE 11853 USED FOR NODES 11970
NODE 11854 USED FOR NODES 11971
NODE 11855 USED FOR NODES 11972
NODE 11856 USED FOR NODES 11973
NODE 11931 USED FOR NODES 12230
NODE 10668 USED FOR NODES 11709
NODE 9706 USED FOR NODES 10620
NODE 11978 USED FOR NODES 12270
NODE 11979 USED FOR NODES 12271
NODE 11980 USED FOR NODES 12272
NODE 10669 USED FOR NODES 11710
NODE 11981 USED FOR NODES 12273
NODE 9761 USED FOR NODES 10660
NODE 9762 USED FOR NODES 10661
NODE 9763 USED FOR NODES 10662
NODE 9764 USED FOR NODES 10663
NODE 10606 USED FOR NODES 11687
NODE 10165 USED FOR NODES 11058
NODE 11069 USED FOR NODES 11402

NODE 11103	USED FOR NODES	11437		
NODE 11104	USED FOR NODES	11438		
NODE 11105	USED FOR NODES	11439		
NODE 11106	USED FOR NODES	11440		
NODE 10205	USED FOR NODES	11111		
NODE 10206	USED FOR NODES	11112		
NODE 10207	USED FOR NODES	11113		
NODE 10208	USED FOR NODES	11114		
NODE 10670	USED FOR NODES	11711		
NODE 10671	USED FOR NODES	11712		
NODE 9977	USED FOR NODES	10151		
NODE 9979	USED FOR NODES	10213		
NODE 9980	USED FOR NODES	10214		
NODE 9981	USED FOR NODES	10215		
NODE 9982	USED FOR NODES	10216		
NODE 11407	USED FOR NODES	11542		
NODE 11429	USED FOR NODES	11577		
NODE 11430	USED FOR NODES	11578		
NODE 11431	USED FOR NODES	11579		
NODE 11432	USED FOR NODES	11580		
NODE 9838	USED FOR NODES	9930		
NODE 9840	USED FOR NODES	9932		
NODE 9721	USED FOR NODES	9923		
NODE 9837	USED FOR NODES	9929		
NODE 9839	USED FOR NODES	9931		
NODE 8837	USED FOR NODES	9057	9711	9922
NODE 8893	USED FOR NODES	9058	9757	9925
NODE 8894	USED FOR NODES	9059	9758	9926
NODE 8895	USED FOR NODES	9060	9759	9927
NODE 8896	USED FOR NODES	9061	9760	9928
NODE 9091	USED FOR NODES	10043		
NODE 9092	USED FOR NODES	10044		
NODE 9093	USED FOR NODES	10045		
NODE 9094	USED FOR NODES	10046		
NODE 9082	USED FOR NODES	10010		
NODE 8933	USED FOR NODES	9793		
NODE 8934	USED FOR NODES	9794		
NODE 8839	USED FOR NODES	9712		
NODE 8935	USED FOR NODES	9795		
NODE 8936	USED FOR NODES	9796		
NODE 9095	USED FOR NODES	10039		
NODE 9096	USED FOR NODES	10040		
NODE 9097	USED FOR NODES	10041		
NODE 9098	USED FOR NODES	10042		
NODE 8840	USED FOR NODES	9713		
NODE 8937	USED FOR NODES	9797		
NODE 8938	USED FOR NODES	9798		
NODE 8939	USED FOR NODES	9799		
NODE 8940	USED FOR NODES	9800		
NODE 9083	USED FOR NODES	10009		
NODE 9099	USED FOR NODES	10035		
NODE 9100	USED FOR NODES	10036		
NODE 9101	USED FOR NODES	10037		
NODE 9102	USED FOR NODES	10038		
NODE 8841	USED FOR NODES	9714		
NODE 8941	USED FOR NODES	9801		
NODE 8942	USED FOR NODES	9802		
NODE 8943	USED FOR NODES	9803		
NODE 8944	USED FOR NODES	9804		
NODE 9084	USED FOR NODES	10008		
NODE 8981	USED FOR NODES	9073		
NODE 8862	USED FOR NODES	9064		
NODE 8982	USED FOR NODES	9074		
NODE 8983	USED FOR NODES	9075		
NODE 8984	USED FOR NODES	9076		
NODE 8842	USED FOR NODES	9715		
NODE 9103	USED FOR NODES	10031		
NODE 9104	USED FOR NODES	10032		
NODE 9105	USED FOR NODES	10033		
NODE 9106	USED FOR NODES	10034		

NODE 8945	USED FOR NODES	9805		
NODE 8946	USED FOR NODES	9806		
NODE 8947	USED FOR NODES	9807		
NODE 8948	USED FOR NODES	9808		
NODE 9085	USED FOR NODES	10007		
NODE 8861	USED FOR NODES	9063		
NODE 8977	USED FOR NODES	9069		
NODE 8978	USED FOR NODES	9070		
NODE 8979	USED FOR NODES	9071		
NODE 8980	USED FOR NODES	9072		
NODE 9107	USED FOR NODES	10027		
NODE 9108	USED FOR NODES	10028		
NODE 9109	USED FOR NODES	10029		
NODE 9110	USED FOR NODES	10030		
NODE 9086	USED FOR NODES	10006		
NODE 8952	USED FOR NODES	9812		
NODE 8950	USED FOR NODES	9810		
NODE 8951	USED FOR NODES	9811		
NODE 8843	USED FOR NODES	9716		
NODE 8949	USED FOR NODES	9809		
NODE 9986	USED FOR NODES	10220		
NODE 9983	USED FOR NODES	10217		
NODE 9978	USED FOR NODES	10152		
NODE 9985	USED FOR NODES	10219		
NODE 9984	USED FOR NODES	10218		
NODE 11822	USED FOR NODES	11941		
NODE 11723	USED FOR NODES	11851		
NODE 10210	USED FOR NODES	11116		
NODE 11983	USED FOR NODES	12275		
NODE 11858	USED FOR NODES	11975		
NODE 11932	USED FOR NODES	12231		
NODE 11984	USED FOR NODES	12276		
NODE 11985	USED FOR NODES	12277		
NODE 11107	USED FOR NODES	11441		
NODE 11435	USED FOR NODES	11583		
NODE 11436	USED FOR NODES	11584		
NODE 11683	USED FOR NODES	11826		
NODE 10674	USED FOR NODES	11715		
NODE 11108	USED FOR NODES	11442		
NODE 9707	USED FOR NODES	10621		
NODE 11433	USED FOR NODES	11581		
NODE 11859	USED FOR NODES	11976		
NODE 10212	USED FOR NODES	11118		
NODE 10673	USED FOR NODES	11714		
NODE 11857	USED FOR NODES	11974		
NODE 10607	USED FOR NODES	11688		
NODE 11109	USED FOR NODES	11443		
NODE 10209	USED FOR NODES	11115		
NODE 11724	USED FOR NODES	11852		
NODE 10675	USED FOR NODES	11716		
NODE 10672	USED FOR NODES	11713		
NODE 11721	USED FOR NODES	11849		
NODE 11982	USED FOR NODES	12274		
NODE 10211	USED FOR NODES	11117		
NODE 11722	USED FOR NODES	11850		
NODE 11434	USED FOR NODES	11582		
NODE 11070	USED FOR NODES	11403		
NODE 9766	USED FOR NODES	10665		
NODE 11860	USED FOR NODES	11977		
NODE 11408	USED FOR NODES	11543		
NODE 9767	USED FOR NODES	10666		
NODE 9768	USED FOR NODES	10667		
NODE 10166	USED FOR NODES	11059		
NODE 9765	USED FOR NODES	10664		
NODE 11110	USED FOR NODES	11444		
NODE 8087	USED FOR NODES	8252	8851	9062
NODE 8136	USED FOR NODES	8253	8885	9065
NODE 8137	USED FOR NODES	8254	8886	9066
NODE 8138	USED FOR NODES	8255	8887	9067
NODE 8139	USED FOR NODES	8256	8888	9068

NODE	8281	USED FOR NODES	9183
NODE	8282	USED FOR NODES	9184
NODE	8283	USED FOR NODES	9185
NODE	8284	USED FOR NODES	9186
NODE	8272	USED FOR NODES	9150
NODE	8175	USED FOR NODES	8900
NODE	8174	USED FOR NODES	8899
NODE	8172	USED FOR NODES	8897
NODE	8173	USED FOR NODES	8898
NODE	8089	USED FOR NODES	8852
NODE	8285	USED FOR NODES	9179
NODE	8286	USED FOR NODES	9180
NODE	8287	USED FOR NODES	9181
NODE	8288	USED FOR NODES	9182
NODE	8273	USED FOR NODES	9149
NODE	8176	USED FOR NODES	8901
NODE	8177	USED FOR NODES	8902
NODE	8178	USED FOR NODES	8903
NODE	8179	USED FOR NODES	8904
NODE	8090	USED FOR NODES	8853
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NODE	8954	USED FOR NODES	9814
NODE	8844	USED FOR NODES	9717
NODE	8955	USED FOR NODES	9815
NODE	8956	USED FOR NODES	9816
NODE	9111	USED FOR NODES	10023
NODE	9112	USED FOR NODES	10024
NODE	9113	USED FOR NODES	10025
NODE	9114	USED FOR NODES	10026
NODE	9087	USED FOR NODES	10005
NODE	8180	USED FOR NODES	8905
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NODE	8182	USED FOR NODES	8907
NODE	8183	USED FOR NODES	8908
NODE	8274	USED FOR NODES	9148
NODE	8289	USED FOR NODES	9175
NODE	8290	USED FOR NODES	9176
NODE	8291	USED FOR NODES	9177
NODE	8292	USED FOR NODES	9178
NODE	8091	USED FOR NODES	8854
NODE	8215	USED FOR NODES	8266
NODE	8110	USED FOR NODES	8258
NODE	8214	USED FOR NODES	8265
NODE	8212	USED FOR NODES	8263
NODE	8213	USED FOR NODES	8264
NODE	8293	USED FOR NODES	9171
NODE	8294	USED FOR NODES	9172
NODE	8295	USED FOR NODES	9173
NODE	8296	USED FOR NODES	9174
NODE	8275	USED FOR NODES	9147
NODE	8187	USED FOR NODES	8912
NODE	8185	USED FOR NODES	8910
NODE	8092	USED FOR NODES	8855
NODE	8186	USED FOR NODES	8911
NODE	8184	USED FOR NODES	8909
NODE	8125	USED FOR NODES	8260
NODE	8126	USED FOR NODES	8261
NODE	8127	USED FOR NODES	8262
NODE	8104	USED FOR NODES	8257
NODE	8124	USED FOR NODES	8259
NODE	9115	USED FOR NODES	10019
NODE	9116	USED FOR NODES	10020
NODE	9117	USED FOR NODES	10021
NODE	9118	USED FOR NODES	10022
NODE	9088	USED FOR NODES	10004
NODE	8959	USED FOR NODES	9819
NODE	8958	USED FOR NODES	9818
NODE	8845	USED FOR NODES	9718
NODE	8960	USED FOR NODES	9820
NODE	8957	USED FOR NODES	9817

NODE	8297	USED FOR NODES	9167
NODE	8298	USED FOR NODES	9168
NODE	8299	USED FOR NODES	9169
NODE	8300	USED FOR NODES	9170
NODE	8276	USED FOR NODES	9146
NODE	8191	USED FOR NODES	8916
NODE	8190	USED FOR NODES	8915
NODE	8093	USED FOR NODES	8856
NODE	8188	USED FOR NODES	8913
NODE	8189	USED FOR NODES	8914
NODE	8301	USED FOR NODES	9163
NODE	8302	USED FOR NODES	9164
NODE	8303	USED FOR NODES	9165
NODE	8304	USED FOR NODES	9166
NODE	8277	USED FOR NODES	9145
NODE	8192	USED FOR NODES	8917
NODE	8195	USED FOR NODES	8920
NODE	8194	USED FOR NODES	8919
NODE	8193	USED FOR NODES	8918
NODE	8094	USED FOR NODES	8857
NODE	7695	USED FOR NODES	8131
NODE	7693	USED FOR NODES	8129
NODE	7677	USED FOR NODES	8100
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NODE	7694	USED FOR NODES	8130
NODE	9119	USED FOR NODES	10015
NODE	9120	USED FOR NODES	10016
NODE	9121	USED FOR NODES	10017
NODE	9122	USED FOR NODES	10018
NODE	9089	USED FOR NODES	10003
NODE	8964	USED FOR NODES	9824
NODE	8846	USED FOR NODES	9719
NODE	8961	USED FOR NODES	9821
NODE	8963	USED FOR NODES	9823
NODE	8962	USED FOR NODES	9822
NODE	8307	USED FOR NODES	9161
NODE	8308	USED FOR NODES	9162
NODE	8196	USED FOR NODES	8921
NODE	8197	USED FOR NODES	8922
NODE	8198	USED FOR NODES	8923
NODE	8199	USED FOR NODES	8924
NODE	8095	USED FOR NODES	8858
NODE	8305	USED FOR NODES	9159
NODE	8306	USED FOR NODES	9160
NODE	8278	USED FOR NODES	9144
NODE	7679	USED FOR NODES	8101
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*** WARNING ***

CP= 129.960 TIME= 17:05:04

Same node numbers associated with more than one solid model entity.

Future mesh clearing operations could produce unexpected results.

NUMMRG,KP could correct this problem.

```

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
KEYPOINT 78 USED FOR KEYPOINT(S) 132
KEYPOINT 89 USED FOR KEYPOINT(S) 106 131
KEYPOINT 104 USED FOR KEYPOINT(S) 117
KEYPOINT 111 USED FOR KEYPOINT(S) 130 137 157
KEYPOINT 114 USED FOR KEYPOINT(S) 144
KEYPOINT 119 USED FOR KEYPOINT(S) 127 146 152
KEYPOINT 122 USED FOR KEYPOINT(S) 128
KEYPOINT 124 USED FOR KEYPOINT(S) 133
KEYPOINT 125 USED FOR KEYPOINT(S) 129 148 160
KEYPOINT 140 USED FOR KEYPOINT(S) 155 162 193
KEYPOINT 141 USED FOR KEYPOINT(S) 170
KEYPOINT 145 USED FOR KEYPOINT(S) 150 176 186
KEYPOINT 149 USED FOR KEYPOINT(S) 153 177 196
KEYPOINT 164 USED FOR KEYPOINT(S) 192 210
KEYPOINT 165 USED FOR KEYPOINT(S) 212
KEYPOINT 171 USED FOR KEYPOINT(S) 205
KEYPOINT 173 USED FOR KEYPOINT(S) 184 202
KEYPOINT 179 USED FOR KEYPOINT(S) 187
KEYPOINT 181 USED FOR KEYPOINT(S) 199
KEYPOINT 190 USED FOR KEYPOINT(S) 207
KEYPOINT 198 USED FOR KEYPOINT(S) 214
KEYPOINT 204 USED FOR KEYPOINT(S) 215
KEYPOINT 206 USED FOR KEYPOINT(S) 217
KEYPOINT 208 USED FOR KEYPOINT(S) 231
KEYPOINT 209 USED FOR KEYPOINT(S) 234
KEYPOINT 211 USED FOR KEYPOINT(S) 236
KEYPOINT 213 USED FOR KEYPOINT(S) 220
KEYPOINT 216 USED FOR KEYPOINT(S) 221
KEYPOINT 218 USED FOR KEYPOINT(S) 223
KEYPOINT 219 USED FOR KEYPOINT(S) 226
KEYPOINT 222 USED FOR KEYPOINT(S) 227
KEYPOINT 224 USED FOR KEYPOINT(S) 229
KEYPOINT 232 USED FOR KEYPOINT(S) 237
KEYPOINT 233 USED FOR KEYPOINT(S) 240
KEYPOINT 235 USED FOR KEYPOINT(S) 242
KEYPOINT 238 USED FOR KEYPOINT(S) 243
KEYPOINT 239 USED FOR KEYPOINT(S) 246
KEYPOINT 241 USED FOR KEYPOINT(S) 248
KEYPOINT 244 USED FOR KEYPOINT(S) 249
KEYPOINT 245 USED FOR KEYPOINT(S) 252
KEYPOINT 247 USED FOR KEYPOINT(S) 254
LINE 154 USED FOR LINE(S) 297
LINE 172 USED FOR LINE(S) 298
LINE 174 USED FOR LINE(S) 240 292
LINE 233 USED FOR LINE(S) 257
LINE 236 USED FOR LINE(S) 256
LINE 239 USED FOR LINE(S) 290
LINE 241 USED FOR LINE(S) 289 306 359
LINE 243 USED FOR LINE(S) 314
LINE 244 USED FOR LINE(S) 313
LINE 259 USED FOR LINE(S) 330
LINE 262 USED FOR LINE(S) 271 325 345
LINE 263 USED FOR LINE(S) 272
LINE 264 USED FOR LINE(S) 273
LINE 267 USED FOR LINE(S) 302
LINE 268 USED FOR LINE(S) 300
LINE 269 USED FOR LINE(S) 283 335 366
LINE 270 USED FOR LINE(S) 346
LINE 282 USED FOR LINE(S) 365
LINE 305 USED FOR LINE(S) 358
LINE 307 USED FOR LINE(S) 354 372 439
LINE 308 USED FOR LINE(S) 396
LINE 309 USED FOR LINE(S) 395

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LINE	315	USED FOR LINE(S)	414		
LINE	319	USED FOR LINE(S)	340	413	431
LINE	320	USED FOR LINE(S)	341		
LINE	331	USED FOR LINE(S)	367		
LINE	336	USED FOR LINE(S)	353	421	441
LINE	339	USED FOR LINE(S)	432		
LINE	352	USED FOR LINE(S)	440		
LINE	371	USED FOR LINE(S)	438		
LINE	377	USED FOR LINE(S)	437	462	
LINE	382	USED FOR LINE(S)	468		
LINE	383	USED FOR LINE(S)	467		
LINE	401	USED FOR LINE(S)	452		
LINE	403	USED FOR LINE(S)	451		
LINE	408	USED FOR LINE(S)	429	447	
LINE	409	USED FOR LINE(S)	430		
LINE	416	USED FOR LINE(S)	442		
LINE	422	USED FOR LINE(S)	434		
LINE	427	USED FOR LINE(S)	445		
LINE	428	USED FOR LINE(S)	446		
LINE	435	USED FOR LINE(S)	457		
LINE	436	USED FOR LINE(S)	463		
LINE	444	USED FOR LINE(S)	471		
LINE	449	USED FOR LINE(S)	473		
LINE	450	USED FOR LINE(S)	472		
LINE	454	USED FOR LINE(S)	478		
LINE	455	USED FOR LINE(S)	477		
LINE	458	USED FOR LINE(S)	509		
LINE	459	USED FOR LINE(S)	515		
LINE	460	USED FOR LINE(S)	514		
LINE	464	USED FOR LINE(S)	520		
LINE	465	USED FOR LINE(S)	519		
LINE	470	USED FOR LINE(S)	484		
LINE	475	USED FOR LINE(S)	486		
LINE	476	USED FOR LINE(S)	485		
LINE	480	USED FOR LINE(S)	491		
LINE	481	USED FOR LINE(S)	490		
LINE	483	USED FOR LINE(S)	497		
LINE	488	USED FOR LINE(S)	499		
LINE	489	USED FOR LINE(S)	498		
LINE	493	USED FOR LINE(S)	504		
LINE	494	USED FOR LINE(S)	503		
LINE	510	USED FOR LINE(S)	522		
LINE	511	USED FOR LINE(S)	528		
LINE	512	USED FOR LINE(S)	527		
LINE	516	USED FOR LINE(S)	533		
LINE	517	USED FOR LINE(S)	532		
LINE	523	USED FOR LINE(S)	535		
LINE	524	USED FOR LINE(S)	541		
LINE	525	USED FOR LINE(S)	540		
LINE	529	USED FOR LINE(S)	546		
LINE	530	USED FOR LINE(S)	545		
LINE	536	USED FOR LINE(S)	548		
LINE	537	USED FOR LINE(S)	554		
LINE	538	USED FOR LINE(S)	553		
LINE	542	USED FOR LINE(S)	559		
LINE	543	USED FOR LINE(S)	558		
AREA	123	USED FOR AREA(S)	230		
AREA	163	USED FOR AREA(S)	182		
AREA	176	USED FOR AREA(S)	226		
AREA	177	USED FOR AREA(S)	264		
AREA	193	USED FOR AREA(S)	282		
AREA	198	USED FOR AREA(S)	208		
AREA	204	USED FOR AREA(S)	239		
AREA	205	USED FOR AREA(S)	291		
AREA	223	USED FOR AREA(S)	295		
AREA	248	USED FOR AREA(S)	294		
AREA	255	USED FOR AREA(S)	302		
AREA	273	USED FOR AREA(S)	307		
AREA	277	USED FOR AREA(S)	290		
AREA	288	USED FOR AREA(S)	296		

AREA 289 USED FOR AREA(S) 313
 AREA 293 USED FOR AREA(S) 318
 AREA 298 USED FOR AREA(S) 317
 AREA 299 USED FOR AREA(S) 337
 AREA 305 USED FOR AREA(S) 326
 AREA 306 USED FOR AREA(S) 312
 AREA 309 USED FOR AREA(S) 319
 AREA 311 USED FOR AREA(S) 322
 AREA 316 USED FOR AREA(S) 333
 AREA 324 USED FOR AREA(S) 340
 AREA 328 USED FOR AREA(S) 344
 AREA 331 USED FOR AREA(S) 369
 AREA 335 USED FOR AREA(S) 373
 AREA 342 USED FOR AREA(S) 349
 AREA 346 USED FOR AREA(S) 353
 AREA 351 USED FOR AREA(S) 358
 AREA 355 USED FOR AREA(S) 362
 AREA 367 USED FOR AREA(S) 378
 AREA 371 USED FOR AREA(S) 382
 AREA 376 USED FOR AREA(S) 387
 AREA 380 USED FOR AREA(S) 391
 AREA 385 USED FOR AREA(S) 396
 AREA 389 USED FOR AREA(S) 400

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
 IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 133.730 TIME= 17:05:10
 Nodes cannot be cleared from area 1 because volume 55 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.740 TIME= 17:05:11
 Nodes cannot be cleared from area 2 because volume 56 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.750 TIME= 17:05:11
 Nodes cannot be cleared from area 3 because volume 53 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.750 TIME= 17:05:11
 Nodes cannot be cleared from area 4 because volume 54 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.760 TIME= 17:05:11
 Nodes cannot be cleared from area 5 because volume 51 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.780 TIME= 17:05:11
 Nodes cannot be cleared from area 6 because volume 52 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.790 TIME= 17:05:11
 Nodes cannot be cleared from area 7 because volume 47 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.810 TIME= 17:05:11
 Nodes cannot be cleared from area 8 because volume 48 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.830 TIME= 17:05:11
 Nodes cannot be cleared from area 9 because volume 49 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.850 TIME= 17:05:11

Nodes cannot be cleared from area 10 because volume 50 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.860 TIME= 17:05:11
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.870 TIME= 17:05:11
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.880 TIME= 17:05:11
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.880 TIME= 17:05:11
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.890 TIME= 17:05:11
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.900 TIME= 17:05:11
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.910 TIME= 17:05:11
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.920 TIME= 17:05:11
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.940 TIME= 17:05:11
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.950 TIME= 17:05:11
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.960 TIME= 17:05:11
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.970 TIME= 17:05:11
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.980 TIME= 17:05:11
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.990 TIME= 17:05:11
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only elements are deleted.

*** NOTE *** CP= 133.990 TIME= 17:05:11
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.000 TIME= 17:05:11
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.000 TIME= 17:05:11
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.010 TIME= 17:05:11
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.010 TIME= 17:05:11
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.020 TIME= 17:05:11
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.030 TIME= 17:05:11
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.040 TIME= 17:05:11
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.050 TIME= 17:05:11
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.060 TIME= 17:05:11
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.070 TIME= 17:05:11
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.080 TIME= 17:05:11
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.100 TIME= 17:05:11
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.110 TIME= 17:05:11
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.130 TIME= 17:05:11
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only elements are deleted.

*** NOTE *** CP= 134.150 TIME= 17:05:11
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 10806 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 10806 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

99 NODES (OF 10806 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES

TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 80
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

363 NODES (OF 10806 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 320

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE ***

Zero nodes were merged.

CP= 196.580 TIME= 17:07:05

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 197.100

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:07:06 JAN 04, 1995 CP= 197.110
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 9636 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

994 NODES (OF 10806 DEFINED) SELECTED FROM
952 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c12b5a.sub

*** WARNING *** CP= 197.620 TIME= 17:07:07
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 952 NUMBER OF NODES= 994
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10478 STEP 1

9636 ELEMENTS (OF 9636 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2178.710

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

TRW ENVIRONMENT VERSION=HP 9000/7XX 18:10:02 JAN 04, 1995 CP= 2178.710
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 10479 c12b5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 10479

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 10479
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 9637 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2179.640

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 2179.650 TIME= 18:10:13
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.77 AND 308.77
KABS= 0. TOLERANCE= 1.54386

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 10806 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12656 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.23 AND -991.23
KABS= 0. TOLERANCE= 4.95614

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 10806 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 12656 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2182.290 TIME= 18:10:25
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:10:25 JAN 04, 1995 CP= 2182.290
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM. TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 2184.270 TIME= 18:10:28
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2184.290 TIME= 18:10:28
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER. 1
 TIME AT END OF THE LOAD STEP.10000E-05
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 0
 MAXIMUM NUMBER OF SUBSTEPS 0
 MINIMUM NUMBER OF SUBSTEPS 1
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS OFF
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .42400E+06

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.47924E-09	IXX = .8356E+11	IXX = .5443E+11
YC = -.262.15	IYY = .1727E+08	IYY = .1727E+08
ZC = .24065E-15	IZZ = .8357E+11	IZZ = .5443E+11
	IXY = -.1523	IXY = -.9904E-01
	IYZ = .4879E-07	IYZ = .2204E-07
	IZX = -.2115E-09	IZX = -.2115E-09

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
2	424001.

Range of element maximum matrix coefficients in global coordinates
 Maximum= 174.474458 at element 9222.
 Minimum= 3.753562157E-08 at element 10479.

*** WARNING *** CP= 2236.220 TIME= 18:12:20
 Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8684	SOLID70	37.660	.004
18	1	MATRIX50	1.420	1.420

Time at end of element matrix formulation CP= 2236.22.
 HT FLOW CONVERGENCE VALUE= 82.18 CRITERION= .8218E-01

Estimated number of active DOF= 10652.
 Maximum wavefront= 1211.

Time at end of matrix triangularization CP= 2638.97.
 Equation solver maximum pivot= 732.088639 at node 898 TEMP.
 Equation solver minimum pivot= 0.919061741 at node 1968 TEMP.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
 HT FLOW CONVERGENCE VALUE= .1122 CRITERION= .1690E-02
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3730E-02
 HT FLOW CONVERGENCE VALUE= .5219E-05 CRITERION= .1690E-02 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8684	SOLID70	24.910	.003
18	1	MATRIX50	1.710	1.710

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8684	SOLID70	2.020	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2

*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 10652

R.M.S. WAVEFRONT SIZE = 445.2

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096

14.781 MB WRITTEN ON ELEMENT MATRIX FILE: c12b5a.emat

7.828 MB WRITTEN ON ELEMENT SAVED DATA FILE: c12b5a.esav

27.719 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c12b5a.tri

.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c12b5a.dsub

6.813 MB WRITTEN ON RESULTS FILE: c12b5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 3189.660

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

TRW ENVIRONMENT VERSION=HP 9000/7XX 18:45:48 JAN 04, 1995 CP= 3189.720

FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2

TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.13753

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 3201.480

Apply initial conditions wall temperature
as a temporary boundry condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS

RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

```
SELECT      FOR ITEM=AREA COMPONENT=
IN RANGE    64 TO      64 STEP      1

    1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    86 TO      86 STEP      1

    2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    120 TO     120 STEP      1

    3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    151 TO     151 STEP      1

    4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    157 TO     157 STEP      1

    5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    162 TO     162 STEP      1

    6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    160 TO     160 STEP      1

    7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    168 TO     168 STEP      1

    8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    181 TO     181 STEP      1

    9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    199 TO     199 STEP      1

   10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    212 TO     212 STEP      1

   11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    235 TO     235 STEP      1

   12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT      ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

   440 NODES (OF 10806 DEFINED) SELECTED FROM
   12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES      1 TO 12656 BY      1
REAL= 26.1375258      IMAG= .000000000E+00

ALL SELECT  FOR ITEM=AREA COMPONENT=
```

IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP intial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:46:15 JAN 04, 1995 CP= 3202.340
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 3204.370 TIME= 18:46:18
This load step will be a static (steady-state) step.

*** NOTE *** CP= 3205.080 TIME= 18:46:20
The step data was checked and warning messages were found.
Please review output or errors file (c12b5a.err) for these warning
messages.

*** NOTE *** CP= 3205.090 TIME= 18:46:20
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:46:20 JAN 04, 1995 CP= 3205.490
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
TIME AT END OF THE LOAD STEP.20000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 167.5 CRITERION= .1675
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 92.96
HT FLOW CONVERGENCE VALUE= 56.44 CRITERION= .1675
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.894
HT FLOW CONVERGENCE VALUE= 2.063 CRITERION= .1675
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1028
HT FLOW CONVERGENCE VALUE= .2056E-01 CRITERION= .1675 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .20000E-05 TIME INC = .10000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 10806 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 12656 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 440

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12656 STEP 1

10806 NODES (OF 10806 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:

USE 80 SUBSTEPS AS A MAXIMUM

USE 4 SUBSTEPS AS A MINIMUM

USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

Begin Transient

Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 3589.020 TIME= 19:03:20
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:03:20 JAN 04, 1995 CP= 3589.020
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 31.558
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 304.2 CRITERION= .1675
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5914E-04
HT FLOW CONVERGENCE VALUE= .3636E-04 CRITERION= .3473 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
*** TIME = .394472 TIME INC = .394470

*** RESPONSE EIGENVALUE = .9972E-05 OSCILLATION LIMIT = .3934E-05
 *** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 608.4 CRITERION= .3473
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1183E-03
 HT FLOW CONVERGENCE VALUE= .7272E-04 CRITERION= .3473 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
 *** TIME = .788942 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9972E-05 OSCILLATION LIMIT = .3934E-05
 *** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 608.4 CRITERION= .3473
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3548E-03
 HT FLOW CONVERGENCE VALUE= .2182E-03 CRITERION= .3473 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
 *** TIME = 1.97235 TIME INC = 1.18341
 *** RESPONSE EIGENVALUE = .9970E-05 OSCILLATION LIMIT = .1180E-04
 *** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 608.4 CRITERION= .3473
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1064E-02
 HT FLOW CONVERGENCE VALUE= .6544E-03 CRITERION= .3472 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
 *** TIME = 5.52258 TIME INC = 3.55023
 *** RESPONSE EIGENVALUE = .9967E-05 OSCILLATION LIMIT = .3539E-04
 *** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 608.4 CRITERION= .3473
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2365E-02
 HT FLOW CONVERGENCE VALUE= .1454E-02 CRITERION= .3472 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
 *** TIME = 13.4120 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9959E-05 OSCILLATION LIMIT = .7857E-04
 *** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

HT FLOW CONVERGENCE VALUE= 608.3 CRITERION= .3473
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2365E-02
 HT FLOW CONVERGENCE VALUE= .1454E-02 CRITERION= .3472 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
 *** TIME = 21.3014 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9948E-05 OSCILLATION LIMIT = .7849E-04
 *** AUTO TIME STEP: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 608.3 CRITERION= .3472
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1537E-02
 HT FLOW CONVERGENCE VALUE= .9447E-03 CRITERION= .3472 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
 *** TIME = 26.4295 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9940E-05 OSCILLATION LIMIT = .5097E-04
 *** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 608.2 CRITERION= .3472
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1537E-02
 HT FLOW CONVERGENCE VALUE= .9445E-03 CRITERION= .3472 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
 *** TIME = 31.5576 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9934E-05 OSCILLATION LIMIT = .5094E-04

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:13:01 JAN 04, 1995 CP= 5201.850
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 608.2    CRITERION= .3472
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.152
HT FLOW CONVERGENCE VALUE= 4.929    CRITERION= .2613
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1308
HT FLOW CONVERGENCE VALUE= .1058    CRITERION= .2612    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
*** TIME = 39478.6    TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .8052E-05    OSCILLATION LIMIT = .3176
*** AUTO STEP TIME: NEXT TIME INC = 39447.    UNCHANGED

HT FLOW CONVERGENCE VALUE= 412.9    CRITERION= .2705
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.432
HT FLOW CONVERGENCE VALUE= 2.857    CRITERION= .2341
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6173E-01
HT FLOW CONVERGENCE VALUE= .5863E-01    CRITERION= .2348    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
*** TIME = 78925.6    TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4829E-05    OSCILLATION LIMIT = .1905
*** AUTO TIME STEP: NEXT TIME INC = .10353E+06    INCREASED (FACTOR = 2.6246)

HT FLOW CONVERGENCE VALUE= 351.1    CRITERION= .2503
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.791
HT FLOW CONVERGENCE VALUE= 5.041    CRITERION= .2159
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1505
HT FLOW CONVERGENCE VALUE= .1608    CRITERION= .2170    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 20
*** TIME = 182458.    TIME INC = 103532.
*** RESPONSE EIGENVALUE = .2516E-05    OSCILLATION LIMIT = .2605
*** AUTO TIME STEP: NEXT TIME INC = .19869E+06    INCREASED (FACTOR = 1.9192)

HT FLOW CONVERGENCE VALUE= 303.4    CRITERION= .2347
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.686
HT FLOW CONVERGENCE VALUE= 6.322    CRITERION= .2081
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1991
HT FLOW CONVERGENCE VALUE= .2405    CRITERION= .2092
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7200E-02
HT FLOW CONVERGENCE VALUE= .6858E-02    CRITERION= .2092    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
*** TIME = 381152.    TIME INC = 198694.
*** RESPONSE EIGENVALUE = .1108E-05    OSCILLATION LIMIT = .2201
*** AUTO STEP TIME: NEXT TIME INC = .19869E+06    UNCHANGED

HT FLOW CONVERGENCE VALUE= 274.9    CRITERION= .2239
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.375
HT FLOW CONVERGENCE VALUE= 4.392    CRITERION= .2058
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1327
HT FLOW CONVERGENCE VALUE= .1645    CRITERION= .2065    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 25
*** TIME = 579846.    TIME INC = 198694.
*** RESPONSE EIGENVALUE = .6715E-06    OSCILLATION LIMIT = .1334
*** AUTO TIME STEP: NEXT TIME INC = .59608E+06    INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 259.3    CRITERION= .2169
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.031
HT FLOW CONVERGENCE VALUE= 9.398    CRITERION= .2012
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3867
HT FLOW CONVERGENCE VALUE= .4901    CRITERION= .2019
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2162E-01
```

HT FLOW CONVERGENCE VALUE= .2634E-01 CRITERION= .2018 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 28
*** TIME = .117593E+07 TIME INC = 596083.
*** RESPONSE EIGENVALUE = .4268E-06 OSCILLATION LIMIT = .2544
*** AUTO STEP TIME: NEXT TIME INC = .59608E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 235.9 CRITERION= .2077
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.553
HT FLOW CONVERGENCE VALUE= 5.885 CRITERION= .1998
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2509
HT FLOW CONVERGENCE VALUE= .3178 CRITERION= .2002
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1305E-01
HT FLOW CONVERGENCE VALUE= .1594E-01 CRITERION= .2002 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 31
*** TIME = .177201E+07 TIME INC = 596083.
*** RESPONSE EIGENVALUE = .2639E-06 OSCILLATION LIMIT = .1573
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3235)

HT FLOW CONVERGENCE VALUE= 226.5 CRITERION= .2038
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.473
HT FLOW CONVERGENCE VALUE= 5.880 CRITERION= .2002
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2621
HT FLOW CONVERGENCE VALUE= .3323 CRITERION= .2004
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1485E-01
HT FLOW CONVERGENCE VALUE= .1888E-01 CRITERION= .2004 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 34
*** TIME = .256095E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1805E-06 OSCILLATION LIMIT = .1424
*** AUTO TIME STEP: NEXT TIME INC = .59484E+06 DECREASED (FACTOR = .7540)

HT FLOW CONVERGENCE VALUE= 227.2 CRITERION= .2039
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.021
HT FLOW CONVERGENCE VALUE= 3.487 CRITERION= .2014
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1458
HT FLOW CONVERGENCE VALUE= .1847 CRITERION= .2016 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 36
*** TIME = .315579E+07 TIME INC = 594841.
*** RESPONSE EIGENVALUE = .1311E-06 OSCILLATION LIMIT = .7799E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 22:49:56 JAN 04, 1995 CP= 8613.670
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 229.1 CRITERION= .2037
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.732
HT FLOW CONVERGENCE VALUE= 2.997 CRITERION= .2016
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1239
HT FLOW CONVERGENCE VALUE= .1565 CRITERION= .2017 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 38
*** TIME = .375063E+07 TIME INC = 594841.
*** RESPONSE EIGENVALUE = .1070E-06 OSCILLATION LIMIT = .6362E-01
*** AUTO STEP TIME: NEXT TIME INC = .59484E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 230.7 CRITERION= .2043
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.535
HT FLOW CONVERGENCE VALUE= 2.619 CRITERION= .2024
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1080
HT FLOW CONVERGENCE VALUE= .1362 CRITERION= .2025 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 40
*** TIME = .434547E+07 TIME INC = 594841.
*** RESPONSE EIGENVALUE = .9088E-07 OSCILLATION LIMIT = .5406E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3263)

HT FLOW CONVERGENCE VALUE= 231.7 CRITERION= .2040
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.804
HT FLOW CONVERGENCE VALUE= 3.074 CRITERION= .2023
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1331
HT FLOW CONVERGENCE VALUE= .1673 CRITERION= .2024 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 42
*** TIME = .513441E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7812E-07 OSCILLATION LIMIT = .6163E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 232.5 CRITERION= .2044
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.604
HT FLOW CONVERGENCE VALUE= 2.708 CRITERION= .2028
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1167
HT FLOW CONVERGENCE VALUE= .1464 CRITERION= .2029 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 44
*** TIME = .592335E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .6755E-07 OSCILLATION LIMIT = .5329E-01
*** AUTO TIME STEP: NEXT TIME INC = .38820E+06 DECREASED (FACTOR = .4921)

HT FLOW CONVERGENCE VALUE= 232.8 CRITERION= .2040
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7277
HT FLOW CONVERGENCE VALUE= 1.218 CRITERION= .2024
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4414E-01
HT FLOW CONVERGENCE VALUE= .5498E-01 CRITERION= .2025 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 46
*** TIME = .631155E+07 TIME INC = 388199.
*** RESPONSE EIGENVALUE = .6148E-07 OSCILLATION LIMIT = .2387E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:04:20 JAN 05, 1995 CP= 10254.260
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 232.9 CRITERION= .2043
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6951
HT FLOW CONVERGENCE VALUE= 1.157 CRITERION= .2028
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4205E-01
HT FLOW CONVERGENCE VALUE= .5235E-01 CRITERION= .2029 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 48
*** TIME = .669975E+07 TIME INC = 388199.
*** RESPONSE EIGENVALUE = .5798E-07 OSCILLATION LIMIT = .2251E-01
*** AUTO STEP TIME: NEXT TIME INC = .38820E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 232.9 CRITERION= .2039
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6656
HT FLOW CONVERGENCE VALUE= 1.109 CRITERION= .2024
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4000E-01
HT FLOW CONVERGENCE VALUE= .4967E-01 CRITERION= .2025 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 50
*** TIME = .708795E+07 TIME INC = 388199.
*** RESPONSE EIGENVALUE = .5487E-07 OSCILLATION LIMIT = .2130E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.0323)

HT FLOW CONVERGENCE VALUE= 232.9 CRITERION= .2042

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.274
HT FLOW CONVERGENCE VALUE= 2.128 CRITERION= .2029
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9023E-01
HT FLOW CONVERGENCE VALUE= .1122 CRITERION= .2029 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 52
*** TIME = .787689E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .5049E-07 OSCILLATION LIMIT = .3983E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 233.0 CRITERION= .2037
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.181
HT FLOW CONVERGENCE VALUE= 1.967 CRITERION= .2025
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8267E-01
HT FLOW CONVERGENCE VALUE= .1025 CRITERION= .2025 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 54
*** TIME = .866583E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .4553E-07 OSCILLATION LIMIT = .3592E-01
*** AUTO TIME STEP: NEXT TIME INC = .80148E+06 INCREASED (FACTOR = 1.0159)

HT FLOW CONVERGENCE VALUE= 233.2 CRITERION= .2040
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.119
HT FLOW CONVERGENCE VALUE= 1.854 CRITERION= .2029
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7792E-01
HT FLOW CONVERGENCE VALUE= .9636E-01 CRITERION= .2030 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 56
*** TIME = .946731E+07 TIME INC = 801482.
*** RESPONSE EIGENVALUE = .4118E-07 OSCILLATION LIMIT = .3300E-01

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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:11 JAN 05, 1995 CP= 11891.070
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 233.4 CRITERION= .2036
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.033
HT FLOW CONVERGENCE VALUE= 1.708 CRITERION= .2026
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7095E-01
HT FLOW CONVERGENCE VALUE= .8747E-01 CRITERION= .2026 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 58
*** TIME = .102563E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3738E-07 OSCILLATION LIMIT = .2949E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 233.7 CRITERION= .2040
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9738
HT FLOW CONVERGENCE VALUE= 1.604 CRITERION= .2031
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6647E-01
HT FLOW CONVERGENCE VALUE= .8177E-01 CRITERION= .2031 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 60
*** TIME = .110452E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3405E-07 OSCILLATION LIMIT = .2686E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 234.1 CRITERION= .2036
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9214
HT FLOW CONVERGENCE VALUE= 1.515 CRITERION= .2028
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6230E-01
HT FLOW CONVERGENCE VALUE= .7643E-01 CRITERION= .2028 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 62

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*** TIME = .118341E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3112E-07 OSCILLATION LIMIT = .2455E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 234.5 CRITERION= .2040
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8747
 HT FLOW CONVERGENCE VALUE= 1.434 CRITERION= .2033
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5884E-01
 HT FLOW CONVERGENCE VALUE= .7204E-01 CRITERION= .2033 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 64
 *** TIME = .126231E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2850E-07 OSCILLATION LIMIT = .2248E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 02:18:02 JAN 05, 1995 CP= 13207.140
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 235.0 CRITERION= .2037
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8326
 HT FLOW CONVERGENCE VALUE= 1.367 CRITERION= .2030
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5552E-01
 HT FLOW CONVERGENCE VALUE= .6779E-01 CRITERION= .2030 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 66
 *** TIME = .134120E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2619E-07 OSCILLATION LIMIT = .2066E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 235.5 CRITERION= .2041
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7943
 HT FLOW CONVERGENCE VALUE= 1.303 CRITERION= .2035
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5275E-01
 HT FLOW CONVERGENCE VALUE= .6423E-01 CRITERION= .2035 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 68
 *** TIME = .142010E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2410E-07 OSCILLATION LIMIT = .1902E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 236.0 CRITERION= .2038
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7596
 HT FLOW CONVERGENCE VALUE= 1.254 CRITERION= .2032
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5005E-01
 HT FLOW CONVERGENCE VALUE= .6069E-01 CRITERION= .2032 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 70
 *** TIME = .149899E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2227E-07 OSCILLATION LIMIT = .1757E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 236.5 CRITERION= .2042
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7280
 HT FLOW CONVERGENCE VALUE= 1.205 CRITERION= .2037
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4780E-01
 HT FLOW CONVERGENCE VALUE= .5782E-01 CRITERION= .2037 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 72
 *** TIME = .157788E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2061E-07 OSCILLATION LIMIT = .1626E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 03:19:58 JAN 05, 1995 CP= 14524.160
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 237.1 CRITERION= .2039
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6992
HT FLOW CONVERGENCE VALUE= 1.160 CRITERION= .2034
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4554E-01
HT FLOW CONVERGENCE VALUE= .5493E-01 CRITERION= .2034 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 74
*** TIME = .165678E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1916E-07 OSCILLATION LIMIT = .1511E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 237.6 CRITERION= .2044
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6730
HT FLOW CONVERGENCE VALUE= 1.117 CRITERION= .2039
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4369E-01
HT FLOW CONVERGENCE VALUE= .5260E-01 CRITERION= .2039 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 76
*** TIME = .173567E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1783E-07 OSCILLATION LIMIT = .1407E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 238.2 CRITERION= .2041
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6489
HT FLOW CONVERGENCE VALUE= 1.077 CRITERION= .2036
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4180E-01
HT FLOW CONVERGENCE VALUE= .5019E-01 CRITERION= .2036 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 78
*** TIME = .181457E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1667E-07 OSCILLATION LIMIT = .1315E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 238.7 CRITERION= .2045
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6268
HT FLOW CONVERGENCE VALUE= 1.039 CRITERION= .2041
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4026E-01
HT FLOW CONVERGENCE VALUE= .4825E-01 CRITERION= .2041 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 80
*** TIME = .189346E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1561E-07 OSCILLATION LIMIT = .1232E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 04:18:20 JAN 05, 1995 CP= 15838.500
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 239.2 CRITERION= .2042
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6062
HT FLOW CONVERGENCE VALUE= 1.007 CRITERION= .2038
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3865E-01
HT FLOW CONVERGENCE VALUE= .4617E-01 CRITERION= .2038 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 82
*** TIME = .197235E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1468E-07 OSCILLATION LIMIT = .1158E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 239.7 CRITERION= .2047
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5874
 HT FLOW CONVERGENCE VALUE= .9742 CRITERION= .2042
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3734E-01
 HT FLOW CONVERGENCE VALUE= .4456E-01 CRITERION= .2042 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 84
 *** TIME = .205125E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1382E-07 OSCILLATION LIMIT = .1091E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 240.2 CRITERION= .2044
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5702
 HT FLOW CONVERGENCE VALUE= .9445 CRITERION= .2039
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3596E-01
 HT FLOW CONVERGENCE VALUE= .4281E-01 CRITERION= .2039 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 86
 *** TIME = .213014E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1307E-07 OSCILLATION LIMIT = .1031E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 240.7 CRITERION= .2048
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5542
 HT FLOW CONVERGENCE VALUE= .9144 CRITERION= .2044
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3485E-01
 HT FLOW CONVERGENCE VALUE= .4144E-01 CRITERION= .2044 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 88
 *** TIME = .220904E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1237E-07 OSCILLATION LIMIT = .9761E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 05:17:06 JAN 05, 1995 CP= 17151.470
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 241.1 CRITERION= .2045
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5393
 HT FLOW CONVERGENCE VALUE= .8903 CRITERION= .2041
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3366E-01
 HT FLOW CONVERGENCE VALUE= .3992E-01 CRITERION= .2041 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 90
 *** TIME = .228793E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1176E-07 OSCILLATION LIMIT = .9277E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 241.6 CRITERION= .2049
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5256
 HT FLOW CONVERGENCE VALUE= .8661 CRITERION= .2045
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3273E-01
 HT FLOW CONVERGENCE VALUE= .3876E-01 CRITERION= .2045 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 92
 *** TIME = .236682E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1118E-07 OSCILLATION LIMIT = .8823E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 242.0 CRITERION= .2046
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5128
 HT FLOW CONVERGENCE VALUE= .8459 CRITERION= .2042
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3170E-01
 HT FLOW CONVERGENCE VALUE= .3744E-01 CRITERION= .2042 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 94
*** TIME = .244572E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1068E-07 OSCILLATION LIMIT = .8429E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 242.4 CRITERION= .2050
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5007
HT FLOW CONVERGENCE VALUE= .8235 CRITERION= .2047
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3088E-01
HT FLOW CONVERGENCE VALUE= .3644E-01 CRITERION= .2047 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 96
*** TIME = .252461E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1021E-07 OSCILLATION LIMIT = .8055E-02

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 06:16:20 JAN 05, 1995 CP= 18468.810
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 242.8 CRITERION= .2047
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4893
HT FLOW CONVERGENCE VALUE= .8034 CRITERION= .2043
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2996E-01
HT FLOW CONVERGENCE VALUE= .3528E-01 CRITERION= .2043 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 98
*** TIME = .260351E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .9800E-08 OSCILLATION LIMIT = .7732E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 243.2 CRITERION= .2051
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4784
HT FLOW CONVERGENCE VALUE= .7818 CRITERION= .2048
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2923E-01
HT FLOW CONVERGENCE VALUE= .3438E-01 CRITERION= .2048 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 100
*** TIME = .268240E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .9403E-08 OSCILLATION LIMIT = .7419E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 243.6 CRITERION= .2048
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4681
HT FLOW CONVERGENCE VALUE= .7646 CRITERION= .2044
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2839E-01
HT FLOW CONVERGENCE VALUE= .3333E-01 CRITERION= .2044 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 102
*** TIME = .276129E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .9057E-08 OSCILLATION LIMIT = .7145E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 244.0 CRITERION= .2052
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4585
HT FLOW CONVERGENCE VALUE= .7460 CRITERION= .2048
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2776E-01
HT FLOW CONVERGENCE VALUE= .3255E-01 CRITERION= .2048 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 104
*** TIME = .284019E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8718E-08 OSCILLATION LIMIT = .6878E-02
Apply loads and solve for 1 to 9 years
```

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
755.827987 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 19787.170 TIME= 07:16:53
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 07:16:53 JAN 05, 1995 CP= 19787.170
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
TIME AT END OF THE LOAD STEP.31558E+08
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 244.3 CRITERION= .2049
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4494
HT FLOW CONVERGENCE VALUE= .7317 CRITERION= .2045
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2702E-01
HT FLOW CONVERGENCE VALUE= .3162E-01 CRITERION= .2045 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 106
*** TIME = .291908E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8421E-08 OSCILLATION LIMIT = .6644E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 244.6 CRITERION= .2052
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4410
HT FLOW CONVERGENCE VALUE= .7163 CRITERION= .2049
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2649E-01
HT FLOW CONVERGENCE VALUE= .3096E-01 CRITERION= .2049 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 108
*** TIME = .299798E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8129E-08 OSCILLATION LIMIT = .6413E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 244.9 CRITERION= .2049
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4331
HT FLOW CONVERGENCE VALUE= .7031 CRITERION= .2046
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2584E-01
HT FLOW CONVERGENCE VALUE= .3014E-01 CRITERION= .2046 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 110
*** TIME = .307687E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7881E-08 OSCILLATION LIMIT = .6218E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 245.2 CRITERION= .2053
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4256
HT FLOW CONVERGENCE VALUE= .6884 CRITERION= .2050
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2535E-01
HT FLOW CONVERGENCE VALUE= .2954E-01 CRITERION= .2050 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 112
*** TIME = .315576E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7631E-08 OSCILLATION LIMIT = .6020E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:18:08 JAN 05, 1995 CP= 21109.680
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 245.5 CRITERION= .2050
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4186
HT FLOW CONVERGENCE VALUE= .6763 CRITERION= .2046
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2475E-01
HT FLOW CONVERGENCE VALUE= .2879E-01 CRITERION= .2046 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 114
*** TIME = .323466E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7419E-08 OSCILLATION LIMIT = .5853E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 245.8 CRITERION= .2053
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4118
HT FLOW CONVERGENCE VALUE= .6626 CRITERION= .2050
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2432E-01
HT FLOW CONVERGENCE VALUE= .2826E-01 CRITERION= .2050 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 116
*** TIME = .331355E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .7201E-08 OSCILLATION LIMIT = .5681E-02

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*** AUTO TIME STEP: NEXT TIME INC = .23668E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 246.1 CRITERION= .2049
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.198
 HT FLOW CONVERGENCE VALUE= 1.936 CRITERION= .2048
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8294E-01
 HT FLOW CONVERGENCE VALUE= .9577E-01 CRITERION= .2047 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 118
 *** TIME = .355023E+08 TIME INC = .236682E+07
 *** RESPONSE EIGENVALUE = .6751E-08 OSCILLATION LIMIT = .1598E-01
 *** AUTO TIME STEP: NEXT TIME INC = .71005E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 246.9 CRITERION= .2049
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.330
 HT FLOW CONVERGENCE VALUE= 5.311 CRITERION= .2053
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2490
 HT FLOW CONVERGENCE VALUE= .2824 CRITERION= .2051
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2262E-01
 HT FLOW CONVERGENCE VALUE= .3347E-01 CRITERION= .2051 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 121
 *** TIME = .426028E+08 TIME INC = .710046E+07
 *** RESPONSE EIGENVALUE = .5871E-08 OSCILLATION LIMIT = .4169E-01
 *** AUTO STEP TIME: NEXT TIME INC = .71005E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 248.7 CRITERION= .2045
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.016
 HT FLOW CONVERGENCE VALUE= 4.696 CRITERION= .2048
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2167
 HT FLOW CONVERGENCE VALUE= .2429 CRITERION= .2045
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1933E-01
 HT FLOW CONVERGENCE VALUE= .2835E-01 CRITERION= .2045 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 124
 *** TIME = .497033E+08 TIME INC = .710046E+07
 *** RESPONSE EIGENVALUE = .4926E-08 OSCILLATION LIMIT = .3497E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 249.8 CRITERION= .2045
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.109
 HT FLOW CONVERGENCE VALUE= 4.701 CRITERION= .2047
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2160
 HT FLOW CONVERGENCE VALUE= .2390 CRITERION= .2045
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1940E-01
 HT FLOW CONVERGENCE VALUE= .2835E-01 CRITERION= .2045 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 127
 *** TIME = .575927E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .4238E-08 OSCILLATION LIMIT = .3343E-01
 *** AUTO TIME STEP: NEXT TIME INC = .55226E+07 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 250.6 CRITERION= .2040
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.050
 HT FLOW CONVERGENCE VALUE= 3.027 CRITERION= .2039
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1833
 HT FLOW CONVERGENCE VALUE= .1929 CRITERION= .2038 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 129
 *** TIME = .631152E+08 TIME INC = .552258E+07
 *** RESPONSE EIGENVALUE = .3798E-08 OSCILLATION LIMIT = .2097E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 10:20:00 JAN 05, 1995 CP= 23769.030
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 250.7 CRITERION= .2039
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.958
HT FLOW CONVERGENCE VALUE= 2.791 CRITERION= .2038
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1805
HT FLOW CONVERGENCE VALUE= .1917 CRITERION= .2037 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 131
*** TIME = .686378E+08 TIME INC = .552258E+07
*** RESPONSE EIGENVALUE = .3503E-08 OSCILLATION LIMIT = .1934E-01
*** AUTO STEP TIME: NEXT TIME INC = .55226E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 250.6 CRITERION= .2031
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.871
HT FLOW CONVERGENCE VALUE= 2.592 CRITERION= .2030
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1466
HT FLOW CONVERGENCE VALUE= .1526 CRITERION= .2028 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 133
*** TIME = .741604E+08 TIME INC = .552258E+07
*** RESPONSE EIGENVALUE = .3230E-08 OSCILLATION LIMIT = .1784E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 250.2 CRITERION= .2028
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.537
HT FLOW CONVERGENCE VALUE= 3.677 CRITERION= .2026
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2531
HT FLOW CONVERGENCE VALUE= .3224 CRITERION= .2023
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1057E-01
HT FLOW CONVERGENCE VALUE= .8556E-02 CRITERION= .2023 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 136
*** TIME = .820498E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2973E-08 OSCILLATION LIMIT = .2345E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 249.2 CRITERION= .2015
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.385
HT FLOW CONVERGENCE VALUE= 3.691 CRITERION= .2013
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2405
HT FLOW CONVERGENCE VALUE= .3512 CRITERION= .2009
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1011E-01
HT FLOW CONVERGENCE VALUE= .1123E-01 CRITERION= .2009 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 139
*** TIME = .899392E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2763E-08 OSCILLATION LIMIT = .2180E-01
*** AUTO TIME STEP: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 247.9 CRITERION= .2011
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.360
HT FLOW CONVERGENCE VALUE= 2.377 CRITERION= .2008
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1052
HT FLOW CONVERGENCE VALUE= .1514 CRITERION= .2006 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 141
*** TIME = .946728E+08 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .2582E-08 OSCILLATION LIMIT = .1222E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 11:17:06 JAN 05, 1995 CP= 25570.840
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 246.9 CRITERION= .2001
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.311
HT FLOW CONVERGENCE VALUE= 2.788 CRITERION= .1998
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1015
HT FLOW CONVERGENCE VALUE= .1558 CRITERION= .1996 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 143
*** TIME = .994065E+08 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .2468E-08 OSCILLATION LIMIT = .1168E-01
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 245.8 CRITERION= .1998
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.265
HT FLOW CONVERGENCE VALUE= 2.355 CRITERION= .1995
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8792E-01
HT FLOW CONVERGENCE VALUE= .1129 CRITERION= .1993 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 145
*** TIME = .104140E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .2358E-08 OSCILLATION LIMIT = .1116E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 244.7 CRITERION= .1986
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.014
HT FLOW CONVERGENCE VALUE= 4.076 CRITERION= .1981
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1706
HT FLOW CONVERGENCE VALUE= .2779 CRITERION= .1978
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7544E-02
HT FLOW CONVERGENCE VALUE= .1011E-01 CRITERION= .1978 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 148
*** TIME = .112030E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2190E-08 OSCILLATION LIMIT = .1728E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 242.7 CRITERION= .1977
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.902
HT FLOW CONVERGENCE VALUE= 3.523 CRITERION= .1972
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1421
HT FLOW CONVERGENCE VALUE= .2323 CRITERION= .1970
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7687E-02
HT FLOW CONVERGENCE VALUE= .9768E-02 CRITERION= .1970 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 151
*** TIME = .119919E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2033E-08 OSCILLATION LIMIT = .1604E-01
*** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 240.6 CRITERION= .1963
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.448
HT FLOW CONVERGENCE VALUE= 3.475 CRITERION= .1959
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1046
HT FLOW CONVERGENCE VALUE= .2031 CRITERION= .1956
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5263E-02
HT FLOW CONVERGENCE VALUE= .8697E-02 CRITERION= .1956 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 154
*** TIME = .126230E+09 TIME INC = .631152E+07
*** RESPONSE EIGENVALUE = .1926E-08 OSCILLATION LIMIT = .1215E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:08:42 JAN 05, 1995 CP= 27459.400
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 238.9 CRITERION= .1957
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.387
 HT FLOW CONVERGENCE VALUE= 3.168 CRITERION= .1953
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8984E-01
 HT FLOW CONVERGENCE VALUE= .1690 CRITERION= .1950 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 156
 *** TIME = .132542E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1838E-08 OSCILLATION LIMIT = .1160E-01
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 237.1 CRITERION= .1944
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.330
 HT FLOW CONVERGENCE VALUE= 3.230 CRITERION= .1940
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9507E-01
 HT FLOW CONVERGENCE VALUE= .1503 CRITERION= .1937 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 158
 *** TIME = .138853E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1749E-08 OSCILLATION LIMIT = .1104E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 235.3 CRITERION= .1937
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.589
 HT FLOW CONVERGENCE VALUE= 3.502 CRITERION= .1932
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1034
 HT FLOW CONVERGENCE VALUE= .1812 CRITERION= .1929 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 160
 *** TIME = .146743E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1638E-08 OSCILLATION LIMIT = .1292E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 233.1 CRITERION= .1921
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.513
 HT FLOW CONVERGENCE VALUE= 3.942 CRITERION= .1916
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1073
 HT FLOW CONVERGENCE VALUE= .2186 CRITERION= .1913
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8046E-02
 HT FLOW CONVERGENCE VALUE= .1202E-01 CRITERION= .1913 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 163
 *** TIME = .154632E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1543E-08 OSCILLATION LIMIT = .1218E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+07 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 230.8 CRITERION= .1916
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5837
 HT FLOW CONVERGENCE VALUE= 1.778 CRITERION= .1913
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3286E-01
 HT FLOW CONVERGENCE VALUE= .6367E-01 CRITERION= .1912 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 165
 *** TIME = .157788E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1523E-08 OSCILLATION LIMIT = .4806E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:31:16 JAN 05, 1995 CP= 29221.110
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 229.9 CRITERION= .1908
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5726
 HT FLOW CONVERGENCE VALUE= 1.749 CRITERION= .1905
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3261E-01

HT FLOW CONVERGENCE VALUE= .6116E-01 CRITERION= .1904 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 167
 *** TIME = .160944E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1503E-08 OSCILLATION LIMIT = .4744E-02
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 229.0 CRITERION= .1906
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5618
 HT FLOW CONVERGENCE VALUE= 1.757 CRITERION= .1904
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3265E-01
 HT FLOW CONVERGENCE VALUE= .5869E-01 CRITERION= .1903 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 169
 *** TIME = .164100E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1450E-08 OSCILLATION LIMIT = .4577E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 228.1 CRITERION= .1895
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.363
 HT FLOW CONVERGENCE VALUE= 3.741 CRITERION= .1891
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8404E-01
 HT FLOW CONVERGENCE VALUE= .1504 CRITERION= .1888 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 171
 *** TIME = .171989E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1359E-08 OSCILLATION LIMIT = .1073E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 226.0 CRITERION= .1887
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.305
 HT FLOW CONVERGENCE VALUE= 3.685 CRITERION= .1883
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8520E-01
 HT FLOW CONVERGENCE VALUE= .1716 CRITERION= .1880 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 173
 *** TIME = .179878E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1286E-08 OSCILLATION LIMIT = .1015E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 223.8 CRITERION= .1874
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7562
 HT FLOW CONVERGENCE VALUE= 2.434 CRITERION= .1871
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5112E-01
 HT FLOW CONVERGENCE VALUE= .9222E-01 CRITERION= .1869 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 175
 *** TIME = .184612E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1264E-08 OSCILLATION LIMIT = .5984E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.5 CRITERION= .1871
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7379
 HT FLOW CONVERGENCE VALUE= 2.361 CRITERION= .1868
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4298E-01
 HT FLOW CONVERGENCE VALUE= .9450E-01 CRITERION= .1866 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 6 COMPLETED. CUM ITER = 177
 *** TIME = .189346E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1224E-08 OSCILLATION LIMIT = .5795E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:01:10 JAN 05, 1995 CP= 31195.280
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 221.2 CRITERION= .1861
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7203
 HT FLOW CONVERGENCE VALUE= 2.596 CRITERION= .1858
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4441E-01
 HT FLOW CONVERGENCE VALUE= .1023 CRITERION= .1856 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 179
 *** TIME = .194079E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1206E-08 OSCILLATION LIMIT = .5709E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 219.9 CRITERION= .1857
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7037
 HT FLOW CONVERGENCE VALUE= 2.509 CRITERION= .1855
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4053E-01
 HT FLOW CONVERGENCE VALUE= .8268E-01 CRITERION= .1853 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 181
 *** TIME = .198813E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1167E-08 OSCILLATION LIMIT = .5523E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 218.7 CRITERION= .1845
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.139
 HT FLOW CONVERGENCE VALUE= 3.554 CRITERION= .1841
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7403E-01
 HT FLOW CONVERGENCE VALUE= .1494 CRITERION= .1839 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 183
 *** TIME = .206702E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1096E-08 OSCILLATION LIMIT = .8649E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 216.7 CRITERION= .1838
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.099
 HT FLOW CONVERGENCE VALUE= 3.748 CRITERION= .1835
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6951E-01
 HT FLOW CONVERGENCE VALUE= .1426 CRITERION= .1832 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 185
 *** TIME = .214592E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1046E-08 OSCILLATION LIMIT = .8252E-02
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 214.7 CRITERION= .1825
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8516
 HT FLOW CONVERGENCE VALUE= 2.797 CRITERION= .1822
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6522E-01
 HT FLOW CONVERGENCE VALUE= .1569 CRITERION= .1820 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 187
 *** TIME = .220903E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1015E-08 OSCILLATION LIMIT = .6403E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 16:22:34 JAN 05, 1995 CP= 32856.720
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 213.2 CRITERION= .1821
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8294
 HT FLOW CONVERGENCE VALUE= 5.754 CRITERION= .1820
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1021
 HT FLOW CONVERGENCE VALUE= .4687 CRITERION= .1816

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8923E-02
 HT FLOW CONVERGENCE VALUE= .4501E-01 CRITERION= .1816 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 190
 *** TIME = .227215E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1016E-08 OSCILLATION LIMIT = .6415E-02
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.9 CRITERION= .1811
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8079
 HT FLOW CONVERGENCE VALUE= 5.456 CRITERION= .1811
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8490E-01
 HT FLOW CONVERGENCE VALUE= .3047 CRITERION= .1806
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5923E-02
 HT FLOW CONVERGENCE VALUE= .2069E-01 CRITERION= .1806 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 193
 *** TIME = .233526E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .1086E-08 OSCILLATION LIMIT = .6855E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 210.8 CRITERION= .1807
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9808
 HT FLOW CONVERGENCE VALUE= 5.492 CRITERION= .1806
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9205E-01
 HT FLOW CONVERGENCE VALUE= .3103 CRITERION= .1802
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6386E-02
 HT FLOW CONVERGENCE VALUE= .2092E-01 CRITERION= .1802 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 196
 *** TIME = .241416E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1015E-08 OSCILLATION LIMIT = .8006E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 209.5 CRITERION= .1796
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9497
 HT FLOW CONVERGENCE VALUE= 4.965 CRITERION= .1794
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8715E-01
 HT FLOW CONVERGENCE VALUE= .2995 CRITERION= .1791
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5906E-02
 HT FLOW CONVERGENCE VALUE= .2088E-01 CRITERION= .1791 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 199
 *** TIME = .249305E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .9415E-09 OSCILLATION LIMIT = .7428E-02
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+07 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 208.1 CRITERION= .1794
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3716
 HT FLOW CONVERGENCE VALUE= 2.049 CRITERION= .1792
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2151E-01
 HT FLOW CONVERGENCE VALUE= .7536E-01 CRITERION= .1791 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 201
 *** TIME = .252461E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .9545E-09 OSCILLATION LIMIT = .3012E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:06:40 JAN 05, 1995 CP= 34991.490
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 207.6 CRITERION= .1785
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3672
 HT FLOW CONVERGENCE VALUE= 2.038 CRITERION= .1785

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2326E-01
 HT FLOW CONVERGENCE VALUE= .8378E-01 CRITERION= .1783 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 203
 *** TIME = .255617E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1091E-08 OSCILLATION LIMIT = .3442E-02
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 207.0 CRITERION= .1784
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3630
 HT FLOW CONVERGENCE VALUE= 2.875 CRITERION= .1784
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3452E-01
 HT FLOW CONVERGENCE VALUE= .1601 CRITERION= .1782 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 205
 *** TIME = .258772E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1173E-08 OSCILLATION LIMIT = .3702E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 206.4 CRITERION= .1771
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8903
 HT FLOW CONVERGENCE VALUE= 9.345 CRITERION= .1775
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1274
 HT FLOW CONVERGENCE VALUE= .7477 CRITERION= .1766
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1345E-01
 HT FLOW CONVERGENCE VALUE= .7222E-01 CRITERION= .1766 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 208
 *** TIME = .266662E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1229E-08 OSCILLATION LIMIT = .9700E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 204.9 CRITERION= .1762
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8634
 HT FLOW CONVERGENCE VALUE= 5.640 CRITERION= .1763
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7203E-01
 HT FLOW CONVERGENCE VALUE= .2557 CRITERION= .1758
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4219E-02
 HT FLOW CONVERGENCE VALUE= .1489E-01 CRITERION= .1758 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 211
 *** TIME = .274551E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1251E-08 OSCILLATION LIMIT = .9870E-02
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 203.5 CRITERION= .1750
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5042
 HT FLOW CONVERGENCE VALUE= 2.631 CRITERION= .1749
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4047E-01
 HT FLOW CONVERGENCE VALUE= .1351 CRITERION= .1747 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 213
 *** TIME = .279285E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1174E-08 OSCILLATION LIMIT = .5557E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 202.5 CRITERION= .1746
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4944
 HT FLOW CONVERGENCE VALUE= 4.075 CRITERION= .1747
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5042E-01
 HT FLOW CONVERGENCE VALUE= .2602 CRITERION= .1743
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3925E-02
 HT FLOW CONVERGENCE VALUE= .2043E-01 CRITERION= .1743 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 21 SUBSTEP 6 COMPLETED. CUM ITER = 216
 *** TIME = .284018E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1176E-08 OSCILLATION LIMIT = .5566E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
640.948474 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 37325.020 TIME= 19:56:12
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:56:13 JAN 05, 1995 CP= 37325.020
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
TIME AT END OF THE LOAD STEP.31558E+09
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 201.6 CRITERION= .1736
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4851
HT FLOW CONVERGENCE VALUE= 4.143 CRITERION= .1738
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4460E-01
HT FLOW CONVERGENCE VALUE= .2255 CRITERION= .1733
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3248E-02

HT FLOW CONVERGENCE VALUE= .1367E-01 CRITERION= .1734 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 219
 *** TIME = .288752E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1095E-08 OSCILLATION LIMIT = .5183E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 200.7 CRITERION= .1734
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4756
 HT FLOW CONVERGENCE VALUE= 3.006 CRITERION= .1735
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3030E-01
 HT FLOW CONVERGENCE VALUE= .1117 CRITERION= .1732 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 221
 *** TIME = .293486E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1055E-08 OSCILLATION LIMIT = .4995E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 200.0 CRITERION= .1723
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7734
 HT FLOW CONVERGENCE VALUE= 3.772 CRITERION= .1722
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5159E-01
 HT FLOW CONVERGENCE VALUE= .1476 CRITERION= .1719 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 223
 *** TIME = .301375E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .9806E-09 OSCILLATION LIMIT = .7736E-02
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 198.8 CRITERION= .1717
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7536
 HT FLOW CONVERGENCE VALUE= 4.206 CRITERION= .1717
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7452E-01
 HT FLOW CONVERGENCE VALUE= .2786 CRITERION= .1713
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6155E-02
 HT FLOW CONVERGENCE VALUE= .2342E-01 CRITERION= .1713 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 226
 *** TIME = .309265E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .9345E-09 OSCILLATION LIMIT = .7373E-02
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 197.4 CRITERION= .1705
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5895
 HT FLOW CONVERGENCE VALUE= 4.035 CRITERION= .1705
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5340E-01
 HT FLOW CONVERGENCE VALUE= .2949 CRITERION= .1701
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5264E-02
 HT FLOW CONVERGENCE VALUE= .2595E-01 CRITERION= .1701 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 229
 *** TIME = .315576E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .9818E-09 OSCILLATION LIMIT = .6197E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:27:07 JAN 05, 1995 CP= 39333.520
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 196.3 CRITERION= .1702
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5781
 HT FLOW CONVERGENCE VALUE= 3.806 CRITERION= .1702
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4388E-01

HT FLOW CONVERGENCE VALUE= .2540 CRITERION= .1698
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7660E-02
 HT FLOW CONVERGENCE VALUE= .2737E-01 CRITERION= .1698 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 232
 *** TIME = .321888E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .9218E-09 OSCILLATION LIMIT = .5818E-02
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 195.2 CRITERION= .1692
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5673
 HT FLOW CONVERGENCE VALUE= 4.545 CRITERION= .1693
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6758E-01
 HT FLOW CONVERGENCE VALUE= .3477 CRITERION= .1687
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7070E-02
 HT FLOW CONVERGENCE VALUE= .3301E-01 CRITERION= .1688 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 235
 *** TIME = .328199E+09 TIME INC = .631152E+07
 *** RESPONSE EIGENVALUE = .9558E-09 OSCILLATION LIMIT = .6032E-02
 *** AUTO TIME STEP: NEXT TIME INC = .18935E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 194.0 CRITERION= .1681
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.637
 HT FLOW CONVERGENCE VALUE= 12.40 CRITERION= .1690
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2691
 HT FLOW CONVERGENCE VALUE= 1.105 CRITERION= .1670
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3328E-01
 HT FLOW CONVERGENCE VALUE= .1258 CRITERION= .1671 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 238
 *** TIME = .347134E+09 TIME INC = .189346E+08
 *** RESPONSE EIGENVALUE = .9631E-09 OSCILLATION LIMIT = .1824E-01
 *** AUTO TIME STEP: NEXT TIME INC = .56804E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 190.8 CRITERION= .1636
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.418
 HT FLOW CONVERGENCE VALUE= 23.99 CRITERION= .1659
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6765
 HT FLOW CONVERGENCE VALUE= 3.632 CRITERION= .1610
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1171
 HT FLOW CONVERGENCE VALUE= .5918 CRITERION= .1614
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2513E-01
 HT FLOW CONVERGENCE VALUE= .1083 CRITERION= .1613 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 242
 *** TIME = .403937E+09 TIME INC = .568037E+08
 *** RESPONSE EIGENVALUE = .7853E-09 OSCILLATION LIMIT = .4461E-01
 *** AUTO STEP TIME: NEXT TIME INC = .56804E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 183.0 CRITERION= .1585
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.760
 HT FLOW CONVERGENCE VALUE= 16.15 CRITERION= .1593
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4761
 HT FLOW CONVERGENCE VALUE= 1.689 CRITERION= .1565
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6177E-01
 HT FLOW CONVERGENCE VALUE= .2842 CRITERION= .1567
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1015E-01
 HT FLOW CONVERGENCE VALUE= .5379E-01 CRITERION= .1567 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 246
 *** TIME = .460741E+09 TIME INC = .568037E+08
 *** RESPONSE EIGENVALUE = .6906E-09 OSCILLATION LIMIT = .3923E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.3889)

HT FLOW CONVERGENCE VALUE= 176.6 CRITERION= .1519
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.505
 HT FLOW CONVERGENCE VALUE= 22.81 CRITERION= .1529
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6113
 HT FLOW CONVERGENCE VALUE= 2.643 CRITERION= .1490


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EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9262E-01
HT FLOW CONVERGENCE VALUE= .4899 CRITERION= .1493
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1730E-01
HT FLOW CONVERGENCE VALUE= .9350E-01 CRITERION= .1493 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 250
*** TIME = .539635E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6503E-09 OSCILLATION LIMIT = .5131E-01
*** AUTO TIME STEP: NEXT TIME INC = .45759E+08 DECREASED (FACTOR = .5800)

HT FLOW CONVERGENCE VALUE= 167.4 CRITERION= .1471
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.294
HT FLOW CONVERGENCE VALUE= 10.10 CRITERION= .1474
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1882
HT FLOW CONVERGENCE VALUE= .9330 CRITERION= .1460
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2363E-01
HT FLOW CONVERGENCE VALUE= .1090 CRITERION= .1461 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 253
*** TIME = .585394E+09 TIME INC = .457585E+08
*** RESPONSE EIGENVALUE = .6728E-09 OSCILLATION LIMIT = .3078E-01
*** AUTO STEP TIME: NEXT TIME INC = .45759E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 163.9 CRITERION= .1431
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.122
HT FLOW CONVERGENCE VALUE= 10.53 CRITERION= .1432
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1852
HT FLOW CONVERGENCE VALUE= .8528 CRITERION= .1420
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2723E-01
HT FLOW CONVERGENCE VALUE= .9390E-01 CRITERION= .1421 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 256
*** TIME = .631152E+09 TIME INC = .457585E+08
*** RESPONSE EIGENVALUE = .6685E-09 OSCILLATION LIMIT = .3059E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:29:59 JAN 06, 1995 CP= 43278.370
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 160.2 CRITERION= .1405
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.977
HT FLOW CONVERGENCE VALUE= 10.86 CRITERION= .1409
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2319
HT FLOW CONVERGENCE VALUE= 1.102 CRITERION= .1396
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2897E-01
HT FLOW CONVERGENCE VALUE= .2042 CRITERION= .1397
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5626E-02
HT FLOW CONVERGENCE VALUE= .3746E-01 CRITERION= .1397 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 260
*** TIME = .676911E+09 TIME INC = .457585E+08
*** RESPONSE EIGENVALUE = .5274E-09 OSCILLATION LIMIT = .2413E-01
*** AUTO STEP TIME: NEXT TIME INC = .45759E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 157.5 CRITERION= .1374
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.849
HT FLOW CONVERGENCE VALUE= 16.84 CRITERION= .1401
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2135
HT FLOW CONVERGENCE VALUE= 1.480 CRITERION= .1371
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2694E-01
HT FLOW CONVERGENCE VALUE= .2050 CRITERION= .1373
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3896E-02
HT FLOW CONVERGENCE VALUE= .3045E-01 CRITERION= .1373 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

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*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 264
 *** TIME = .722669E+09 TIME INC = .457585E+08
 *** RESPONSE EIGENVALUE = .5410E-09 OSCILLATION LIMIT = .2476E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7241)

HT FLOW CONVERGENCE VALUE= 157.0 CRITERION= .1343
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.953
 HT FLOW CONVERGENCE VALUE= 13.58 CRITERION= .1351
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7790
 HT FLOW CONVERGENCE VALUE= 1.674 CRITERION= .1344
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1325
 HT FLOW CONVERGENCE VALUE= .3367 CRITERION= .1346
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2327E-01
 HT FLOW CONVERGENCE VALUE= .6714E-01 CRITERION= .1346 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 268
 *** TIME = .801563E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6670E-09 OSCILLATION LIMIT = .5262E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 158.3 CRITERION= .1310
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.951
 HT FLOW CONVERGENCE VALUE= 21.77 CRITERION= .1334
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4123
 HT FLOW CONVERGENCE VALUE= 2.486 CRITERION= .1300
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9278E-01
 HT FLOW CONVERGENCE VALUE= .5986 CRITERION= .1304
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2535E-01
 HT FLOW CONVERGENCE VALUE= .1406 CRITERION= .1304
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6460E-02
 HT FLOW CONVERGENCE VALUE= .3534E-01 CRITERION= .1304 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 273
 *** TIME = .880457E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .6640E-09 OSCILLATION LIMIT = .5238E-01
 *** AUTO TIME STEP: NEXT TIME INC = .66271E+08 DECREASED (FACTOR = .8400)

HT FLOW CONVERGENCE VALUE= 156.2 CRITERION= .1280
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.261
 HT FLOW CONVERGENCE VALUE= 8.543 CRITERION= .1284
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2025
 HT FLOW CONVERGENCE VALUE= 1.227 CRITERION= .1279
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2923E-01
 HT FLOW CONVERGENCE VALUE= .2740 CRITERION= .1281
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6267E-02
 HT FLOW CONVERGENCE VALUE= .6207E-01 CRITERION= .1281 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 277
 *** TIME = .946728E+09 TIME INC = .662710E+08
 *** RESPONSE EIGENVALUE = .6646E-09 OSCILLATION LIMIT = .4404E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 02:47:31 JAN 06, 1995 CP= 46252.670
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 156.5 CRITERION= .1254
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.107
 HT FLOW CONVERGENCE VALUE= 19.17 CRITERION= .1303
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2637
 HT FLOW CONVERGENCE VALUE= 1.891 CRITERION= .1250
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4894E-01
 HT FLOW CONVERGENCE VALUE= .3379 CRITERION= .1254
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9458E-02
 HT FLOW CONVERGENCE VALUE= .6062E-01 CRITERION= .1253 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 281
*** TIME = .101300E+10 TIME INC = .662710E+08
*** RESPONSE EIGENVALUE = .5421E-09 OSCILLATION LIMIT = .3592E-01
*** AUTO STEP TIME: NEXT TIME INC = .66271E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 156.2 CRITERION= .1233
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.909
HT FLOW CONVERGENCE VALUE= 5.107 CRITERION= .1231
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1155
HT FLOW CONVERGENCE VALUE= .3728 CRITERION= .1234
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1121E-01
HT FLOW CONVERGENCE VALUE= .3232E-01 CRITERION= .1235 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 284
*** TIME = .107927E+10 TIME INC = .662710E+08
*** RESPONSE EIGENVALUE = .5716E-09 OSCILLATION LIMIT = .3788E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1905)

HT FLOW CONVERGENCE VALUE= 156.6 CRITERION= .1204
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.149
HT FLOW CONVERGENCE VALUE= 13.57 CRITERION= .1198
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3128
HT FLOW CONVERGENCE VALUE= .2888 CRITERION= .1188
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1020E-01
HT FLOW CONVERGENCE VALUE= .2003E-01 CRITERION= .1189 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 287
*** TIME = .115816E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6125E-09 OSCILLATION LIMIT = .4832E-01
*** AUTO TIME STEP: NEXT TIME INC = .52070E+08 DECREASED (FACTOR = .6600)

HT FLOW CONVERGENCE VALUE= 151.9 CRITERION= .1174
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.357
HT FLOW CONVERGENCE VALUE= 14.68 CRITERION= .1181
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2561
HT FLOW CONVERGENCE VALUE= .5969 CRITERION= .1160
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1877E-01
HT FLOW CONVERGENCE VALUE= .6934E-01 CRITERION= .1161 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 290
*** TIME = .121023E+10 TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .7007E-09 OSCILLATION LIMIT = .3649E-01
*** AUTO STEP TIME: NEXT TIME INC = .52070E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 148.0 CRITERION= .1140
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.270
HT FLOW CONVERGENCE VALUE= 12.18 CRITERION= .1150
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1694
HT FLOW CONVERGENCE VALUE= .2866 CRITERION= .1128
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8437E-02
HT FLOW CONVERGENCE VALUE= .2766E-01 CRITERION= .1129 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 293
*** TIME = .126230E+10 TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .7491E-09 OSCILLATION LIMIT = .3901E-01

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 04:35:34 JAN 06, 1995 CP= 48623.100
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 144.5 CRITERION= .1119
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.212
HT FLOW CONVERGENCE VALUE= 2.910 CRITERION= .1105

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6383E-01
HT FLOW CONVERGENCE VALUE= .1274 CRITERION= .1109
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2890E-02
HT FLOW CONVERGENCE VALUE= .7368E-02 CRITERION= .1109 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 296
*** TIME = .131437E+10 TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .5323E-09 OSCILLATION LIMIT = .2772E-01
*** AUTO STEP TIME: NEXT TIME INC = .52070E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 141.5 CRITERION= .1093
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.167
HT FLOW CONVERGENCE VALUE= 11.08 CRITERION= .1101
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1489
HT FLOW CONVERGENCE VALUE= 1.290 CRITERION= .1080
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1857E-01
HT FLOW CONVERGENCE VALUE= .1740 CRITERION= .1083
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2549E-02
HT FLOW CONVERGENCE VALUE= .2317E-01 CRITERION= .1083 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 300
*** TIME = .136644E+10 TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .4886E-09 OSCILLATION LIMIT = .2544E-01
*** AUTO STEP TIME: NEXT TIME INC = .52070E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 138.5 CRITERION= .1073
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.132
HT FLOW CONVERGENCE VALUE= 5.622 CRITERION= .1075
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9411E-01
HT FLOW CONVERGENCE VALUE= .6477 CRITERION= .1063
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1682E-01
HT FLOW CONVERGENCE VALUE= .1262 CRITERION= .1064
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3218E-02
HT FLOW CONVERGENCE VALUE= .2433E-01 CRITERION= .1064 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 304
*** TIME = .141851E+10 TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .5527E-09 OSCILLATION LIMIT = .2878E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5152)

HT FLOW CONVERGENCE VALUE= 135.7 CRITERION= .1041
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.654
HT FLOW CONVERGENCE VALUE= 10.12 CRITERION= .1030
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2204
HT FLOW CONVERGENCE VALUE= .7698 CRITERION= .1027
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2213E-01
HT FLOW CONVERGENCE VALUE= .1161 CRITERION= .1028
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3737E-02
HT FLOW CONVERGENCE VALUE= .1920E-01 CRITERION= .1028 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 308
*** TIME = .149741E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5945E-09 OSCILLATION LIMIT = .4690E-01
*** AUTO TIME STEP: NEXT TIME INC = .40236E+08 DECREASED (FACTOR = .5100)

HT FLOW CONVERGENCE VALUE= 132.0 CRITERION= .1022
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8079
HT FLOW CONVERGENCE VALUE= 3.819 CRITERION= .1012
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1147
HT FLOW CONVERGENCE VALUE= .3905 CRITERION= .1017
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1575E-01
HT FLOW CONVERGENCE VALUE= .4753E-01 CRITERION= .1017 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 311
*** TIME = .153764E+10 TIME INC = .402359E+08
*** RESPONSE EIGENVALUE = .6314E-09 OSCILLATION LIMIT = .2541E-01
*** AUTO STEP TIME: NEXT TIME INC = .40236E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 130.7 CRITERION= .1004
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7866

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HT FLOW CONVERGENCE VALUE= 2.315      CRITERION= .1001
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3426E-01
HT FLOW CONVERGENCE VALUE= .2638      CRITERION= .9969E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3966E-02
HT FLOW CONVERGENCE VALUE= .3189E-01 CRITERION= .9974E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 26 SUBSTEP 6 COMPLETED. CUM ITER = 314
*** TIME = .157788E+10 TIME INC = .402359E+08
*** RESPONSE EIGENVALUE = .5828E-09 OSCILLATION LIMIT = .2345E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 06:59:39 JAN 06, 1995 CP= 51695.650
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 128.7      CRITERION= .9928E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7703
HT FLOW CONVERGENCE VALUE= 10.80      CRITERION= .1010
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1361
HT FLOW CONVERGENCE VALUE= .9697      CRITERION= .9808E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1396E-01
HT FLOW CONVERGENCE VALUE= .9861E-01 CRITERION= .9832E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1521E-02
HT FLOW CONVERGENCE VALUE= .1016E-01 CRITERION= .9829E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 318
*** TIME = .161812E+10 TIME INC = .402359E+08
*** RESPONSE EIGENVALUE = .4930E-09 OSCILLATION LIMIT = .1984E-01
*** AUTO STEP TIME: NEXT TIME INC = .40236E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 125.6      CRITERION= .9717E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7492
HT FLOW CONVERGENCE VALUE= 3.706      CRITERION= .9723E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5062E-01
HT FLOW CONVERGENCE VALUE= .4906E-02 CRITERION= .9634E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 320
*** TIME = .165835E+10 TIME INC = .402359E+08
*** RESPONSE EIGENVALUE = .5228E-09 OSCILLATION LIMIT = .2103E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.9608)

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HT FLOW CONVERGENCE VALUE= 123.0      CRITERION= .9512E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.422
HT FLOW CONVERGENCE VALUE= .9478      CRITERION= .9377E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3199E-01
HT FLOW CONVERGENCE VALUE= .8575E-01 CRITERION= .9388E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 322
*** TIME = .173725E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .4733E-09 OSCILLATION LIMIT = .3734E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 119.2      CRITERION= .9199E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.365
HT FLOW CONVERGENCE VALUE= 5.762      CRITERION= .9030E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1099
HT FLOW CONVERGENCE VALUE= .7227      CRITERION= .9046E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1331E-01
HT FLOW CONVERGENCE VALUE= .1252      CRITERION= .9067E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2325E-02
HT FLOW CONVERGENCE VALUE= .2334E-01 CRITERION= .9065E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 326
*** TIME = .181614E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5199E-09 OSCILLATION LIMIT = .4101E-01

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*** AUTO TIME STEP: NEXT TIME INC = .77316E+08 DECREASED (FACTOR = .9800)

HT FLOW CONVERGENCE VALUE= 115.0 CRITERION= .8946E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.290
 HT FLOW CONVERGENCE VALUE= 11.55 CRITERION= .9083E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1812
 HT FLOW CONVERGENCE VALUE= .7923E-02 CRITERION= .8820E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 328
 *** TIME = .189346E+10 TIME INC = .77316E+08
 *** RESPONSE EIGENVALUE = .5975E-09 OSCILLATION LIMIT = .4620E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:41:00 JAN 06, 1995 CP= 53842.140
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 111.0 CRITERION= .8665E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.232
 HT FLOW CONVERGENCE VALUE= .6524 CRITERION= .8569E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2533E-01
 HT FLOW CONVERGENCE VALUE= .6323E-01 CRITERION= .8575E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 330
 *** TIME = .197077E+10 TIME INC = .77316E+08
 *** RESPONSE EIGENVALUE = .4692E-09 OSCILLATION LIMIT = .3627E-01
 *** AUTO STEP TIME: NEXT TIME INC = .77316E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 108.2 CRITERION= .8487E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.186
 HT FLOW CONVERGENCE VALUE= 5.117 CRITERION= .8432E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1341
 HT FLOW CONVERGENCE VALUE= .6230 CRITERION= .8404E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1966E-01
 HT FLOW CONVERGENCE VALUE= .9022E-01 CRITERION= .8415E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3026E-02
 HT FLOW CONVERGENCE VALUE= .1243E-01 CRITERION= .8415E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 334
 *** TIME = .204809E+10 TIME INC = .77316E+08
 *** RESPONSE EIGENVALUE = .4487E-09 OSCILLATION LIMIT = .3469E-01
 *** AUTO STEP TIME: NEXT TIME INC = .77316E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 105.9 CRITERION= .8259E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.143
 HT FLOW CONVERGENCE VALUE= 5.585 CRITERION= .8256E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1021
 HT FLOW CONVERGENCE VALUE= .4512 CRITERION= .8191E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1669E-01
 HT FLOW CONVERGENCE VALUE= .7715E-01 CRITERION= .8196E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 337
 *** TIME = .212540E+10 TIME INC = .77316E+08
 *** RESPONSE EIGENVALUE = .4831E-09 OSCILLATION LIMIT = .3735E-01
 *** AUTO TIME STEP: NEXT TIME INC = .41814E+08 DECREASED (FACTOR = .5408)

HT FLOW CONVERGENCE VALUE= 103.9 CRITERION= .8163E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6007
 HT FLOW CONVERGENCE VALUE= 3.911 CRITERION= .8148E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6430E-01
 HT FLOW CONVERGENCE VALUE= .3802 CRITERION= .8118E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7426E-02
 HT FLOW CONVERGENCE VALUE= .4196E-01 CRITERION= .8125E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 340

*** TIME = .216722E+10 TIME INC = .418138E+08
*** RESPONSE EIGENVALUE = .5176E-09 OSCILLATION LIMIT = .2164E-01
*** AUTO STEP TIME: NEXT TIME INC = .41814E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 102.7 CRITERION= .8025E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5892
HT FLOW CONVERGENCE VALUE= 3.803 CRITERION= .8034E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5748E-01
HT FLOW CONVERGENCE VALUE= .2930 CRITERION= .7971E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4538E-02
HT FLOW CONVERGENCE VALUE= .2376E-01 CRITERION= .7975E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 343
*** TIME = .220903E+10 TIME INC = .418138E+08
*** RESPONSE EIGENVALUE = .5267E-09 OSCILLATION LIMIT = .2202E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 10:27:14 JAN 06, 1995 CP= 56109.010
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 101.1 CRITERION= .7947E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5780
HT FLOW CONVERGENCE VALUE= 1.731 CRITERION= .7921E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2409E-01
HT FLOW CONVERGENCE VALUE= .1936E-02 CRITERION= .7893E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 345
*** TIME = .225085E+10 TIME INC = .418138E+08
*** RESPONSE EIGENVALUE = .4870E-09 OSCILLATION LIMIT = .2036E-01
*** AUTO STEP TIME: NEXT TIME INC = .41814E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 99.37 CRITERION= .7798E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5679
HT FLOW CONVERGENCE VALUE= .6757E-01 CRITERION= .7750E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 346
*** TIME = .229266E+10 TIME INC = .418138E+08
*** RESPONSE EIGENVALUE = .4645E-09 OSCILLATION LIMIT = .1942E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8868)

HT FLOW CONVERGENCE VALUE= 97.87 CRITERION= .7668E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.048
HT FLOW CONVERGENCE VALUE= 4.357 CRITERION= .7617E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1157
HT FLOW CONVERGENCE VALUE= .5288 CRITERION= .7563E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1494E-01
HT FLOW CONVERGENCE VALUE= .7150E-01 CRITERION= .7571E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 349
*** TIME = .237155E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .4923E-09 OSCILLATION LIMIT = .3884E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 94.76 CRITERION= .7422E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.012
HT FLOW CONVERGENCE VALUE= 4.245 CRITERION= .7362E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7534E-01
HT FLOW CONVERGENCE VALUE= .2669 CRITERION= .7321E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6349E-02
HT FLOW CONVERGENCE VALUE= .2756E-01 CRITERION= .7326E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 352
*** TIME = .245045E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5617E-09 OSCILLATION LIMIT = .4432E-01

*** AUTO TIME STEP: NEXT TIME INC = .74160E+08 DECREASED (FACTOR = .9400)

HT FLOW CONVERGENCE VALUE= 91.70 CRITERION= .7250E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9209
 HT FLOW CONVERGENCE VALUE= 5.974 CRITERION= .7302E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9369E-01
 HT FLOW CONVERGENCE VALUE= .4913 CRITERION= .7169E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7959E-02
 HT FLOW CONVERGENCE VALUE= .4311E-01 CRITERION= .7179E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 355
 *** TIME = .252461E+10 TIME INC = .741604E+08
 *** RESPONSE EIGENVALUE = .5836E-09 OSCILLATION LIMIT = .4328E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 11:29:59 JAN 06, 1995 CP= 57936.040
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 89.41 CRITERION= .7066E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8923
 HT FLOW CONVERGENCE VALUE= 1.647 CRITERION= .7037E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2062E-01
 HT FLOW CONVERGENCE VALUE= .9296E-01 CRITERION= .7002E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1901E-02
 HT FLOW CONVERGENCE VALUE= .1130E-01 CRITERION= .7004E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 358
 *** TIME = .259877E+10 TIME INC = .741604E+08
 *** RESPONSE EIGENVALUE = .4505E-09 OSCILLATION LIMIT = .3341E-01
 *** AUTO STEP TIME: NEXT TIME INC = .74160E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 87.40 CRITERION= .6959E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8660
 HT FLOW CONVERGENCE VALUE= 5.081 CRITERION= .6969E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8023E-01
 HT FLOW CONVERGENCE VALUE= .3981 CRITERION= .6895E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6432E-02
 HT FLOW CONVERGENCE VALUE= .3275E-01 CRITERION= .6903E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 361
 *** TIME = .267293E+10 TIME INC = .741604E+08
 *** RESPONSE EIGENVALUE = .4201E-09 OSCILLATION LIMIT = .3115E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0638)

HT FLOW CONVERGENCE VALUE= 85.60 CRITERION= .6786E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8938
 HT FLOW CONVERGENCE VALUE= 2.394 CRITERION= .6741E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4880E-01
 HT FLOW CONVERGENCE VALUE= .1438 CRITERION= .6740E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4710E-02
 HT FLOW CONVERGENCE VALUE= .1428E-01 CRITERION= .6741E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 364
 *** TIME = .275182E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .4461E-09 OSCILLATION LIMIT = .3519E-01
 *** AUTO TIME STEP: NEXT TIME INC = .44181E+08 DECREASED (FACTOR = .5600)

HT FLOW CONVERGENCE VALUE= 84.16 CRITERION= .6728E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4881
 HT FLOW CONVERGENCE VALUE= 1.000 CRITERION= .6698E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2641E-01
 HT FLOW CONVERGENCE VALUE= .8083E-01 CRITERION= .6707E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2186E-02
 HT FLOW CONVERGENCE VALUE= .6690E-02 CRITERION= .6708E-01 <<< CONVERGED


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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 367
*** TIME = .279600E+10 TIME INC = .441806E+08
*** RESPONSE EIGENVALUE = .4412E-09 OSCILLATION LIMIT = .1949E-01
*** AUTO STEP TIME: NEXT TIME INC = .44181E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 83.50 CRITERION= .6627E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4791
HT FLOW CONVERGENCE VALUE= .4331 CRITERION= .6599E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1543E-01
HT FLOW CONVERGENCE VALUE= .6783E-03 CRITERION= .6603E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 369
*** TIME = .284018E+10 TIME INC = .441806E+08
*** RESPONSE EIGENVALUE = .4336E-09 OSCILLATION LIMIT = .1916E-01
Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10
TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
221.360946 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10479 STEP 1

8685 ELEMENTS (OF 8685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 59906.660 TIME= 12:13:57
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:13:57 JAN 06, 1995 CP= 59906.660
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

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LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 31
TIME AT END OF THE LOAD STEP. . . . . .31558E+10
AUTOMATIC TIME STEPPING . . . . . ON
INITIAL NUMBER OF SUBSTEPS . . . . . 10
MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
MINIMUM NUMBER OF SUBSTEPS . . . . . 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS

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THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 82.73 CRITERION= .6598E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4705
 HT FLOW CONVERGENCE VALUE= .5757E-01 CRITERION= .6569E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 370
 *** TIME = .288436E+10 TIME INC = .441806E+08
 *** RESPONSE EIGENVALUE = .3677E-09 OSCILLATION LIMIT = .1625E-01
 *** AUTO STEP TIME: NEXT TIME INC = .44181E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 81.81 CRITERION= .6495E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4628
 HT FLOW CONVERGENCE VALUE= 1.445 CRITERION= .6480E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3058E-01
 HT FLOW CONVERGENCE VALUE= .1417 CRITERION= .6460E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3056E-02
 HT FLOW CONVERGENCE VALUE= .1447E-01 CRITERION= .6462E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 373
 *** TIME = .292855E+10 TIME INC = .441806E+08
 *** RESPONSE EIGENVALUE = .3585E-09 OSCILLATION LIMIT = .1584E-01
 *** AUTO STEP TIME: NEXT TIME INC = .44181E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 80.72 CRITERION= .6457E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4556
 HT FLOW CONVERGENCE VALUE= 2.212 CRITERION= .6448E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3778E-01
 HT FLOW CONVERGENCE VALUE= .1544 CRITERION= .6417E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2687E-02
 HT FLOW CONVERGENCE VALUE= .1121E-01 CRITERION= .6419E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 376
 *** TIME = .297273E+10 TIME INC = .441806E+08
 *** RESPONSE EIGENVALUE = .3781E-09 OSCILLATION LIMIT = .1671E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7857)

HT FLOW CONVERGENCE VALUE= 79.51 CRITERION= .6315E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7980
 HT FLOW CONVERGENCE VALUE= 4.602 CRITERION= .6337E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9375E-01
 HT FLOW CONVERGENCE VALUE= .3333 CRITERION= .6240E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9030E-02
 HT FLOW CONVERGENCE VALUE= .3340E-01 CRITERION= .6244E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 379
 *** TIME = .305162E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .3912E-09 OSCILLATION LIMIT = .3086E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52070E+08 DECREASED (FACTOR = .6600)

HT FLOW CONVERGENCE VALUE= 77.21 CRITERION= .6232E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5154
 HT FLOW CONVERGENCE VALUE= 2.058 CRITERION= .6210E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3229E-01
 HT FLOW CONVERGENCE VALUE= .1235 CRITERION= .6189E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1973E-02
 HT FLOW CONVERGENCE VALUE= .7610E-02 CRITERION= .6191E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 382
 *** TIME = .310369E+10 TIME INC = .520700E+08

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*** RESPONSE EIGENVALUE = .4198E-09  OSCILLATION LIMIT = .2186E-01
*** AUTO STEP TIME: NEXT TIME INC = .52070E+08  UNCHANGED

  HT FLOW CONVERGENCE VALUE= 75.91  CRITERION= .6110E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5063
  HT FLOW CONVERGENCE VALUE= 1.067  CRITERION= .6079E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2184E-01
  HT FLOW CONVERGENCE VALUE= .6382E-01  CRITERION= .6079E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1555E-02
  HT FLOW CONVERGENCE VALUE= .4550E-02  CRITERION= .6080E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 31 SUBSTEP 6 COMPLETED. CUM ITER = 385
*** TIME = .315576E+10  TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .4145E-09  OSCILLATION LIMIT = .2158E-01

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:05:46 JAN 06, 1995 CP= 62197.060
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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  HT FLOW CONVERGENCE VALUE= 74.90  CRITERION= .6089E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4968
  HT FLOW CONVERGENCE VALUE= .9106  CRITERION= .6057E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2631E-01
  HT FLOW CONVERGENCE VALUE= .7828E-01  CRITERION= .6065E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2311E-02
  HT FLOW CONVERGENCE VALUE= .6904E-02  CRITERION= .6066E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 388
*** TIME = .320783E+10  TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .2897E-09  OSCILLATION LIMIT = .1508E-01
*** AUTO STEP TIME: NEXT TIME INC = .52070E+08  UNCHANGED

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  HT FLOW CONVERGENCE VALUE= 74.13  CRITERION= .6007E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4870
  HT FLOW CONVERGENCE VALUE= .3142  CRITERION= .5981E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1108E-01
  HT FLOW CONVERGENCE VALUE= .3662E-02  CRITERION= .5985E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 390
*** TIME = .325990E+10  TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .2295E-09  OSCILLATION LIMIT = .1195E-01
*** AUTO TIME STEP: NEXT TIME INC = .15621E+09  INCREASED (FACTOR = 3.0000)

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  HT FLOW CONVERGENCE VALUE= 73.40  CRITERION= .5947E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.409
  HT FLOW CONVERGENCE VALUE= 5.685  CRITERION= .5994E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1098
  HT FLOW CONVERGENCE VALUE= .6647  CRITERION= .5867E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1399E-01
  HT FLOW CONVERGENCE VALUE= .8534E-01  CRITERION= .5885E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1833E-02
  HT FLOW CONVERGENCE VALUE= .1066E-01  CRITERION= .5883E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 394
*** TIME = .341611E+10  TIME INC = .156210E+09
*** RESPONSE EIGENVALUE = .2043E-09  OSCILLATION LIMIT = .3191E-01
*** AUTO STEP TIME: NEXT TIME INC = .15621E+09  UNCHANGED

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  HT FLOW CONVERGENCE VALUE= 71.33  CRITERION= .5776E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.333
  HT FLOW CONVERGENCE VALUE= 3.092  CRITERION= .5820E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5925E-01

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HT FLOW CONVERGENCE VALUE= .3155E-02 CRITERION= .5739E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 396
 *** TIME = .357232E+10 TIME INC = .156210E+09
 *** RESPONSE EIGENVALUE = .1909E-09 OSCILLATION LIMIT = .2981E-01
 *** AUTO TIME STEP: NEXT TIME INC = .46863E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 70.13 CRITERION= .5556E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.672
 HT FLOW CONVERGENCE VALUE= 6.362 CRITERION= .5470E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3105
 HT FLOW CONVERGENCE VALUE= .7888 CRITERION= .5403E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5747E-01
 HT FLOW CONVERGENCE VALUE= .2478 CRITERION= .5420E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1895E-01
 HT FLOW CONVERGENCE VALUE= .7826E-01 CRITERION= .5416E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6117E-02
 HT FLOW CONVERGENCE VALUE= .2547E-01 CRITERION= .5417E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 401
 *** TIME = .404095E+10 TIME INC = .468630E+09
 *** RESPONSE EIGENVALUE = .1843E-09 OSCILLATION LIMIT = .8639E-01
 *** AUTO STEP TIME: NEXT TIME INC = .46863E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 65.66 CRITERION= .5167E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.264
 HT FLOW CONVERGENCE VALUE= 6.765 CRITERION= .5169E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2806
 HT FLOW CONVERGENCE VALUE= 1.133 CRITERION= .5011E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7631E-01
 HT FLOW CONVERGENCE VALUE= .3340 CRITERION= .5033E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2180E-01
 HT FLOW CONVERGENCE VALUE= .9334E-01 CRITERION= .5027E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6184E-02
 HT FLOW CONVERGENCE VALUE= .2665E-01 CRITERION= .5029E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 406
 *** TIME = .450958E+10 TIME INC = .468630E+09
 *** RESPONSE EIGENVALUE = .1986E-09 OSCILLATION LIMIT = .9305E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6835)

HT FLOW CONVERGENCE VALUE= 61.28 CRITERION= .4702E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.828
 HT FLOW CONVERGENCE VALUE= 6.625 CRITERION= .4600E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3654
 HT FLOW CONVERGENCE VALUE= 1.375 CRITERION= .4475E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1535
 HT FLOW CONVERGENCE VALUE= .5656 CRITERION= .4499E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6117E-01
 HT FLOW CONVERGENCE VALUE= .2174 CRITERION= .4490E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2385E-01
 HT FLOW CONVERGENCE VALUE= .8600E-01 CRITERION= .4493E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9384E-02
 HT FLOW CONVERGENCE VALUE= .3364E-01 CRITERION= .4492E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 412
 *** TIME = .529852E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .2417E-09 OSCILLATION LIMIT = .1907
 *** AUTO TIME STEP: NEXT TIME INC = .50650E+09 DECREASED (FACTOR = .6420)

HT FLOW CONVERGENCE VALUE= 54.56 CRITERION= .4225E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.706
 HT FLOW CONVERGENCE VALUE= 5.425 CRITERION= .4193E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2352
 HT FLOW CONVERGENCE VALUE= .9728E-01 CRITERION= .4082E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6779E-02
 HT FLOW CONVERGENCE VALUE= .1181E-01 CRITERION= .4083E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 415
 *** TIME = .580502E+10 TIME INC = .506499E+09

*** RESPONSE EIGENVALUE = .3092E-09 OSCILLATION LIMIT = .1566
*** AUTO STEP TIME: NEXT TIME INC = .50650E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 49.93 CRITERION= .3884E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.008
HT FLOW CONVERGENCE VALUE= 4.346 CRITERION= .3842E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2036
HT FLOW CONVERGENCE VALUE= .3716 CRITERION= .3748E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2855E-01
HT FLOW CONVERGENCE VALUE= .7506E-01 CRITERION= .3756E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5785E-02
HT FLOW CONVERGENCE VALUE= .1490E-01 CRITERION= .3755E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 32 SUBSTEP 9 COMPLETED. CUM ITER = 419
*** TIME = .631152E+10 TIME INC = .506499E+09
*** RESPONSE EIGENVALUE = .3837E-09 OSCILLATION LIMIT = .1944

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:49:36 JAN 06, 1995 CP= 66727.540
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 45.71 CRITERION= .3641E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.225
HT FLOW CONVERGENCE VALUE= 2.029 CRITERION= .3563E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1311
HT FLOW CONVERGENCE VALUE= .2927 CRITERION= .3533E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2048E-01
HT FLOW CONVERGENCE VALUE= .1273E-02 CRITERION= .3537E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 422
*** TIME = .681802E+10 TIME INC = .506499E+09
*** RESPONSE EIGENVALUE = .2049E-09 OSCILLATION LIMIT = .1038
*** AUTO STEP TIME: NEXT TIME INC = .50650E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 42.24 CRITERION= .3491E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.054
HT FLOW CONVERGENCE VALUE= 3.521 CRITERION= .3484E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1568
HT FLOW CONVERGENCE VALUE= .2930 CRITERION= .3419E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2230E-01
HT FLOW CONVERGENCE VALUE= .5013E-01 CRITERION= .3424E-01
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3789E-02
HT FLOW CONVERGENCE VALUE= .8352E-02 CRITERION= .3423E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 426
*** TIME = .732452E+10 TIME INC = .506499E+09
*** RESPONSE EIGENVALUE = .1300E-09 OSCILLATION LIMIT = .6585E-01
*** AUTO STEP TIME: NEXT TIME INC = .50650E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 39.90 CRITERION= .3307E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.898
HT FLOW CONVERGENCE VALUE= 1.496 CRITERION= .3278E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9131E-01
HT FLOW CONVERGENCE VALUE= .1497E-02 CRITERION= .3264E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 428
*** TIME = .783102E+10 TIME INC = .506499E+09
*** RESPONSE EIGENVALUE = .1278E-09 OSCILLATION LIMIT = .6474E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5576)

HT FLOW CONVERGENCE VALUE= 38.34 CRITERION= .3173E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.705
HT FLOW CONVERGENCE VALUE= 3.817 CRITERION= .3176E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2331

HT FLOW CONVERGENCE VALUE= .1567 CRITERION= .3096E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1404E-01
HT FLOW CONVERGENCE VALUE= .2765E-02 CRITERION= .3098E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 431
*** TIME = .861996E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .1231E-09 OSCILLATION LIMIT = .9712E-01
*** AUTO TIME STEP: NEXT TIME INC = .42366E+09 DECREASED (FACTOR = .5370)

HT FLOW CONVERGENCE VALUE= 35.60 CRITERION= .2995E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.339
HT FLOW CONVERGENCE VALUE= 1.841 CRITERION= .2987E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8801E-01
HT FLOW CONVERGENCE VALUE= .1594 CRITERION= .2963E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8031E-02
HT FLOW CONVERGENCE VALUE= .1480E-01 CRITERION= .2965E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 434
*** TIME = .904362E+10 TIME INC = .423661E+09
*** RESPONSE EIGENVALUE = .1428E-09 OSCILLATION LIMIT = .6049E-01
*** AUTO STEP TIME: NEXT TIME INC = .42366E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 34.42 CRITERION= .2932E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.270
HT FLOW CONVERGENCE VALUE= .8850 CRITERION= .2909E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3195E-01
HT FLOW CONVERGENCE VALUE= .2696E-01 CRITERION= .2903E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 33 SUBSTEP 6 COMPLETED. CUM ITER = 436
*** TIME = .946728E+10 TIME INC = .423661E+09
*** RESPONSE EIGENVALUE = .1474E-09 OSCILLATION LIMIT = .6246E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:55:29 JAN 06, 1995 CP= 69175.520
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 33.28 CRITERION= .2829E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.212
HT FLOW CONVERGENCE VALUE= 1.129 CRITERION= .2811E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7627E-01
HT FLOW CONVERGENCE VALUE= .1263 CRITERION= .2798E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8965E-02
HT FLOW CONVERGENCE VALUE= .1529E-01 CRITERION= .2800E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 439
*** TIME = .989094E+10 TIME INC = .423661E+09
*** RESPONSE EIGENVALUE = .1126E-09 OSCILLATION LIMIT = .4772E-01
*** AUTO STEP TIME: NEXT TIME INC = .42366E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 32.06 CRITERION= .2795E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.161
HT FLOW CONVERGENCE VALUE= 1.781 CRITERION= .2795E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8115E-01
HT FLOW CONVERGENCE VALUE= .1174 CRITERION= .2764E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8321E-02
HT FLOW CONVERGENCE VALUE= .1238E-01 CRITERION= .2766E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 442
*** TIME = .103146E+11 TIME INC = .423661E+09
*** RESPONSE EIGENVALUE = .9621E-10 OSCILLATION LIMIT = .4076E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.8622)

HT FLOW CONVERGENCE VALUE= 30.84 CRITERION= .2658E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.036

HT FLOW CONVERGENCE VALUE= 1.280 CRITERION= .2637E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9232E-01
 HT FLOW CONVERGENCE VALUE= .8400E-01 CRITERION= .2623E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5128E-02
 HT FLOW CONVERGENCE VALUE= .1033E-01 CRITERION= .2624E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 445
 *** TIME = .111035E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .9430E-10 OSCILLATION LIMIT = .7440E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 29.19 CRITERION= .2586E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.880
 HT FLOW CONVERGENCE VALUE= 2.597 CRITERION= .2616E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1346
 HT FLOW CONVERGENCE VALUE= .1943E-02 CRITERION= .2566E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 447
 *** TIME = .118925E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .9312E-10 OSCILLATION LIMIT = .7347E-01
 *** AUTO TIME STEP: NEXT TIME INC = .73056E+09 DECREASED (FACTOR = .9260)

HT FLOW CONVERGENCE VALUE= 27.94 CRITERION= .2464E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.623
 HT FLOW CONVERGENCE VALUE= .1306 CRITERION= .2449E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7175E-02
 HT FLOW CONVERGENCE VALUE= .4233E-02 CRITERION= .2450E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 449
 *** TIME = .126230E+11 TIME INC = .730558E+09
 *** RESPONSE EIGENVALUE = .1023E-09 OSCILLATION LIMIT = .7477E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 16:47:16 JAN 06, 1995 CP= 71080.430
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 26.84 CRITERION= .2438E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.523
 HT FLOW CONVERGENCE VALUE= 1.652 CRITERION= .2436E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1195
 HT FLOW CONVERGENCE VALUE= .1855 CRITERION= .2411E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1341E-01
 HT FLOW CONVERGENCE VALUE= .2280E-01 CRITERION= .2414E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 452
 *** TIME = .133536E+11 TIME INC = .730558E+09
 *** RESPONSE EIGENVALUE = .8705E-10 OSCILLATION LIMIT = .6360E-01
 *** AUTO STEP TIME: NEXT TIME INC = .73056E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.34 CRITERION= .2333E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.428
 HT FLOW CONVERGENCE VALUE= 1.137 CRITERION= .2336E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7595E-01
 HT FLOW CONVERGENCE VALUE= .5355E-02 CRITERION= .2320E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 454
 *** TIME = .140842E+11 TIME INC = .730558E+09
 *** RESPONSE EIGENVALUE = .8371E-10 OSCILLATION LIMIT = .6115E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.0799)

HT FLOW CONVERGENCE VALUE= 24.12 CRITERION= .2304E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.440
 HT FLOW CONVERGENCE VALUE= .4474 CRITERION= .2301E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2278E-01

HT FLOW CONVERGENCE VALUE= .3566E-01 CRITERION= .2298E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2691E-02
HT FLOW CONVERGENCE VALUE= .4205E-02 CRITERION= .2298E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 457
*** TIME = .148731E+11 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .8386E-10 OSCILLATION LIMIT = .6616E-01
*** AUTO TIME STEP: NEXT TIME INC = .45285E+09 DECREASED (FACTOR = .5740)

HT FLOW CONVERGENCE VALUE= 23.11 CRITERION= .2236E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7808
HT FLOW CONVERGENCE VALUE= .8827 CRITERION= .2246E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4059E-01
HT FLOW CONVERGENCE VALUE= .5147E-01 CRITERION= .2235E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2457E-02
HT FLOW CONVERGENCE VALUE= .3148E-02 CRITERION= .2235E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 460
*** TIME = .153259E+11 TIME INC = .452852E+09
*** RESPONSE EIGENVALUE = .8790E-10 OSCILLATION LIMIT = .3980E-01
*** AUTO STEP TIME: NEXT TIME INC = .45285E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.57 CRITERION= .2240E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7508
HT FLOW CONVERGENCE VALUE= .5750 CRITERION= .2249E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2397E-01
HT FLOW CONVERGENCE VALUE= .4578E-02 CRITERION= .2241E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 462
*** TIME = .157788E+11 TIME INC = .452852E+09
*** RESPONSE EIGENVALUE = .9068E-10 OSCILLATION LIMIT = .4107E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:30:32 JAN 06, 1995 CP= 72947.070
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 22.09 CRITERION= .2183E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7220
HT FLOW CONVERGENCE VALUE= .1243 CRITERION= .2184E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1048E-01
HT FLOW CONVERGENCE VALUE= .1752E-02 CRITERION= .2184E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 464
*** TIME = .162317E+11 TIME INC = .452852E+09
*** RESPONSE EIGENVALUE = .8762E-10 OSCILLATION LIMIT = .3968E-01
*** AUTO STEP TIME: NEXT TIME INC = .45285E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 21.57 CRITERION= .2192E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6942
HT FLOW CONVERGENCE VALUE= .7564E-01 CRITERION= .2192E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6302E-02
HT FLOW CONVERGENCE VALUE= .3258E-03 CRITERION= .2192E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 466
*** TIME = .166845E+11 TIME INC = .452852E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7422)

HT FLOW CONVERGENCE VALUE= 21.05 CRITERION= .2118E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.154
HT FLOW CONVERGENCE VALUE= .2382 CRITERION= .2119E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1796E-01
HT FLOW CONVERGENCE VALUE= .1553E-01 CRITERION= .2118E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 468

*** TIME = .174734E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 20.08 CRITERION= .2108E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.107
HT FLOW CONVERGENCE VALUE= 1.105 CRITERION= .2119E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9353E-01
HT FLOW CONVERGENCE VALUE= .8736E-01 CRITERION= .2108E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7704E-02
HT FLOW CONVERGENCE VALUE= .7400E-02 CRITERION= .2109E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 471

*** TIME = .182624E+11 TIME INC = .788940E+09

*** AUTO TIME STEP: NEXT TIME INC = .67218E+09 DECREASED (FACTOR = .8520)

HT FLOW CONVERGENCE VALUE= 19.13 CRITERION= .2043E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9082
HT FLOW CONVERGENCE VALUE= .3708 CRITERION= .2049E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2340E-01
HT FLOW CONVERGENCE VALUE= .4111E-02 CRITERION= .2046E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 473

*** TIME = .189346E+11 TIME INC = .672177E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:06:05 JAN 06, 1995 CP= 74584.700
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 18.36 CRITERION= .2052E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8783
HT FLOW CONVERGENCE VALUE= .1412 CRITERION= .2056E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1084E-01
HT FLOW CONVERGENCE VALUE= .3314E-02 CRITERION= .2056E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 475

*** TIME = .196067E+11 TIME INC = .672177E+09

*** AUTO STEP TIME: NEXT TIME INC = .67218E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 17.68 CRITERION= .2001E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8497
HT FLOW CONVERGENCE VALUE= .5342 CRITERION= .2012E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3394E-01
HT FLOW CONVERGENCE VALUE= .3484E-01 CRITERION= .2006E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2296E-02
HT FLOW CONVERGENCE VALUE= .2380E-02 CRITERION= .2007E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 478

*** TIME = .202789E+11 TIME INC = .672177E+09

*** AUTO STEP TIME: NEXT TIME INC = .67218E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 17.04 CRITERION= .2012E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8223
HT FLOW CONVERGENCE VALUE= .5707 CRITERION= .2026E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3229E-01
HT FLOW CONVERGENCE VALUE= .3017E-01 CRITERION= .2019E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1740E-02
HT FLOW CONVERGENCE VALUE= .1641E-02 CRITERION= .2019E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 481

*** TIME = .209511E+11 TIME INC = .672177E+09

*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1737)

HT FLOW CONVERGENCE VALUE= 16.51 CRITERION= .1962E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9319

HT FLOW CONVERGENCE VALUE= .2167 CRITERION= .1974E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1081E-01
HT FLOW CONVERGENCE VALUE= .3076E-02 CRITERION= .1972E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 483
*** TIME = .217400E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .35029E+09 DECREASED (FACTOR = .4440)

HT FLOW CONVERGENCE VALUE= 15.91 CRITERION= .1988E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4026
HT FLOW CONVERGENCE VALUE= .6311E-01 CRITERION= .1993E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4223E-02
HT FLOW CONVERGENCE VALUE= .8883E-03 CRITERION= .1993E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 485
*** TIME = .220903E+11 TIME INC = .350289E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:43:11 JAN 06, 1995 CP= 76335.750
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 15.65 CRITERION= .1955E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3967
HT FLOW CONVERGENCE VALUE= .2494 CRITERION= .1959E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2086E-01
HT FLOW CONVERGENCE VALUE= .1796E-01 CRITERION= .1958E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 487
*** TIME = .224406E+11 TIME INC = .350289E+09
*** AUTO STEP TIME: NEXT TIME INC = .35029E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 15.37 CRITERION= .1977E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3907
HT FLOW CONVERGENCE VALUE= .2729 CRITERION= .1982E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1994E-01
HT FLOW CONVERGENCE VALUE= .1660E-01 CRITERION= .1981E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 489
*** TIME = .227909E+11 TIME INC = .350289E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.2523)

HT FLOW CONVERGENCE VALUE= 15.11 CRITERION= .1932E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8583
HT FLOW CONVERGENCE VALUE= .6190 CRITERION= .1945E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6872E-01
HT FLOW CONVERGENCE VALUE= .7609E-01 CRITERION= .1941E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9837E-02
HT FLOW CONVERGENCE VALUE= .1101E-01 CRITERION= .1941E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 492
*** TIME = .235798E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 14.52 CRITERION= .1948E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8265
HT FLOW CONVERGENCE VALUE= .7146 CRITERION= .1962E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5438E-01
HT FLOW CONVERGENCE VALUE= .7635E-01 CRITERION= .1956E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6668E-02
HT FLOW CONVERGENCE VALUE= .9103E-02 CRITERION= .1956E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 495
*** TIME = .243688E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .43865E+09 DECREASED (FACTOR = .5560)

HT FLOW CONVERGENCE VALUE= 13.93 CRITERION= .1918E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4451
HT FLOW CONVERGENCE VALUE= .4390 CRITERION= .1926E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2086E-01
HT FLOW CONVERGENCE VALUE= .2651E-01 CRITERION= .1923E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1374E-02
HT FLOW CONVERGENCE VALUE= .1710E-02 CRITERION= .1923E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 498
*** TIME = .248074E+11 TIME INC = .438651E+09
*** AUTO STEP TIME: NEXT TIME INC = .43865E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 13.61 CRITERION= .1938E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4360
HT FLOW CONVERGENCE VALUE= .3237 CRITERION= .1947E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1289E-01
HT FLOW CONVERGENCE VALUE= .1038E-01 CRITERION= .1944E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 6 COMPLETED. CUM ITER = 500
*** TIME = .252461E+11 TIME INC = .438651E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:28:57 JAN 06, 1995 CP= 78498.280
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 13.37 CRITERION= .1909E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4272
HT FLOW CONVERGENCE VALUE= .2182 CRITERION= .1917E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9687E-02
HT FLOW CONVERGENCE VALUE= .8989E-02 CRITERION= .1915E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 502
*** TIME = .256847E+11 TIME INC = .438651E+09
*** AUTO STEP TIME: NEXT TIME INC = .43865E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 13.12 CRITERION= .1932E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4185
HT FLOW CONVERGENCE VALUE= .2280 CRITERION= .1940E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1443E-01
HT FLOW CONVERGENCE VALUE= .1134E-01 CRITERION= .1938E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 504
*** TIME = .261234E+11 TIME INC = .438651E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7986)

HT FLOW CONVERGENCE VALUE= 12.92 CRITERION= .1897E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7310
HT FLOW CONVERGENCE VALUE= .2641 CRITERION= .1909E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2135E-01
HT FLOW CONVERGENCE VALUE= .1165E-01 CRITERION= .1908E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 506
*** TIME = .269123E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 12.53 CRITERION= .1918E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7037
HT FLOW CONVERGENCE VALUE= .2247 CRITERION= .1930E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1636E-01
HT FLOW CONVERGENCE VALUE= .2937E-03 CRITERION= .1928E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 508
*** TIME = .277013E+11 TIME INC = .788940E+09

*** AUTO TIME STEP: NEXT TIME INC = .70058E+09 DECREASED (FACTOR = .8880)

HT FLOW CONVERGENCE VALUE= 12.21 CRITERION= .1891E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6053
HT FLOW CONVERGENCE VALUE= .1808 CRITERION= .1901E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1232E-01
HT FLOW CONVERGENCE VALUE= .9593E-02 CRITERION= .1900E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 510
*** TIME = .284018E+11 TIME INC = .700579E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:01:05 JAN 06, 1995 CP= 80026.160
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 11.91 CRITERION= .1914E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5880
HT FLOW CONVERGENCE VALUE= .5942 CRITERION= .1928E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3020E-01
HT FLOW CONVERGENCE VALUE= .7525E-01 CRITERION= .1922E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4312E-02
HT FLOW CONVERGENCE VALUE= .1104E-01 CRITERION= .1923E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 513
*** TIME = .291024E+11 TIME INC = .700579E+09
*** AUTO STEP TIME: NEXT TIME INC = .70058E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 11.67 CRITERION= .1890E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5715
HT FLOW CONVERGENCE VALUE= .9602 CRITERION= .1909E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3974E-01
HT FLOW CONVERGENCE VALUE= .8288E-01 CRITERION= .1899E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3623E-02
HT FLOW CONVERGENCE VALUE= .7847E-02 CRITERION= .1900E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 516
*** TIME = .298030E+11 TIME INC = .700579E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1261)

HT FLOW CONVERGENCE VALUE= 11.51 CRITERION= .1912E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6245
HT FLOW CONVERGENCE VALUE= .7809 CRITERION= .1933E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2889E-01
HT FLOW CONVERGENCE VALUE= .5583E-01 CRITERION= .1924E-01
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2164E-02
HT FLOW CONVERGENCE VALUE= .4269E-02 CRITERION= .1924E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 519
*** TIME = .305919E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .48283E+09 DECREASED (FACTOR = .6120)

HT FLOW CONVERGENCE VALUE= 11.45 CRITERION= .1895E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3723
HT FLOW CONVERGENCE VALUE= .3534 CRITERION= .1906E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8127E-02
HT FLOW CONVERGENCE VALUE= .1493E-01 CRITERION= .1902E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 521
*** TIME = .310748E+11 TIME INC = .482831E+09
*** AUTO STEP TIME: NEXT TIME INC = .48283E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 11.41 CRITERION= .1918E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3652
HT FLOW CONVERGENCE VALUE= .3127 CRITERION= .1929E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6584E-02
HT FLOW CONVERGENCE VALUE= .1164E-01 CRITERION= .1925E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 523
*** TIME = .315576E+11 TIME INC = .482831E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 81882.650

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12b5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:40:36 JAN 06, 1995 CP= 81895.520
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 57.35152
PARAMETER WPSID(JINC) = 57.31607
PARAMETER WPBOT(JINC) = 57.25148
PARAMETER DFTOP(JINC) = 26.13816
PARAMETER DFSID(JINC) = 26.13815
PARAMETER DFEDG(JINC) = 26.13795
PARAMETER DFBOT(JINC) = 26.16026
PARAMETER WPTOP(JINC,0) = 31.55760
PARAMETER WPSID(JINC,0) = 31.55760
PARAMETER WPBOT(JINC,0) = 31.55760
PARAMETER DFTOP(JINC,0) = 31.55760
PARAMETER DFSID(JINC,0) = 31.55760
PARAMETER DFEDG(JINC,0) = 31.55760
PARAMETER DFBOT(JINC,0) = 31.55760

PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 4 CUMULATIVE ITERATION= 112
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 102.4079

PARAMETER WPSID(JINC) = 103.1146

PARAMETER WPBOT(JINC) = 104.6015

PARAMETER DFTOP(JINC) = 75.54638

PARAMETER DFSID(JINC) = 75.66565

PARAMETER DFEDG(JINC) = 73.74185

PARAMETER DFBOT(JINC) = 67.74412

PARAMETER WPTOP(JINC,0) = .3155763E+08

PARAMETER WPSID(JINC,0) = .3155763E+08

PARAMETER WPBOT(JINC,0) = .3155763E+08

PARAMETER DFTOP(JINC,0) = .3155763E+08

PARAMETER DFSID(JINC,0) = .3155763E+08

PARAMETER DFEDG(JINC,0) = .3155763E+08

PARAMETER DFBOT(JINC,0) = .3155763E+08

PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 229
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 142.1073

PARAMETER WPSID(JINC) = 142.6498

PARAMETER WPBOT(JINC) = 143.8034

PARAMETER DFTOP(JINC) = 125.4545

PARAMETER DFSID(JINC) = 125.7896

PARAMETER DFEDG(JINC) = 124.2046

PARAMETER DFBOT(JINC) = 118.0122

PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09

PARAMETER WPBOT(JINC,0) = .3155760E+09

PARAMETER DFTOP(JINC,0) = .3155760E+09

PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 385
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 155.6215

PARAMETER WPSID(JINC) = 155.8090

PARAMETER WPBOT(JINC) = 156.1942

PARAMETER DFTOP(JINC) = 150.5318

PARAMETER DFSID(JINC) = 150.7061

PARAMETER DFEDG(JINC) = 150.1712

PARAMETER DFBOT(JINC) = 147.8572

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10

PARAMETER DFTOP(JINC,0) = .3155760E+10

PARAMETER DFSID(JINC,0) = .3155760E+10

PARAMETER DFEDG(JINC,0) = .3155760E+10

PARAMETER DFBOT(JINC,0) = .3155760E+10

PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 84492.220

*** NOTE *** CP= 84492.220 TIME= 21:24:08
Write parameters to file= c12b5a.parm.

*** NOTE *** CP= 84492.280 TIME= 21:24:08
Parameters written. Lines= 770.

*** WARNING *** CP= 84492.280 TIME= 21:24:08
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c12b5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 21:24:08 JAN 06, 1995 CP= 84492.340
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 21.23

DISTANCE MULTIPLIER FOR WINDOW 1 1.250

DISTANCE FOR WINDOW 1 26.54

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4342 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE MULTIPLIER FOR WINDOW 1 .8000

DISTANCE FOR WINDOW 1 21.23

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4342 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 12.18

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1

DIRECTION -.36934 .15899 -.91559

INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4342 ELEMENTS (OF 8685 DEFINED) SELECTED FROM

48 SELECTED VOLUMES BY ESLV COMMAND.

Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING ***

CP= 84519.140 TIME= 21:24:45

The selected element set contains mixed materials.

This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 4 CUMULATIVE ITERATION= 72
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84541.010 TIME= 21:25:07
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 4 CUMULATIVE ITERATION= 112
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84562.890 TIME= 21:25:29
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 165
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84584.660 TIME= 21:25:51
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 229
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84606.500 TIME= 21:26:14
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 314
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84628.290 TIME= 21:26:36
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 385
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84650.070 TIME= 21:26:58
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 462
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84671.880 TIME= 21:27:20
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 523
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84693.210 TIME= 21:27:41
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 7.622

DISTANCE MULTIPLIER FOR WINDOW 1 1.500

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1

DIRECTION .64865 .48519E-01 -.75954

INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2171 ELEMENTS (OF 8685 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.

Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING ***

CP= 84715.230 TIME= 21:28:03

The selected element set contains mixed materials.

This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 4 CUMULATIVE ITERATION= 72
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84732.970 TIME= 21:28:21
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 4 CUMULATIVE ITERATION= 112
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84750.710 TIME= 21:28:39
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 165
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84768.470 TIME= 21:28:56
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 229
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84786.250 TIME= 21:29:14
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 6 CUMULATIVE ITERATION= 314
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84804.060 TIME= 21:29:33
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 6 CUMULATIVE ITERATION= 385
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84821.810 TIME= 21:29:50
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 462
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84839.530 TIME= 21:30:08
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 523
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 84857.270 TIME= 21:30:26
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 84862.550

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:32 JAN 06, 1995 CP= 84862.560
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

 * Waste Package Surface Temperatures *

 wmidside = midlength side surface
 wwpeside = end of WP side surface
 wmidtop = midlength top surface
 wwpetop = end of WP top surface
 wmidbot = midlength bottom surface
 wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
 VARIABLE 3 IS AT NODE 1804 ITEM= TEMP COMP= NAME= wwpeside
 VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
 VARIABLE 5 IS AT NODE 1810 ITEM= TEMP COMP= NAME= wwpetop
 VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
 VARIABLE 7 IS AT NODE 1803 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	159.6	.1578E+10
3	NSOL	1804 TEMP	wwpeside	26.14	.1000E-05	156.9	.1893E+10
4	NSOL	129 TEMP	wmidtop	26.13	.1000E-05	159.3	.1578E+10
5	NSOL	1810 TEMP	wwpetop	26.13	.1000E-05	156.8	.1893E+10
6	NSOL	122 TEMP	wmidbot	26.14	.1000E-05	160.2	.1578E+10
7	NSOL	1803 TEMP	wwpebot	26.14	.1000E-05	157.1	.1893E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:36 JAN 06, 1995 CP= 84864.720
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1804 TEMP wwpeside	129 TEMP wmidtop	1810 TEMP wwpetop	122 TEMP wmidbot	1803 TEMP wwpebot
.10000E-05	26.1382	26.1382	26.1335	26.1349	26.1420	26.1407
.20000E-05	57.3161	50.6794	57.3515	50.7631	57.2515	50.6158
31.558	57.3161	50.6794	57.3515	50.7632	57.2515	50.6158
.31558E+07	79.3914	70.6922	78.6378	70.4755	80.9138	71.2688
.63116E+07	85.3188	76.7791	84.5689	76.5651	86.8605	77.3688
.94673E+07	89.2142	80.8185	88.4708	80.6081	90.7446	81.4050
.12623E+08	92.2194	83.9427	91.4840	83.7362	93.7438	84.5280
.15779E+08	94.6786	86.5044	93.9501	86.3009	96.1971	87.0880
.18935E+08	96.7714	88.6868	96.0486	88.4858	98.2837	89.2683
.22090E+08	98.6028	90.5982	97.8849	90.3990	100.109	91.1772
.25246E+08	100.246	92.3132	99.5326	92.1154	101.746	92.8895
.28402E+08	101.737	93.8700	101.027	93.6734	103.230	94.4435
.31558E+08	103.115	95.3092	102.408	95.1134	104.601	95.8800
.63115E+08	113.480	106.179	112.804	105.989	114.913	106.725
.94673E+08	120.379	113.436	119.714	113.245	121.772	113.969
.12623E+09	125.490	118.811	124.845	118.624	126.842	119.328

.15779E+09	129.607	123.150	128.980	122.970	130.919	123.649
.18935E+09	133.130	126.865	132.522	126.691	134.404	127.347
.22090E+09	136.227	130.144	135.636	129.976	137.470	130.613
.25246E+09	139.013	133.087	138.439	132.927	140.231	133.545
.28402E+09	140.933	135.211	140.371	135.053	142.117	135.657
.31558E+09	142.650	137.087	142.107	136.936	143.803	137.520
.63115E+09	151.953	147.453	151.511	147.331	152.906	147.809
.94673E+09	156.911	153.123	156.527	153.013	157.715	153.418
.12623E+10	159.008	155.785	158.678	155.690	159.696	156.038
.15779E+10	159.630	156.807	159.341	156.723	160.234	157.028
.18935E+10	159.410	156.884	159.150	156.809	159.949	157.081
.22090E+10	158.922	156.629	158.686	156.560	159.413	156.809
.25246E+10	157.740	155.658	157.525	155.595	158.183	155.819
.28402E+10	156.715	154.783	156.515	154.725	157.128	154.935
.31558E+10	155.809	154.004	155.621	153.948	156.194	154.145
.63115E+10	150.193	149.058	150.074	149.023	150.432	149.146
.94673E+10	146.420	145.513	146.324	145.483	146.611	145.582
.12623E+11	144.262	143.490	144.180	143.465	144.426	143.550
.15779E+11	142.485	141.808	142.413	141.786	142.626	141.860
.18935E+11	140.469	139.876	140.405	139.856	140.594	139.922
.22090E+11	138.650	138.119	138.593	138.101	138.761	138.160
.25246E+11	137.043	136.562	136.990	136.545	137.144	136.599
.28402E+11	135.593	135.151	135.544	135.135	135.687	135.186
.31558E+11	134.321	133.909	134.275	133.894	134.407	133.940

* Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 84865.040 TIME= 21:30:37

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 992 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1142 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 957 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
------	------	-------------	------	---------	---------	---------	---------

2	NSOL	8 TEMP	smidside	26.14	.1000E-05	159.9	.1578E+10
3	NSOL	992 TEMP	swpeside	26.14	.1000E-05	157.1	.1893E+10
4	NSOL	38 TEMP	smidtop	26.13	.1000E-05	159.6	.1578E+10
5	NSOL	1142 TEMP	swpetop	26.13	.1000E-05	157.0	.1893E+10
6	NSOL	2 TEMP	smidbot	26.14	.1000E-05	160.5	.1578E+10
7	NSOL	957 TEMP	swpebot	26.14	.1000E-05	157.3	.1893E+10

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:38 JAN 06, 1995 CP= 84866.740
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	992 TEMP swpeside	38 TEMP smidtop	1142 TEMP swpetop	2 TEMP smidbot	957 TEMP swpebot
.10000E-05	26.1382	26.1382	26.1335	26.1350	26.1420	26.1407
.20000E-05	57.8735	51.2468	57.9094	51.3241	57.8106	51.1886
31.558	57.8735	51.2468	57.9094	51.3241	57.8106	51.1886
.31558E+07	79.9406	71.2924	79.1913	71.0654	81.4193	71.8495
.63116E+07	85.8690	77.3778	85.1234	77.1533	87.3660	77.9469
.94673E+07	89.7633	81.4143	89.0240	81.1933	91.2495	81.9801
.12623E+08	92.7677	84.5358	92.0363	84.3186	94.2480	85.1003
.15779E+08	95.2260	87.0948	94.5013	86.8806	96.7007	87.6575
.18935E+08	97.3180	89.2748	96.5990	89.0629	98.7866	89.8352
.22090E+08	99.1485	91.1837	98.4343	90.9737	100.611	91.7418
.25246E+08	100.791	92.8965	100.081	92.6879	102.248	93.4519
.28402E+08	102.281	94.4512	101.574	94.2438	103.730	95.0040
.31558E+08	103.658	95.8885	102.955	95.6821	105.101	96.4387
.63115E+08	114.014	106.741	113.341	106.541	115.405	107.267
.94673E+08	120.902	113.983	120.241	113.783	122.255	114.498
.12623E+09	126.005	119.346	125.363	119.151	127.317	119.844
.15779E+09	130.114	123.674	129.490	123.485	131.386	124.155
.18935E+09	133.628	127.378	133.023	127.196	134.865	127.844
.22090E+09	136.718	130.647	136.130	130.472	137.924	131.100
.25246E+09	139.497	133.582	138.926	133.414	140.679	134.024
.28402E+09	141.404	135.693	140.846	135.527	142.553	136.123
.31558E+09	143.112	137.558	142.573	137.399	144.231	137.976
.63115E+09	152.344	147.846	151.904	147.718	153.268	148.189
.94673E+09	157.247	153.459	156.866	153.345	158.027	153.745
.12623E+10	159.297	156.074	158.970	155.974	159.964	156.318
.15779E+10	159.885	157.060	159.597	156.973	160.470	157.274
.18935E+10	159.637	157.111	159.379	157.032	160.160	157.301
.22090E+10	159.128	156.835	158.893	156.763	159.604	157.008
.25246E+10	157.926	155.843	157.712	155.778	158.355	155.999
.28402E+10	156.887	154.955	156.689	154.894	157.287	155.101
.31558E+10	155.969	154.164	155.783	154.106	156.342	154.300
.63115E+10	150.291	149.157	150.172	149.120	150.523	149.241
.94673E+10	146.497	145.591	146.401	145.560	146.682	145.658
.12623E+11	144.327	143.556	144.246	143.530	144.485	143.614
.15779E+11	142.541	141.866	142.470	141.843	142.679	141.916
.18935E+11	140.518	139.926	140.455	139.905	140.640	139.971
.22090E+11	138.694	138.164	138.637	138.145	138.801	138.203
.25246E+11	137.082	136.602	137.030	136.584	137.180	136.638
.28402E+11	135.629	135.188	135.581	135.171	135.720	135.222
.31558E+11	134.354	133.943	134.308	133.927	134.437	133.973

 * Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 84867.060 TIME= 21:30:39
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 962 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1683 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2710 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2698 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	1 TEMP	wmidcent	26.14	.1000E-05	191.9	.6312E+09
3 NSOL	962 TEMP	shellcnt	26.14	.1000E-05	158.5	.1578E+10
4 NSOL	1683 TEMP	wwpecent	26.14	.1000E-05	158.3	.1578E+10
5 NSOL	147 TEMP	imidbot	26.16	.2000E-05	150.6	.2209E+10
6 NSOL	2710 TEMP	iwpebot	26.16	.2000E-05	149.9	.2209E+10
7 NSOL	2698 TEMP	idfebot	26.16	.2000E-05	148.8	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:40 JAN 06, 1995 CP= 84868.750
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	962 TEMP shellcnt	1683 TEMP wwpecent	147 TEMP imidbot	2710 TEMP iwpebot	2698 TEMP idfebot
.10000E-05	26.1380	26.1380	26.1381	26.1687	26.1684	26.1683
.20000E-05	114.149	55.0566	54.5927	26.1603	26.1603	26.1603
31.558	114.149	55.0566	54.5927	26.1603	26.1603	26.1603
.31558E+07	135.653	74.7188	74.2359	46.7866	43.5175	38.4090
.63116E+07	141.642	80.7794	80.2985	53.9118	50.6358	45.4612
.94673E+07	145.502	84.8126	84.3292	58.5571	55.3534	50.3009
.12623E+08	148.441	87.9222	87.4396	62.1297	58.9962	54.0661
.15779E+08	150.810	90.4692	89.9875	65.0579	61.9853	57.1619
.18935E+08	152.805	92.6375	92.1567	67.5488	64.5287	59.7971
.22090E+08	154.534	94.5352	94.0553	69.7265	66.7523	62.1003
.25246E+08	156.082	96.2384	95.7592	71.6729	68.7392	64.1573
.28402E+08	157.465	97.7835	97.3051	73.4406	70.5437	66.0251
.31558E+08	158.744	99.2120	98.7343	75.0683	72.2051	67.7441
.63115E+08	168.070	109.976	109.509	87.3270	84.7183	80.6838
.94673E+08	173.982	117.153	116.691	95.6195	93.2469	89.5216
.12623E+09	178.154	122.443	121.991	101.676	99.4154	95.9710
.15779E+09	181.390	126.714	126.266	106.596	104.406	101.065
.18935E+09	184.065	130.358	129.918	110.806	108.678	105.441
.22090E+09	186.356	133.569	133.137	114.493	112.427	109.289
.25246E+09	188.494	136.467	136.038	117.838	115.820	112.737
.28402E+09	189.124	138.498	138.080	120.515	118.577	115.630
.31558E+09	189.894	140.301	139.893	122.722	120.856	118.012
.63115E+09	191.860	150.147	149.802	135.745	134.281	132.079
.94673E+09	191.267	155.435	155.136	143.148	141.931	140.110
.12623E+10	188.518	157.764	157.508	147.272	146.245	144.709
.15779E+10	185.566	158.544	158.320	149.343	148.448	147.111
.18935E+10	182.599	158.442	158.239	150.215	149.416	148.225
.22090E+10	179.927	158.036	157.854	150.583	149.859	148.780
.25246E+10	176.723	156.934	156.767	150.176	149.519	148.540
.28402E+10	174.250	155.959	155.807	149.711	149.102	148.194
.31558E+10	172.128	155.098	154.957	149.275	148.706	147.857
.63115E+10	160.203	149.735	149.647	146.120	145.762	145.229
.94673E+10	154.292	146.046	145.977	143.186	142.899	142.472
.12623E+11	150.896	143.936	143.880	141.516	141.272	140.908
.15779E+11	148.254	142.201	142.150	140.086	139.872	139.552
.18935E+11	145.479	140.213	140.171	138.371	138.183	137.902
.22090E+11	143.100	138.423	138.384	136.782	136.613	136.361
.25246E+11	141.048	136.836	136.800	135.356	135.203	134.974
.28402E+11	139.248	135.397	135.367	134.046	133.905	133.694
.31558E+11	137.707	134.141	134.111	132.884	132.753	132.556

 * Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 84869.070 TIME= 21:30:41
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2718 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2702 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2762 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2752 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	156.3	.1893E+10
3	NSOL	2718 TEMP	iwpecent	26.14	.2000E-05	154.7	.1893E+10
4	NSOL	2702 TEMP	idfecent	26.14	.2000E-05	152.7	.2209E+10
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	154.3	.1893E+10
6	NSOL	2762 TEMP	iwpeedge	26.14	.2000E-05	153.2	.2209E+10
7	NSOL	2752 TEMP	idfeedge	26.14	.2000E-05	151.8	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:42 JAN 06, 1995 CP= 84870.760
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2718 TEMP iwpecent	2702 TEMP idfecent	157 TEMP imidedge	2762 TEMP iwpeedge	2752 TEMP idfeedge
.10000E-05	26.1470	26.1461	26.1449	26.1506	26.1515	26.1533
.20000E-05	26.1375	26.1375	26.1375	26.1375	26.1375	26.1375
31.558	26.1469	26.1431	26.1385	26.1402	26.1391	26.1380
.31558E+07	63.5039	56.9534	46.8672	55.0756	50.3656	43.6757
.63116E+07	70.3974	64.0499	54.3502	62.2313	57.5919	50.9961
.94673E+07	74.9044	68.7212	59.3332	66.9322	62.3936	55.9594
.12623E+08	78.3539	72.3056	63.1670	70.5440	66.0934	59.8015
.15779E+08	81.1708	75.2347	66.3014	73.4987	69.1237	62.9535
.18935E+08	83.5626	77.7223	68.9622	76.0104	71.7010	65.6358
.22090E+08	85.6517	79.8950	71.2850	78.2063	73.9548	67.9818
.25246E+08	87.5209	81.8379	73.3593	80.1711	75.9710	70.0797
.28402E+08	89.2155	83.6003	75.2413	81.9546	77.8021	71.9858
.31558E+08	90.7781	85.2245	76.9737	83.5986	79.4896	73.7419
.63115E+08	102.490	97.4102	89.9636	95.9320	92.1724	86.9465
.94673E+08	110.257	105.506	98.5997	104.096	100.585	95.7686
.12623E+09	115.974	111.449	104.929	110.142	106.786	102.197
.15779E+09	120.579	116.235	110.008	115.010	111.780	107.372

.18935E+09	124.508	120.320	114.341	119.173	116.040	111.783
.22090E+09	127.955	123.909	118.156	122.814	119.788	115.668
.25246E+09	131.043	127.120	121.556	126.061	123.127	119.141
.28402E+09	133.305	129.535	124.202	128.513	125.694	121.876
.31558E+09	135.271	131.620	126.468	130.628	127.898	124.205
.63115E+09	146.195	143.302	139.276	142.518	140.358	137.463
.94673E+09	152.151	149.741	146.408	149.095	147.298	144.903
.12623E+10	154.993	152.957	150.150	152.413	150.897	148.882
.15779E+10	156.125	154.347	151.904	153.874	152.552	150.798
.18935E+10	156.277	154.690	152.512	154.268	153.089	151.527
.22090E+10	156.075	154.637	152.664	154.255	153.187	151.773
.25246E+10	155.148	153.842	152.052	153.495	152.526	151.244
.28402E+10	154.303	153.092	151.431	152.770	151.873	150.685
.31558E+10	153.550	152.419	150.866	152.118	151.280	150.171
.63115E+10	148.754	148.042	147.066	147.853	147.329	146.635
.94673E+10	144.258	144.688	143.904	144.536	144.118	143.563
.12623E+11	143.265	142.780	142.111	142.651	142.295	141.822
.15779E+11	141.609	141.182	140.596	141.069	140.757	140.343
.18935E+11	139.695	139.321	138.805	139.222	138.948	138.585
.22090E+11	137.956	137.620	137.158	137.532	137.287	136.962
.25246E+11	136.411	136.106	135.685	136.026	135.804	135.509
.28402E+11	135.008	134.728	134.341	134.655	134.451	134.180
.31558E+11	133.775	133.514	133.152	133.446	133.256	133.003

* Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 84871.070 TIME= 21:30:43
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2835 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2805 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 2989 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 2967 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	154.8	.1893E+10
3	NSOL	2835 TEMP	dwpeside	26.14	.2000E-05	153.7	.2209E+10
4	NSOL	2805 TEMP	ddfeside	26.14	.2000E-05	152.5	.2209E+10
5	NSOL	229 TEMP	dmidtop	26.12	.1000E-05	154.3	.1893E+10
6	NSOL	2989 TEMP	dwpetop	26.12	.1000E-05	153.4	.2209E+10
7	NSOL	2967 TEMP	ddfetop	26.12	.1000E-05	152.2	.2209E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:44 JAN 06, 1995 CP= 84872.760
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmdside	2835 TEMP dwpside	2805 TEMP ddfeside	229 TEMP dmidtop	2989 TEMP dwpetop	2967 TEMP ddfetop
.10000E-05	26.1375	26.1383	26.1390	26.1245	26.1228	26.1194
.20000E-05	26.1375	26.1375	26.1375	26.1375	26.1375	26.1375
31.558	26.1410	26.1396	26.1382	26.1406	26.1394	26.1382
.31558E+07	56.6248	51.8615	45.5142	54.9924	50.9835	45.4341
.63116E+07	63.7894	59.1298	52.9270	62.1778	58.2599	52.8378
.94673E+07	68.4858	63.9395	57.9069	66.9106	63.0913	57.8206
.12623E+08	72.0875	67.6359	61.7464	70.5460	66.8103	61.6683
.15779E+08	75.0311	70.6601	64.8915	73.5171	69.8519	64.8181
.18935E+08	77.5328	73.2317	67.5676	76.0402	72.4350	67.4930
.22090E+08	79.7200	75.4811	69.9092	78.2438	74.6906	69.8282
.25246E+08	81.6778	77.4944	72.0048	80.2139	76.7063	71.9133
.28402E+08	83.4551	79.3234	73.9097	82.0011	78.5350	73.8052
.31558E+08	85.0940	81.0097	75.6656	83.6477	80.2191	75.5464
.63115E+08	97.3405	93.6772	88.8657	95.9817	92.8549	88.6100
.94673E+08	105.461	102.014	97.5878	104.119	101.193	97.2712
.12623E+09	111.469	108.183	103.980	110.168	107.372	103.636
.15779E+09	116.311	113.147	109.125	115.041	112.355	108.771
.18935E+09	120.432	117.392	113.503	119.216	116.617	113.144
.22090E+09	124.050	121.109	117.375	122.865	120.357	117.024
.25246E+09	127.254	124.411	120.807	126.124	123.701	120.480
.28402E+09	129.669	126.938	123.488	128.561	126.229	123.144
.31558E+09	131.757	129.119	125.790	130.695	128.439	125.454
.63115E+09	143.434	141.352	138.750	142.587	140.806	138.475
.94673E+09	149.887	148.169	146.032	149.138	147.650	145.714
.12623E+10	153.089	151.642	149.848	152.446	151.189	149.557
.15779E+10	154.466	153.205	151.645	153.903	152.807	151.387
.18935E+10	154.797	153.673	152.284	154.293	153.315	152.049
.22090E+10	154.734	153.716	152.458	154.276	153.390	152.243
.25246E+10	153.931	153.007	151.866	153.513	152.709	151.669
.28402E+10	153.173	152.316	151.259	152.785	152.039	151.074
.31558E+10	152.494	151.694	150.706	152.130	151.433	150.532
.63115E+10	148.087	147.586	146.967	147.855	147.418	146.852
.94673E+10	144.721	144.319	143.823	144.534	144.183	143.729
.12623E+11	142.807	142.465	142.043	142.647	142.349	141.962
.15779E+11	141.206	140.906	140.535	141.065	140.804	140.464
.18935E+11	139.341	139.078	138.752	139.216	138.987	138.688
.22090E+11	137.637	137.401	137.110	137.525	137.318	137.051
.25246E+11	136.120	135.906	135.642	136.017	135.830	135.586
.28402E+11	134.740	134.544	134.300	134.645	134.472	134.248
.31558E+11	133.525	133.342	133.115	133.435	133.275	133.065

 * 1 meter Rock Temperatures *

1mdside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1mdside

*** WARNING *** CP= 84873.080 TIME= 21:30:45
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2795 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 2957 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2793 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	167 TEMP	1midside	26.14	.2000E-05	149.3	.2209E+10
3 NSOL	2795 TEMP	1dfeside	26.14	.2000E-05	148.2	.2209E+10
4 NSOL	219 TEMP	1midtop	26.10	.1000E-05	148.4	.2209E+10
5 NSOL	2957 TEMP	1dfetop	26.10	.1000E-05	147.4	.2209E+10
6 NSOL	165 TEMP	1midbot	26.18	.2000E-05	146.2	.2525E+10
7 NSOL	2793 TEMP	1dfebot	26.18	.2000E-05	145.3	.2525E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:46 JAN 06, 1995 CP= 84874.820
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2795 TEMP 1dfeside	219 TEMP 1midtop	2957 TEMP 1dfetop	165 TEMP 1midbot	2793 TEMP 1dfebot
.10000E-05	26.1391	26.1397	26.0976	26.0955	26.1893	26.1893
.20000E-05	26.1389	26.1389	26.1079	26.1079	26.1819	26.1819
31.558	26.1389	26.1389	26.1079	26.1079	26.1819	26.1819
.31558E+07	41.1362	36.1093	40.3828	36.0435	36.4979	32.6891
.63116E+07	47.9593	42.7006	47.1327	42.5945	42.8599	38.6416
.94673E+07	52.5542	47.3724	51.7383	47.2665	47.2504	43.0573
.12623E+08	56.1152	51.0392	55.3271	50.9492	50.7036	46.5921
.15779E+08	59.0539	54.0762	58.2841	53.9938	53.5703	49.5407
.18935E+08	61.5740	56.6830	60.8072	56.5935	56.0291	52.0730
.22090E+08	63.7953	58.9814	63.0173	58.8705	58.1907	54.2992
.25246E+08	65.7952	61.0501	64.9950	60.9070	60.1294	56.2951
.28402E+08	67.6240	62.9419	66.7937	62.7587	61.8963	58.1133
.31558E+08	69.3169	64.6927	68.4515	64.4647	63.5267	59.7908
.63115E+08	82.1899	78.0244	80.9858	77.3622	75.9215	72.5335
.94673E+08	90.8912	87.1442	89.4946	86.2248	84.5782	81.4743
.12623E+09	97.2520	93.7508	95.8065	92.7466	90.9835	88.1486
.15779E+09	102.409	98.9566	100.888	97.8866	96.0492	93.3717
.18935E+09	106.774	103.393	105.251	102.277	100.399	97.7171
.22090E+09	110.612	107.290	109.070	106.189	104.190	101.550
.25246E+09	113.964	110.733	112.523	109.720	107.604	104.998
.28402E+09	116.782	113.658	115.240	112.543	110.519	107.998
.31558E+09	119.117	116.167	117.685	115.050	112.857	110.422
.63115E+09	132.863	130.565	131.624	129.602	127.444	125.572
.94673E+09	140.987	139.091	139.562	137.892	135.938	134.391
.12623E+10	145.493	143.901	144.183	142.772	141.063	139.757
.15779E+10	147.805	146.418	146.638	145.410	143.882	142.744
.18935E+10	148.851	147.615	147.789	146.696	145.329	144.316
.22090E+10	149.348	148.230	148.378	147.386	146.157	145.238
.25246E+10	149.066	148.051	148.174	147.276	146.168	145.335
.28402E+10	148.677	147.736	147.845	147.011	146.013	145.240
.31558E+10	148.308	147.430	147.526	146.746	145.832	145.111
.63115E+10	145.517	144.966	145.009	144.520	144.003	143.550
.94673E+10	142.693	142.252	142.284	141.893	141.527	141.164
.12623E+11	141.096	140.720	140.748	140.414	140.119	139.810
.15779E+11	139.716	139.386	139.410	139.117	138.871	138.599
.18935E+11	138.045	137.756	137.773	137.516	137.316	137.077
.22090E+11	136.485	136.226	136.237	136.006	135.847	135.634
.25246E+11	135.083	134.847	134.850	134.641	134.518	134.324
.28402E+11	133.792	133.576	133.576	133.383	133.283	133.104
.31558E+11	132.646	132.445	132.443	132.263	132.178	132.011

 * 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 84875.140 TIME= 21:30:47
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 3441 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 3657 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3438 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	143.5	.2840E+10
3	NSOL	3441 TEMP	3dfeside	26.14	.2000E-05	143.2	.3156E+10
4	NSOL	309 TEMP	3midtop	26.05	.1000E-05	141.3	.3156E+10
5	NSOL	3657 TEMP	3dfetop	26.05	.1000E-05	141.1	.3156E+10
6	NSOL	276 TEMP	3midbot	26.22	.2000E-05	140.7	.6312E+10
7	NSOL	3438 TEMP	3dfebot	26.22	.2000E-05	140.6	.6312E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:48 JAN 06, 1995 CP= 84876.830
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3441 TEMP 3dfeside	309 TEMP 3midtop	3657 TEMP 3dfetop	276 TEMP 3midbot	3438 TEMP 3dfebot
.10000E-05	26.1402	26.1403	26.0543	26.0539	26.2292	26.2293
.20000E-05	26.1402	26.1402	26.0619	26.0619	26.2234	26.2234
31.558	26.1402	26.1402	26.0619	26.0619	26.2234	26.2234
.31558E+07	28.8292	28.0551	28.4356	27.8140	27.8173	27.3157
.63116E+07	33.0513	31.8563	32.4627	31.4725	31.2456	30.3188
.94673E+07	36.5302	35.2657	35.9135	34.8546	34.3700	33.3500
.12623E+08	39.4537	38.1951	38.8355	37.7787	37.0843	36.0590
.15779E+08	41.9980	40.7597	41.3552	40.3154	39.4618	38.4512
.18935E+08	44.2711	43.0543	43.5702	42.5488	41.5739	40.5808
.22090E+08	46.3410	45.1440	45.5518	44.5473	43.4775	42.5010
.25246E+08	48.2524	47.0732	47.3523	46.3630	45.2162	44.2547
.28402E+08	50.0365	48.8734	49.0104	48.0346	46.8237	45.8755
.31558E+08	51.7146	50.5664	50.5541	49.5905	48.3246	47.3886
.63115E+08	64.9905	63.9541	62.6122	61.7382	60.1458	59.2982
.94673E+08	74.5116	73.5802	71.4221	70.6347	68.9260	68.1502
.12623E+09	81.7271	80.8612	78.2563	77.5203	75.7854	75.0744
.15779E+09	87.4385	86.6197	83.7950	83.1044	81.3540	80.6795
.18935E+09	92.0836	91.3006	88.4398	87.7395	86.0190	85.3737

.22090E+09	95.9286	95.1755	92.3619	91.6947	89.9913	89.3747
.25246E+09	99.1452	98.3565	95.8637	95.1903	93.4542	92.8282
.28402E+09	102.110	101.338	98.5280	97.8942	96.4073	95.8505
.31558E+09	104.587	103.843	101.205	100.565	98.7404	98.1307
.63115E+09	120.370	119.798	117.249	116.735	114.842	114.372
.94673E+09	130.631	130.159	126.822	126.419	124.808	124.425
.12623E+10	136.658	136.265	133.116	132.781	131.403	131.075
.15779E+10	140.057	139.714	136.890	136.597	135.361	135.076
.18935E+10	141.935	141.628	139.049	138.787	137.691	137.439
.22090E+10	143.085	142.808	140.446	140.209	139.234	139.005
.25246E+10	143.408	143.156	140.982	140.767	139.889	139.682
.28402E+10	143.451	143.218	141.194	140.995	140.225	140.033
.31558E+10	143.444	143.226	141.323	141.137	140.446	140.266
.63115E+10	142.533	142.397	141.164	141.047	140.690	140.577
.94673E+10	140.342	140.233	139.252	139.158	138.942	138.852
.12623E+11	139.115	139.022	138.190	138.110	137.946	137.869
.15779E+11	137.991	137.909	137.179	137.109	136.982	136.914
.18935E+11	136.547	136.475	135.829	135.768	135.679	135.620
.22090E+11	135.153	135.089	134.500	134.445	134.400	134.347
.25246E+11	133.883	133.825	133.277	133.227	133.223	133.175
.28402E+11	132.698	132.644	132.135	132.089	132.106	132.062
.31558E+11	131.631	131.581	131.104	131.061	131.089	131.048

* Upper Rock Layer Interface Temperatures *

surfTCw = center ground surface
 TCwPTn = center TCw and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 771 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 84877.150 TIME= 21:30:49
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 750 ITEM= TEMP COMP= NAME= TCwPTn

VARIABLE 4 IS AT NODE 693 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 528 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 436 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 402 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	771 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	750 TEMP	TCwPTn	19.53	.1000E-05	29.31	.3156E+11
4	NSOL	693 TEMP	PTnTSw1	21.24	.1000E-05	51.74	.3156E+11
5	NSOL	528 TEMP	TSw1TSw2	24.25	.1000E-05	96.38	.3156E+11
6	NSOL	436 TEMP	upmodel	25.95	.1000E-05	134.0	.6312E+10
7	NSOL	402 TEMP	middrift	26.14	.1000E-05	140.0	.6312E+10

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:50 JAN 06, 1995 CP= 84878.830
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	771 TEMP surfTCw	750 TEMP TCwPTn	693 TEMP PTnTSw1	528 TEMP TSw1TSw2	436 TEMP upmodel	402 TEMP middrift
.10000E-05	18.7000	19.5284	21.2405	24.2522	25.9456	26.1406
.20000E-05	18.7000	19.5289	21.2422	24.2561	25.9510	26.1409
31.558	18.7000	19.5289	21.2422	24.2561	25.9510	26.1409
.31558E+07	18.7000	19.5289	21.2422	24.2561	25.9568	26.1587
.63116E+07	18.7000	19.5289	21.2422	24.2561	26.0557	26.4253
.94673E+07	18.7000	19.5289	21.2422	24.2561	26.3602	27.1480
.12623E+08	18.7000	19.5289	21.2422	24.2561	26.8642	28.2457
.15779E+08	18.7000	19.5289	21.2422	24.2561	27.5098	29.5790
.18935E+08	18.7000	19.5289	21.2422	24.2561	28.2428	31.0423
.22090E+08	18.7000	19.5289	21.2422	24.2561	29.0249	32.5671
.25246E+08	18.7000	19.5289	21.2422	24.2561	29.8323	34.1108
.28402E+08	18.7000	19.5289	21.2422	24.2561	30.6505	35.6473
.31558E+08	18.7000	19.5289	21.2422	24.2561	31.4714	37.1613
.63115E+08	18.7000	19.5289	21.2422	24.2561	39.3811	50.3184
.94673E+08	18.7000	19.5289	21.2422	24.2561	46.5533	60.4060
.12623E+09	18.7000	19.5289	21.2422	24.2561	52.8770	68.3301
.15779E+09	18.7000	19.5289	21.2422	24.2561	58.4091	74.7182
.18935E+09	18.7000	19.5289	21.2422	24.2561	63.2633	79.9932
.22090E+09	18.7000	19.5289	21.2422	24.2563	67.5510	84.4235
.25246E+09	18.7000	19.5289	21.2422	24.2567	71.3695	88.1461
.28402E+09	18.7000	19.5289	21.2422	24.2577	74.7219	91.2340
.31558E+09	18.7000	19.5289	21.2422	24.2596	77.7101	93.6345
.63115E+09	18.7000	19.5289	21.2422	24.4975	95.0311	108.765
.94673E+09	18.7000	19.5289	21.2422	25.5544	105.013	121.579
.12623E+10	18.7000	19.5289	21.2424	27.4788	113.241	129.003
.15779E+10	18.7000	19.5290	21.2440	29.9678	119.214	133.342
.18935E+10	18.7000	19.5291	21.2500	32.7496	123.100	135.936
.22090E+10	18.7000	19.5295	21.2662	35.6416	125.934	137.659
.25246E+10	18.7000	19.5310	21.3003	38.5279	127.723	138.504
.28402E+10	18.7000	19.5344	21.3601	41.3377	128.934	138.926
.31558E+10	18.7000	19.5412	21.4527	44.0321	129.873	139.234
.63115E+10	18.7000	20.1045	24.5742	63.8739	133.974	139.954
.94673E+10	18.7000	21.6507	30.0681	74.8495	133.610	138.311
.12623E+11	18.7000	23.4711	35.5560	81.6354	133.438	137.407
.15779E+11	18.7000	25.0971	40.1721	86.2653	133.034	136.502
.18935E+11	18.7000	26.4154	43.8277	89.6108	132.210	135.256
.22090E+11	18.7000	27.4455	46.6574	92.0610	131.263	134.005
.25246E+11	18.7000	28.2383	48.8247	93.9214	130.338	132.850
.28402E+11	18.7000	28.8450	50.4797	95.3488	129.441	131.756
.31558E+11	18.7000	29.3077	51.7421	96.3833	128.600	130.757

* Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP

TSw2TSw3 = center TSw2 and TSw3 interface

TSw3CHnv = center TSw3 and CHn1v interface

CHnvCHnz = center CHn1v and CHn1z interface

CHnzCHn2 = center CHn1z and CHn2 interface

CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING ***

CP= 84879.150 TIME= 21:30:51

NSOL command erases all previously stored or calculated data
unless STORE,MERGE is used.

VARIABLE 5 IS AT NODE 612 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 6 IS AT NODE 792 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 7 IS AT NODE 812 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 831 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 888 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	396 TEMP	dwnmodel	26.33	.2000E-05	134.0	.6312E+10
3 NSOL	750 TEMP	TCwPTn	19.53	.1000E-05	29.31	.3156E+11
4 NSOL	693 TEMP	PTnTSw1	21.24	.1000E-05	51.74	.3156E+11
5 NSOL	612 TEMP	TSw2TSw3	27.67	.3156E+07	106.1	.3156E+11
6 NSOL	792 TEMP	TSw3CHnv	28.15	.2000E-05	98.61	.3156E+11
7 NSOL	888 TEMP	CHn2bot	31.86	.2000E-05	59.04	.3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:30:52 JAN 06, 1995 CP= 84880.840
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	750 TEMP TCwPTn	693 TEMP PTnTSw1	612 TEMP TSw2TSw3	792 TEMP TSw3CHnv	888 TEMP CHn2bot
.10000E-05	26.3367	19.5284	21.2405	27.6788	28.1503	31.8639
.20000E-05	26.3323	19.5289	21.2422	27.6750	28.1465	31.8607
31.558	26.3323	19.5289	21.2422	27.6750	28.1465	31.8607
.31558E+07	26.3361	19.5289	21.2422	27.6750	28.1465	31.8607
.63116E+07	26.4134	19.5289	21.2422	27.6750	28.1465	31.8607
.94673E+07	26.6703	19.5289	21.2422	27.6750	28.1465	31.8607
.12623E+08	27.1123	19.5289	21.2422	27.6750	28.1465	31.8607
.15779E+08	27.6908	19.5289	21.2422	27.6750	28.1465	31.8607
.18935E+08	28.3573	19.5289	21.2422	27.6750	28.1465	31.8607
.22090E+08	29.0763	19.5289	21.2422	27.6750	28.1465	31.8607
.25246E+08	29.8249	19.5289	21.2422	27.6750	28.1465	31.8607
.28402E+08	30.5890	19.5289	21.2422	27.6750	28.1465	31.8607
.31558E+08	31.3604	19.5289	21.2422	27.6750	28.1465	31.8607
.63115E+08	38.9367	19.5289	21.2422	27.6750	28.1465	31.8607
.94673E+08	45.9275	19.5289	21.2422	27.6750	28.1465	31.8607
.12623E+09	52.1539	19.5289	21.2422	27.6750	28.1465	31.8607
.15779E+09	57.6245	19.5289	21.2422	27.6753	28.1465	31.8607
.18935E+09	62.4413	19.5289	21.2422	27.6765	28.1466	31.8607
.22090E+09	66.7042	19.5289	21.2422	27.6797	28.1467	31.8607
.25246E+09	70.4990	19.5289	21.2422	27.6869	28.1470	31.8607
.28402E+09	73.8839	19.5289	21.2422	27.7006	28.1477	31.8607
.31558E+09	76.8246	19.5289	21.2422	27.7235	28.1493	31.8607
.63115E+09	94.2047	19.5289	21.2422	28.9182	28.3706	31.8607
.94673E+09	104.179	19.5289	21.2422	31.9722	29.3763	31.8607
.12623E+10	112.481	19.5289	21.2424	35.9847	31.2221	31.8607
.15779E+10	118.503	19.5290	21.2440	40.2637	33.6232	31.8608
.18935E+10	122.478	19.5291	21.2500	44.4793	36.3174	31.8614
.22090E+10	125.396	19.5295	21.2662	48.4758	39.1242	31.8636
.25246E+10	127.276	19.5310	21.3003	52.1874	41.9282	31.8689
.28402E+10	128.607	19.5344	21.3601	55.5962	44.6589	31.8799
.31558E+10	129.613	19.5412	21.4527	58.7077	47.2767	31.8995
.63115E+10	133.961	20.1045	24.5742	78.3269	66.3123	33.0531
.94673E+10	133.743	21.6507	30.0681	87.5988	76.8130	36.0069
.12623E+11	133.587	23.4711	35.5560	92.8840	83.2035	39.7747
.15779E+11	133.198	25.0971	40.1721	96.5579	87.6562	43.6285
.18935E+11	132.399	26.4154	43.8277	99.6964	91.2783	47.2732
.22090E+11	131.508	27.4455	46.6574	102.190	94.1894	50.6420
.25246E+11	130.641	28.2383	48.8247	103.997	96.1078	53.7341
.28402E+11	129.763	28.8450	50.4797	105.210	97.5347	56.5355
.31558E+11	128.926	29.3077	51.7421	106.067	98.6081	59.0410

***** ROUTINE COMPLETED ***** CP = 84880.850

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12b5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 52
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```
*-----*
|
|               ANSYS RUN COMPLETED
|
|-----|
|
|      REV. 5.0 A                      HP 9000/7XX
|
| CP TIME      (sec) =      84890.030    TIME = 21:31:07
| ELAPSED TIME (sec) =     189025.000    DATE  = 01/06/95
|
|-----|
|
|*-----*
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*-----*
|               |
|   W E L C O M E   T O   T H E   A N S Y S   P R O G R A M   |
|               |
*-----*

```

```

***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = c12w5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

```

```

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED = 16777216      64.000 MB  COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592    18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496  25.568 MB
WORK SPACE OBTAINED = 16777214      64.000 MB
BYTES PER WORD = 4

```

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RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON     TO START THE ANSYS MENU SYSTEM
ENTER HELP        FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 1/11/1995
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c12w5a.inp
7 /COM, *
8 /COM, * 12 PWR WP/MPC (10 cm overpack)
9 /COM, * Average SNF: 22 years old, 42.2 Gwd/MTU burnup
10 /COM, * 5.0 m Diameter Drift with Concrete Invert
11 /COM, * 25 NTU/acre (6.18 kgU/m^2) AML (Low Thermal Loading)
12 /COM, * Drift spacing = 45.0 m (22.5 m model half width)
13 /COM, * WP c/c spacing = 18.475 m
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat
16 /COM, * SNF Heat Loads file: snf2242.dat
17 /COM, *
18 /COM, *****

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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,12 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.76525,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.647,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,18.475,
42 *SET,WPNUM,12.0,
43 *SET,MODEL,22.5,
44 *SET,OFFST,0.27255,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD+OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4*6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM, Model is 6 elements wide
372 LSEL,S,LINE,, 9,12,1, (3+7=10 divisions)
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 6,3.0,
378 /COM, Extrude WP 5 elements
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM, 1 element thick steel
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM, Extrude drift 5 elements with smallest
386 /COM, elements at WP mid-length
387 LESIZE, 58,,, 6,5.7,
388 LESIZE, 59,,, 6,5.7,
389 /COM, *****
390 /COM, Set element sizes in rock layers
391 /COM, 3 element thick TCw
392 LESIZE, 24,,, 3,
393 /COM, 3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM, 9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM, 12 elements above and below near field
398 /COM, with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,, 9,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,, 9,
403 LSEL,ALL,
404 /COM, 3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM, 2 element thick CHn1v
407 LESIZE, 46,,, 2,
408 /COM, 7 element thick CHn1z
409 LESIZE, 49,,, 7,
410 /COM, 12 element thick CHN2 with smaller elements
411 /COM, near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM, Concatenate lines for mapped meshing
417 /COM, (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM, Mesh 2-D areas
426 /COM, (first WP, then invert, DF wall and rock layers)
427 /COM, Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM, Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM, Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM,          TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM,          PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM,          TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM,          TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM,          CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM,          CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM,          CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM,          *****
468 /COM,          Delete concatenated lines
469 /COM,          (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM,          *****
477 /COM,          Extrude 2-D waste package into 3-D
478 /COM,          (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM,          ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM,          (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM,          Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM,          *****
505 /COM,          Extrude 2-D rock into front half 3-D
506 /COM,          Invert
507 /COM,          (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,      Rock around drift
513 /COM,      (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,,58,
527 VMESH,41,
528 /COM,      Mid-drift rock
529 /COM,      (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,,58,
535 /COM,      Concatenate to mesh volume 45
536 /COM,      (L's 311,312 used and freed up)
537 /COM,      (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,      Extrude rest of TSw2
546 /COM,      (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,      Extrude TSw1
549 /COM,      (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,      Extrude PTn
553 /COM,      (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,      Extrude TCw
557 /COM,      (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,      Extrude TSw3
561 /COM,      (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,      Extrude CHn1v
565 /COM,      (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,      Extrude CHn1z
569 /COM,      (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,      Extrude CHn2
573 /COM,      (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,      *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM, Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM, Define edge elements for radiation
659 /COM, Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM, Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM, Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM, Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundary condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Appiy loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862  *ENDDO
863  /COM,          Apply loads and solve for 100 to 1000 years
864  *DO,TM,TME100,TME1000,TMI100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872  *ENDDO
873  FINISH
874  SAVE,
875  /COM,          *****
876  /COM,          Store temperatures at waste package mid-length surface
877  /COM,          and drift wall end in array tables for use as boundary
878  /COM,          conditions in later analyses
879  /POST1,
880  JINC=1
881  /COM,          0 to .9 years
882  *DO,TM,TM_START,TME0,TM10,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0)))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0)))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0)))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0)))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899  *ENDDO
900  /COM,          1 to 9 years
901  *DO,TM,TME1,TME9,TMI1,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0)))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0)))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0)))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0)))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918  *ENDDO
919  /COM,          10 to 90 years
920  *DO,TM,TME10,TME90,TMI10,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WPSPC/2.0)))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WPSPC/2.0)))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WPSPC/2.0)))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WPSPC/2.0)))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TMI100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAV,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 50.0,
984 /VCON,1, 25.000,
985 /TYPE,1,HIDP,
986 /SHADE,,GOUR,
987 /GLINE,,0,
988 /TITLE,
989 VSEL,S,LOC,Z,0,100
990 ESLV,S
991 /SHOW,meshdrift,grph,0,8,
992 EPLOT
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1,+90,YS,1
995 /DIST,1, 20.0,
996 VSEL,S,LOC,X,-100,0
997 ESLV,S
998 /SHOW,meshside,grph,0,8,

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999 EPLLOT
1000 /COM, *****
1001 /COM, Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM, Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT , 1,
1009 /WIND,1, -1.0000 , 1.00000 , -1.0000 , 1.0000,
1010 /VIEW,1, -.36934 , .15899 , -.91559,
1011 /FOC, 1, 2.7776 , -.97308 , 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088 ,ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM, Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM, Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0 ,100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05 ,100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1 ,100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5 ,100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10 ,100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50 ,100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100 ,100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500 ,100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k ,100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM, View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPLLOT
1065 /COM, *****
1066 /COM, Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM, Set view settings

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1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT, 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC, 1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG, 1, -.52088,2S,
1079 /VCON,1, 25.000,
1080 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM,          Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM,          Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM,          View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLT
1131 FINISH
1132 /COM, *****
1133 /COM,          Print time/temperature output at specific locations
1134 /POST26,
1135 /COM, *****
1136 /COM, *****
1137 /COM, *          Waste Package Surface Temperatures *
1138 /COM, *****

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1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE( WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE( WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpside,
1147 NSOL,4,(NODE( 0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE( 0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE( 0.0, (0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE( 0.0, (0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWLL), 0.0,      0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWLL), 0.0, (WPLEN/2.0-WPWLL))),TEMP,,swpside,
1164 NSOL,4,(NODE(0.0,      (WPRAD-WPWLL),      0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0,      (WPRAD-WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWLL),      0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE( 0.0,      0.0,      0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE( 0.0,      0.0, (WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE( 0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE( 0.0, (DFCENT-DFRAD),      0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE( 0.0, (DFCENT-DFRAD),      (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE( 0.0, (DFCENT-DFRAD),      (WSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfecent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE( 0.0,      YYY,      0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE( 0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE( 0.0,      YYY,      (WSPC/2.0))),TEMP,,idfecent,
1199 NSOL,5,(NODE( XXX,      YYY,      0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE( XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE( XXX,      YYY,      (WSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpside = end of WP drift wall side surface

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1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddfetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmdside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WPSPC/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,, dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,, dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WPSPC/2.0))),TEMP,, ddfetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *      1 meter Rock Temperatures      *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dfetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WPSPC/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,, 1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WPSPC/2.0))),TEMP,, 1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,, 1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WPSPC/2.0))),TEMP,, 1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *      3 meter Rock Temperatures      *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WPSPC/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,, 3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WPSPC/2.0))),TEMP,, 3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,, 3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WPSPC/2.0))),TEMP,, 3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *      Upper Rock Layer Interface Temperatures      *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *      Lower Rock Layer Interface Temperatures      *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHnvCHnz = center CHn1v and CHn1z interface

```

```

1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1282 NSOL,5,(NODE( 0.0,(GSURF-393.5), 0.0)),TEMP,,Tsw2Tsw3,
1283 NSOL,6,(NODE( 0.0,(GSURF-409.3), 0.0)),TEMP,,Tsw3CHnv,
1284 NSOL,7,(NODE( 0.0,(GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1285 NSOL,7,(NODE( 0.0,(GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2), 0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM,          *****
1291 /COM,          End of batch input file
1292 /COM,          *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE= 0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,1,

```

ABBREVIATION= RAS /show,,,0,
 ABBREVIATION= ON /menu,on,
 ABBREVIATION= OFF /menu,off,
 ABBREVIATION= NVP /config,nvpag,512,
 ABBREVIATION= QUIT /exit,nosav,
 XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

 END start.ans

To start ANSYS menu:

type: x3d for console
 x11 for X-term

type: on

 ANSYS REVISION 5.0A 1/11/1995
 3-D Model of Waste Package Drift Emplacement R.Bahney III

 * *
 * File name: c12w5a.inp *
 * *
 * 12 PWR WP/MPC (10 cm overpack) *
 * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
 * 5.0 m Diameter Drift with Concrete Invert *
 * 25 MTU/acre (6.18 kgU/m²) AML (Low Thermal Loading) *
 * Drift spacing = 45.0 m (22.5 m model half width) *
 * WP c/c spacing = 18.475 m *
 * *
 * Material Properties file: Proprep.dat *
 * SNF Heat Loads file: snf2242.dat *
 * *

 Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

TITLE=

12 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
 MASS = KILOGRAMS(KG)
 TIME = SECONDS(SEC)
 TEMPERATURE = CENTIGRADE
 CURRENT = AMPS

Define emplacement parameters

WPRAD = radius of waste package (m)
 DFRAD = radius of drift (m)
 INVRT = height of invert backfill floor (m)
 WPLEN = length of waste package (m)
 WPWLL = thickness of outer barrier (m)
 WSPC = waste package c/c spacing (m)
 WPNUM = number of assemblies per WP
 MODEL = model half width (m)
 OFFST = WP center below drift center (m)

PARAMETER WPRAD = .7652500
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.647000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 18.47500
 PARAMETER WPNUM = 12.00000
 PARAMETER MODEL = 22.50000
 PARAMETER OFFST = .2725500

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1

PARAMETER GSURF = 308.7726
 PARAMETER DFCENT = .2725500
 PARAMETER XXX = 1.734935

```

PARAMETER YYY      =      -1.527450
PARAMETER WPVOL     =      7.573152
PARAMETER TM_START  =      31.55760
PARAMETER TMIO      =      3155760.
PARAMETER TMI1      =      .3155760E+08
PARAMETER TMI10     =      .3155760E+09
PARAMETER TMI100    =      .3155760E+10
PARAMETER TMI1000   =      .3155760E+11
PARAMETER TME0      =      .2840187E+08
PARAMETER TME1      =      .3155763E+08
PARAMETER TME9      =      .2840184E+09
PARAMETER TME10     =      .3155760E+09
PARAMETER TME90     =      .2840184E+10
PARAMETER TME100    =      .3155760E+10
PARAMETER TME1000   =      .3155760E+11
*****
Define different element types

```

1

```

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT  VERSION=HP 9000/7XX  07:28:56 JAN 20, 1995 CP=
FOR SUPPORT CALL BOB BAHNEY          PHONE (702) 794-5337 FAX

```

.800

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

```

ELEMENT TYPE      1 IS PLANE55      2-D THERMAL SOLID
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
TWO-DIMENSIONAL MODEL

```

ELEMENT TYPE      2 IS SOLID70      3-D THERMAL SOLID
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE     16 IS SHELL57      THERMAL SHELL
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE     17 IS LINK32      2-D CONDUCTING BAR
KEYOPT(1-12)=    0 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

```

ELEMENT TYPE     18 IS MATRIX50     SUBSTRUCTURE MATRIX
KEYOPT(1-12)=    1 0 0 0 0 0 0 0 0 0 0 0

```

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **
** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCw	Top Rock Layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smeared Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **
** Emissivity EMIS **
** Conductivity: KXX (W/m/K) **
** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***
SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Mats 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C	MAT=	4	NUM. POINTS=	8	
SLOC= 5	.1046900E+08	.1019840E+08	2006500.	2111400.	
PROPERTY TABLE C	MAT=	4	NUM. POINTS=	11	
SLOC= 9	2191200.	2269200.	2341000.		
PROPERTY TABLE C	MAT=	5	NUM. POINTS=	4	
SLOC= 1	1844300.	2031500.	2283100.	4559000.	
PROPERTY TABLE C	MAT=	5	NUM. POINTS=	8	
SLOC= 5	4518800.	4480000.	2295300.	2448900.	
PROPERTY TABLE C	MAT=	5	NUM. POINTS=	11	
SLOC= 9	2574000.	2679200.	2770200.		
PROPERTY TABLE C	MAT=	6	NUM. POINTS=	4	
SLOC= 1	2443600.	2555700.	2696000.	.3660130E+08	
PROPERTY TABLE C	MAT=	6	NUM. POINTS=	8	
SLOC= 5	.3532630E+08	.3417640E+08	1501300.	1601800.	
PROPERTY TABLE C	MAT=	6	NUM. POINTS=	11	
SLOC= 9	1683600.	1752500.	1812000.		
PROPERTY TABLE C	MAT=	7	NUM. POINTS=	4	
SLOC= 1	2603200.	2664700.	2744700.	.3660690E+08	
PROPERTY TABLE C	MAT=	7	NUM. POINTS=	8	
SLOC= 5	.3534400E+08	.3420530E+08	2791400.	2741900.	
PROPERTY TABLE C	MAT=	7	NUM. POINTS=	11	
SLOC= 9	2670700.	1581400.	1632000.		
PROPERTY TABLE C	MAT=	8	NUM. POINTS=	4	
SLOC= 1	2430900.	2538500.	2680250.	.2798690E+08	
PROPERTY TABLE C	MAT=	8	NUM. POINTS=	8	
SLOC= 5	.2705530E+08	.2621460E+08	2564400.	2593500.	
PROPERTY TABLE C	MAT=	8	NUM. POINTS=	11	
SLOC= 9	2598500.	1981950.	2047350.		

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***

SLOC= 1	21.11000	37.78000	65.56000
	93.33000	121.1100	148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***

SLOC= 7	176.6700	204.4400	232.2200
	260.0000	287.7800	315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***

SLOC= 13	343.3300	371.1100	398.8900
	426.6700	454.4400	482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***

SLOC= 19	510.0000	537.7800	565.5600
----------	----------	----------	----------

593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

 Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
 477.0000 467.8000

PARAMETER ASSY(13,1) = 459.2000 451.1000 443.5000 436.2000
429.3000 423.7000

PARAMETER ASSY(19,1) = 412.6000 404.5000 341.6000 294.1000
252.6000 222.0000

PARAMETER ASSY(25,1) = 198.5000 179.8000 162.5000 150.1000
139.7000 85.70000

PARAMETER ASSY(31,1) = 67.40000 56.80000 49.40000 42.90000
38.10000 34.30000

PARAMETER ASSY(37,1) = 31.30000 29.00000 15.50000 12.80000
11.10000 10.00000

PARAMETER ASSY(43,1) = 9.200000 8.600000 8.000000 7.600000
7.200000

PARAMETER ASSY(1,0) = .1000000E-05 .1000000 .2000000 .3000000
.4000000 .5000000

PARAMETER ASSY(7,0) = .6000000 .7000000 .8000000 .9000000
1.000000 2.000000

PARAMETER ASSY(13,0) = 3.000000 4.000000 5.000000 6.000000
7.000000 8.000000

PARAMETER ASSY(19,0) = 9.000000 10.00000 20.00000 30.00000
40.00000 50.00000

PARAMETER ASSY(25,0) = 60.00000 70.00000 80.00000 90.00000
100.0000 200.0000

PARAMETER ASSY(31,0) = 300.0000 400.0000 500.0000 600.0000
700.0000 800.0000

PARAMETER ASSY(37,0) = 900.0000 1000.000 2000.000 3000.000
4000.000 5000.000

PARAMETER ASSY(43,0) = 6000.000 7000.000 8000.000 9000.000
10000.00

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)
INPUT MATRIX= ASSY(1,0)
INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.5845
FACTOR ON FIRST VECTOR PARAMETER = 1.0000
FACTOR ON SECOND VECTOR PARAMETER= 1.0000
FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
WPHOT(1) = COPY ASSY(1)
SCALE FACTORS RESULT= 1.5845 INPUT= 1.0000
VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000
PARAMETER WPTOP(0,1) = 1.000000
PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-22.5000	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	3	X,Y,Z=	22.5000	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	-22.5000	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	22.5000	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	-22.5000	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	22.5000	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	-22.5000	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	22.5000	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	-22.5000	22.7726	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.000000E+00	22.7726	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	22.5000	22.7726	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	-22.5000	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	22.5000	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	-22.5000	-22.2275	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.000000E+00	-22.2275	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	22.5000	-22.2275	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	-22.5000	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	22.5000	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	-22.5000	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	22.5000	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	-22.5000	-105.727	.000000E+00	IN CSYS=	0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.727	.000000E+00	IN CSYS=	0

KEYPOINT 29 X,Y,Z= 22.5000 -105.727 .000000E+00 IN CSYS= 0
 KEYPOINT 30 X,Y,Z= -22.5000 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 31 X,Y,Z= .000000E+00 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 32 X,Y,Z= 22.5000 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 33 X,Y,Z= -22.5000 -991.227 .000000E+00 IN CSYS= 0
 KEYPOINT 34 X,Y,Z= .000000E+00 -991.227 .000000E+00 IN CSYS= 0
 KEYPOINT 35 X,Y,Z= 22.5000 -991.227 .000000E+00 IN CSYS= 0

Define lines connecting rock layers
 (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS 1 2
 LINE NO.= 1 KP1= 1 TAN1= -1.0000 .0000 .0000
 KP2= 2 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 2 3
 LINE NO.= 2 KP1= 2 TAN1= -1.0000 .0000 .0000
 KP2= 3 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 4 5
 LINE NO.= 3 KP1= 4 TAN1= -1.0000 .0000 .0000
 KP2= 5 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 5 6
 LINE NO.= 4 KP1= 5 TAN1= -1.0000 .0000 .0000
 KP2= 6 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 7 8
 LINE NO.= 5 KP1= 7 TAN1= -1.0000 .0000 .0000
 KP2= 8 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 8 9
 LINE NO.= 6 KP1= 8 TAN1= -1.0000 .0000 .0000
 KP2= 9 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 10 11
 LINE NO.= 7 KP1= 10 TAN1= -1.0000 .0000 .0000
 KP2= 11 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 11 12
 LINE NO.= 8 KP1= 11 TAN1= -1.0000 .0000 .0000
 KP2= 12 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 13 14
 LINE NO.= 9 KP1= 13 TAN1= -1.0000 .0000 .0000
 KP2= 14 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 14 15
 LINE NO.= 10 KP1= 14 TAN1= -1.0000 .0000 .0000
 KP2= 15 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 18 19
 LINE NO.= 11 KP1= 18 TAN1= -1.0000 .0000 .0000
 KP2= 19 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 19 20
 LINE NO.= 12 KP1= 19 TAN1= -1.0000 .0000 .0000
 KP2= 20 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 21 22
 LINE NO.= 13 KP1= 21 TAN1= -1.0000 .0000 .0000
 KP2= 22 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.= 31	KP1= 9	TAN1= .0000	1.0000	.0000
	KP2= 12	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13				
LINE NO.= 32	KP1= 10	TAN1= .0000	1.0000	.0000
	KP2= 13	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14				
LINE NO.= 33	KP1= 11	TAN1= .0000	1.0000	.0000
	KP2= 14	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15				
LINE NO.= 34	KP1= 12	TAN1= .0000	1.0000	.0000
	KP2= 15	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16				
LINE NO.= 35	KP1= 13	TAN1= .0000	1.0000	.0000
	KP2= 16	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17				
LINE NO.= 36	KP1= 15	TAN1= .0000	1.0000	.0000
	KP2= 17	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18				
LINE NO.= 37	KP1= 16	TAN1= .0000	1.0000	.0000
	KP2= 18	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20				
LINE NO.= 38	KP1= 17	TAN1= .0000	1.0000	.0000
	KP2= 20	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21				
LINE NO.= 39	KP1= 18	TAN1= .0000	1.0000	.0000
	KP2= 21	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22				
LINE NO.= 40	KP1= 19	TAN1= .0000	1.0000	.0000
	KP2= 22	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23				
LINE NO.= 41	KP1= 20	TAN1= .0000	1.0000	.0000
	KP2= 23	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24				
LINE NO.= 42	KP1= 21	TAN1= .0000	1.0000	.0000
	KP2= 24	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25				
LINE NO.= 43	KP1= 22	TAN1= .0000	1.0000	.0000
	KP2= 25	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26				
LINE NO.= 44	KP1= 23	TAN1= .0000	1.0000	.0000
	KP2= 26	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27				
LINE NO.= 45	KP1= 24	TAN1= .0000	1.0000	.0000
	KP2= 27	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28				
LINE NO.= 46	KP1= 25	TAN1= .0000	1.0000	.0000
	KP2= 28	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29				
LINE NO.= 47	KP1= 26	TAN1= .0000	1.0000	.0000
	KP2= 29	TAN2= .0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30				
LINE NO.= 48	KP1= 27	TAN1= .0000	1.0000	.0000
	KP2= 30	TAN2= .0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES

LINE LIST = 39 13 40 11
(TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES

LINE LIST = 40 14 41 12
(TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES

LINE LIST = 42 15 43 13
(TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES

LINE LIST = 43 16 44 14
(TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES

LINE LIST = 45 17 46 15
(TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES

LINE LIST = 46 18 47 16
(TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES

LINE LIST = 48 19 49 17
(TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES

LINE LIST = 49 20 50 18
(TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES

LINE LIST = 51 21 52 19
(TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES

LINE LIST = 52 22 53 20
(TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
(K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS=	0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.72350	IN CSYS=	0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.82350	IN CSYS=	0

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.72350 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.82350 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .272550 9.23750 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .272550 -9.23750 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .6653

AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19

ARC = 360. NUMBER OF LINES = 4

LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .7653

AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19

ARC = 360. NUMBER OF LINES = 4

LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.22745 .000000E+00 IN CSYS= 0
 KEYPOINT 53 X,Y,Z= 1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .272550 .000000E+00 IN CSYS= 0

KEYPOINT 55 X,Y,Z= .000000E+00 2.77255 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.52745 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS		36	45			
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		36	46			
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000
		KP2=	46	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		36	47			
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		44	48			
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000
		KP2=	48	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		45	49			
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		46	50			
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000
		KP2=	50	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		47	51			
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		50	55			
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000
		KP2=	55	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		48	58			
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000
		KP2=	58	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		58	52			
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000
		KP2=	52	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		57	58			
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		58	53			
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		52	59			
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000
		KP2=	59	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		54	60			
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		55	61			
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000
		KP2=	61	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		56	62			
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		59	63			
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000
		KP2=	63	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		60	64			
LINE NO.=	100	KP1=	60	TAN1=	-1.0000	.0000

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      KP2=    64 TAN2=    1.0000    .0000    .0000
LINE CONNECTS KEYPOINTS    61    65
LINE NO.=   101 KP1=    61 TAN1=    .0000   -1.0000    .0000
      KP2=    65 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    62    66
LINE NO.=   102 KP1=    62 TAN1=    1.0000    .0000    .0000
      KP2=    66 TAN2=   -1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    63    19
LINE NO.=   103 KP1=    63 TAN1=    .0000    1.0000    .0000
      KP2=    19 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS    64    17
LINE NO.=   104 KP1=    64 TAN1=   -1.0000    .0000    .0000
      KP2=    17 TAN2=    1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    65    14
LINE NO.=   105 KP1=    65 TAN1=    .0000   -1.0000    .0000
      KP2=    14 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    66    16
LINE NO.=   106 KP1=    66 TAN1=    1.0000    .0000    .0000
      KP2=    16 TAN2=   -1.0000    .0000    .0000
      Define areas around drift
      (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
      (   35,36,37,38,39,40)

```

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    82    60    83
      (TRAVERSED IN SAME DIRECTION AS LINE    82)

```

AREA NUMBER = 19

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    83    61    84
      (TRAVERSED IN SAME DIRECTION AS LINE    83)

```

AREA NUMBER = 20

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    85    84    62
      (TRAVERSED IN SAME DIRECTION AS LINE    85)

```

AREA NUMBER = 21

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    63    82    85
      (TRAVERSED IN SAME DIRECTION AS LINE    63)

```

AREA NUMBER = 22

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    86    64    87    60
      (TRAVERSED IN SAME DIRECTION AS LINE    86)

```

AREA NUMBER = 23

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    61    87    65    88
      (TRAVERSED IN SAME DIRECTION AS LINE    61)

```

AREA NUMBER = 24

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    89    62    88    66
      (TRAVERSED IN SAME DIRECTION AS LINE    89)

```

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES
LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4*6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1
1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1
10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide
(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 3.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 6, SPACING RATIO = 5.700

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 6, SPACING RATIO = 5.700

Set element sizes in rock layers
3 element thick TCW

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSW1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 9, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 9, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TSw3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHn1v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHn1z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES
LINES = 36 10

COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14

CONCATENATE LINES

LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES

LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)
Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS

IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS

IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132
Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS

IN AREAS 27 TO 28 IN STEPS OF 1
** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144
Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS

IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS

IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 275
 MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
 IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 395
 MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
 IN AREAS 37 TO 40 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 635
 MAXIMUM ELEMENT NUMBER = 584

GENERATE NODES AND ELEMENTS
 IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 761
 MAXIMUM ELEMENT NUMBER = 692
 TSw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
 IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 824
 MAXIMUM ELEMENT NUMBER = 746
 PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
 IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 845
 MAXIMUM ELEMENT NUMBER = 764
 TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
 IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 866
 MAXIMUM ELEMENT NUMBER = 782
 TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
 IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 887
 MAXIMUM ELEMENT NUMBER = 800
 CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
 IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 901
MAXIMUM ELEMENT NUMBER = 812
Chn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 950
MAXIMUM ELEMENT NUMBER = 854
Chn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
IN AREAS 17 TO 18 IN STEPS OF 1

*** WARNING *** CP= 7.700 TIME= 07:29:08
Meshing of area 17 produced 3 poorly shaped elements.

*** NOTE *** CP= 7.700 TIME= 07:29:08
Worst aspect ratio is 21.4173987 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
866 878 890

*** WARNING *** CP= 7.770 TIME= 07:29:08
Meshing of area 18 produced 3 poorly shaped elements.

*** NOTE *** CP= 7.770 TIME= 07:29:08
Worst aspect ratio is 21.4173987 : 1.

*** LIST OF ELEMENTS WITH POOR SHAPE ***
902 914 926

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 1034
MAXIMUM ELEMENT NUMBER = 926

Delete concatenated lines
(L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D

(V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)

(20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS

19, 20, 21, 22,

ALONG LINES

54,

DRAG AREAS

23, 24, 25, 26,

ALONG LINES

54,

DRAG AREAS

19, 20, 21, 22,

ALONG LINES

56,

DRAG AREAS

23, 24, 25, 26,

ALONG LINES

56,

(plot area numbers before next drag commands)

DRAG AREAS

44, 47, 50, 52,

ALONG LINES

55,

DRAG AREAS

57, 61, 65, 68,

ALONG LINES

55,

DRAG AREAS

72, 75, 78, 80,

ALONG LINES

57,

DRAG AREAS

85, 89, 93, 96,

ALONG LINES

57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172
LINE	175 USED FOR LINE(S)	187
LINE	176 USED FOR LINE(S)	193
LINE	177 USED FOR LINE(S)	192
LINE	179 USED FOR LINE(S)	194
LINE	180 USED FOR LINE(S)	195
LINE	183 USED FOR LINE(S)	200
LINE	184 USED FOR LINE(S)	203
LINE	185 USED FOR LINE(S)	205
LINE	208 USED FOR LINE(S)	220
LINE	209 USED FOR LINE(S)	226
LINE	210 USED FOR LINE(S)	225
LINE	212 USED FOR LINE(S)	227
LINE	213 USED FOR LINE(S)	228
LINE	216 USED FOR LINE(S)	233
LINE	217 USED FOR LINE(S)	236
LINE	218 USED FOR LINE(S)	238
AREA	42 USED FOR AREA(S)	56
AREA	45 USED FOR AREA(S)	58
AREA	49 USED FOR AREA(S)	64
AREA	51 USED FOR AREA(S)	67
AREA	70 USED FOR AREA(S)	84
AREA	73 USED FOR AREA(S)	86
AREA	77 USED FOR AREA(S)	92
AREA	79 USED FOR AREA(S)	95
AREA	98 USED FOR AREA(S)	112
AREA	101 USED FOR AREA(S)	114
AREA	105 USED FOR AREA(S)	120
AREA	107 USED FOR AREA(S)	123
AREA	126 USED FOR AREA(S)	140
AREA	129 USED FOR AREA(S)	142
AREA	133 USED FOR AREA(S)	148
AREA	135 USED FOR AREA(S)	151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1639
MAXIMUM ELEMENT NUMBER = 1466

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 1759
MAXIMUM ELEMENT NUMBER = 1586

GENERATE NODES AND ELEMENTS
IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 1904
MAXIMUM ELEMENT NUMBER = 1718

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2509
MAXIMUM ELEMENT NUMBER = 2258

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2629
MAXIMUM ELEMENT NUMBER = 2378

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2774
MAXIMUM ELEMENT NUMBER = 2510

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2888
MAXIMUM ELEMENT NUMBER = 2582
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3266

MAXIMUM ELEMENT NUMBER = 2822

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3464
MAXIMUM ELEMENT NUMBER = 2942

GENERATE NODES AND ELEMENTS
IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3662
MAXIMUM ELEMENT NUMBER = 3062

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4166
MAXIMUM ELEMENT NUMBER = 3422

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4430
MAXIMUM ELEMENT NUMBER = 3602

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4694
MAXIMUM ELEMENT NUMBER = 3782
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 27.640 TIME= 07:29:28
Meshing of volume 43 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3873 3874 3875 3876 3877 3878 3879 3880

3881 3882 3883 3884 3885 3886 3887 3888
3889 3890

*** WARNING *** CP= 28.530 TIME= 07:29:29
Meshing of volume 44 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
4413 4414 4415 4416 4417 4418 4419 4420
4421 4422 4423 4424 4425 4426 4427 4428
4429 4430

MAXIMUM NODE NUMBER = 5576
MAXIMUM ELEMENT NUMBER = 4502

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 29.580 TIME= 07:29:30
Meshing of volume 46 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
4545 4546 4547 4548 4549 4550 4605 4606
4607 4608 4609 4610 4665 4666 4667 4668
4669 4670

MAXIMUM NODE NUMBER = 6038
MAXIMUM ELEMENT NUMBER = 4862
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 30.890 TIME= 07:29:32
Meshing of volume 45 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
5118 5119 5120 5124 5125 5126 5130 5131
5132 5136 5137 5138 5142 5143 5144 5148

5149 5150

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 6500
MAXIMUM ELEMENT NUMBER = 5222

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7340
MAXIMUM ELEMENT NUMBER = 5870
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7760
MAXIMUM ELEMENT NUMBER = 6194
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7928
MAXIMUM ELEMENT NUMBER = 6302
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8096
MAXIMUM ELEMENT NUMBER = 6410
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS

11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8264
MAXIMUM ELEMENT NUMBER = 6518
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8390
MAXIMUM ELEMENT NUMBER = 6590
Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 8726
MAXIMUM ELEMENT NUMBER = 6842
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 36.520 TIME= 07:29:37
Meshing of volume 63 produced 51 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***							
6885	6891	6892	6897	6898	6899	6903	6904
6905	6906	6907	6909	6910	6911	6912	6913
6914	6957	6963	6964	6969	6970	6971	6975
6976	6977	6978	6979	6981	6982	6983	6984
6985	6986	7029	7035	7036	7041	7042	7043
7047	7048	7049	7050	7051	7053	7054	7055
7056	7057	7058					

*** WARNING *** CP= 37.060 TIME= 07:29:38
Meshing of volume 64 produced 51 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***							
7101	7107	7108	7113	7114	7115	7119	7120
7121	7122	7123	7125	7126	7127	7128	7129
7130	7173	7179	7180	7185	7186	7187	7191
7192	7193	7194	7195	7197	7198	7199	7200
7201	7202	7245	7251	7252	7257	7258	7259
7263	7264	7265	7266	7267	7269	7270	7271
7272	7273	7274					

MAXIMUM NODE NUMBER = 9272
MAXIMUM ELEMENT NUMBER = 7274

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE	8392	USED FOR NODES	8727
NODE	7381	USED FOR NODES	7787
NODE	7382	USED FOR NODES	7788
NODE	7383	USED FOR NODES	7789
NODE	7384	USED FOR NODES	7790
NODE	7385	USED FOR NODES	7791
NODE	6082	USED FOR NODES	6551
NODE	6083	USED FOR NODES	6552
NODE	6084	USED FOR NODES	6553
NODE	6085	USED FOR NODES	6554
NODE	6086	USED FOR NODES	6555
NODE	6541	USED FOR NODES	7391
NODE	5578	USED FOR NODES	6921
NODE	6542	USED FOR NODES	7392
NODE	5577	USED FOR NODES	6039
NODE	6543	USED FOR NODES	7393
NODE	6544	USED FOR NODES	7394
NODE	6545	USED FOR NODES	7395
NODE	8433	USED FOR NODES	8779
NODE	8434	USED FOR NODES	8780
NODE	8435	USED FOR NODES	8781
NODE	8436	USED FOR NODES	8782
NODE	8437	USED FOR NODES	8783
NODE	5654	USED FOR NODES	6040
NODE	5655	USED FOR NODES	6041
NODE	5656	USED FOR NODES	6042
NODE	5657	USED FOR NODES	6043
NODE	5658	USED FOR NODES	6044
NODE	6922	USED FOR NODES	8097
NODE	5659	USED FOR NODES	6961
NODE	5660	USED FOR NODES	6962
NODE	5661	USED FOR NODES	6963
NODE	5662	USED FOR NODES	6964
NODE	5663	USED FOR NODES	6965
NODE	8098	USED FOR NODES	8265
NODE	8266	USED FOR NODES	8391
NODE	8123	USED FOR NODES	8277
NODE	8124	USED FOR NODES	8278
NODE	8125	USED FOR NODES	8279
NODE	6081	USED FOR NODES	6502
NODE	8126	USED FOR NODES	8280
NODE	8127	USED FOR NODES	8281
NODE	8287	USED FOR NODES	8423
NODE	8288	USED FOR NODES	8424
NODE	8289	USED FOR NODES	8425
NODE	8290	USED FOR NODES	8426
NODE	8291	USED FOR NODES	8427
NODE	6501	USED FOR NODES	7342
NODE	6971	USED FOR NODES	8113
NODE	6972	USED FOR NODES	8114
NODE	6973	USED FOR NODES	8115
NODE	7341	USED FOR NODES	7762
NODE	6974	USED FOR NODES	8116
NODE	6975	USED FOR NODES	8117
NODE	7777	USED FOR NODES	7955
NODE	7761	USED FOR NODES	7930
NODE	7778	USED FOR NODES	7956
NODE	7779	USED FOR NODES	7957
NODE	7780	USED FOR NODES	7958
NODE	7781	USED FOR NODES	7959
NODE	5810	USED FOR NODES	6077
NODE	5812	USED FOR NODES	6079
NODE	5813	USED FOR NODES	6080
NODE	5608	USED FOR NODES	6050
NODE	5809	USED FOR NODES	6076
NODE	5811	USED FOR NODES	6078
NODE	8143	USED FOR NODES	8297
NODE	8144	USED FOR NODES	8298

NODE	8145	USED FOR NODES	8299
NODE	8146	USED FOR NODES	8300
NODE	7363	USED FOR NODES	7766
NODE	8147	USED FOR NODES	8301
NODE	5683	USED FOR NODES	6985
NODE	7797	USED FOR NODES	7975
NODE	6932	USED FOR NODES	8107
NODE	6991	USED FOR NODES	8133
NODE	6992	USED FOR NODES	8134
NODE	6993	USED FOR NODES	8135
NODE	6994	USED FOR NODES	8136
NODE	5586	USED FOR NODES	6943
NODE	6561	USED FOR NODES	7411
NODE	8400	USED FOR NODES	8755
NODE	6562	USED FOR NODES	7412
NODE	6523	USED FOR NODES	7352
NODE	6563	USED FOR NODES	7413
NODE	6564	USED FOR NODES	7414
NODE	6565	USED FOR NODES	7415
NODE	7401	USED FOR NODES	7807
NODE	7402	USED FOR NODES	7808
NODE	7403	USED FOR NODES	7809
NODE	7404	USED FOR NODES	7810
NODE	7405	USED FOR NODES	7811
NODE	8453	USED FOR NODES	8799
NODE	8454	USED FOR NODES	8800
NODE	8455	USED FOR NODES	8801
NODE	8456	USED FOR NODES	8802
NODE	8457	USED FOR NODES	8803
NODE	6995	USED FOR NODES	8137
NODE	6131	USED FOR NODES	6571
NODE	6132	USED FOR NODES	6572
NODE	6133	USED FOR NODES	6573
NODE	6134	USED FOR NODES	6574
NODE	6135	USED FOR NODES	6575
NODE	5679	USED FOR NODES	6981
NODE	5680	USED FOR NODES	6982
NODE	5681	USED FOR NODES	6983
NODE	5682	USED FOR NODES	6984
NODE	8269	USED FOR NODES	8409
NODE	8102	USED FOR NODES	8273
NODE	7771	USED FOR NODES	7934
NODE	7798	USED FOR NODES	7976
NODE	8307	USED FOR NODES	8443
NODE	8308	USED FOR NODES	8444
NODE	8309	USED FOR NODES	8445
NODE	8310	USED FOR NODES	8446
NODE	8311	USED FOR NODES	8447
NODE	7799	USED FOR NODES	7977
NODE	7800	USED FOR NODES	7978
NODE	7801	USED FOR NODES	7979
NODE	6129	USED FOR NODES	6512
NODE	5808	USED FOR NODES	6075
NODE	5805	USED FOR NODES	6072
NODE	5804	USED FOR NODES	6071
NODE	5806	USED FOR NODES	6073
NODE	5607	USED FOR NODES	6049
NODE	5807	USED FOR NODES	6074
NODE	5801	USED FOR NODES	6068
NODE	5606	USED FOR NODES	6048
NODE	5799	USED FOR NODES	6066
NODE	5800	USED FOR NODES	6067
NODE	5803	USED FOR NODES	6070
NODE	5802	USED FOR NODES	6069
NODE	5796	USED FOR NODES	6063
NODE	5798	USED FOR NODES	6065
NODE	5794	USED FOR NODES	6061
NODE	5795	USED FOR NODES	6062
NODE	5797	USED FOR NODES	6064
NODE	5605	USED FOR NODES	6047

NODE 7364	USED FOR NODES	7767		
NODE 8148	USED FOR NODES	8302		
NODE 8149	USED FOR NODES	8303		
NODE 8150	USED FOR NODES	8304		
NODE 8151	USED FOR NODES	8305		
NODE 8152	USED FOR NODES	8306		
NODE 5684	USED FOR NODES	6986		
NODE 5685	USED FOR NODES	6987		
NODE 5686	USED FOR NODES	6988		
NODE 5687	USED FOR NODES	6989		
NODE 6933	USED FOR NODES	8108		
NODE 5688	USED FOR NODES	6990		
NODE 5587	USED FOR NODES	6944		
NODE 8401	USED FOR NODES	8756		
NODE 6524	USED FOR NODES	7353		
NODE 7406	USED FOR NODES	7812		
NODE 7407	USED FOR NODES	7813		
NODE 7408	USED FOR NODES	7814		
NODE 7409	USED FOR NODES	7815		
NODE 7410	USED FOR NODES	7816		
NODE 8458	USED FOR NODES	8804		
NODE 8459	USED FOR NODES	8805		
NODE 8460	USED FOR NODES	8806		
NODE 8461	USED FOR NODES	8807		
NODE 8462	USED FOR NODES	8808		
NODE 6566	USED FOR NODES	7416		
NODE 6567	USED FOR NODES	7417		
NODE 6568	USED FOR NODES	7418		
NODE 6569	USED FOR NODES	7419		
NODE 6570	USED FOR NODES	7420		
NODE 6136	USED FOR NODES	6576		
NODE 6137	USED FOR NODES	6577		
NODE 6138	USED FOR NODES	6578		
NODE 6139	USED FOR NODES	6579		
NODE 6140	USED FOR NODES	6580		
NODE 6996	USED FOR NODES	8138		
NODE 6997	USED FOR NODES	8139		
NODE 8270	USED FOR NODES	8410		
NODE 8103	USED FOR NODES	8274		
NODE 6998	USED FOR NODES	8140		
NODE 6999	USED FOR NODES	8141		
NODE 7000	USED FOR NODES	8142		
NODE 8312	USED FOR NODES	8448		
NODE 8313	USED FOR NODES	8449		
NODE 8314	USED FOR NODES	8450		
NODE 8315	USED FOR NODES	8451		
NODE 8316	USED FOR NODES	8452		
NODE 7802	USED FOR NODES	7980		
NODE 7803	USED FOR NODES	7981		
NODE 7772	USED FOR NODES	7935		
NODE 7804	USED FOR NODES	7982		
NODE 6130	USED FOR NODES	6513		
NODE 7805	USED FOR NODES	7983		
NODE 7806	USED FOR NODES	7984		
NODE 5792	USED FOR NODES	6059		
NODE 5793	USED FOR NODES	6060		
NODE 5789	USED FOR NODES	6056		
NODE 5791	USED FOR NODES	6058		
NODE 5790	USED FOR NODES	6057		
NODE 5604	USED FOR NODES	6046		
NODE 4167	USED FOR NODES	4431	5594	6045
NODE 4228	USED FOR NODES	4434	5676	6053
NODE 4226	USED FOR NODES	4432	5674	6051
NODE 4227	USED FOR NODES	4433	5675	6052
NODE 4229	USED FOR NODES	4435	5677	6054
NODE 4230	USED FOR NODES	4436	5678	6055
NODE 4470	USED FOR NODES	6226		
NODE 4471	USED FOR NODES	6227		
NODE 4472	USED FOR NODES	6228		
NODE 4473	USED FOR NODES	6229		

NODE 4474	USED FOR NODES	6230		
NODE 4461	USED FOR NODES	6185		
NODE 4278	USED FOR NODES	5721		
NODE 4169	USED FOR NODES	5595		
NODE 4276	USED FOR NODES	5719		
NODE 4277	USED FOR NODES	5720		
NODE 4280	USED FOR NODES	5723		
NODE 4279	USED FOR NODES	5722		
NODE 4170	USED FOR NODES	5596		
NODE 4281	USED FOR NODES	5724		
NODE 4282	USED FOR NODES	5725		
NODE 4283	USED FOR NODES	5726		
NODE 4284	USED FOR NODES	5727		
NODE 4285	USED FOR NODES	5728		
NODE 4462	USED FOR NODES	6184		
NODE 4475	USED FOR NODES	6221		
NODE 4476	USED FOR NODES	6222		
NODE 4477	USED FOR NODES	6223		
NODE 4478	USED FOR NODES	6224		
NODE 4479	USED FOR NODES	6225		
NODE 4480	USED FOR NODES	6216		
NODE 4481	USED FOR NODES	6217		
NODE 4482	USED FOR NODES	6218		
NODE 4483	USED FOR NODES	6219		
NODE 4484	USED FOR NODES	6220		
NODE 4463	USED FOR NODES	6183		
NODE 4288	USED FOR NODES	5731		
NODE 4286	USED FOR NODES	5729		
NODE 4287	USED FOR NODES	5730		
NODE 4289	USED FOR NODES	5732		
NODE 4171	USED FOR NODES	5597		
NODE 4290	USED FOR NODES	5733		
NODE 4339	USED FOR NODES	4453		
NODE 4340	USED FOR NODES	4454		
NODE 4192	USED FOR NODES	4439		
NODE 4336	USED FOR NODES	4450		
NODE 4338	USED FOR NODES	4452		
NODE 4337	USED FOR NODES	4451		
NODE 4485	USED FOR NODES	6211		
NODE 4486	USED FOR NODES	6212		
NODE 4487	USED FOR NODES	6213		
NODE 4488	USED FOR NODES	6214		
NODE 4489	USED FOR NODES	6215		
NODE 4464	USED FOR NODES	6182		
NODE 4292	USED FOR NODES	5735		
NODE 4293	USED FOR NODES	5736		
NODE 4294	USED FOR NODES	5737		
NODE 4295	USED FOR NODES	5738		
NODE 4291	USED FOR NODES	5734		
NODE 4172	USED FOR NODES	5598		
NODE 4191	USED FOR NODES	4438		
NODE 4331	USED FOR NODES	4445		
NODE 4332	USED FOR NODES	4446		
NODE 4333	USED FOR NODES	4447		
NODE 4334	USED FOR NODES	4448		
NODE 4335	USED FOR NODES	4449		
NODE 4490	USED FOR NODES	6206		
NODE 4491	USED FOR NODES	6207		
NODE 4492	USED FOR NODES	6208		
NODE 4493	USED FOR NODES	6209		
NODE 4494	USED FOR NODES	6210		
NODE 4465	USED FOR NODES	6181		
NODE 4173	USED FOR NODES	5599		
NODE 4300	USED FOR NODES	5743		
NODE 4298	USED FOR NODES	5741		
NODE 4296	USED FOR NODES	5739		
NODE 4297	USED FOR NODES	5740		
NODE 4299	USED FOR NODES	5742		
NODE 3267	USED FOR NODES	3465	4181	4437
NODE 3320	USED FOR NODES	3466	4216	4440

NODE	3321	USED FOR NODES	3467	4217	4441
NODE	3322	USED FOR NODES	3468	4218	4442
NODE	3323	USED FOR NODES	3469	4219	4443
NODE	3324	USED FOR NODES	3470	4220	4444
NODE	3498	USED FOR NODES	4582		
NODE	3499	USED FOR NODES	4583		
NODE	3500	USED FOR NODES	4584		
NODE	3501	USED FOR NODES	4585		
NODE	3502	USED FOR NODES	4586		
NODE	3489	USED FOR NODES	4541		
NODE	3365	USED FOR NODES	4231		
NODE	3366	USED FOR NODES	4232		
NODE	3368	USED FOR NODES	4234		
NODE	3369	USED FOR NODES	4235		
NODE	3367	USED FOR NODES	4233		
NODE	3269	USED FOR NODES	4182		
NODE	3503	USED FOR NODES	4577		
NODE	3504	USED FOR NODES	4578		
NODE	3505	USED FOR NODES	4579		
NODE	3506	USED FOR NODES	4580		
NODE	3507	USED FOR NODES	4581		
NODE	3490	USED FOR NODES	4540		
NODE	3270	USED FOR NODES	4183		
NODE	3371	USED FOR NODES	4237		
NODE	3372	USED FOR NODES	4238		
NODE	3373	USED FOR NODES	4239		
NODE	3370	USED FOR NODES	4236		
NODE	3374	USED FOR NODES	4240		
NODE	4495	USED FOR NODES	6201		
NODE	4496	USED FOR NODES	6202		
NODE	4497	USED FOR NODES	6203		
NODE	4498	USED FOR NODES	6204		
NODE	4499	USED FOR NODES	6205		
NODE	4466	USED FOR NODES	6180		
NODE	4303	USED FOR NODES	5746		
NODE	4304	USED FOR NODES	5747		
NODE	4302	USED FOR NODES	5745		
NODE	4174	USED FOR NODES	5600		
NODE	4305	USED FOR NODES	5748		
NODE	4301	USED FOR NODES	5744		
NODE	3508	USED FOR NODES	4572		
NODE	3509	USED FOR NODES	4573		
NODE	3510	USED FOR NODES	4574		
NODE	3511	USED FOR NODES	4575		
NODE	3512	USED FOR NODES	4576		
NODE	3491	USED FOR NODES	4539		
NODE	3379	USED FOR NODES	4245		
NODE	3377	USED FOR NODES	4243		
NODE	3375	USED FOR NODES	4241		
NODE	3378	USED FOR NODES	4244		
NODE	3271	USED FOR NODES	4184		
NODE	3376	USED FOR NODES	4242		
NODE	3417	USED FOR NODES	3480		
NODE	3415	USED FOR NODES	3478		
NODE	3290	USED FOR NODES	3472		
NODE	3419	USED FOR NODES	3482		
NODE	3416	USED FOR NODES	3479		
NODE	3418	USED FOR NODES	3481		
NODE	3513	USED FOR NODES	4567		
NODE	3514	USED FOR NODES	4568		
NODE	3515	USED FOR NODES	4569		
NODE	3516	USED FOR NODES	4570		
NODE	3517	USED FOR NODES	4571		
NODE	3492	USED FOR NODES	4538		
NODE	3381	USED FOR NODES	4247		
NODE	3380	USED FOR NODES	4246		
NODE	3382	USED FOR NODES	4248		
NODE	3383	USED FOR NODES	4249		
NODE	3384	USED FOR NODES	4250		
NODE	3272	USED FOR NODES	4185		

NODE	3284	USED FOR NODES	3471
NODE	3307	USED FOR NODES	3475
NODE	3309	USED FOR NODES	3477
NODE	3308	USED FOR NODES	3476
NODE	3305	USED FOR NODES	3473
NODE	3306	USED FOR NODES	3474
NODE	4500	USED FOR NODES	6196
NODE	4501	USED FOR NODES	6197
NODE	4502	USED FOR NODES	6198
NODE	4503	USED FOR NODES	6199
NODE	4504	USED FOR NODES	6200
NODE	4467	USED FOR NODES	6179
NODE	4309	USED FOR NODES	5752
NODE	4175	USED FOR NODES	5601
NODE	4307	USED FOR NODES	5750
NODE	4306	USED FOR NODES	5749
NODE	4310	USED FOR NODES	5753
NODE	4308	USED FOR NODES	5751
NODE	3518	USED FOR NODES	4562
NODE	3519	USED FOR NODES	4563
NODE	3520	USED FOR NODES	4564
NODE	3521	USED FOR NODES	4565
NODE	3522	USED FOR NODES	4566
NODE	3493	USED FOR NODES	4537
NODE	3273	USED FOR NODES	4186
NODE	3387	USED FOR NODES	4253
NODE	3388	USED FOR NODES	4254
NODE	3389	USED FOR NODES	4255
NODE	3386	USED FOR NODES	4252
NODE	3385	USED FOR NODES	4251
NODE	3523	USED FOR NODES	4557
NODE	3524	USED FOR NODES	4558
NODE	3525	USED FOR NODES	4559
NODE	3526	USED FOR NODES	4560
NODE	3527	USED FOR NODES	4561
NODE	3494	USED FOR NODES	4536
NODE	3394	USED FOR NODES	4260
NODE	3390	USED FOR NODES	4256
NODE	3391	USED FOR NODES	4257
NODE	3392	USED FOR NODES	4258
NODE	3393	USED FOR NODES	4259
NODE	3274	USED FOR NODES	4187
NODE	2795	USED FOR NODES	3314
NODE	2791	USED FOR NODES	3310
NODE	2792	USED FOR NODES	3311
NODE	2793	USED FOR NODES	3312
NODE	2794	USED FOR NODES	3313
NODE	2775	USED FOR NODES	3280
NODE	4505	USED FOR NODES	6191
NODE	4506	USED FOR NODES	6192
NODE	4507	USED FOR NODES	6193
NODE	4508	USED FOR NODES	6194
NODE	4509	USED FOR NODES	6195
NODE	4468	USED FOR NODES	6178
NODE	4315	USED FOR NODES	5758
NODE	4313	USED FOR NODES	5756
NODE	4314	USED FOR NODES	5757
NODE	4176	USED FOR NODES	5602
NODE	4312	USED FOR NODES	5755
NODE	4311	USED FOR NODES	5754
NODE	3528	USED FOR NODES	4552
NODE	3529	USED FOR NODES	4553
NODE	3530	USED FOR NODES	4554
NODE	3531	USED FOR NODES	4555
NODE	3532	USED FOR NODES	4556
NODE	3495	USED FOR NODES	4535
NODE	3275	USED FOR NODES	4188
NODE	3396	USED FOR NODES	4262
NODE	3399	USED FOR NODES	4265
NODE	3398	USED FOR NODES	4264

NODE	3395	USED FOR NODES	4261
NODE	3397	USED FOR NODES	4263
NODE	2801	USED FOR NODES	3350
NODE	2802	USED FOR NODES	3351
NODE	2803	USED FOR NODES	3352
NODE	2804	USED FOR NODES	3353
NODE	2805	USED FOR NODES	3354
NODE	2777	USED FOR NODES	3281
NODE	3533	USED FOR NODES	4547
NODE	3534	USED FOR NODES	4548
NODE	3535	USED FOR NODES	4549
NODE	3536	USED FOR NODES	4550
NODE	3537	USED FOR NODES	4551
NODE	3496	USED FOR NODES	4534
NODE	3403	USED FOR NODES	4269
NODE	3400	USED FOR NODES	4266
NODE	3401	USED FOR NODES	4267
NODE	3402	USED FOR NODES	4268
NODE	3404	USED FOR NODES	4270
NODE	3276	USED FOR NODES	4189
NODE	2778	USED FOR NODES	3282
NODE	2806	USED FOR NODES	3355
NODE	2807	USED FOR NODES	3356
NODE	2808	USED FOR NODES	3357
NODE	2809	USED FOR NODES	3358
NODE	2810	USED FOR NODES	3359
NODE	4510	USED FOR NODES	6186
NODE	4511	USED FOR NODES	6187
NODE	4512	USED FOR NODES	6188
NODE	4513	USED FOR NODES	6189
NODE	4514	USED FOR NODES	6190
NODE	4469	USED FOR NODES	6177
NODE	4316	USED FOR NODES	5759
NODE	4177	USED FOR NODES	5603
NODE	4317	USED FOR NODES	5760
NODE	4318	USED FOR NODES	5761
NODE	4319	USED FOR NODES	5762
NODE	4320	USED FOR NODES	5763
NODE	3538	USED FOR NODES	4542
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NODE	4805	USED FOR NODES	7209
NODE	4806	USED FOR NODES	7210
NODE	7630	USED FOR NODES	7898
NODE	7884	USED FOR NODES	8062
NODE	7885	USED FOR NODES	8063
NODE	7886	USED FOR NODES	8064
NODE	7887	USED FOR NODES	8065
NODE	7594	USED FOR NODES	7859
NODE	8339	USED FOR NODES	8594
NODE	6786	USED FOR NODES	7636
NODE	6787	USED FOR NODES	7637
NODE	6788	USED FOR NODES	7638
NODE	6789	USED FOR NODES	7639
NODE	6790	USED FOR NODES	7640
NODE	8371	USED FOR NODES	8622
NODE	8372	USED FOR NODES	8623
NODE	8585	USED FOR NODES	9055
NODE	5166	USED FOR NODES	6743
NODE	7626	USED FOR NODES	7894
NODE	7627	USED FOR NODES	7895
NODE	7628	USED FOR NODES	7896
NODE	7629	USED FOR NODES	7897
NODE	8632	USED FOR NODES	9093
NODE	8633	USED FOR NODES	9094
NODE	8634	USED FOR NODES	9095
NODE	8635	USED FOR NODES	9096
NODE	8636	USED FOR NODES	9097
NODE	4702	USED FOR NODES	7164
NODE	4782	USED FOR NODES	7191
NODE	4783	USED FOR NODES	7192
NODE	4784	USED FOR NODES	7193
NODE	8354	USED FOR NODES	8610
NODE	8355	USED FOR NODES	8611
NODE	8612	USED FOR NODES	9078
NODE	8613	USED FOR NODES	9079
NODE	8614	USED FOR NODES	9080
NODE	7584	USED FOR NODES	7857
NODE	7860	USED FOR NODES	8025
NODE	8615	USED FOR NODES	9081
NODE	5232	USED FOR NODES	6776
NODE	5233	USED FOR NODES	6777
NODE	5234	USED FOR NODES	6778
NODE	5235	USED FOR NODES	6779
NODE	5236	USED FOR NODES	6780
NODE	8193	USED FOR NODES	8340
NODE	4785	USED FOR NODES	7194
NODE	4786	USED FOR NODES	7195
NODE	7196	USED FOR NODES	8205
NODE	7197	USED FOR NODES	8206
NODE	7198	USED FOR NODES	8207
NODE	7161	USED FOR NODES	8196
NODE	7199	USED FOR NODES	8208
NODE	7200	USED FOR NODES	8209
NODE	8210	USED FOR NODES	8346
NODE	8211	USED FOR NODES	8347

NODE 8212 USED FOR NODES 8348
 NODE 8213 USED FOR NODES 8349
 NODE 8214 USED FOR NODES 8350
 NODE 6771 USED FOR NODES 7616
 NODE 6772 USED FOR NODES 7617
 NODE 6773 USED FOR NODES 7618
 NODE 6774 USED FOR NODES 7619
 NODE 6775 USED FOR NODES 7620
 NODE 8616 USED FOR NODES 9082
 NODE 8337 USED FOR NODES 8586
 NODE 8351 USED FOR NODES 8607
 NODE 8352 USED FOR NODES 8608
 NODE 8353 USED FOR NODES 8609
 NODE 6744 USED FOR NODES 7581
 NODE 5157 USED FOR NODES 6741
 NODE 8583 USED FOR NODES 9042
 NODE 7611 USED FOR NODES 7874
 NODE 7612 USED FOR NODES 7875
 NODE 7613 USED FOR NODES 7876
 NODE 7614 USED FOR NODES 7877
 NODE 7615 USED FOR NODES 7878
 NODE 7869 USED FOR NODES 8042
 NODE 7870 USED FOR NODES 8043
 NODE 7871 USED FOR NODES 8044
 NODE 7872 USED FOR NODES 8045
 NODE 7873 USED FOR NODES 8046

*** WARNING *** CP= 59.740 TIME= 07:30:01
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT 67 USED FOR KEYPOINT(S)	115		
KEYPOINT 72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT 76 USED FOR KEYPOINT(S)	89		
KEYPOINT 80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT 85 USED FOR KEYPOINT(S)	122		
KEYPOINT 91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT 93 USED FOR KEYPOINT(S)	104		
KEYPOINT 98 USED FOR KEYPOINT(S)	117		
KEYPOINT 101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT 120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT 121 USED FOR KEYPOINT(S)	137		
KEYPOINT 123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT 126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT 134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT 135 USED FOR KEYPOINT(S)	162		
KEYPOINT 138 USED FOR KEYPOINT(S)	155		
KEYPOINT 139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT 142 USED FOR KEYPOINT(S)	146		
KEYPOINT 143 USED FOR KEYPOINT(S)	152		
KEYPOINT 147 USED FOR KEYPOINT(S)	157		
KEYPOINT 151 USED FOR KEYPOINT(S)	164		
KEYPOINT 154 USED FOR KEYPOINT(S)	165		
KEYPOINT 156 USED FOR KEYPOINT(S)	167		
KEYPOINT 158 USED FOR KEYPOINT(S)	181		
KEYPOINT 159 USED FOR KEYPOINT(S)	184		
KEYPOINT 161 USED FOR KEYPOINT(S)	186		
KEYPOINT 163 USED FOR KEYPOINT(S)	170		
KEYPOINT 166 USED FOR KEYPOINT(S)	171		
KEYPOINT 168 USED FOR KEYPOINT(S)	173		
KEYPOINT 169 USED FOR KEYPOINT(S)	176		
KEYPOINT 172 USED FOR KEYPOINT(S)	177		
KEYPOINT 174 USED FOR KEYPOINT(S)	179		
KEYPOINT 182 USED FOR KEYPOINT(S)	187		
KEYPOINT 183 USED FOR KEYPOINT(S)	190		
KEYPOINT 185 USED FOR KEYPOINT(S)	192		
KEYPOINT 188 USED FOR KEYPOINT(S)	193		
KEYPOINT 189 USED FOR KEYPOINT(S)	196		

KEYPOINT	191	USED FOR KEYPOINT(S)	198	
KEYPOINT	194	USED FOR KEYPOINT(S)	199	
KEYPOINT	195	USED FOR KEYPOINT(S)	202	
KEYPOINT	197	USED FOR KEYPOINT(S)	204	
LINE	108	USED FOR LINE(S)	240	
LINE	121	USED FOR LINE(S)	241	
LINE	126	USED FOR LINE(S)	154	239
LINE	134	USED FOR LINE(S)	174	
LINE	137	USED FOR LINE(S)	172	
LINE	141	USED FOR LINE(S)	238	
LINE	159	USED FOR LINE(S)	236	246 270
LINE	160	USED FOR LINE(S)	252	
LINE	161	USED FOR LINE(S)	251	
LINE	187	USED FOR LINE(S)	257	
LINE	192	USED FOR LINE(S)	220	256 264
LINE	193	USED FOR LINE(S)	225	
LINE	194	USED FOR LINE(S)	226	
LINE	200	USED FOR LINE(S)	244	
LINE	203	USED FOR LINE(S)	243	
LINE	205	USED FOR LINE(S)	233	259 272
LINE	207	USED FOR LINE(S)	265	
LINE	228	USED FOR LINE(S)	271	
LINE	245	USED FOR LINE(S)	269	
LINE	247	USED FOR LINE(S)	268	275 307
LINE	248	USED FOR LINE(S)	283	
LINE	249	USED FOR LINE(S)	282	
LINE	253	USED FOR LINE(S)	290	
LINE	254	USED FOR LINE(S)	262	289 299
LINE	255	USED FOR LINE(S)	263	
LINE	258	USED FOR LINE(S)	273	
LINE	260	USED FOR LINE(S)	267	292 309
LINE	261	USED FOR LINE(S)	300	
LINE	266	USED FOR LINE(S)	308	
LINE	274	USED FOR LINE(S)	306	
LINE	276	USED FOR LINE(S)	305	330
LINE	277	USED FOR LINE(S)	336	
LINE	278	USED FOR LINE(S)	335	
LINE	285	USED FOR LINE(S)	320	
LINE	286	USED FOR LINE(S)	319	
LINE	287	USED FOR LINE(S)	297	315
LINE	288	USED FOR LINE(S)	298	
LINE	291	USED FOR LINE(S)	310	
LINE	293	USED FOR LINE(S)	302	
LINE	295	USED FOR LINE(S)	313	
LINE	296	USED FOR LINE(S)	314	
LINE	303	USED FOR LINE(S)	325	
LINE	304	USED FOR LINE(S)	331	
LINE	312	USED FOR LINE(S)	339	
LINE	317	USED FOR LINE(S)	341	
LINE	318	USED FOR LINE(S)	340	
LINE	322	USED FOR LINE(S)	346	
LINE	323	USED FOR LINE(S)	345	
LINE	326	USED FOR LINE(S)	377	
LINE	327	USED FOR LINE(S)	383	
LINE	328	USED FOR LINE(S)	382	
LINE	332	USED FOR LINE(S)	388	
LINE	333	USED FOR LINE(S)	387	
LINE	338	USED FOR LINE(S)	352	
LINE	343	USED FOR LINE(S)	354	
LINE	344	USED FOR LINE(S)	353	
LINE	348	USED FOR LINE(S)	359	
LINE	349	USED FOR LINE(S)	358	
LINE	351	USED FOR LINE(S)	365	
LINE	356	USED FOR LINE(S)	367	
LINE	357	USED FOR LINE(S)	366	
LINE	361	USED FOR LINE(S)	372	
LINE	362	USED FOR LINE(S)	371	
LINE	378	USED FOR LINE(S)	390	
LINE	379	USED FOR LINE(S)	396	
LINE	380	USED FOR LINE(S)	395	

LINE 384 USED FOR LINE(S) 401
 LINE 385 USED FOR LINE(S) 400
 LINE 391 USED FOR LINE(S) 403
 LINE 392 USED FOR LINE(S) 409
 LINE 393 USED FOR LINE(S) 408
 LINE 397 USED FOR LINE(S) 414
 LINE 398 USED FOR LINE(S) 413
 LINE 404 USED FOR LINE(S) 416
 LINE 405 USED FOR LINE(S) 422
 LINE 406 USED FOR LINE(S) 421
 LINE 410 USED FOR LINE(S) 427
 LINE 411 USED FOR LINE(S) 426
 AREA 56 USED FOR AREA(S) 161
 AREA 84 USED FOR AREA(S) 123
 AREA 95 USED FOR AREA(S) 160
 AREA 112 USED FOR AREA(S) 168
 AREA 142 USED FOR AREA(S) 172
 AREA 148 USED FOR AREA(S) 156
 AREA 154 USED FOR AREA(S) 163
 AREA 155 USED FOR AREA(S) 177
 AREA 159 USED FOR AREA(S) 181
 AREA 165 USED FOR AREA(S) 180
 AREA 166 USED FOR AREA(S) 188
 AREA 170 USED FOR AREA(S) 193
 AREA 171 USED FOR AREA(S) 176
 AREA 174 USED FOR AREA(S) 182
 AREA 175 USED FOR AREA(S) 199
 AREA 179 USED FOR AREA(S) 204
 AREA 184 USED FOR AREA(S) 203
 AREA 185 USED FOR AREA(S) 223
 AREA 191 USED FOR AREA(S) 212
 AREA 192 USED FOR AREA(S) 198
 AREA 195 USED FOR AREA(S) 205
 AREA 197 USED FOR AREA(S) 208
 AREA 202 USED FOR AREA(S) 219
 AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
 27, 28,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 9386
 MAXIMUM ELEMENT NUMBER = 7346
 Rock around drift
 (V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9764
MAXIMUM ELEMENT NUMBER = 7586

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9962
MAXIMUM ELEMENT NUMBER = 7706

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 10160
MAXIMUM ELEMENT NUMBER = 7826

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10664
MAXIMUM ELEMENT NUMBER = 8186

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10928
MAXIMUM ELEMENT NUMBER = 8366

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 11192
MAXIMUM ELEMENT NUMBER = 8546

Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 69.490 TIME= 07:30:11
Meshing of volume 75 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
8637 8638 8639 8640 8641 8642 8643 8644
8645 8646 8647 8648 8649 8650 8651 8652
8653 8654

*** WARNING *** CP= 70.390 TIME= 07:30:11
Meshing of volume 76 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
9177 9178 9179 9180 9181 9182 9183 9184
9185 9186 9187 9188 9189 9190 9191 9192
9193 9194

MAXIMUM NODE NUMBER = 12074
MAXIMUM ELEMENT NUMBER = 9266

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
59,

*** WARNING *** CP= 71.470 TIME= 07:30:13
Meshing of volume 78 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
9309 9310 9311 9312 9313 9314 9369 9370
9371 9372 9373 9374 9429 9430 9431 9432
9433 9434

MAXIMUM NODE NUMBER = 12536
MAXIMUM ELEMENT NUMBER = 9626
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 72.770 TIME= 07:30:14
Meshing of volume 77 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
9897 9898 9899 9900 9901 9902 9903 9904
9905 9906 9907 9908 9909 9910 9911 9912
9913 9914

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 12998
MAXIMUM ELEMENT NUMBER = 9986

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 79,80,81,82)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13838
MAXIMUM ELEMENT NUMBER = 10634
Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 14258
MAXIMUM ELEMENT NUMBER = 10958
Extrude PTn
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 14426
MAXIMUM ELEMENT NUMBER = 11066
Extrude TCw
(V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,

ALONG LINES
59,

MAXIMUM NODE NUMBER = 14594
MAXIMUM ELEMENT NUMBER = 11174
Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 14762
MAXIMUM ELEMENT NUMBER = 11282
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 14888
MAXIMUM ELEMENT NUMBER = 11354
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 15224
MAXIMUM ELEMENT NUMBER = 11606
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 78.510 TIME= 07:30:20
Meshing of volume 95 produced 51 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

11649	11655	11656	11661	11662	11663	11667	11668
11669	11670	11671	11673	11674	11675	11676	11677
11678	11721	11727	11728	11733	11734	11735	11739
11740	11741	11742	11743	11745	11746	11747	11748
11749	11750	11793	11799	11800	11805	11806	11807
11811	11812	11813	11814	11815	11817	11818	11819
11820	11821	11822					

*** WARNING *** CP= 79.060 TIME= 07:30:20
Meshing of volume 96 produced 51 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

11865	11871	11872	11877	11878	11879	11883	11884
11885	11886	11887	11889	11890	11891	11892	11893
11894	11937	11943	11944	11949	11950	11951	11955
11956	11957	11958	11959	11961	11962	11963	11964
11965	11966	12009	12015	12016	12021	12022	12023
12027	12028	12029	12030	12031	12033	12034	12035
12036	12037	12038					

MAXIMUM NODE NUMBER = 15770
 MAXIMUM ELEMENT NUMBER = 12038

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 14785 USED FOR NODES 14921
 NODE 14786 USED FOR NODES 14922
 NODE 14787 USED FOR NODES 14923
 NODE 14788 USED FOR NODES 14924
 NODE 14789 USED FOR NODES 14925
 NODE 13470 USED FOR NODES 14612
 NODE 13471 USED FOR NODES 14613
 NODE 13472 USED FOR NODES 14614
 NODE 13473 USED FOR NODES 14615
 NODE 13839 USED FOR NODES 14260
 NODE 12999 USED FOR NODES 13840
 NODE 14764 USED FOR NODES 14889
 NODE 14890 USED FOR NODES 15225
 NODE 13420 USED FOR NODES 14595
 NODE 13879 USED FOR NODES 14285
 NODE 13880 USED FOR NODES 14286
 NODE 13881 USED FOR NODES 14287
 NODE 13882 USED FOR NODES 14288
 NODE 13883 USED FOR NODES 14289
 NODE 14621 USED FOR NODES 14775
 NODE 14596 USED FOR NODES 14763
 NODE 14622 USED FOR NODES 14776
 NODE 13039 USED FOR NODES 13889
 NODE 13040 USED FOR NODES 13890
 NODE 13041 USED FOR NODES 13891
 NODE 13042 USED FOR NODES 13892
 NODE 13043 USED FOR NODES 13893
 NODE 14931 USED FOR NODES 15277
 NODE 14932 USED FOR NODES 15278
 NODE 14933 USED FOR NODES 15279
 NODE 14934 USED FOR NODES 15280
 NODE 14935 USED FOR NODES 15281
 NODE 14623 USED FOR NODES 14777
 NODE 12075 USED FOR NODES 12537
 NODE 12152 USED FOR NODES 12538
 NODE 12153 USED FOR NODES 12539
 NODE 12154 USED FOR NODES 12540
 NODE 12155 USED FOR NODES 12541
 NODE 12156 USED FOR NODES 12542
 NODE 12579 USED FOR NODES 13000
 NODE 12580 USED FOR NODES 13049
 NODE 12581 USED FOR NODES 13050
 NODE 12582 USED FOR NODES 13051
 NODE 12583 USED FOR NODES 13052
 NODE 12584 USED FOR NODES 13053
 NODE 12157 USED FOR NODES 13459
 NODE 12158 USED FOR NODES 13460
 NODE 12076 USED FOR NODES 13419
 NODE 12159 USED FOR NODES 13461
 NODE 12160 USED FOR NODES 13462
 NODE 12161 USED FOR NODES 13463
 NODE 14624 USED FOR NODES 14778
 NODE 13469 USED FOR NODES 14611
 NODE 14259 USED FOR NODES 14428
 NODE 14625 USED FOR NODES 14779
 NODE 14275 USED FOR NODES 14453
 NODE 14276 USED FOR NODES 14454

NODE 14277	USED FOR NODES	14455
NODE 14278	USED FOR NODES	14456
NODE 14279	USED FOR NODES	14457
NODE 12308	USED FOR NODES	12575
NODE 12106	USED FOR NODES	12548
NODE 12307	USED FOR NODES	12574
NODE 12309	USED FOR NODES	12576
NODE 12310	USED FOR NODES	12577
NODE 12311	USED FOR NODES	12578
NODE 12177	USED FOR NODES	13479
NODE 14641	USED FOR NODES	14795
NODE 14642	USED FOR NODES	14796
NODE 14643	USED FOR NODES	14797
NODE 14644	USED FOR NODES	14798
NODE 14645	USED FOR NODES	14799
NODE 14805	USED FOR NODES	14941
NODE 14806	USED FOR NODES	14942
NODE 14807	USED FOR NODES	14943
NODE 14808	USED FOR NODES	14944
NODE 14809	USED FOR NODES	14945
NODE 13021	USED FOR NODES	13850
NODE 13861	USED FOR NODES	14264
NODE 14898	USED FOR NODES	15253
NODE 12178	USED FOR NODES	13480
NODE 12179	USED FOR NODES	13481
NODE 14767	USED FOR NODES	14907
NODE 12180	USED FOR NODES	13482
NODE 12181	USED FOR NODES	13483
NODE 13899	USED FOR NODES	14305
NODE 13900	USED FOR NODES	14306
NODE 13901	USED FOR NODES	14307
NODE 13902	USED FOR NODES	14308
NODE 13903	USED FOR NODES	14309
NODE 13059	USED FOR NODES	13909
NODE 13060	USED FOR NODES	13910
NODE 13061	USED FOR NODES	13911
NODE 13062	USED FOR NODES	13912
NODE 13063	USED FOR NODES	13913
NODE 14951	USED FOR NODES	15297
NODE 14952	USED FOR NODES	15298
NODE 14953	USED FOR NODES	15299
NODE 14954	USED FOR NODES	15300
NODE 14955	USED FOR NODES	15301
NODE 13489	USED FOR NODES	14631
NODE 13490	USED FOR NODES	14632
NODE 13491	USED FOR NODES	14633
NODE 13492	USED FOR NODES	14634
NODE 13493	USED FOR NODES	14635
NODE 13430	USED FOR NODES	14605
NODE 12627	USED FOR NODES	13010
NODE 12629	USED FOR NODES	13069
NODE 12630	USED FOR NODES	13070
NODE 12631	USED FOR NODES	13071
NODE 12632	USED FOR NODES	13072
NODE 12633	USED FOR NODES	13073
NODE 12084	USED FOR NODES	13441
NODE 14600	USED FOR NODES	14771
NODE 14269	USED FOR NODES	14432
NODE 14295	USED FOR NODES	14473
NODE 14296	USED FOR NODES	14474
NODE 14297	USED FOR NODES	14475
NODE 14298	USED FOR NODES	14476
NODE 14299	USED FOR NODES	14477
NODE 12302	USED FOR NODES	12569
NODE 12303	USED FOR NODES	12570
NODE 12306	USED FOR NODES	12573
NODE 12304	USED FOR NODES	12571
NODE 12105	USED FOR NODES	12547
NODE 12305	USED FOR NODES	12572
NODE 12299	USED FOR NODES	12566

NODE 12297	USED FOR NODES	12564
NODE 12300	USED FOR NODES	12567
NODE 12301	USED FOR NODES	12568
NODE 12298	USED FOR NODES	12565
NODE 12104	USED FOR NODES	12546
NODE 12294	USED FOR NODES	12561
NODE 12296	USED FOR NODES	12563
NODE 12295	USED FOR NODES	12562
NODE 12292	USED FOR NODES	12559
NODE 12103	USED FOR NODES	12545
NODE 12293	USED FOR NODES	12560
NODE 14646	USED FOR NODES	14800
NODE 14647	USED FOR NODES	14801
NODE 14648	USED FOR NODES	14802
NODE 14649	USED FOR NODES	14803
NODE 14650	USED FOR NODES	14804
NODE 14810	USED FOR NODES	14946
NODE 14811	USED FOR NODES	14947
NODE 14812	USED FOR NODES	14948
NODE 14813	USED FOR NODES	14949
NODE 14814	USED FOR NODES	14950
NODE 13022	USED FOR NODES	13851
NODE 13862	USED FOR NODES	14265
NODE 14899	USED FOR NODES	15254
NODE 13496	USED FOR NODES	14638
NODE 14768	USED FOR NODES	14908
NODE 12182	USED FOR NODES	13484
NODE 13904	USED FOR NODES	14310
NODE 13905	USED FOR NODES	14311
NODE 12183	USED FOR NODES	13485
NODE 13906	USED FOR NODES	14312
NODE 13497	USED FOR NODES	14639
NODE 13907	USED FOR NODES	14313
NODE 13908	USED FOR NODES	14314
NODE 13064	USED FOR NODES	13914
NODE 13065	USED FOR NODES	13915
NODE 13066	USED FOR NODES	13916
NODE 13067	USED FOR NODES	13917
NODE 13068	USED FOR NODES	13918
NODE 14956	USED FOR NODES	15302
NODE 14957	USED FOR NODES	15303
NODE 14958	USED FOR NODES	15304
NODE 13498	USED FOR NODES	14640
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NODE	9694	USED	FOR	NODES	10499
NODE	9508	USED	FOR	NODES	10248
NODE	9509	USED	FOR	NODES	10249
NODE	9506	USED	FOR	NODES	10246
NODE	9507	USED	FOR	NODES	10247
NODE	9505	USED	FOR	NODES	10245
NODE	9395	USED	FOR	NODES	10182
NODE	10554	USED	FOR	NODES	11814
NODE	10550	USED	FOR	NODES	11810
NODE	10551	USED	FOR	NODES	11811
NODE	10552	USED	FOR	NODES	11812
NODE	10553	USED	FOR	NODES	11813
NODE	10432	USED	FOR	NODES	11677
NODE	10283	USED	FOR	NODES	11348
NODE	10284	USED	FOR	NODES	11349
NODE	10168	USED	FOR	NODES	11218
NODE	10281	USED	FOR	NODES	11346
NODE	10282	USED	FOR	NODES	11347
NODE	10280	USED	FOR	NODES	11345
NODE	9686	USED	FOR	NODES	10491
NODE	9687	USED	FOR	NODES	10492
NODE	9688	USED	FOR	NODES	10493
NODE	9689	USED	FOR	NODES	10494
NODE	9589	USED	FOR	NODES	10441
NODE	9685	USED	FOR	NODES	10490
NODE	9510	USED	FOR	NODES	10250
NODE	9513	USED	FOR	NODES	10253
NODE	9514	USED	FOR	NODES	10254
NODE	9511	USED	FOR	NODES	10251
NODE	9512	USED	FOR	NODES	10252
NODE	9396	USED	FOR	NODES	10183
NODE	9680	USED	FOR	NODES	10485
NODE	9588	USED	FOR	NODES	10440
NODE	9681	USED	FOR	NODES	10486
NODE	9684	USED	FOR	NODES	10489
NODE	9682	USED	FOR	NODES	10487
NODE	9683	USED	FOR	NODES	10488
NODE	9519	USED	FOR	NODES	10259
NODE	9518	USED	FOR	NODES	10258
NODE	9515	USED	FOR	NODES	10255
NODE	9397	USED	FOR	NODES	10184
NODE	9516	USED	FOR	NODES	10256
NODE	9517	USED	FOR	NODES	10257
NODE	10431	USED	FOR	NODES	11676
NODE	10545	USED	FOR	NODES	11805
NODE	10546	USED	FOR	NODES	11806
NODE	10547	USED	FOR	NODES	11807
NODE	10548	USED	FOR	NODES	11808
NODE	10549	USED	FOR	NODES	11809
NODE	10169	USED	FOR	NODES	11219
NODE	10286	USED	FOR	NODES	11351
NODE	10288	USED	FOR	NODES	11353
NODE	10289	USED	FOR	NODES	11354
NODE	10287	USED	FOR	NODES	11352
NODE	10285	USED	FOR	NODES	11350
NODE	9675	USED	FOR	NODES	10480
NODE	9676	USED	FOR	NODES	10481
NODE	9587	USED	FOR	NODES	10439
NODE	9677	USED	FOR	NODES	10482
NODE	9678	USED	FOR	NODES	10483
NODE	9679	USED	FOR	NODES	10484
NODE	9520	USED	FOR	NODES	10260
NODE	9524	USED	FOR	NODES	10264
NODE	9521	USED	FOR	NODES	10261
NODE	9523	USED	FOR	NODES	10263
NODE	9398	USED	FOR	NODES	10185

NODE	9522	USED	FOR	NODES	10262
NODE	9670	USED	FOR	NODES	10475
NODE	9671	USED	FOR	NODES	10476
NODE	9672	USED	FOR	NODES	10477
NODE	9673	USED	FOR	NODES	10478
NODE	9674	USED	FOR	NODES	10479
NODE	9586	USED	FOR	NODES	10438
NODE	9527	USED	FOR	NODES	10267
NODE	9526	USED	FOR	NODES	10266
NODE	9399	USED	FOR	NODES	10186
NODE	9528	USED	FOR	NODES	10268
NODE	9529	USED	FOR	NODES	10269
NODE	9525	USED	FOR	NODES	10265
NODE	9390	USED	FOR	NODES	10175
NODE	9441	USED	FOR	NODES	10211
NODE	9442	USED	FOR	NODES	10212
NODE	9443	USED	FOR	NODES	10213
NODE	9444	USED	FOR	NODES	10214
NODE	9440	USED	FOR	NODES	10210
NODE	10542	USED	FOR	NODES	11802
NODE	10543	USED	FOR	NODES	11803
NODE	10430	USED	FOR	NODES	11675
NODE	10540	USED	FOR	NODES	11800
NODE	10541	USED	FOR	NODES	11801
NODE	10544	USED	FOR	NODES	11804
NODE	10291	USED	FOR	NODES	11356
NODE	10170	USED	FOR	NODES	11220
NODE	10294	USED	FOR	NODES	11359
NODE	10292	USED	FOR	NODES	11357
NODE	10293	USED	FOR	NODES	11358
NODE	10290	USED	FOR	NODES	11355
NODE	10537	USED	FOR	NODES	11797
NODE	10429	USED	FOR	NODES	11674
NODE	10536	USED	FOR	NODES	11796
NODE	10535	USED	FOR	NODES	11795
NODE	10539	USED	FOR	NODES	11799
NODE	10538	USED	FOR	NODES	11798
NODE	10171	USED	FOR	NODES	11221
NODE	10297	USED	FOR	NODES	11362
NODE	10299	USED	FOR	NODES	11364
NODE	10298	USED	FOR	NODES	11363
NODE	10296	USED	FOR	NODES	11361
NODE	10295	USED	FOR	NODES	11360
NODE	10533	USED	FOR	NODES	11793
NODE	10534	USED	FOR	NODES	11794
NODE	10531	USED	FOR	NODES	11791
NODE	10532	USED	FOR	NODES	11792
NODE	10530	USED	FOR	NODES	11790
NODE	10428	USED	FOR	NODES	11673
NODE	10300	USED	FOR	NODES	11365
NODE	10301	USED	FOR	NODES	11366
NODE	10172	USED	FOR	NODES	11222
NODE	10302	USED	FOR	NODES	11367
NODE	10303	USED	FOR	NODES	11368
NODE	10304	USED	FOR	NODES	11369
NODE	10305	USED	FOR	NODES	11370
NODE	10306	USED	FOR	NODES	11371
NODE	10307	USED	FOR	NODES	11372
NODE	10308	USED	FOR	NODES	11373
NODE	10309	USED	FOR	NODES	11374
NODE	10173	USED	FOR	NODES	11223
NODE	10525	USED	FOR	NODES	11785
NODE	10526	USED	FOR	NODES	11786
NODE	10527	USED	FOR	NODES	11787
NODE	10528	USED	FOR	NODES	11788
NODE	10529	USED	FOR	NODES	11789
NODE	10427	USED	FOR	NODES	11672
NODE	10520	USED	FOR	NODES	11780
NODE	10522	USED	FOR	NODES	11782
NODE	10523	USED	FOR	NODES	11783

NODE 10524	USED FOR NODES	11784
NODE 10521	USED FOR NODES	11781
NODE 10426	USED FOR NODES	11671
NODE 10312	USED FOR NODES	11377
NODE 10313	USED FOR NODES	11378
NODE 10311	USED FOR NODES	11376
NODE 10174	USED FOR NODES	11224
NODE 10314	USED FOR NODES	11379
NODE 10310	USED FOR NODES	11375
NODE 10222	USED FOR NODES	11292
NODE 10223	USED FOR NODES	11293
NODE 10224	USED FOR NODES	11294
NODE 10165	USED FOR NODES	11210
NODE 10220	USED FOR NODES	11290
NODE 10221	USED FOR NODES	11291
NODE 13712	USED FOR NODES	14716
NODE 13713	USED FOR NODES	14717
NODE 11740	USED FOR NODES	13289
NODE 14836	USED FOR NODES	15091
NODE 14692	USED FOR NODES	14840
NODE 14723	USED FOR NODES	14854
NODE 14724	USED FOR NODES	14855
NODE 14725	USED FOR NODES	14856
NODE 14726	USED FOR NODES	14857
NODE 14727	USED FOR NODES	14858
NODE 14864	USED FOR NODES	15115
NODE 14865	USED FOR NODES	15116
NODE 14866	USED FOR NODES	15117
NODE 14867	USED FOR NODES	15118
NODE 14868	USED FOR NODES	15119
NODE 11296	USED FOR NODES	13700
NODE 11297	USED FOR NODES	13701
NODE 11298	USED FOR NODES	13702
NODE 11299	USED FOR NODES	13703
NODE 11663	USED FOR NODES	13240
NODE 11201	USED FOR NODES	13671
NODE 11741	USED FOR NODES	13290
NODE 11742	USED FOR NODES	13291
NODE 11743	USED FOR NODES	13292
NODE 11744	USED FOR NODES	13293
NODE 15082	USED FOR NODES	15552
NODE 15125	USED FOR NODES	15586
NODE 15126	USED FOR NODES	15587
NODE 15127	USED FOR NODES	15588
NODE 15128	USED FOR NODES	15589
NODE 15129	USED FOR NODES	15590
NODE 13251	USED FOR NODES	14080
NODE 14091	USED FOR NODES	14356
NODE 14119	USED FOR NODES	14387
NODE 14120	USED FOR NODES	14388
NODE 14121	USED FOR NODES	14389
NODE 14122	USED FOR NODES	14390
NODE 14123	USED FOR NODES	14391
NODE 13279	USED FOR NODES	14129
NODE 13280	USED FOR NODES	14130
NODE 13281	USED FOR NODES	14131
NODE 13282	USED FOR NODES	14132
NODE 13283	USED FOR NODES	14133
NODE 13709	USED FOR NODES	14713
NODE 13710	USED FOR NODES	14714
NODE 13711	USED FOR NODES	14715
NODE 13660	USED FOR NODES	14697
NODE 11295	USED FOR NODES	13699
NODE 14361	USED FOR NODES	14524
NODE 14377	USED FOR NODES	14555
NODE 14378	USED FOR NODES	14556
NODE 14379	USED FOR NODES	14557
NODE 14380	USED FOR NODES	14558
NODE 14381	USED FOR NODES	14559
NODE 13284	USED FOR NODES	14134

NODE 13285	USED FOR NODES	14135
NODE 13286	USED FOR NODES	14136
NODE 13287	USED FOR NODES	14137
NODE 13288	USED FOR NODES	14138
NODE 13714	USED FOR NODES	14718
NODE 11746	USED FOR NODES	13295
NODE 11747	USED FOR NODES	13296
NODE 11748	USED FOR NODES	13297
NODE 13715	USED FOR NODES	14719
NODE 11749	USED FOR NODES	13298
NODE 14837	USED FOR NODES	15092
NODE 14693	USED FOR NODES	14841
NODE 13716	USED FOR NODES	14720
NODE 13717	USED FOR NODES	14721
NODE 14728	USED FOR NODES	14859
NODE 14729	USED FOR NODES	14860
NODE 14730	USED FOR NODES	14861
NODE 14731	USED FOR NODES	14862
NODE 14732	USED FOR NODES	14863
NODE 14869	USED FOR NODES	15120
NODE 14870	USED FOR NODES	15121
NODE 14871	USED FOR NODES	15122
NODE 14872	USED FOR NODES	15123
NODE 14873	USED FOR NODES	15124
NODE 11664	USED FOR NODES	13241
NODE 11300	USED FOR NODES	13704
NODE 13718	USED FOR NODES	14722
NODE 11301	USED FOR NODES	13705
NODE 11202	USED FOR NODES	13672
NODE 11745	USED FOR NODES	13294
NODE 15083	USED FOR NODES	15553
NODE 15130	USED FOR NODES	15591
NODE 15131	USED FOR NODES	15592
NODE 15132	USED FOR NODES	15593
NODE 15133	USED FOR NODES	15594
NODE 15134	USED FOR NODES	15595
NODE 13252	USED FOR NODES	14081
NODE 14092	USED FOR NODES	14357
NODE 14124	USED FOR NODES	14392
NODE 14125	USED FOR NODES	14393
NODE 14126	USED FOR NODES	14394
NODE 14127	USED FOR NODES	14395
NODE 14128	USED FOR NODES	14396
NODE 11302	USED FOR NODES	13706
NODE 11303	USED FOR NODES	13707
NODE 11304	USED FOR NODES	13708
NODE 13661	USED FOR NODES	14698
NODE 14362	USED FOR NODES	14525
NODE 14382	USED FOR NODES	14560
NODE 14383	USED FOR NODES	14561
NODE 14384	USED FOR NODES	14562
NODE 14385	USED FOR NODES	14563
NODE 14386	USED FOR NODES	14564
NODE 11655	USED FOR NODES	13239
NODE 14835	USED FOR NODES	15084
NODE 14691	USED FOR NODES	14838
NODE 14708	USED FOR NODES	14844
NODE 14709	USED FOR NODES	14845
NODE 14710	USED FOR NODES	14846
NODE 14711	USED FOR NODES	14847
NODE 14712	USED FOR NODES	14848
NODE 14849	USED FOR NODES	15105
NODE 14850	USED FOR NODES	15106
NODE 14851	USED FOR NODES	15107
NODE 14852	USED FOR NODES	15108
NODE 14853	USED FOR NODES	15109
NODE 13242	USED FOR NODES	14079
NODE 11200	USED FOR NODES	13662
NODE 15081	USED FOR NODES	15540
NODE 15110	USED FOR NODES	15576

NODE 15111 USED FOR NODES 15577
 NODE 15112 USED FOR NODES 15578
 NODE 15113 USED FOR NODES 15579
 NODE 15114 USED FOR NODES 15580
 NODE 14082 USED FOR NODES 14355
 NODE 14109 USED FOR NODES 14372
 NODE 14110 USED FOR NODES 14373
 NODE 14111 USED FOR NODES 14374
 NODE 14112 USED FOR NODES 14375
 NODE 14113 USED FOR NODES 14376
 NODE 13269 USED FOR NODES 14114
 NODE 13270 USED FOR NODES 14115
 NODE 13271 USED FOR NODES 14116
 NODE 13272 USED FOR NODES 14117
 NODE 13273 USED FOR NODES 14118
 NODE 11730 USED FOR NODES 13274
 NODE 13659 USED FOR NODES 14694
 NODE 11731 USED FOR NODES 13275
 NODE 11732 USED FOR NODES 13276
 NODE 11733 USED FOR NODES 13277
 NODE 11280 USED FOR NODES 13689
 NODE 11281 USED FOR NODES 13690
 NODE 11282 USED FOR NODES 13691
 NODE 11283 USED FOR NODES 13692
 NODE 11284 USED FOR NODES 13693
 NODE 13694 USED FOR NODES 14703
 NODE 13695 USED FOR NODES 14704
 NODE 13696 USED FOR NODES 14705
 NODE 11734 USED FOR NODES 13278
 NODE 13697 USED FOR NODES 14706
 NODE 13698 USED FOR NODES 14707
 NODE 14358 USED FOR NODES 14523
 NODE 14367 USED FOR NODES 14540
 NODE 14368 USED FOR NODES 14541
 NODE 14369 USED FOR NODES 14542
 NODE 14370 USED FOR NODES 14543
 NODE 14371 USED FOR NODES 14544

*** WARNING *** CP= 146.160 TIME= 07:31:27
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78	USED FOR KEYPOINT(S)	132		
KEYPOINT	89	USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104	USED FOR KEYPOINT(S)	117		
KEYPOINT	111	USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114	USED FOR KEYPOINT(S)	144		
KEYPOINT	119	USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122	USED FOR KEYPOINT(S)	128		
KEYPOINT	124	USED FOR KEYPOINT(S)	133		
KEYPOINT	125	USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140	USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141	USED FOR KEYPOINT(S)	170		
KEYPOINT	145	USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149	USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164	USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165	USED FOR KEYPOINT(S)	212		
KEYPOINT	171	USED FOR KEYPOINT(S)	205		
KEYPOINT	173	USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179	USED FOR KEYPOINT(S)	187		
KEYPOINT	181	USED FOR KEYPOINT(S)	199		
KEYPOINT	190	USED FOR KEYPOINT(S)	207		
KEYPOINT	198	USED FOR KEYPOINT(S)	214		
KEYPOINT	204	USED FOR KEYPOINT(S)	215		
KEYPOINT	206	USED FOR KEYPOINT(S)	217		
KEYPOINT	208	USED FOR KEYPOINT(S)	231		
KEYPOINT	209	USED FOR KEYPOINT(S)	234		
KEYPOINT	211	USED FOR KEYPOINT(S)	236		

KEYPOINT	213	USED FOR KEYPOINT(S)	220
KEYPOINT	216	USED FOR KEYPOINT(S)	221
KEYPOINT	218	USED FOR KEYPOINT(S)	223
KEYPOINT	219	USED FOR KEYPOINT(S)	226
KEYPOINT	222	USED FOR KEYPOINT(S)	227
KEYPOINT	224	USED FOR KEYPOINT(S)	229
KEYPOINT	232	USED FOR KEYPOINT(S)	237
KEYPOINT	233	USED FOR KEYPOINT(S)	240
KEYPOINT	235	USED FOR KEYPOINT(S)	242
KEYPOINT	238	USED FOR KEYPOINT(S)	243
KEYPOINT	239	USED FOR KEYPOINT(S)	246
KEYPOINT	241	USED FOR KEYPOINT(S)	248
KEYPOINT	244	USED FOR KEYPOINT(S)	249
KEYPOINT	245	USED FOR KEYPOINT(S)	252
KEYPOINT	247	USED FOR KEYPOINT(S)	254
LINE	154	USED FOR LINE(S)	297
LINE	172	USED FOR LINE(S)	298
LINE	174	USED FOR LINE(S)	240 292
LINE	233	USED FOR LINE(S)	257
LINE	236	USED FOR LINE(S)	256
LINE	239	USED FOR LINE(S)	290
LINE	241	USED FOR LINE(S)	289 306 359
LINE	243	USED FOR LINE(S)	314
LINE	244	USED FOR LINE(S)	313
LINE	259	USED FOR LINE(S)	330
LINE	262	USED FOR LINE(S)	271 325 345
LINE	263	USED FOR LINE(S)	272
LINE	264	USED FOR LINE(S)	273
LINE	267	USED FOR LINE(S)	302
LINE	268	USED FOR LINE(S)	300
LINE	269	USED FOR LINE(S)	283 335 366
LINE	270	USED FOR LINE(S)	346
LINE	282	USED FOR LINE(S)	365
LINE	305	USED FOR LINE(S)	358
LINE	307	USED FOR LINE(S)	354 372 439
LINE	308	USED FOR LINE(S)	396
LINE	309	USED FOR LINE(S)	395
LINE	315	USED FOR LINE(S)	414
LINE	319	USED FOR LINE(S)	340 413 431
LINE	320	USED FOR LINE(S)	341
LINE	331	USED FOR LINE(S)	367
LINE	336	USED FOR LINE(S)	353 421 441
LINE	339	USED FOR LINE(S)	432
LINE	352	USED FOR LINE(S)	440
LINE	371	USED FOR LINE(S)	438
LINE	377	USED FOR LINE(S)	437 462
LINE	382	USED FOR LINE(S)	468
LINE	383	USED FOR LINE(S)	467
LINE	401	USED FOR LINE(S)	452
LINE	403	USED FOR LINE(S)	451
LINE	408	USED FOR LINE(S)	429 447
LINE	409	USED FOR LINE(S)	430
LINE	416	USED FOR LINE(S)	442
LINE	422	USED FOR LINE(S)	434
LINE	427	USED FOR LINE(S)	445
LINE	428	USED FOR LINE(S)	446
LINE	435	USED FOR LINE(S)	457
LINE	436	USED FOR LINE(S)	463
LINE	444	USED FOR LINE(S)	471
LINE	449	USED FOR LINE(S)	473
LINE	450	USED FOR LINE(S)	472
LINE	454	USED FOR LINE(S)	478
LINE	455	USED FOR LINE(S)	477
LINE	458	USED FOR LINE(S)	509
LINE	459	USED FOR LINE(S)	515
LINE	460	USED FOR LINE(S)	514
LINE	464	USED FOR LINE(S)	520
LINE	465	USED FOR LINE(S)	519
LINE	470	USED FOR LINE(S)	484
LINE	475	USED FOR LINE(S)	486

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LINE 476 USED FOR LINE(S) 485
LINE 480 USED FOR LINE(S) 491
LINE 481 USED FOR LINE(S) 490
LINE 483 USED FOR LINE(S) 497
LINE 488 USED FOR LINE(S) 499
LINE 489 USED FOR LINE(S) 498
LINE 493 USED FOR LINE(S) 504
LINE 494 USED FOR LINE(S) 503
LINE 510 USED FOR LINE(S) 522
LINE 511 USED FOR LINE(S) 528
LINE 512 USED FOR LINE(S) 527
LINE 516 USED FOR LINE(S) 533
LINE 517 USED FOR LINE(S) 532
LINE 523 USED FOR LINE(S) 535
LINE 524 USED FOR LINE(S) 541
LINE 525 USED FOR LINE(S) 540
LINE 529 USED FOR LINE(S) 546
LINE 530 USED FOR LINE(S) 545
LINE 536 USED FOR LINE(S) 548
LINE 537 USED FOR LINE(S) 554
LINE 538 USED FOR LINE(S) 553
LINE 542 USED FOR LINE(S) 559
LINE 543 USED FOR LINE(S) 558
AREA 123 USED FOR AREA(S) 230
AREA 163 USED FOR AREA(S) 182
AREA 176 USED FOR AREA(S) 226
AREA 177 USED FOR AREA(S) 264
AREA 193 USED FOR AREA(S) 282
AREA 198 USED FOR AREA(S) 208
AREA 204 USED FOR AREA(S) 239
AREA 205 USED FOR AREA(S) 291
AREA 223 USED FOR AREA(S) 295
AREA 248 USED FOR AREA(S) 294
AREA 255 USED FOR AREA(S) 302
AREA 273 USED FOR AREA(S) 307
AREA 277 USED FOR AREA(S) 290
AREA 288 USED FOR AREA(S) 296
AREA 289 USED FOR AREA(S) 313
AREA 293 USED FOR AREA(S) 318
AREA 298 USED FOR AREA(S) 317
AREA 299 USED FOR AREA(S) 337
AREA 305 USED FOR AREA(S) 326
AREA 306 USED FOR AREA(S) 312
AREA 309 USED FOR AREA(S) 319
AREA 311 USED FOR AREA(S) 322
AREA 316 USED FOR AREA(S) 333
AREA 324 USED FOR AREA(S) 340
AREA 328 USED FOR AREA(S) 344
AREA 331 USED FOR AREA(S) 369
AREA 335 USED FOR AREA(S) 373
AREA 342 USED FOR AREA(S) 349
AREA 346 USED FOR AREA(S) 353
AREA 351 USED FOR AREA(S) 358
AREA 355 USED FOR AREA(S) 362
AREA 367 USED FOR AREA(S) 378
AREA 371 USED FOR AREA(S) 382
AREA 376 USED FOR AREA(S) 387
AREA 380 USED FOR AREA(S) 391
AREA 385 USED FOR AREA(S) 396
AREA 389 USED FOR AREA(S) 400

```

Clear 2-D mesh

```

SELECT      FOR ITEM=TYPE COMPONENT=
IN RANGE    1 TO      1 STEP      1

```

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 150.310 TIME= 07:31:32
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.320 TIME= 07:31:32
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.330 TIME= 07:31:32
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.330 TIME= 07:31:32
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.340 TIME= 07:31:32
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.350 TIME= 07:31:32
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.360 TIME= 07:31:32
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.370 TIME= 07:31:32
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.390 TIME= 07:31:32
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.400 TIME= 07:31:32
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.410 TIME= 07:31:32
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.410 TIME= 07:31:32
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.420 TIME= 07:31:32
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.420 TIME= 07:31:32
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.430 TIME= 07:31:32
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.440 TIME= 07:31:32
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.450 TIME= 07:31:32
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.470 TIME= 07:31:32
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

elements are deleted.

*** NOTE *** CP= 150.480 TIME= 07:31:32
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.490 TIME= 07:31:32
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.500 TIME= 07:31:32
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.520 TIME= 07:31:32
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.530 TIME= 07:31:32
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.530 TIME= 07:31:32
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.540 TIME= 07:31:32
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.540 TIME= 07:31:32
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.550 TIME= 07:31:32
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.550 TIME= 07:31:32
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.550 TIME= 07:31:32
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.560 TIME= 07:31:32
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.570 TIME= 07:31:32
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.580 TIME= 07:31:32
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.590 TIME= 07:31:32
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.610 TIME= 07:31:32
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.620 TIME= 07:31:32
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.630 TIME= 07:31:32
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.650 TIME= 07:31:32
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.670 TIME= 07:31:32
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.690 TIME= 07:31:32
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only
elements are deleted.

*** NOTE *** CP= 150.720 TIME= 07:31:32
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only
elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 13442 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 13442 DEFINED) SELECTED FROM

16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

117 NODES (OF 13442 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 96
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

429 NODES (OF 13442 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 384

ALL SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=

IN RANGE 1 TO 15770 STEP 1

13442 NODES (OF 13442 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE ***

CP= 223.620 TIME= 07:32:45

Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 224.150

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

TRW ENVIRONMENT VERSION=HP 9000/7XX 07:32:46 JAN 20, 1995 CP= 224.150
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=

IN RANGE 16 TO 16 STEP 1

1032 ELEMENTS (OF 12144 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

1074 NODES (OF 13442 DEFINED) SELECTED FROM
1032 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c12w5a.sub

*** WARNING *** CP= 224.760 TIME= 07:32:46
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 1032 NUMBER OF NODES= 1074
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13070 STEP 1

12144 ELEMENTS (OF 12144 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15770 STEP 1

13442 NODES (OF 13442 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2490.190

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:10:37 JAN 20, 1995 CP= 2490.190
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 13071 c12w5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 13071

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 13071
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

1032 ELEMENTS (OF 12145 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13071 STEP 1

11113 ELEMENTS (OF 11113 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2491.310

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 2491.320 TIME= 08:10:39
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.77 AND 308.77
KABS= 0. TOLERANCE= 1.54386

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

91 NODES (OF 13442 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 15770 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.23 AND -991.23
KABS= 0. TOLERANCE= 4.95614

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

91 NODES (OF 13442 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 15770 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15770 STEP 1

13442 NODES (OF 13442 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2494.380 TIME= 08:10:42
All shape tests were bypassed for elements associated with the solid model, because most of them were already done at AMESH or VMESH. Use CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:10:42 JAN 20, 1995 CP= 2494.380
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 2496.910 TIME= 08:10:44
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2496.930 TIME= 08:10:44
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER.1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPINGON
INITIAL NUMBER OF SUBSTEPS0
MAXIMUM NUMBER OF SUBSTEPS0
MINIMUM NUMBER OF SUBSTEPS1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONSNO
TRANSIENT (INERTIA) EFFECTSOFF
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .12069E+07

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.56948E-09	IXX = .2775E+12	IXX = .1647E+12
YC = -305.69	IYY = .2098E+09	IYY = .2098E+09

ZC = .20686E-15 IZZ = .2776E+12 IZZ = .1648E+12
 IXY = -.5156 IXY = -.3055
 IYZ = .1015E-06 IYZ = .2520E-07
 IZX = -.4889E-08 IZX = -.4889E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
 2 .120686E+07

Range of element maximum matrix coefficients in global coordinates
 Maximum= 341.507576 at element 11673.
 Minimum= 6.142094072E-08 at element 13071.

*** WARNING *** CP= 2560.030 TIME= 08:11:52
 Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	11112	SOLID70	45.310	.004
18	1	MATRIX50	1.280	1.280

Time at end of element matrix formulation CP= 2560.03.

HT FLOW CONVERGENCE VALUE= 261.8 CRITERION= .2618

Estimated number of active DOF= 13260.
 Maximum wavefront= 1407.

Time at end of matrix triangularization CP= 3219.

Equation solver maximum pivot= 1295.82852 at node 976 TEMP.

Equation solver minimum pivot= 0.902505298 at node 2046 TEMP.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05

HT FLOW CONVERGENCE VALUE= .1825 CRITERION= .5383E-02

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3648E-02

HT FLOW CONVERGENCE VALUE= .8965E-05 CRITERION= .5383E-02 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	11112	SOLID70	30.280	.003
18	1	MATRIX50	1.820	1.820

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	11112	SOLID70	2.720	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2

*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 13260

R.M.S. WAVEFRONT SIZE = 531.2

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096

18.047 MB WRITTEN ON ELEMENT MATRIX FILE: c12w5a.emat

10.000 MB WRITTEN ON ELEMENT SAVED DATA FILE: c12w5a.esav

43.875 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c12w5a.tri

.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c12w5a.dsub

8.688 MB WRITTEN ON RESULTS FILE: c12w5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 4051.320

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:38:57 JAN 20, 1995 CP= 4051.400
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.13980

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 4066.000

Apply initial conditions wall temperature
as a temporary boundry condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

520 NODES (OF 13442 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 15770 BY 1
REAL= 26.1398022 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15770 STEP 1

13442 NODES (OF 13442 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13071 STEP 1

11113 ELEMENTS (OF 11113 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:39:19 JAN 20, 1995 CP= 4067.130
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 4069.640 TIME= 08:39:21
This load step will be a static (steady-state) step.

*** NOTE *** CP= 4070.510 TIME= 08:39:22
The step data was checked and warning messages were found.
Please review output or errors file (c12w5a.err) for these warning
messages.

*** NOTE *** CP= 4070.520 TIME= 08:39:23
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:39:23 JAN 20, 1995 CP= 4071.020
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER.2
TIME AT END OF THE LOAD STEP.20000E-05
AUTOMATIC TIME STEPPINGON
INITIAL NUMBER OF SUBSTEPS0
MAXIMUM NUMBER OF SUBSTEPS0
MINIMUM NUMBER OF SUBSTEPS1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONSNO
TRANSIENT (INERTIA) EFFECTSOFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 167.5 CRITERION= .1676
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 92.37
HT FLOW CONVERGENCE VALUE= 53.74 CRITERION= .1676

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.712
HT FLOW CONVERGENCE VALUE= 1.880 CRITERION= .1676
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9342E-01
HT FLOW CONVERGENCE VALUE= .1790E-01 CRITERION= .1676 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT

KEYPOINTS) RELATED TO SELECTED AREA SET.

520 NODES (OF 13442 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 15770 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 520

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 15770 STEP 1

13442 NODES (OF 13442 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:

USE 80 SUBSTEPS AS A MAXIMUM

USE 4 SUBSTEPS AS A MINIMUM

USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

Begin Transient

Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13071 STEP 1

11113 ELEMENTS (OF 11113 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE ***

CP= 4571.930 TIME= 08:50:38
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:50:38 JAN 20, 1995 CP= 4571.930
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
 TIME AT END OF THE LOAD STEP. 31.558
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 300.8 CRITERION= .1676
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5830E-04
 HT FLOW CONVERGENCE VALUE= .3422E-04 CRITERION= .3443 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
 *** TIME = .394472 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9931E-05 OSCILLATION LIMIT = .3917E-05
 *** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 601.6 CRITERION= .3444
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1166E-03
 HT FLOW CONVERGENCE VALUE= .6845E-04 CRITERION= .3443 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
 *** TIME = .788942 TIME INC = .394470
 *** RESPONSE EIGENVALUE = .9930E-05 OSCILLATION LIMIT = .3917E-05
 *** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 601.6 CRITERION= .3444
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3498E-03
 HT FLOW CONVERGENCE VALUE= .2053E-03 CRITERION= .3443 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
 *** TIME = 1.97235 TIME INC = 1.18341
 *** RESPONSE EIGENVALUE = .9929E-05 OSCILLATION LIMIT = .1175E-04
 *** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 601.6 CRITERION= .3444
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1049E-02
 HT FLOW CONVERGENCE VALUE= .6159E-03 CRITERION= .3443 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
 *** TIME = 5.52258 TIME INC = 3.55023
 *** RESPONSE EIGENVALUE = .9925E-05 OSCILLATION LIMIT = .3524E-04
 *** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 601.6 CRITERION= .3443
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2331E-02
 HT FLOW CONVERGENCE VALUE= .1368E-02 CRITERION= .3443 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
*** TIME = 13.4120 TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9917E-05 OSCILLATION LIMIT = .7824E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

HT FLOW CONVERGENCE VALUE= 601.5 CRITERION= .3443
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2331E-02
HT FLOW CONVERGENCE VALUE= .1368E-02 CRITERION= .3442 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
*** TIME = 21.3014 TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9906E-05 OSCILLATION LIMIT = .7815E-04
*** AUTO TIME STEP: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 601.4 CRITERION= .3443
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1515E-02
HT FLOW CONVERGENCE VALUE= .8891E-03 CRITERION= .3442 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
*** TIME = 26.4295 TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9897E-05 OSCILLATION LIMIT = .5075E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 601.4 CRITERION= .3443
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1515E-02
HT FLOW CONVERGENCE VALUE= .8890E-03 CRITERION= .3442 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
*** TIME = 31.5576 TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9891E-05 OSCILLATION LIMIT = .5072E-04

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 09:34:19 JAN 20, 1995 CP= 6526.970
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 601.4 CRITERION= .3442
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.002
HT FLOW CONVERGENCE VALUE= 4.626 CRITERION= .2568
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1254
HT FLOW CONVERGENCE VALUE= .9754E-01 CRITERION= .2567 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
*** TIME = 39478.6 TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .8010E-05 OSCILLATION LIMIT = .3160
*** AUTO STEP TIME: NEXT TIME INC = 39447. UNCHANGED

HT FLOW CONVERGENCE VALUE= 400.6 CRITERION= .2656
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.308
HT FLOW CONVERGENCE VALUE= 2.606 CRITERION= .2297
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5799E-01
HT FLOW CONVERGENCE VALUE= .5248E-01 CRITERION= .2303 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
*** TIME = 78925.6 TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4768E-05 OSCILLATION LIMIT = .1881
*** AUTO TIME STEP: NEXT TIME INC = .10487E+06 INCREASED (FACTOR = 2.6585)

HT FLOW CONVERGENCE VALUE= 337.3 CRITERION= .2450
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.536
HT FLOW CONVERGENCE VALUE= 4.521 CRITERION= .2119
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1395

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HT FLOW CONVERGENCE VALUE= .1414      CRITERION= .2128      <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 20
*** TIME = 183794. TIME INC = 104869.
*** RESPONSE EIGENVALUE = .2446E-05 OSCILLATION LIMIT = .2565
*** AUTO TIME STEP: NEXT TIME INC = .20439E+06 INCREASED (FACTOR = 1.9490)

HT FLOW CONVERGENCE VALUE= 288.3      CRITERION= .2289
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.465
HT FLOW CONVERGENCE VALUE= 5.385      CRITERION= .2042
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1766
HT FLOW CONVERGENCE VALUE= .2015      CRITERION= .2051      <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 22
*** TIME = 388183. TIME INC = 204389.
*** RESPONSE EIGENVALUE = .1088E-05 OSCILLATION LIMIT = .2224
*** AUTO TIME STEP: NEXT TIME INC = .45949E+06 INCREASED (FACTOR = 2.2481)

HT FLOW CONVERGENCE VALUE= 258.1      CRITERION= .2177
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.678
HT FLOW CONVERGENCE VALUE= 7.089      CRITERION= .1998
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2890
HT FLOW CONVERGENCE VALUE= .3443      CRITERION= .2006
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1362E-01
HT FLOW CONVERGENCE VALUE= .1465E-01 CRITERION= .2005      <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 25
*** TIME = 847674. TIME INC = 459491.
*** RESPONSE EIGENVALUE = .5855E-06 OSCILLATION LIMIT = .2690
*** AUTO STEP TIME: NEXT TIME INC = .45949E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 230.0      CRITERION= .2058
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.891
HT FLOW CONVERGENCE VALUE= 4.143      CRITERION= .1964
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1723
HT FLOW CONVERGENCE VALUE= .2111      CRITERION= .1968
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7699E-02
HT FLOW CONVERGENCE VALUE= .8423E-02 CRITERION= .1967      <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 28
*** TIME = .130716E+07 TIME INC = 459491.
*** RESPONSE EIGENVALUE = .3517E-06 OSCILLATION LIMIT = .1616
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.7170)

HT FLOW CONVERGENCE VALUE= 214.4      CRITERION= .2008
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.332
HT FLOW CONVERGENCE VALUE= 4.895      CRITERION= .1950
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2363
HT FLOW CONVERGENCE VALUE= .2934      CRITERION= .1953
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1201E-01
HT FLOW CONVERGENCE VALUE= .1415E-01 CRITERION= .1953      <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 31
*** TIME = .209610E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2376E-06 OSCILLATION LIMIT = .1875
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 205.2      CRITERION= .1973
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.248
HT FLOW CONVERGENCE VALUE= 3.437      CRITERION= .1944
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1656
HT FLOW CONVERGENCE VALUE= .2076      CRITERION= .1946
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8203E-02
HT FLOW CONVERGENCE VALUE= .9774E-02 CRITERION= .1946      <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 34
*** TIME = .288504E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1601E-06 OSCILLATION LIMIT = .1263
*** AUTO TIME STEP: NEXT TIME INC = .27075E+06 DECREASED (FACTOR = .3432)

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HT FLOW CONVERGENCE VALUE= 203.3    CRITERION= .1969
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6357
HT FLOW CONVERGENCE VALUE= .9657    CRITERION= .1949
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3535E-01
HT FLOW CONVERGENCE VALUE= .4398E-01 CRITERION= .1950    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 36
*** TIME = .315579E+07 TIME INC = 270747.
*** RESPONSE EIGENVALUE = .1306E-06 OSCILLATION LIMIT = .3537E-01

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***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 11:24:47 JAN 20, 1995 CP= 11066.370
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 203.2    CRITERION= .1963
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5784
HT FLOW CONVERGENCE VALUE= .9009    CRITERION= .1946
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3264E-01
HT FLOW CONVERGENCE VALUE= .4042E-01 CRITERION= .1946    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 38
*** TIME = .342654E+07 TIME INC = 270747.
*** RESPONSE EIGENVALUE = .1205E-06 OSCILLATION LIMIT = .3262E-01
*** AUTO STEP TIME: NEXT TIME INC = .27075E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 203.2    CRITERION= .1966
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5395
HT FLOW CONVERGENCE VALUE= .8392    CRITERION= .1950
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3061E-01
HT FLOW CONVERGENCE VALUE= .3807E-01 CRITERION= .1951    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 40
*** TIME = .369729E+07 TIME INC = 270747.
*** RESPONSE EIGENVALUE = .1117E-06 OSCILLATION LIMIT = .3025E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.9139)

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HT FLOW CONVERGENCE VALUE= 203.3    CRITERION= .1961
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.389
HT FLOW CONVERGENCE VALUE= 2.208    CRITERION= .1949
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1070
HT FLOW CONVERGENCE VALUE= .1347    CRITERION= .1950    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 42
*** TIME = .448623E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .9819E-07 OSCILLATION LIMIT = .7747E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 204.2    CRITERION= .1966
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.173
HT FLOW CONVERGENCE VALUE= 1.888    CRITERION= .1956
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9169E-01
HT FLOW CONVERGENCE VALUE= .1157    CRITERION= .1957    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 44
*** TIME = .527517E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .8296E-07 OSCILLATION LIMIT = .6545E-01
*** AUTO TIME STEP: NEXT TIME INC = .51819E+06 DECREASED (FACTOR = .6568)

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HT FLOW CONVERGENCE VALUE= 205.1    CRITERION= .1963
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6796
HT FLOW CONVERGENCE VALUE= 1.101    CRITERION= .1953
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4831E-01
HT FLOW CONVERGENCE VALUE= .6061E-01 CRITERION= .1954    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 46
*** TIME = .579336E+07 TIME INC = 518193.
*** RESPONSE EIGENVALUE = .7362E-07 OSCILLATION LIMIT = .3815E-01
*** AUTO STEP TIME: NEXT TIME INC = .51819E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 205.8 CRITERION= .1968
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6259
HT FLOW CONVERGENCE VALUE= 1.019 CRITERION= .1959
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4486E-01
HT FLOW CONVERGENCE VALUE= .5636E-01 CRITERION= .1959 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 5 SUBSTEP 6 COMPLETED. CUM ITER = 48
*** TIME = .631155E+07 TIME INC = 518193.
*** RESPONSE EIGENVALUE = .6763E-07 OSCILLATION LIMIT = .3504E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:24:38 JAN 20, 1995 CP= 13648.610
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 206.3 CRITERION= .1964
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5799
HT FLOW CONVERGENCE VALUE= .9503 CRITERION= .1956
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4165E-01
HT FLOW CONVERGENCE VALUE= .5224E-01 CRITERION= .1957 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 50
*** TIME = .682974E+07 TIME INC = 518193.
*** RESPONSE EIGENVALUE = .6264E-07 OSCILLATION LIMIT = .3246E-01
*** AUTO STEP TIME: NEXT TIME INC = .51819E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 206.9 CRITERION= .1969
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5415
HT FLOW CONVERGENCE VALUE= .8892 CRITERION= .1961
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3908E-01
HT FLOW CONVERGENCE VALUE= .4907E-01 CRITERION= .1962 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 52
*** TIME = .734794E+07 TIME INC = 518193.
*** RESPONSE EIGENVALUE = .5830E-07 OSCILLATION LIMIT = .3021E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5225)

HT FLOW CONVERGENCE VALUE= 207.4 CRITERION= .1965
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7632
HT FLOW CONVERGENCE VALUE= 1.262 CRITERION= .1959
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6099E-01
HT FLOW CONVERGENCE VALUE= .7679E-01 CRITERION= .1959 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 54
*** TIME = .813688E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .5362E-07 OSCILLATION LIMIT = .4231E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 208.1 CRITERION= .1970
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6995
HT FLOW CONVERGENCE VALUE= 1.159 CRITERION= .1964
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5607E-01
HT FLOW CONVERGENCE VALUE= .7060E-01 CRITERION= .1965 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 56
*** TIME = .892582E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .4892E-07 OSCILLATION LIMIT = .3859E-01
*** AUTO TIME STEP: NEXT TIME INC = .54149E+06 DECREASED (FACTOR = .6864)

HT FLOW CONVERGENCE VALUE= 208.7 CRITERION= .1967

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4505
HT FLOW CONVERGENCE VALUE= .7407 CRITERION= .1961
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3269E-01
HT FLOW CONVERGENCE VALUE= .4093E-01 CRITERION= .1961 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 58
*** TIME = .946731E+07 TIME INC = 541494.
*** RESPONSE EIGENVALUE = .4569E-07 OSCILLATION LIMIT = .2474E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:13 JAN 20, 1995 CP= 15799.450
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 209.0 CRITERION= .1971
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4303
HT FLOW CONVERGENCE VALUE= .7042 CRITERION= .1965
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3116E-01
HT FLOW CONVERGENCE VALUE= .3903E-01 CRITERION= .1966 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 60
*** TIME = .100088E+08 TIME INC = 541494.
*** RESPONSE EIGENVALUE = .4326E-07 OSCILLATION LIMIT = .2343E-01
*** AUTO STEP TIME: NEXT TIME INC = .54149E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 209.3 CRITERION= .1967
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4130
HT FLOW CONVERGENCE VALUE= .6733 CRITERION= .1962
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2963E-01
HT FLOW CONVERGENCE VALUE= .3705E-01 CRITERION= .1962 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 62
*** TIME = .105503E+08 TIME INC = 541494.
*** RESPONSE EIGENVALUE = .4114E-07 OSCILLATION LIMIT = .2228E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.4570)

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HT FLOW CONVERGENCE VALUE= 209.6 CRITERION= .1971
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5732
HT FLOW CONVERGENCE VALUE= .9319 CRITERION= .1966
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4488E-01
HT FLOW CONVERGENCE VALUE= .5635E-01 CRITERION= .1966 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 64
*** TIME = .113392E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3867E-07 OSCILLATION LIMIT = .3050E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 210.0 CRITERION= .1967
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5432
HT FLOW CONVERGENCE VALUE= .8770 CRITERION= .1962
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4204E-01
HT FLOW CONVERGENCE VALUE= .5269E-01 CRITERION= .1963 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 66
*** TIME = .121282E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3623E-07 OSCILLATION LIMIT = .2859E-01
*** AUTO TIME STEP: NEXT TIME INC = .49489E+06 DECREASED (FACTOR = .6273)

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HT FLOW CONVERGENCE VALUE= 210.2 CRITERION= .1971
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3269
HT FLOW CONVERGENCE VALUE= .5205 CRITERION= .1966
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2240E-01
HT FLOW CONVERGENCE VALUE= .2793E-01 CRITERION= .1967 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 68

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*** TIME = .126231E+08 TIME INC = 494892.
*** RESPONSE EIGENVALUE = .3462E-07 OSCILLATION LIMIT = .1713E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:14:40 JAN 20, 1995 CP= 17976.210
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 210.4 CRITERION= .1967
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3168
HT FLOW CONVERGENCE VALUE= .5030 CRITERION= .1963
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2155E-01
HT FLOW CONVERGENCE VALUE= .2683E-01 CRITERION= .1963 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 70
*** TIME = .131180E+08 TIME INC = 494892.
*** RESPONSE EIGENVALUE = .3340E-07 OSCILLATION LIMIT = .1653E-01
*** AUTO STEP TIME: NEXT TIME INC = .49489E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.5 CRITERION= .1971
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3074
HT FLOW CONVERGENCE VALUE= .4854 CRITERION= .1966
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2089E-01
HT FLOW CONVERGENCE VALUE= .2601E-01 CRITERION= .1967 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 72
*** TIME = .136129E+08 TIME INC = 494892.
*** RESPONSE EIGENVALUE = .3222E-07 OSCILLATION LIMIT = .1594E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.5942)

HT FLOW CONVERGENCE VALUE= 210.6 CRITERION= .1967
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4714
HT FLOW CONVERGENCE VALUE= .7466 CRITERION= .1962
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3573E-01
HT FLOW CONVERGENCE VALUE= .4465E-01 CRITERION= .1962 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 74
*** TIME = .144018E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3067E-07 OSCILLATION LIMIT = .2420E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.7 CRITERION= .1970
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4508
HT FLOW CONVERGENCE VALUE= .7095 CRITERION= .1966
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3402E-01
HT FLOW CONVERGENCE VALUE= .4250E-01 CRITERION= .1966 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 76
*** TIME = .151907E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2912E-07 OSCILLATION LIMIT = .2297E-01
*** AUTO TIME STEP: NEXT TIME INC = .58810E+06 DECREASED (FACTOR = .7454)

HT FLOW CONVERGENCE VALUE= 210.8 CRITERION= .1966
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3237
HT FLOW CONVERGENCE VALUE= .5056 CRITERION= .1962
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2256E-01
HT FLOW CONVERGENCE VALUE= .2805E-01 CRITERION= .1962 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 78
*** TIME = .157788E+08 TIME INC = 588096.
*** RESPONSE EIGENVALUE = .2802E-07 OSCILLATION LIMIT = .1648E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:00:42 JAN 20, 1995 CP= 20107.550
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 210.9 CRITERION= .1969
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3137
HT FLOW CONVERGENCE VALUE= .4879 CRITERION= .1965
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2186E-01
HT FLOW CONVERGENCE VALUE= .2717E-01 CRITERION= .1965 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 80
*** TIME = .163669E+08 TIME INC = 588096.
*** RESPONSE EIGENVALUE = .2703E-07 OSCILLATION LIMIT = .1590E-01
*** AUTO STEP TIME: NEXT TIME INC = .58810E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.9 CRITERION= .1965
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3045
HT FLOW CONVERGENCE VALUE= .4729 CRITERION= .1961
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2108E-01
HT FLOW CONVERGENCE VALUE= .2616E-01 CRITERION= .1961 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 82
*** TIME = .169550E+08 TIME INC = 588096.
*** RESPONSE EIGENVALUE = .2616E-07 OSCILLATION LIMIT = .1538E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3415)

HT FLOW CONVERGENCE VALUE= 211.0 CRITERION= .1968
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3946
HT FLOW CONVERGENCE VALUE= .6123 CRITERION= .1964
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2928E-01
HT FLOW CONVERGENCE VALUE= .3645E-01 CRITERION= .1964 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 84
*** TIME = .177440E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2506E-07 OSCILLATION LIMIT = .1977E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.0 CRITERION= .1963
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3802
HT FLOW CONVERGENCE VALUE= .5881 CRITERION= .1960
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2799E-01
HT FLOW CONVERGENCE VALUE= .3478E-01 CRITERION= .1960 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 86
*** TIME = .185329E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2405E-07 OSCILLATION LIMIT = .1897E-01
*** AUTO TIME STEP: NEXT TIME INC = .40169E+06 DECREASED (FACTOR = .5091)

HT FLOW CONVERGENCE VALUE= 211.0 CRITERION= .1967
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1886
HT FLOW CONVERGENCE VALUE= .2874 CRITERION= .1963
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1161E-01
HT FLOW CONVERGENCE VALUE= .1431E-01 CRITERION= .1963 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 88
*** TIME = .189346E+08 TIME INC = 401687.
*** RESPONSE EIGENVALUE = .2370E-07 OSCILLATION LIMIT = .9521E-02

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:46:36 JAN 20, 1995 CP= 22237.950
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 211.0 CRITERION= .1963
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1852
HT FLOW CONVERGENCE VALUE= .2825 CRITERION= .1959
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1134E-01
HT FLOW CONVERGENCE VALUE= .1395E-01 CRITERION= .1959 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 90
*** TIME = .193363E+08 TIME INC = 401687.
*** RESPONSE EIGENVALUE = .2327E-07 OSCILLATION LIMIT = .9346E-02
*** AUTO STEP TIME: NEXT TIME INC = .40169E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.0 CRITERION= .1966
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1820
HT FLOW CONVERGENCE VALUE= .2766 CRITERION= .1962
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1117E-01
HT FLOW CONVERGENCE VALUE= .1375E-01 CRITERION= .1962 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 92
*** TIME = .197380E+08 TIME INC = 401687.
*** RESPONSE EIGENVALUE = .2278E-07 OSCILLATION LIMIT = .9149E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.9641)

HT FLOW CONVERGENCE VALUE= 210.9 CRITERION= .1961
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3479
HT FLOW CONVERGENCE VALUE= .5333 CRITERION= .1958
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2533E-01
HT FLOW CONVERGENCE VALUE= .3139E-01 CRITERION= .1958 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 94
*** TIME = .205269E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2178E-07 OSCILLATION LIMIT = .1718E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.9 CRITERION= .1964
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3366
HT FLOW CONVERGENCE VALUE= .5135 CRITERION= .1961
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2447E-01
HT FLOW CONVERGENCE VALUE= .3030E-01 CRITERION= .1961 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 96
*** TIME = .213158E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2098E-07 OSCILLATION LIMIT = .1655E-01
*** AUTO TIME STEP: NEXT TIME INC = .77451E+06 DECREASED (FACTOR = .9817)

HT FLOW CONVERGENCE VALUE= 210.9 CRITERION= .1960
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3201
HT FLOW CONVERGENCE VALUE= .4869 CRITERION= .1956
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2300E-01
HT FLOW CONVERGENCE VALUE= .2843E-01 CRITERION= .1956 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 98
*** TIME = .220904E+08 TIME INC = 774505.
*** RESPONSE EIGENVALUE = .2029E-07 OSCILLATION LIMIT = .1572E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:35:09 JAN 20, 1995 CP= 24390.950
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 210.8 CRITERION= .1962
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3104
HT FLOW CONVERGENCE VALUE= .4709 CRITERION= .1959
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2229E-01
HT FLOW CONVERGENCE VALUE= .2754E-01 CRITERION= .1959 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 100
*** TIME = .228649E+08 TIME INC = 774505.
*** RESPONSE EIGENVALUE = .1960E-07 OSCILLATION LIMIT = .1518E-01
*** AUTO STEP TIME: NEXT TIME INC = .77451E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.8 CRITERION= .1958
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3014
HT FLOW CONVERGENCE VALUE= .4573 CRITERION= .1955
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2151E-01
HT FLOW CONVERGENCE VALUE= .2654E-01 CRITERION= .1955 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 102
*** TIME = .236394E+08 TIME INC = 774505.
*** RESPONSE EIGENVALUE = .1899E-07 OSCILLATION LIMIT = .1470E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0186)
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HT FLOW CONVERGENCE VALUE= 210.7 CRITERION= .1961
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2982
HT FLOW CONVERGENCE VALUE= .4508 CRITERION= .1958
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2138E-01
HT FLOW CONVERGENCE VALUE= .2637E-01 CRITERION= .1958 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 104
*** TIME = .244283E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1837E-07 OSCILLATION LIMIT = .1449E-01
*** AUTO STEP TIME: NEXT TIME INC = .40890E+06 DECREASED (FACTOR = .5183)
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HT FLOW CONVERGENCE VALUE= 210.7 CRITERION= .1957
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1515
HT FLOW CONVERGENCE VALUE= .2270 CRITERION= .1954
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9084E-02
HT FLOW CONVERGENCE VALUE= .1109E-01 CRITERION= .1954 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 106
*** TIME = .248372E+08 TIME INC = 408905.
*** RESPONSE EIGENVALUE = .1838E-07 OSCILLATION LIMIT = .7517E-02
*** AUTO STEP TIME: NEXT TIME INC = .40890E+06 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 210.6 CRITERION= .1960
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1492
HT FLOW CONVERGENCE VALUE= .2227 CRITERION= .1957
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8979E-02
HT FLOW CONVERGENCE VALUE= .1097E-01 CRITERION= .1957 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 108
*** TIME = .252461E+08 TIME INC = 408905.
*** RESPONSE EIGENVALUE = .1805E-07 OSCILLATION LIMIT = .7382E-02
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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:37:41 JAN 20, 1995 CP= 26585.190
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 210.6 CRITERION= .1956
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1471
HT FLOW CONVERGENCE VALUE= .2200 CRITERION= .1953
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8811E-02
HT FLOW CONVERGENCE VALUE= .1075E-01 CRITERION= .1953 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 110
*** TIME = .256550E+08 TIME INC = 408905.
*** RESPONSE EIGENVALUE = .1781E-07 OSCILLATION LIMIT = .7284E-02
*** AUTO STEP TIME: NEXT TIME INC = .40890E+06 UNCHANGED
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HT FLOW CONVERGENCE VALUE= 210.6 CRITERION= .1959
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1450
 HT FLOW CONVERGENCE VALUE= .2155 CRITERION= .1956
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8702E-02
 HT FLOW CONVERGENCE VALUE= .1062E-01 CRITERION= .1956 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 112
 *** TIME = .260639E+08 TIME INC = 408905.
 *** RESPONSE EIGENVALUE = .1751E-07 OSCILLATION LIMIT = .7158E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.9294)

HT FLOW CONVERGENCE VALUE= 210.5 CRITERION= .1954
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2736
 HT FLOW CONVERGENCE VALUE= .4102 CRITERION= .1952
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1938E-01
 HT FLOW CONVERGENCE VALUE= .2382E-01 CRITERION= .1952 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 114
 *** TIME = .268529E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1676E-07 OSCILLATION LIMIT = .1322E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.5 CRITERION= .1957
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2664
 HT FLOW CONVERGENCE VALUE= .3976 CRITERION= .1954
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1886E-01
 HT FLOW CONVERGENCE VALUE= .2317E-01 CRITERION= .1954 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 116
 *** TIME = .276418E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1626E-07 OSCILLATION LIMIT = .1283E-01
 *** AUTO TIME STEP: NEXT TIME INC = .76007E+06 DECREASED (FACTOR = .9634)

HT FLOW CONVERGENCE VALUE= 210.4 CRITERION= .1953
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2501
 HT FLOW CONVERGENCE VALUE= .3726 CRITERION= .1950
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1744E-01
 HT FLOW CONVERGENCE VALUE= .2139E-01 CRITERION= .1950 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 118
 *** TIME = .284019E+08 TIME INC = 760070.
 *** RESPONSE EIGENVALUE = .1585E-07 OSCILLATION LIMIT = .1205E-01
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
 TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 755.827987 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 13071 STEP 1

11113 ELEMENTS (OF 11113 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 28879.230 TIME= 19:16:16
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:16:16 JAN 20, 1995 CP= 28879.230
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
TIME AT END OF THE LOAD STEP.31558E+08
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 210.3 CRITERION= .1955
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2440
HT FLOW CONVERGENCE VALUE= .3629 CRITERION= .1953
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1703E-01
HT FLOW CONVERGENCE VALUE= .2088E-01 CRITERION= .1953 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 120
*** TIME = .291619E+08 TIME INC = 760070.
*** RESPONSE EIGENVALUE = .1540E-07 OSCILLATION LIMIT = .1171E-01
*** AUTO STEP TIME: NEXT TIME INC = .76007E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.3 CRITERION= .1951
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2383
HT FLOW CONVERGENCE VALUE= .3549 CRITERION= .1949
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1654E-01
HT FLOW CONVERGENCE VALUE= .2025E-01 CRITERION= .1949 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 122
*** TIME = .299220E+08 TIME INC = 760070.
*** RESPONSE EIGENVALUE = .1502E-07 OSCILLATION LIMIT = .1142E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0380)

HT FLOW CONVERGENCE VALUE= 210.2 CRITERION= .1954
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2415
HT FLOW CONVERGENCE VALUE= .3586 CRITERION= .1951
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1694E-01
HT FLOW CONVERGENCE VALUE= .2073E-01 CRITERION= .1951 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 124
*** TIME = .307110E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1460E-07 OSCILLATION LIMIT = .1152E-01

*** AUTO TIME STEP: NEXT TIME INC = .42334E+06 DECREASED (FACTOR = .5366)

HT FLOW CONVERGENCE VALUE= 210.2 CRITERION= .1950
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1274
 HT FLOW CONVERGENCE VALUE= .1879 CRITERION= .1947 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 125
 *** TIME = .311343E+08 TIME INC = 423340.
 *** RESPONSE EIGENVALUE = .1475E-07 OSCILLATION LIMIT = .6244E-02
 *** AUTO STEP TIME: NEXT TIME INC = .42334E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.2 CRITERION= .1953
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1257
 HT FLOW CONVERGENCE VALUE= .1845 CRITERION= .1951 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 126
 *** TIME = .315576E+08 TIME INC = 423340.
 *** RESPONSE EIGENVALUE = .1445E-07 OSCILLATION LIMIT = .6116E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 20:36:40 JAN 20, 1995 CP= 30824.220
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 210.2 CRITERION= .1949
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1251
 HT FLOW CONVERGENCE VALUE= .1799 CRITERION= .1947 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 127
 *** TIME = .319810E+08 TIME INC = 423340.
 *** RESPONSE EIGENVALUE = .1431E-07 OSCILLATION LIMIT = .6056E-02
 *** AUTO STEP TIME: NEXT TIME INC = .42334E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.1 CRITERION= .1952
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1234
 HT FLOW CONVERGENCE VALUE= .1767 CRITERION= .1950 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 128
 *** TIME = .324043E+08 TIME INC = 423340.
 *** RESPONSE EIGENVALUE = .1410E-07 OSCILLATION LIMIT = .5968E-02
 *** AUTO TIME STEP: NEXT TIME INC = .12700E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 210.1 CRITERION= .1947
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3594
 HT FLOW CONVERGENCE VALUE= .5277 CRITERION= .1945
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2766E-01
 HT FLOW CONVERGENCE VALUE= .3393E-01 CRITERION= .1945 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 130
 *** TIME = .336743E+08 TIME INC = .127002E+07
 *** RESPONSE EIGENVALUE = .1329E-07 OSCILLATION LIMIT = .1688E-01
 *** AUTO STEP TIME: NEXT TIME INC = .12700E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.1 CRITERION= .1949
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3468
 HT FLOW CONVERGENCE VALUE= .5087 CRITERION= .1947
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2636E-01
 HT FLOW CONVERGENCE VALUE= .3228E-01 CRITERION= .1947 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 132
 *** TIME = .349443E+08 TIME INC = .127002E+07
 *** RESPONSE EIGENVALUE = .1277E-07 OSCILLATION LIMIT = .1622E-01
 *** AUTO STEP TIME: NEXT TIME INC = .38101E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 210.0 CRITERION= .1943
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9715
 HT FLOW CONVERGENCE VALUE= 1.442 CRITERION= .1941
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8571E-01
 HT FLOW CONVERGENCE VALUE= .1047 CRITERION= .1941 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 134
 *** TIME = .387544E+08 TIME INC = .381006E+07
 *** RESPONSE EIGENVALUE = .1177E-07 OSCILLATION LIMIT = .4483E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.0707)

HT FLOW CONVERGENCE VALUE= 210.1 CRITERION= .1939
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.754
 HT FLOW CONVERGENCE VALUE= 2.569 CRITERION= .1940
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1633
 HT FLOW CONVERGENCE VALUE= .1975 CRITERION= .1940
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1159E-01
 HT FLOW CONVERGENCE VALUE= .1609E-01 CRITERION= .1939 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 137
 *** TIME = .466438E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .9958E-08 OSCILLATION LIMIT = .7856E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.6 CRITERION= .1931
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.475
 HT FLOW CONVERGENCE VALUE= 2.125 CRITERION= .1933
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1351
 HT FLOW CONVERGENCE VALUE= .1625 CRITERION= .1932 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 139
 *** TIME = .545332E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .7989E-08 OSCILLATION LIMIT = .6303E-01
 *** AUTO TIME STEP: NEXT TIME INC = .42910E+07 DECREASED (FACTOR = .5439)

HT FLOW CONVERGENCE VALUE= 211.6 CRITERION= .1933
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7134
 HT FLOW CONVERGENCE VALUE= 1.008 CRITERION= .1934
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6099E-01
 HT FLOW CONVERGENCE VALUE= .7325E-01 CRITERION= .1934 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 141
 *** TIME = .588242E+08 TIME INC = .429101E+07
 *** RESPONSE EIGENVALUE = .6799E-08 OSCILLATION LIMIT = .2917E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42910E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 212.2 CRITERION= .1928
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6610
 HT FLOW CONVERGENCE VALUE= .9242 CRITERION= .1929
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5580E-01
 HT FLOW CONVERGENCE VALUE= .6689E-01 CRITERION= .1929 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 9 COMPLETED. CUM ITER = 143
 *** TIME = .631152E+08 TIME INC = .429101E+07
 *** RESPONSE EIGENVALUE = .6119E-08 OSCILLATION LIMIT = .2626E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:17:03 JAN 20, 1995 CP= 34757.450
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 212.9 CRITERION= .1930
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6162
 HT FLOW CONVERGENCE VALUE= .8623 CRITERION= .1931

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5198E-01
 HT FLOW CONVERGENCE VALUE= .6214E-01 CRITERION= .1931 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 145
 *** TIME = .674062E+08 TIME INC = .429101E+07
 *** RESPONSE EIGENVALUE = .5497E-08 OSCILLATION LIMIT = .2359E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42910E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 213.6 CRITERION= .1925
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5776
 HT FLOW CONVERGENCE VALUE= .8028 CRITERION= .1926
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4813E-01
 HT FLOW CONVERGENCE VALUE= .5741E-01 CRITERION= .1926 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 147
 *** TIME = .716973E+08 TIME INC = .429101E+07
 *** RESPONSE EIGENVALUE = .4987E-08 OSCILLATION LIMIT = .2140E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8386)

HT FLOW CONVERGENCE VALUE= 214.4 CRITERION= .1924
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9763
 HT FLOW CONVERGENCE VALUE= 1.348 CRITERION= .1928
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8573E-01
 HT FLOW CONVERGENCE VALUE= .1020 CRITERION= .1927 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 149
 *** TIME = .795867E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .4376E-08 OSCILLATION LIMIT = .3452E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 215.7 CRITERION= .1918
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8810
 HT FLOW CONVERGENCE VALUE= 1.199 CRITERION= .1922
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7598E-01
 HT FLOW CONVERGENCE VALUE= .9017E-01 CRITERION= .1921 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 151
 *** TIME = .874761E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .3755E-08 OSCILLATION LIMIT = .2962E-01
 *** AUTO TIME STEP: NEXT TIME INC = .71968E+07 DECREASED (FACTOR = .9122)

HT FLOW CONVERGENCE VALUE= 217.0 CRITERION= .1920
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7366
 HT FLOW CONVERGENCE VALUE= .9807 CRITERION= .1922
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6220E-01
 HT FLOW CONVERGENCE VALUE= .7359E-01 CRITERION= .1922 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 153
 *** TIME = .946728E+08 TIME INC = .719678E+07
 *** RESPONSE EIGENVALUE = .3294E-08 OSCILLATION LIMIT = .2371E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:50:40 JAN 21, 1995 CP= 37043.010
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 218.0 CRITERION= .1914
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6835
 HT FLOW CONVERGENCE VALUE= .8998 CRITERION= .1916
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5669E-01
 HT FLOW CONVERGENCE VALUE= .6675E-01 CRITERION= .1916 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 155
 *** TIME = .101870E+09 TIME INC = .719678E+07
 *** RESPONSE EIGENVALUE = .2933E-08 OSCILLATION LIMIT = .2110E-01

*** AUTO STEP TIME: NEXT TIME INC = .71968E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 218.9 CRITERION= .1915
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6395
HT FLOW CONVERGENCE VALUE= .8281 CRITERION= .1917
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5257E-01
HT FLOW CONVERGENCE VALUE= .6173E-01 CRITERION= .1916 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 157
*** TIME = .109066E+09 TIME INC = .719678E+07
*** RESPONSE EIGENVALUE = .2653E-08 OSCILLATION LIMIT = .1909E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.0962)

HT FLOW CONVERGENCE VALUE= 219.7 CRITERION= .1908
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6578
HT FLOW CONVERGENCE VALUE= .8321 CRITERION= .1910
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5345E-01
HT FLOW CONVERGENCE VALUE= .6252E-01 CRITERION= .1910 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 159
*** TIME = .116956E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2433E-08 OSCILLATION LIMIT = .1920E-01
*** AUTO TIME STEP: NEXT TIME INC = .46373E+07 DECREASED (FACTOR = .5878)

HT FLOW CONVERGENCE VALUE= 220.5 CRITERION= .1910
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3690
HT FLOW CONVERGENCE VALUE= .4541 CRITERION= .1911
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2797E-01
HT FLOW CONVERGENCE VALUE= .3263E-01 CRITERION= .1911 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 161
*** TIME = .121593E+09 TIME INC = .463732E+07
*** RESPONSE EIGENVALUE = .2285E-08 OSCILLATION LIMIT = .1060E-01
*** AUTO STEP TIME: NEXT TIME INC = .46373E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 220.8 CRITERION= .1904
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3571
HT FLOW CONVERGENCE VALUE= .4328 CRITERION= .1905
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2661E-01
HT FLOW CONVERGENCE VALUE= .3097E-01 CRITERION= .1905 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 163
*** TIME = .126230E+09 TIME INC = .463732E+07
*** RESPONSE EIGENVALUE = .2198E-08 OSCILLATION LIMIT = .1019E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:25:29 JAN 21, 1995 CP= 39336.400
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 221.2 CRITERION= .1905
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3461
HT FLOW CONVERGENCE VALUE= .4178 CRITERION= .1906
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2571E-01
HT FLOW CONVERGENCE VALUE= .2983E-01 CRITERION= .1906 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 165
*** TIME = .130868E+09 TIME INC = .463732E+07
*** RESPONSE EIGENVALUE = .2080E-08 OSCILLATION LIMIT = .9647E-02
*** AUTO STEP TIME: NEXT TIME INC = .46373E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 221.5 CRITERION= .1900
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3370
HT FLOW CONVERGENCE VALUE= .4022 CRITERION= .1901
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2462E-01

HT FLOW CONVERGENCE VALUE= .2846E-01 CRITERION= .1900 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 167
*** TIME = .135505E+09 TIME INC = .463732E+07
*** RESPONSE EIGENVALUE = .2008E-08 OSCILLATION LIMIT = .9311E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.7013)

HT FLOW CONVERGENCE VALUE= 221.7 CRITERION= .1899
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5545
HT FLOW CONVERGENCE VALUE= .6493 CRITERION= .1900
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4243E-01
HT FLOW CONVERGENCE VALUE= .4904E-01 CRITERION= .1899 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 169
*** TIME = .143394E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1905E-08 OSCILLATION LIMIT = .1503E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.1 CRITERION= .1891
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5329
HT FLOW CONVERGENCE VALUE= .6067 CRITERION= .1892
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3968E-01
HT FLOW CONVERGENCE VALUE= .4571E-01 CRITERION= .1892 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 171
*** TIME = .151284E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1817E-08 OSCILLATION LIMIT = .1433E-01
*** AUTO TIME STEP: NEXT TIME INC = .65042E+07 DECREASED (FACTOR = .8244)

HT FLOW CONVERGENCE VALUE= 222.4 CRITERION= .1891
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4262
HT FLOW CONVERGENCE VALUE= .4697 CRITERION= .1891
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3050E-01
HT FLOW CONVERGENCE VALUE= .3506E-01 CRITERION= .1891 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 173
*** TIME = .157788E+09 TIME INC = .650415E+07
*** RESPONSE EIGENVALUE = .1746E-08 OSCILLATION LIMIT = .1135E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 03:59:38 JAN 21, 1995 CP= 41627.960
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 222.5 CRITERION= .1884
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4151
HT FLOW CONVERGENCE VALUE= .4507 CRITERION= .1884
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2898E-01
HT FLOW CONVERGENCE VALUE= .3316E-01 CRITERION= .1884 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 175
*** TIME = .164292E+09 TIME INC = .650415E+07
*** RESPONSE EIGENVALUE = .1679E-08 OSCILLATION LIMIT = .1092E-01
*** AUTO STEP TIME: NEXT TIME INC = .65042E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.6 CRITERION= .1883
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4062
HT FLOW CONVERGENCE VALUE= .4307 CRITERION= .1883
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2800E-01
HT FLOW CONVERGENCE VALUE= .3196E-01 CRITERION= .1883 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 177
*** TIME = .170796E+09 TIME INC = .650415E+07
*** RESPONSE EIGENVALUE = .1619E-08 OSCILLATION LIMIT = .1053E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2130)

HT FLOW CONVERGENCE VALUE= 222.7 CRITERION= .1875
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4814
HT FLOW CONVERGENCE VALUE= .4964 CRITERION= .1875
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3296E-01
HT FLOW CONVERGENCE VALUE= .3752E-01 CRITERION= .1875 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 179
*** TIME = .178686E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1575E-08 OSCILLATION LIMIT = .1243E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.7 CRITERION= .1873
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4716
HT FLOW CONVERGENCE VALUE= .4694 CRITERION= .1873
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3157E-01
HT FLOW CONVERGENCE VALUE= .3586E-01 CRITERION= .1873 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 181
*** TIME = .186575E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1523E-08 OSCILLATION LIMIT = .1202E-01
*** AUTO TIME STEP: NEXT TIME INC = .27705E+07 DECREASED (FACTOR = .3512)

HT FLOW CONVERGENCE VALUE= 222.6 CRITERION= .1868
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1634
HT FLOW CONVERGENCE VALUE= .1569 CRITERION= .1868 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 182
*** TIME = .189346E+09 TIME INC = .277049E+07
*** RESPONSE EIGENVALUE = .1548E-08 OSCILLATION LIMIT = .4288E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 05:26:19 JAN 21, 1995 CP= 43745.310
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 222.6 CRITERION= .1870
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1622
HT FLOW CONVERGENCE VALUE= .1533 CRITERION= .1869 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 183
*** TIME = .192116E+09 TIME INC = .277049E+07
*** RESPONSE EIGENVALUE = .1482E-08 OSCILLATION LIMIT = .4106E-02
*** AUTO STEP TIME: NEXT TIME INC = .27705E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.5 CRITERION= .1865
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1611
HT FLOW CONVERGENCE VALUE= .1492 CRITERION= .1864 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 184
*** TIME = .194887E+09 TIME INC = .277049E+07
*** RESPONSE EIGENVALUE = .1497E-08 OSCILLATION LIMIT = .4147E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.8477)

HT FLOW CONVERGENCE VALUE= 222.5 CRITERION= .1863
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4527
HT FLOW CONVERGENCE VALUE= .4246 CRITERION= .1862
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2925E-01
HT FLOW CONVERGENCE VALUE= .3309E-01 CRITERION= .1862 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 186
*** TIME = .202776E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1419E-08 OSCILLATION LIMIT = .1119E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.3 CRITERION= .1854
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4435
 HT FLOW CONVERGENCE VALUE= .4077 CRITERION= .1854
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2757E-01
 HT FLOW CONVERGENCE VALUE= .3097E-01 CRITERION= .1853 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 188
 *** TIME = .210665E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1393E-08 OSCILLATION LIMIT = .1099E-01
 *** AUTO TIME STEP: NEXT TIME INC = .51189E+07 DECREASED (FACTOR = .6488)

HT FLOW CONVERGENCE VALUE= 222.0 CRITERION= .1854
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2830
 HT FLOW CONVERGENCE VALUE= .2553 CRITERION= .1853
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1653E-01
 HT FLOW CONVERGENCE VALUE= .1845E-01 CRITERION= .1853 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 190
 *** TIME = .215784E+09 TIME INC = .511891E+07
 *** RESPONSE EIGENVALUE = .1363E-08 OSCILLATION LIMIT = .6978E-02
 *** AUTO STEP TIME: NEXT TIME INC = .51189E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 221.9 CRITERION= .1847
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2793
 HT FLOW CONVERGENCE VALUE= .2466 CRITERION= .1846
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1603E-01
 HT FLOW CONVERGENCE VALUE= .1788E-01 CRITERION= .1846 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 6 COMPLETED. CUM ITER = 192
 *** TIME = .220903E+09 TIME INC = .511891E+07
 *** RESPONSE EIGENVALUE = .1362E-08 OSCILLATION LIMIT = .6970E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:04:12 JAN 21, 1995 CP= 46146.950
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 221.7 CRITERION= .1847
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2756
 HT FLOW CONVERGENCE VALUE= .2518 CRITERION= .1846
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1579E-01
 HT FLOW CONVERGENCE VALUE= .1740E-01 CRITERION= .1846 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 194
 *** TIME = .226022E+09 TIME INC = .511891E+07
 *** RESPONSE EIGENVALUE = .1255E-08 OSCILLATION LIMIT = .6424E-02
 *** AUTO STEP TIME: NEXT TIME INC = .51189E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 221.5 CRITERION= .1841
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2721
 HT FLOW CONVERGENCE VALUE= .2521 CRITERION= .1840
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1563E-01
 HT FLOW CONVERGENCE VALUE= .1715E-01 CRITERION= .1840 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 196
 *** TIME = .231141E+09 TIME INC = .511891E+07
 *** RESPONSE EIGENVALUE = .1223E-08 OSCILLATION LIMIT = .6262E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.5412)

HT FLOW CONVERGENCE VALUE= 221.3 CRITERION= .1839
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4125
 HT FLOW CONVERGENCE VALUE= .3797 CRITERION= .1838
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2489E-01
 HT FLOW CONVERGENCE VALUE= .2732E-01 CRITERION= .1838 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 198
*** TIME = .239030E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1184E-08 OSCILLATION LIMIT = .9342E-02
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 220.9 CRITERION= .1831
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4044
HT FLOW CONVERGENCE VALUE= .3689 CRITERION= .1830
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2409E-01
HT FLOW CONVERGENCE VALUE= .2635E-01 CRITERION= .1830 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 200
*** TIME = .246920E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1159E-08 OSCILLATION LIMIT = .9143E-02
*** AUTO TIME STEP: NEXT TIME INC = .55410E+07 DECREASED (FACTOR = .7023)

HT FLOW CONVERGENCE VALUE= 220.6 CRITERION= .1831
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2792
HT FLOW CONVERGENCE VALUE= .2506 CRITERION= .1830
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1593E-01
HT FLOW CONVERGENCE VALUE= .1737E-01 CRITERION= .1830 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 202
*** TIME = .252461E+09 TIME INC = .554099E+07
*** RESPONSE EIGENVALUE = .1143E-08 OSCILLATION LIMIT = .6334E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:38:15 JAN 21, 1995 CP= 48433.010
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 220.3 CRITERION= .1821
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2755
HT FLOW CONVERGENCE VALUE= .1978 CRITERION= .1821
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1527E-01
HT FLOW CONVERGENCE VALUE= .1746E-01 CRITERION= .1820 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 204
*** TIME = .258002E+09 TIME INC = .554099E+07
*** RESPONSE EIGENVALUE = .1577E-08 OSCILLATION LIMIT = .8737E-02
*** AUTO STEP TIME: NEXT TIME INC = .55410E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 220.0 CRITERION= .1818
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2718
HT FLOW CONVERGENCE VALUE= .1627 CRITERION= .1817 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 205
*** TIME = .263543E+09 TIME INC = .554099E+07
*** RESPONSE EIGENVALUE = .1723E-08 OSCILLATION LIMIT = .9548E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.4238)

HT FLOW CONVERGENCE VALUE= 219.7 CRITERION= .1807
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3809
HT FLOW CONVERGENCE VALUE= .2130 CRITERION= .1805
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1936E-01
HT FLOW CONVERGENCE VALUE= .2295E-01 CRITERION= .1805 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 207
*** TIME = .271432E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1740E-08 OSCILLATION LIMIT = .1373E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 219.1 CRITERION= .1800
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3736
HT FLOW CONVERGENCE VALUE= .1866 CRITERION= .1799

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1747E-01
 HT FLOW CONVERGENCE VALUE= .2093E-01 CRITERION= .1798 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 209
 *** TIME = .279322E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1842E-08 OSCILLATION LIMIT = .1453E-01
 *** AUTO TIME STEP: NEXT TIME INC = .46968E+07 DECREASED (FACTOR = .5953)

HT FLOW CONVERGENCE VALUE= 218.4 CRITERION= .1791
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2190
 HT FLOW CONVERGENCE VALUE= .1056 CRITERION= .1790 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 210
 *** TIME = .284018E+09 TIME INC = .469683E+07
 *** RESPONSE EIGENVALUE = .1779E-08 OSCILLATION LIMIT = .8358E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09
 TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 640.948474 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 13071 STEP 1

11113 ELEMENTS (OF 11113 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 50377.720 TIME= 09:57:33
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:57:34 JAN 21, 1995 CP= 50377.720
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
 TIME AT END OF THE LOAD STEP.31558E+09
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS

THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA50000
 OSCILLATION LIMIT CRITERION50000
 TOLERANCE20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLSUSE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLSALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 218.0 CRITERION= .1789
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2166
 HT FLOW CONVERGENCE VALUE= .1084 CRITERION= .1788 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 211
 *** TIME = .288715E+09 TIME INC = .469683E+07
 *** RESPONSE EIGENVALUE = .1530E-08 OSCILLATION LIMIT = .7185E-02
 *** AUTO STEP TIME: NEXT TIME INC = .46968E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 217.6 CRITERION= .1782
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2141
 HT FLOW CONVERGENCE VALUE= .1145 CRITERION= .1780 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 212
 *** TIME = .293412E+09 TIME INC = .469683E+07
 *** RESPONSE EIGENVALUE = .1419E-08 OSCILLATION LIMIT = .6665E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6797)

HT FLOW CONVERGENCE VALUE= 217.1 CRITERION= .1778
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3540
 HT FLOW CONVERGENCE VALUE= .1890 CRITERION= .1776
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1626E-01
 HT FLOW CONVERGENCE VALUE= .1850E-01 CRITERION= .1775 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 214
 *** TIME = .301301E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1435E-08 OSCILLATION LIMIT = .1132E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 216.4 CRITERION= .1767
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3469
 HT FLOW CONVERGENCE VALUE= .1861 CRITERION= .1765
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1538E-01
 HT FLOW CONVERGENCE VALUE= .1720E-01 CRITERION= .1764 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 216
 *** TIME = .309191E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1393E-08 OSCILLATION LIMIT = .1099E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63851E+07 DECREASED (FACTOR = .8093)

HT FLOW CONVERGENCE VALUE= 215.6 CRITERION= .1763
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2756
 HT FLOW CONVERGENCE VALUE= .1454 CRITERION= .1761 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 217
 *** TIME = .315576E+09 TIME INC = .638515E+07
 *** RESPONSE EIGENVALUE = .1377E-08 OSCILLATION LIMIT = .8790E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 11:10:19 JAN 21, 1995 CP= 52154.850
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 215.0 CRITERION= .1755
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2712
 HT FLOW CONVERGENCE VALUE= .1530 CRITERION= .1753 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 218
 *** TIME = .321961E+09 TIME INC = .638515E+07
 *** RESPONSE EIGENVALUE = .1193E-08 OSCILLATION LIMIT = .7615E-02
 *** AUTO STEP TIME: NEXT TIME INC = .63851E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 214.3 CRITERION= .1752
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2669
 HT FLOW CONVERGENCE VALUE= .1554 CRITERION= .1750 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 219
 *** TIME = .328346E+09 TIME INC = .638515E+07
 *** RESPONSE EIGENVALUE = .1152E-08 OSCILLATION LIMIT = .7353E-02
 *** AUTO TIME STEP: NEXT TIME INC = .19155E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 213.7 CRITERION= .1737
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7762
 HT FLOW CONVERGENCE VALUE= .4666 CRITERION= .1731
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4034E-01
 HT FLOW CONVERGENCE VALUE= .4377E-01 CRITERION= .1731 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 221
 *** TIME = .347502E+09 TIME INC = .191554E+08
 *** RESPONSE EIGENVALUE = .1115E-08 OSCILLATION LIMIT = .2136E-01
 *** AUTO STEP TIME: NEXT TIME INC = .19155E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.7 CRITERION= .1724
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7411
 HT FLOW CONVERGENCE VALUE= .4401 CRITERION= .1718
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3813E-01
 HT FLOW CONVERGENCE VALUE= .4096E-01 CRITERION= .1718 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 223
 *** TIME = .366657E+09 TIME INC = .191554E+08
 *** RESPONSE EIGENVALUE = .1083E-08 OSCILLATION LIMIT = .2074E-01
 *** AUTO TIME STEP: NEXT TIME INC = .57466E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 209.9 CRITERION= .1684
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.051
 HT FLOW CONVERGENCE VALUE= 1.126 CRITERION= .1668
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1183
 HT FLOW CONVERGENCE VALUE= .1274 CRITERION= .1666 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 225
 *** TIME = .424124E+09 TIME INC = .574663E+08
 *** RESPONSE EIGENVALUE = .1054E-08 OSCILLATION LIMIT = .6055E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.3729)

HT FLOW CONVERGENCE VALUE= 204.2 CRITERION= .1627
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.455
 HT FLOW CONVERGENCE VALUE= 1.118 CRITERION= .1604
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1400
 HT FLOW CONVERGENCE VALUE= .1509 CRITERION= .1602 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 227
 *** TIME = .503018E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1061E-08 OSCILLATION LIMIT = .8372E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 196.1 CRITERION= .1556
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.110
 HT FLOW CONVERGENCE VALUE= .7611 CRITERION= .1532
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1107
 HT FLOW CONVERGENCE VALUE= .1202 CRITERION= .1530 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 229
*** TIME = .581912E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1121E-08 OSCILLATION LIMIT = .8843E-01
*** AUTO TIME STEP: NEXT TIME INC = .49241E+08 DECREASED (FACTOR = .6241)

HT FLOW CONVERGENCE VALUE= 187.7 CRITERION= .1507
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.331
HT FLOW CONVERGENCE VALUE= .3680 CRITERION= .1491
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5137E-01
HT FLOW CONVERGENCE VALUE= .5691E-01 CRITERION= .1490 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 231
*** TIME = .631152E+09 TIME INC = .492405E+08
*** RESPONSE EIGENVALUE = .1201E-08 OSCILLATION LIMIT = .5913E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:26:22 JAN 21, 1995 CP= 55468.900
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 182.4 CRITERION= .1467
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.076
HT FLOW CONVERGENCE VALUE= .3357 CRITERION= .1452
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4410E-01
HT FLOW CONVERGENCE VALUE= .4525E-01 CRITERION= .1451 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 233
*** TIME = .680393E+09 TIME INC = .492405E+08
*** RESPONSE EIGENVALUE = .9367E-09 OSCILLATION LIMIT = .4612E-01
*** AUTO STEP TIME: NEXT TIME INC = .49241E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 177.3 CRITERION= .1434
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9982
HT FLOW CONVERGENCE VALUE= .3191 CRITERION= .1421
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4265E-01
HT FLOW CONVERGENCE VALUE= .4294E-01 CRITERION= .1420 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 235
*** TIME = .729633E+09 TIME INC = .492405E+08
*** RESPONSE EIGENVALUE = .8905E-09 OSCILLATION LIMIT = .4385E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6022)

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HT FLOW CONVERGENCE VALUE= 172.6 CRITERION= .1385
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.603
HT FLOW CONVERGENCE VALUE= .4196 CRITERION= .1364
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6432E-01
HT FLOW CONVERGENCE VALUE= .6583E-01 CRITERION= .1363 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 237
*** TIME = .808527E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .9452E-09 OSCILLATION LIMIT = .7457E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 165.4 CRITERION= .1333
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.737
HT FLOW CONVERGENCE VALUE= .3760 CRITERION= .1314
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5681E-01
HT FLOW CONVERGENCE VALUE= .5627E-01 CRITERION= .1312 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 239
*** TIME = .887421E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1009E-08 OSCILLATION LIMIT = .7962E-01
*** AUTO TIME STEP: NEXT TIME INC = .59307E+08 DECREASED (FACTOR = .7517)

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HT FLOW CONVERGENCE VALUE= 158.5 CRITERION= .1285

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.409
HT FLOW CONVERGENCE VALUE= .2943 CRITERION= .1270
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3583E-01
HT FLOW CONVERGENCE VALUE= .3375E-01 CRITERION= .1270 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 241
*** TIME = .946728E+09 TIME INC = .593070E+08
*** RESPONSE EIGENVALUE = .1104E-08 OSCILLATION LIMIT = .6550E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:00:01 JAN 21, 1995 CP= 57765.540
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 153.5 CRITERION= .1251
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.231
HT FLOW CONVERGENCE VALUE= .2544 CRITERION= .1238
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3074E-01
HT FLOW CONVERGENCE VALUE= .2818E-01 CRITERION= .1237 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 243
*** TIME = .100604E+10 TIME INC = .593070E+08
*** RESPONSE EIGENVALUE = .9932E-09 OSCILLATION LIMIT = .5890E-01
*** AUTO STEP TIME: NEXT TIME INC = .59307E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 148.7 CRITERION= .1212
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.266
HT FLOW CONVERGENCE VALUE= .2607 CRITERION= .1199
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2889E-01
HT FLOW CONVERGENCE VALUE= .2564E-01 CRITERION= .1199 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 245
*** TIME = .106534E+10 TIME INC = .593070E+08
*** RESPONSE EIGENVALUE = .1022E-08 OSCILLATION LIMIT = .6062E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.3303)

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HT FLOW CONVERGENCE VALUE= 144.1 CRITERION= .1173
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.772
HT FLOW CONVERGENCE VALUE= .3805 CRITERION= .1157
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3844E-01
HT FLOW CONVERGENCE VALUE= .3291E-01 CRITERION= .1156 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 247
*** TIME = .114424E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1103E-08 OSCILLATION LIMIT = .8698E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 138.3 CRITERION= .1124
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.864
HT FLOW CONVERGENCE VALUE= .4233 CRITERION= .1108
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3494E-01
HT FLOW CONVERGENCE VALUE= .2856E-01 CRITERION= .1108 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 249
*** TIME = .122313E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1211E-08 OSCILLATION LIMIT = .9554E-01
*** AUTO TIME STEP: NEXT TIME INC = .39174E+08 DECREASED (FACTOR = .4965)

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HT FLOW CONVERGENCE VALUE= 132.7 CRITERION= .1096
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9638
HT FLOW CONVERGENCE VALUE= .2355 CRITERION= .1089
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1341E-01
HT FLOW CONVERGENCE VALUE= .1033E-01 CRITERION= .1088 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 251

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*** TIME = .126230E+10 TIME INC = .391740E+08
 *** RESPONSE EIGENVALUE = .1304E-08 OSCILLATION LIMIT = .5109E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 16:33:51 JAN 21, 1995 CP= 60063.750
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 130.0 CRITERION= .1075
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6997
 HT FLOW CONVERGENCE VALUE= .1637 CRITERION= .1067
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9880E-02
 HT FLOW CONVERGENCE VALUE= .7562E-02 CRITERION= .1067 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 253
 *** TIME = .130148E+10 TIME INC = .391740E+08
 *** RESPONSE EIGENVALUE = .9759E-09 OSCILLATION LIMIT = .3823E-01
 *** AUTO STEP TIME: NEXT TIME INC = .39174E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 127.4 CRITERION= .1060
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6730
 HT FLOW CONVERGENCE VALUE= .1458 CRITERION= .1053
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1018E-01
 HT FLOW CONVERGENCE VALUE= .7729E-02 CRITERION= .1052 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 255
 *** TIME = .134065E+10 TIME INC = .391740E+08
 *** RESPONSE EIGENVALUE = .9014E-09 OSCILLATION LIMIT = .3531E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 2.0139)

HT FLOW CONVERGENCE VALUE= 125.0 CRITERION= .1028
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.395
 HT FLOW CONVERGENCE VALUE= .3022 CRITERION= .1015
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2377E-01
 HT FLOW CONVERGENCE VALUE= .1786E-01 CRITERION= .1014 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 257
 *** TIME = .141955E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9446E-09 OSCILLATION LIMIT = .7452E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 120.4 CRITERION= .9965E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.431
 HT FLOW CONVERGENCE VALUE= .3170 CRITERION= .9843E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2261E-01
 HT FLOW CONVERGENCE VALUE= .1624E-01 CRITERION= .9838E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 259
 *** TIME = .149844E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9907E-09 OSCILLATION LIMIT = .7816E-01
 *** AUTO TIME STEP: NEXT TIME INC = .79440E+08 INCREASED (FACTOR = 1.0069)

HT FLOW CONVERGENCE VALUE= 116.1 CRITERION= .9593E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.501
 HT FLOW CONVERGENCE VALUE= .3436 CRITERION= .9476E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2151E-01
 HT FLOW CONVERGENCE VALUE= .1471E-01 CRITERION= .9472E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 261
 *** TIME = .157788E+10 TIME INC = .794399E+08
 *** RESPONSE EIGENVALUE = .1078E-08 OSCILLATION LIMIT = .8565E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:08:16 JAN 21, 1995 CP= 62361.910
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 112.0 CRITERION= .9341E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.135
HT FLOW CONVERGENCE VALUE= .2530 CRITERION= .9234E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1612E-01
HT FLOW CONVERGENCE VALUE= .1073E-01 CRITERION= .9230E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 263
*** TIME = .165677E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8376E-09 OSCILLATION LIMIT = .6608E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 108.2 CRITERION= .9035E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.126
HT FLOW CONVERGENCE VALUE= .2378 CRITERION= .8937E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1574E-01
HT FLOW CONVERGENCE VALUE= .1019E-01 CRITERION= .8934E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 265
*** TIME = .173567E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8200E-09 OSCILLATION LIMIT = .6469E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 104.8 CRITERION= .8802E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.162
HT FLOW CONVERGENCE VALUE= .2516 CRITERION= .8712E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1515E-01
HT FLOW CONVERGENCE VALUE= .9393E-02 CRITERION= .8709E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 267
*** TIME = .181456E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8712E-09 OSCILLATION LIMIT = .6874E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 101.6 CRITERION= .8513E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.189
HT FLOW CONVERGENCE VALUE= .2575 CRITERION= .8428E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1440E-01
HT FLOW CONVERGENCE VALUE= .8625E-02 CRITERION= .8425E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 269
*** TIME = .189346E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .9195E-09 OSCILLATION LIMIT = .7255E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:23:48 JAN 21, 1995 CP= 64206.930
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 98.56 CRITERION= .8326E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9524
HT FLOW CONVERGENCE VALUE= .2047 CRITERION= .8246E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1129E-01
HT FLOW CONVERGENCE VALUE= .6595E-02 CRITERION= .8244E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 271
*** TIME = .197235E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7531E-09 OSCILLATION LIMIT = .5941E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 95.73 CRITERION= .8081E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9376
HT FLOW CONVERGENCE VALUE= .1912 CRITERION= .8007E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1103E-01
HT FLOW CONVERGENCE VALUE= .6291E-02 CRITERION= .8005E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 273
*** TIME = .205124E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7340E-09 OSCILLATION LIMIT = .5791E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 93.10 CRITERION= .7906E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9662
HT FLOW CONVERGENCE VALUE= .2016 CRITERION= .7838E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1073E-01
HT FLOW CONVERGENCE VALUE= .5977E-02 CRITERION= .7835E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 275
*** TIME = .213014E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7757E-09 OSCILLATION LIMIT = .6120E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 90.66 CRITERION= .7673E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9795
HT FLOW CONVERGENCE VALUE= .2037 CRITERION= .7607E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1025E-01
HT FLOW CONVERGENCE VALUE= .5572E-02 CRITERION= .7605E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 277
*** TIME = .220903E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8063E-09 OSCILLATION LIMIT = .6361E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:39:29 JAN 21, 1995 CP= 66051.710
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 88.32 CRITERION= .7516E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9272
HT FLOW CONVERGENCE VALUE= .1953 CRITERION= .7454E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9346E-02
HT FLOW CONVERGENCE VALUE= .4947E-02 CRITERION= .7452E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 279
*** TIME = .228793E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7809E-09 OSCILLATION LIMIT = .6161E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 86.12 CRITERION= .7299E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9312
HT FLOW CONVERGENCE VALUE= .1929 CRITERION= .7240E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9006E-02
HT FLOW CONVERGENCE VALUE= .4647E-02 CRITERION= .7238E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 281
*** TIME = .236682E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7983E-09 OSCILLATION LIMIT = .6298E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 84.00 CRITERION= .7149E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9562
HT FLOW CONVERGENCE VALUE= .2004 CRITERION= .7093E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8931E-02
HT FLOW CONVERGENCE VALUE= .4470E-02 CRITERION= .7091E-01 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 283
*** TIME = .244571E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8440E-09 OSCILLATION LIMIT = .6659E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 82.00 CRITERION= .6939E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9698
HT FLOW CONVERGENCE VALUE= .2024 CRITERION= .6884E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8642E-02
HT FLOW CONVERGENCE VALUE= .4199E-02 CRITERION= .6883E-01 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 285
*** TIME = .252461E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .8843E-09 OSCILLATION LIMIT = .6977E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 21:54:23 JAN 21, 1995 CP= 67896.380
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 80.05 CRITERION= .6827E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7139
HT FLOW CONVERGENCE VALUE= .1527 CRITERION= .6776E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6210E-02
HT FLOW CONVERGENCE VALUE= .2950E-02 CRITERION= .6775E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 287
*** TIME = .260350E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6618E-09 OSCILLATION LIMIT = .5221E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 78.22 CRITERION= .6656E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6818
HT FLOW CONVERGENCE VALUE= .1350 CRITERION= .6608E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5930E-02
HT FLOW CONVERGENCE VALUE= .2787E-02 CRITERION= .6607E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 289
*** TIME = .268240E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6161E-09 OSCILLATION LIMIT = .4861E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 76.51 CRITERION= .6552E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7004
HT FLOW CONVERGENCE VALUE= .1399 CRITERION= .6507E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5974E-02
HT FLOW CONVERGENCE VALUE= .2748E-02 CRITERION= .6506E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 291
*** TIME = .276129E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6419E-09 OSCILLATION LIMIT = .5064E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 74.93 CRITERION= .6388E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6973
HT FLOW CONVERGENCE VALUE= .1366 CRITERION= .6345E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5745E-02
HT FLOW CONVERGENCE VALUE= .2588E-02 CRITERION= .6344E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 293
*** TIME = .284018E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6487E-09 OSCILLATION LIMIT = .5118E-01
Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10
TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
221.360946 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 13071 STEP 1

11113 ELEMENTS (OF 11113 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 69742.750 TIME= 23:10:09
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 23:10:09 JAN 21, 1995 CP= 69742.760
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
TIME AT END OF THE LOAD STEP.31558E+10
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 73.40 CRITERION= .6303E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6006
HT FLOW CONVERGENCE VALUE= .1195 CRITERION= .6263E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4876E-02
HT FLOW CONVERGENCE VALUE= .2156E-02 CRITERION= .6262E-01 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 295
*** TIME = .291908E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5715E-09 OSCILLATION LIMIT = .4509E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 71.98 CRITERION= .6157E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5831
HT FLOW CONVERGENCE VALUE= .1106 CRITERION= .6119E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4652E-02
HT FLOW CONVERGENCE VALUE= .2028E-02 CRITERION= .6118E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 297
*** TIME = .299797E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5525E-09 OSCILLATION LIMIT = .4359E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 70.61 CRITERION= .6077E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5988
HT FLOW CONVERGENCE VALUE= .1142 CRITERION= .6041E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4718E-02
HT FLOW CONVERGENCE VALUE= .2020E-02 CRITERION= .6040E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 299
*** TIME = .307687E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5728E-09 OSCILLATION LIMIT = .4519E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 69.34 CRITERION= .5936E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5951
HT FLOW CONVERGENCE VALUE= .1118 CRITERION= .5901E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4537E-02
HT FLOW CONVERGENCE VALUE= .1903E-02 CRITERION= .5900E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 301
*** TIME = .315576E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .5789E-09 OSCILLATION LIMIT = .4567E-01
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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:25:02 JAN 22, 1995 CP= 71587.650
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 68.09 CRITERION= .5894E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3275
HT FLOW CONVERGENCE VALUE= .6419E-01 CRITERION= .5862E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2452E-02
HT FLOW CONVERGENCE VALUE= .1018E-02 CRITERION= .5861E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 303
*** TIME = .323465E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .3710E-09 OSCILLATION LIMIT = .2927E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 66.94 CRITERION= .5791E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3184
HT FLOW CONVERGENCE VALUE= .4473E-01 CRITERION= .5762E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 304
*** TIME = .331355E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .3097E-09 OSCILLATION LIMIT = .2443E-01
*** AUTO TIME STEP: NEXT TIME INC = .23668E+09 INCREASED (FACTOR = 3.0000)
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HT FLOW CONVERGENCE VALUE= 65.89      CRITERION= .5680E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9066
HT FLOW CONVERGENCE VALUE= .1266      CRITERION= .5603E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9754E-02
HT FLOW CONVERGENCE VALUE= .4042E-02  CRITERION= .5600E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 306
*** TIME = .355023E+10 TIME INC = .236682E+09
*** RESPONSE EIGENVALUE = .2975E-09 OSCILLATION LIMIT = .7042E-01
*** AUTO STEP TIME: NEXT TIME INC = .23668E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 63.13      CRITERION= .5455E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8377
HT FLOW CONVERGENCE VALUE= .1132      CRITERION= .5390E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9472E-02
HT FLOW CONVERGENCE VALUE= .3827E-02  CRITERION= .5388E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 308
*** TIME = .378691E+10 TIME INC = .236682E+09
*** RESPONSE EIGENVALUE = .2807E-09 OSCILLATION LIMIT = .6645E-01
*** AUTO TIME STEP: NEXT TIME INC = .71005E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 60.86      CRITERION= .5081E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.528
HT FLOW CONVERGENCE VALUE= .3236      CRITERION= .4914E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3734E-01
HT FLOW CONVERGENCE VALUE= .1406E-01  CRITERION= .4909E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 310
*** TIME = .449696E+10 TIME INC = .710046E+09
*** RESPONSE EIGENVALUE = .2923E-09 OSCILLATION LIMIT = .2076
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1111)

HT FLOW CONVERGENCE VALUE= 54.97      CRITERION= .4504E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.092
HT FLOW CONVERGENCE VALUE= .3883      CRITERION= .4346E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3743E-01
HT FLOW CONVERGENCE VALUE= .1227E-01  CRITERION= .4342E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 312
*** TIME = .528590E+10 TIME INC = .788940E+09
*** RESPONSE EIGENVALUE = .3420E-09 OSCILLATION LIMIT = .2698
*** AUTO TIME STEP: NEXT TIME INC = .51281E+09 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 49.22      CRITERION= .4130E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.229
HT FLOW CONVERGENCE VALUE= .2991      CRITERION= .4041E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1954E-01
HT FLOW CONVERGENCE VALUE= .5416E-02  CRITERION= .4039E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 314
*** TIME = .579871E+10 TIME INC = .512811E+09
*** RESPONSE EIGENVALUE = .4183E-09 OSCILLATION LIMIT = .2145
*** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 46.04      CRITERION= .3768E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.382
HT FLOW CONVERGENCE VALUE= .3097      CRITERION= .3685E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1836E-01
HT FLOW CONVERGENCE VALUE= .4452E-02  CRITERION= .3683E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 316
*** TIME = .631152E+10 TIME INC = .512811E+09
*** RESPONSE EIGENVALUE = .4911E-09 OSCILLATION LIMIT = .2518

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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 02:47:53 JAN 22, 1995 CP= 75094.980

FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 42.95 CRITERION= .3633E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9569
 HT FLOW CONVERGENCE VALUE= .1502 CRITERION= .3564E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6327E-02
 HT FLOW CONVERGENCE VALUE= .1478E-02 CRITERION= .3563E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 318
 *** TIME = .682433E+10 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .2296E-09 OSCILLATION LIMIT = .1177
 *** AUTO STEP TIME: NEXT TIME INC = .51281E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 40.39 CRITERION= .3451E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8770
 HT FLOW CONVERGENCE VALUE= .9426E-01 CRITERION= .3398E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5480E-02
 HT FLOW CONVERGENCE VALUE= .1258E-02 CRITERION= .3397E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 320
 *** TIME = .733714E+10 TIME INC = .512811E+09
 *** RESPONSE EIGENVALUE = .1724E-09 OSCILLATION LIMIT = .8841E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5385)

HT FLOW CONVERGENCE VALUE= 38.29 CRITERION= .3302E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.215
 HT FLOW CONVERGENCE VALUE= .1414 CRITERION= .3239E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9422E-02
 HT FLOW CONVERGENCE VALUE= .2054E-02 CRITERION= .3238E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 322
 *** TIME = .812608E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1724E-09 OSCILLATION LIMIT = .1360
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 35.58 CRITERION= .3082E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.181
 HT FLOW CONVERGENCE VALUE= .1262 CRITERION= .3034E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8731E-02
 HT FLOW CONVERGENCE VALUE= .1810E-02 CRITERION= .3033E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 324
 *** TIME = .891502E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1677E-09 OSCILLATION LIMIT = .1323
 *** AUTO TIME STEP: NEXT TIME INC = .55226E+09 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 33.15 CRITERION= .2976E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8951
 HT FLOW CONVERGENCE VALUE= .9923E-01 CRITERION= .2950E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5462E-02
 HT FLOW CONVERGENCE VALUE= .1038E-02 CRITERION= .2950E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 326
 *** TIME = .946728E+10 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .1880E-09 OSCILLATION LIMIT = .1038

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 04:23:10 JAN 22, 1995 CP= 77404.880
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 31.64 CRITERION= .2869E-01

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6605
 HT FLOW CONVERGENCE VALUE= .5786E-01 CRITERION= .2850E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2978E-02
 HT FLOW CONVERGENCE VALUE= .5464E-03 CRITERION= .2849E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 328
 *** TIME = .100195E+11 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .1290E-09 OSCILLATION LIMIT = .7125E-01
 *** AUTO STEP TIME: NEXT TIME INC = .55226E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 30.24 CRITERION= .2829E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6232
 HT FLOW CONVERGENCE VALUE= .5216E-01 CRITERION= .2816E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2959E-02
 HT FLOW CONVERGENCE VALUE= .5403E-03 CRITERION= .2816E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 330
 *** TIME = .105718E+11 TIME INC = .552258E+09
 *** RESPONSE EIGENVALUE = .1224E-09 OSCILLATION LIMIT = .6761E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 29.03 CRITERION= .2715E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8309
 HT FLOW CONVERGENCE VALUE= .6683E-01 CRITERION= .2705E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4367E-02
 HT FLOW CONVERGENCE VALUE= .7745E-03 CRITERION= .2704E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 332
 *** TIME = .113607E+11 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1197E-09 OSCILLATION LIMIT = .9443E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 27.40 CRITERION= .2664E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7707
 HT FLOW CONVERGENCE VALUE= .6865E-01 CRITERION= .2662E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4343E-02
 HT FLOW CONVERGENCE VALUE= .7289E-03 CRITERION= .2662E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 334
 *** TIME = .121497E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 25.95 CRITERION= .2592E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4361
 HT FLOW CONVERGENCE VALUE= .4118E-01 CRITERION= .2594E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2125E-02
 HT FLOW CONVERGENCE VALUE= .3423E-03 CRITERION= .2594E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 336
 *** TIME = .126230E+11 TIME INC = .473364E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 05:57:07 JAN 22, 1995 CP= 79717.910
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 25.12 CRITERION= .2594E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4177
 HT FLOW CONVERGENCE VALUE= .3273E-01 CRITERION= .2599E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1564E-02
 HT FLOW CONVERGENCE VALUE= .2462E-03 CRITERION= .2599E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 338
 *** TIME = .130964E+11 TIME INC = .473364E+09
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 24.36 CRITERION= .2542E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4001
HT FLOW CONVERGENCE VALUE= .2720E-01 CRITERION= .2549E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1401E-02
HT FLOW CONVERGENCE VALUE= .2177E-03 CRITERION= .2549E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 340
*** TIME = .135698E+11 TIME INC = .473364E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 23.63 CRITERION= .2530E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6300
HT FLOW CONVERGENCE VALUE= .4652E-01 CRITERION= .2546E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2784E-02
HT FLOW CONVERGENCE VALUE= .4169E-03 CRITERION= .2546E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 342
*** TIME = .143587E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 22.54 CRITERION= .2473E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5866
HT FLOW CONVERGENCE VALUE= .4398E-01 CRITERION= .2493E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2602E-02
HT FLOW CONVERGENCE VALUE= .3742E-03 CRITERION= .2493E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 344
*** TIME = .151476E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 21.49 CRITERION= .2484E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4409
HT FLOW CONVERGENCE VALUE= .3805E-01 CRITERION= .2502E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2004E-02
HT FLOW CONVERGENCE VALUE= .2781E-03 CRITERION= .2502E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 346
*** TIME = .157788E+11 TIME INC = .631152E+09

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 07:31:56 JAN 22, 1995 CP= 82034.080
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 20.75 CRITERION= .2446E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4171
HT FLOW CONVERGENCE VALUE= .3293E-01 CRITERION= .2465E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1649E-02
HT FLOW CONVERGENCE VALUE= .2222E-03 CRITERION= .2465E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 348
*** TIME = .164100E+11 TIME INC = .631152E+09
*** AUTO STEP TIME: NEXT TIME INC = .63115E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 20.03 CRITERION= .2461E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3997
HT FLOW CONVERGENCE VALUE= .3412E-01 CRITERION= .2482E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1702E-02
HT FLOW CONVERGENCE VALUE= .2234E-03 CRITERION= .2481E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 350
*** TIME = .170411E+11 TIME INC = .631152E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2500)

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HT FLOW CONVERGENCE VALUE= 19.39    CRITERION= .2420E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4946
HT FLOW CONVERGENCE VALUE= .4105E-01 CRITERION= .2448E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2119E-02
HT FLOW CONVERGENCE VALUE= .2660E-03 CRITERION= .2447E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 352
*** TIME = .178300E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 18.59    CRITERION= .2436E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5263
HT FLOW CONVERGENCE VALUE= .4330E-01 CRITERION= .2464E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2157E-02
HT FLOW CONVERGENCE VALUE= .2615E-03 CRITERION= .2464E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 354
*** TIME = .186190E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .31558E+09 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 17.88    CRITERION= .2427E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2054
HT FLOW CONVERGENCE VALUE= .1729E-01 CRITERION= .2438E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 355
*** TIME = .189346E+11 TIME INC = .315576E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:59:05 JAN 22, 1995 CP= 84172.990
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 17.60    CRITERION= .2451E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1791
HT FLOW CONVERGENCE VALUE= .1575E-01 CRITERION= .2462E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 356
*** TIME = .192501E+11 TIME INC = .315576E+09
*** AUTO STEP TIME: NEXT TIME INC = .31558E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 17.35    CRITERION= .2430E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1680
HT FLOW CONVERGENCE VALUE= .1362E-01 CRITERION= .2441E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 357
*** TIME = .195657E+11 TIME INC = .315576E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 17.08    CRITERION= .2439E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4203
HT FLOW CONVERGENCE VALUE= .3460E-01 CRITERION= .2467E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1535E-02
HT FLOW CONVERGENCE VALUE= .1795E-03 CRITERION= .2467E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 359
*** TIME = .203547E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 16.49    CRITERION= .2422E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4096
HT FLOW CONVERGENCE VALUE= .3282E-01 CRITERION= .2450E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1441E-02
HT FLOW CONVERGENCE VALUE= .1651E-03 CRITERION= .2449E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 361

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*** TIME = .211436E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 15.92 CRITERION= .2457E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2609
HT FLOW CONVERGENCE VALUE= .2097E-01 CRITERION= .2473E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 362
*** TIME = .216170E+11 TIME INC = .473364E+09
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 15.63 CRITERION= .2439E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2495
HT FLOW CONVERGENCE VALUE= .1994E-01 CRITERION= .2455E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 37 SUBSTEP 6 COMPLETED. CUM ITER = 363
*** TIME = .220903E+11 TIME INC = .473364E+09

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 10:23:36 JAN 22, 1995 CP= 86250.580
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 15.32 CRITERION= .2465E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2253
HT FLOW CONVERGENCE VALUE= .1861E-01 CRITERION= .2480E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 364
*** TIME = .225637E+11 TIME INC = .473364E+09
*** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 15.04 CRITERION= .2450E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2101
HT FLOW CONVERGENCE VALUE= .1679E-01 CRITERION= .2466E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 365
*** TIME = .230370E+11 TIME INC = .473364E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6667)

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HT FLOW CONVERGENCE VALUE= 14.76 CRITERION= .2469E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3664
HT FLOW CONVERGENCE VALUE= .2849E-01 CRITERION= .2493E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1129E-02
HT FLOW CONVERGENCE VALUE= .1255E-03 CRITERION= .2493E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 367
*** TIME = .238260E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 14.36 CRITERION= .2458E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3572
HT FLOW CONVERGENCE VALUE= .2722E-01 CRITERION= .2482E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1063E-02
HT FLOW CONVERGENCE VALUE= .1172E-03 CRITERION= .2482E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 369
*** TIME = .246149E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .63115E+09 DECREASED (FACTOR = .8000)

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HT FLOW CONVERGENCE VALUE= 13.96 CRITERION= .2488E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3023
HT FLOW CONVERGENCE VALUE= .2278E-01 CRITERION= .2506E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 370
*** TIME = .252461E+11 TIME INC = .631152E+09

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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 11:35:53 JAN 22, 1995 CP= 88042.130
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 13.69 CRITERION= .2478E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2466
HT FLOW CONVERGENCE VALUE= .1944E-01 CRITERION= .2495E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 371
*** TIME = .258772E+11 TIME INC = .631152E+09
*** AUTO STEP TIME: NEXT TIME INC = .63115E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 13.41 CRITERION= .2504E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2550
HT FLOW CONVERGENCE VALUE= .1938E-01 CRITERION= .2520E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 372
*** TIME = .265084E+11 TIME INC = .631152E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 13.17 CRITERION= .2491E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3067
HT FLOW CONVERGENCE VALUE= .2290E-01 CRITERION= .2511E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 373
*** TIME = .272973E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 12.86 CRITERION= .2516E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3212
HT FLOW CONVERGENCE VALUE= .2335E-01 CRITERION= .2535E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 374
*** TIME = .280863E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .31558E+09 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 12.60 CRITERION= .2514E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1209
HT FLOW CONVERGENCE VALUE= .9050E-02 CRITERION= .2521E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 375
*** TIME = .284018E+11 TIME INC = .315576E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:37:18 JAN 22, 1995 CP= 89486.620
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 12.49 CRITERION= .2534E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1264
HT FLOW CONVERGENCE VALUE= .8796E-02 CRITERION= .2541E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 376
*** TIME = .287174E+11 TIME INC = .315576E+09
*** AUTO STEP TIME: NEXT TIME INC = .31558E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 12.40 CRITERION= .2521E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1066

HT FLOW CONVERGENCE VALUE= .7808E-02 CRITERION= .2528E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 377
 *** TIME = .290330E+11 TIME INC = .315576E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 12.29 CRITERION= .2535E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2715
 HT FLOW CONVERGENCE VALUE= .1987E-01 CRITERION= .2551E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 378
 *** TIME = .298219E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 12.08 CRITERION= .2527E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2581
 HT FLOW CONVERGENCE VALUE= .1872E-01 CRITERION= .2542E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 379
 *** TIME = .306109E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+09 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 11.85 CRITERION= .2553E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1716
 HT FLOW CONVERGENCE VALUE= .1173E-01 CRITERION= .2561E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 380
 *** TIME = .310842E+11 TIME INC = .473364E+09
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 11.74 CRITERION= .2541E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1540
 HT FLOW CONVERGENCE VALUE= .1109E-01 CRITERION= .2549E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 6 COMPLETED. CUM ITER = 381
 *** TIME = .315576E+11 TIME INC = .473364E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 91211.750

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12w5a.db
 FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
 and drift wall end in array tables for use as boundary
 conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:47:23 JAN 22, 1995 CP= 91227.230
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
 USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 56.92073
PARAMETER WPSID(JINC) = 56.94599
PARAMETER WPBOT(JINC) = 56.97196
PARAMETER DFTOP(JINC) = 26.13992
PARAMETER DFSID(JINC) = 26.13991
PARAMETER DFEDG(JINC) = 26.13987
PARAMETER DFBOT(JINC) = 26.16306
PARAMETER WPTOP(JINC,0) = 31.55760
PARAMETER WPSID(JINC,0) = 31.55760
PARAMETER WPBOT(JINC,0) = 31.55760
PARAMETER DFTOP(JINC,0) = 31.55760
PARAMETER DFSID(JINC,0) = 31.55760
PARAMETER DFEDG(JINC,0) = 31.55760
PARAMETER DFBOT(JINC,0) = 31.55760
PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 126
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 87.45584
PARAMETER WPSID(JINC) = 88.29960
PARAMETER WPBOT(JINC) = 89.92963
PARAMETER DFTOP(JINC) = 52.62304
PARAMETER DFSID(JINC) = 52.45984
PARAMETER DFEDG(JINC) = 51.51348
PARAMETER DFBOT(JINC) = 48.29213
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08
PARAMETER DFSID(JINC,0) = .3155763E+08
PARAMETER DFEDG(JINC,0) = .3155763E+08

PARAMETER DFBOT(JINC,0) = .3155763E+08

PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 217
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 99.49315

PARAMETER WPSID(JINC) = 100.1931

PARAMETER WPBOT(JINC) = 101.5587

PARAMETER DFTOP(JINC) = 73.29316

PARAMETER DFSID(JINC) = 73.19847

PARAMETER DFEDG(JINC) = 72.40468

PARAMETER DFBOT(JINC) = 69.42500

PARAMETER WPTOP(JINC,0) = .3155760E+09

PARAMETER WPSID(JINC,0) = .3155760E+09

PARAMETER WPBOT(JINC,0) = .3155760E+09

PARAMETER DFTOP(JINC,0) = .3155760E+09

PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 4 CUMULATIVE ITERATION= 301
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 86.64232

PARAMETER WPSID(JINC) = 86.90182

PARAMETER WPBOT(JINC) = 87.39271

PARAMETER DFTOP(JINC) = 77.23631

PARAMETER DFSID(JINC) = 77.24162

PARAMETER DFEDG(JINC) = 76.96353

PARAMETER DFBOT(JINC) = 75.91668
PARAMETER WPTOP(JINC,0) = .3155760E+10
PARAMETER WPSID(JINC,0) = .3155760E+10
PARAMETER WPBOT(JINC,0) = .3155760E+10
PARAMETER DFTOP(JINC,0) = .3155760E+10
PARAMETER DFSID(JINC,0) = .3155760E+10
PARAMETER DFEDG(JINC,0) = .3155760E+10
PARAMETER DFBOT(JINC,0) = .3155760E+10
PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 94257.330

*** NOTE *** CP= 94257.330 TIME= 15:26:57
Write parameters to file= c12w5a.parm.

*** NOTE *** CP= 94257.410 TIME= 15:26:58
Parameters written. Lines= 770.

*** WARNING *** CP= 94257.410 TIME= 15:26:58
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c12w5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:26:58 JAN 22, 1995 CP= 94257.490
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.

- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 50.00

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE
TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5556 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 20.00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5556 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

5556 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94292.290 TIME= 15:28:11
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 78
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94322.340 TIME= 15:29:09
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 126
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94352.680 TIME= 15:30:09
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 173
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94383.070 TIME= 15:31:02
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 217
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94413.510 TIME= 15:31:56
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 261
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94443.560 TIME= 15:32:51
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 4 CUMULATIVE ITERATION= 301
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94473.500 TIME= 15:33:50
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 346
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94503.830 TIME= 15:34:48
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 6 CUMULATIVE ITERATION= 381
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94534.300 TIME= 15:35:43
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2778 ELEMENTS (OF 11113 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94563.980 TIME= 15:36:38
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 78
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94587.000 TIME= 15:37:21
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 126
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94609.940 TIME= 15:38:08
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 173
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94633.070 TIME= 15:38:53
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 5 CUMULATIVE ITERATION= 217
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94656.400 TIME= 15:39:37
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 261
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94679.990 TIME= 15:40:22
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 4 CUMULATIVE ITERATION= 301
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94703.390 TIME= 15:41:03
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 346
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94726.830 TIME= 15:41:45
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 6 CUMULATIVE ITERATION= 381
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 94749.920 TIME= 15:42:28
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 94756.480

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:42:40 JAN 22, 1995 CP= 94756.480
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

 wmidside = midlength side surface
 wwpside = end of WP side surface
 wmidtop = midlength top surface
 wwpetop = end of WP top surface
 wmidbot = midlength bottom surface
 wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
 VARIABLE 3 IS AT NODE 1882 ITEM= TEMP COMP= NAME= wwpside
 VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
 VARIABLE 5 IS AT NODE 1888 ITEM= TEMP COMP= NAME= wwpetop
 VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot
 VARIABLE 7 IS AT NODE 1881 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	100.6	.6312E+09
3	NSOL	1882 TEMP	wwpside	26.14	.1000E-05	93.07	.6312E+09
4	NSOL	129 TEMP	wmidtop	26.14	.1000E-05	99.96	.6312E+09
5	NSOL	1888 TEMP	wwpetop	26.14	.1000E-05	92.83	.6312E+09
6	NSOL	122 TEMP	wmidbot	26.14	.1000E-05	101.7	.6312E+09
7	NSOL	1881 TEMP	wwpebot	26.14	.1000E-05	93.60	.6312E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:42:52 JAN 22, 1995 CP= 94759.150
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1882 TEMP wwpside	129 TEMP wmidtop	1888 TEMP wwpetop	122 TEMP wmidbot	1881 TEMP wwpebot
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.10000E-05	26.1404	26.1402	26.1360	26.1373	26.1441	26.1423
.20000E-05	56.9460	48.2373	56.9207	48.2055	56.9720	48.3981
31.558	56.9460	48.2373	56.9207	48.2055	56.9720	48.3981
.31558E+07	74.5482	62.8584	73.6885	62.5014	76.1795	63.6299
.63116E+07	78.3015	66.6394	77.4324	66.2802	79.9535	67.4202
.94673E+07	80.6563	69.0798	79.7897	68.7225	82.3159	69.8636
.12623E+08	82.4058	70.9153	81.5414	70.5602	84.0587	71.6953
.15779E+08	83.8023	72.3945	82.9421	72.0417	85.4555	73.1742
.18935E+08	84.9609	73.6290	84.1039	73.2785	86.6070	74.4046
.22090E+08	85.9553	74.6941	85.1022	74.3455	87.5995	75.4686
.25246E+08	86.8262	75.6283	85.9762	75.2818	88.4644	76.3991
.28402E+08	87.5962	76.4590	86.7494	76.1140	89.2315	77.2285
.31558E+08	88.2996	77.2160	87.4558	76.8728	89.9296	77.9822
.63115E+08	92.7540	82.1040	91.9354	81.7736	94.3466	82.8501
.94673E+08	95.1400	84.8007	94.3407	84.4796	96.6985	85.5283
.12623E+09	96.6748	86.5899	95.8918	86.2760	98.2043	87.3027
.15779E+09	97.7773	87.9134	97.0089	87.6061	99.2780	88.6112
.18935E+09	98.6317	88.9670	97.8767	88.6653	100.107	89.6524
.22090E+09	99.3072	89.8278	98.5648	89.5315	100.758	90.5008
.25246E+09	99.9706	90.6446	99.2387	90.3528	101.400	91.3064
.28402E+09	100.052	90.9704	99.3380	90.6859	101.446	91.6156
.31558E+09	100.193	91.2979	99.4931	91.0193	101.559	91.9290
.63115E+09	100.556	93.0653	99.9620	92.8297	101.712	93.5961
.94673E+09	99.2901	92.8068	98.7741	92.6025	100.290	93.2654
.12623E+10	96.9262	91.2989	96.4781	91.1214	97.7895	91.6942
.15779E+10	94.7501	89.7564	94.3524	89.5987	95.5137	90.1064
.18935E+10	92.8517	88.3478	92.4932	88.2054	93.5379	88.6624
.22090E+10	91.1833	87.0725	90.8560	86.9423	91.8077	87.3588
.25246E+10	89.4126	85.6669	89.1144	85.5481	89.9796	85.9270
.28402E+10	88.0655	84.5841	87.7883	84.4735	88.5912	84.8254
.31558E+10	86.9018	83.6442	86.6423	83.5405	87.3927	83.8696
.63115E+10	80.6738	78.6171	80.5089	78.5504	80.9811	78.7586
.94673E+10	77.8002	76.1616	77.6686	76.1082	78.0431	76.2733
.12623E+11	76.1649	74.7728	76.0528	74.7270	76.3716	74.8683
.15779E+11	74.9310	73.7139	74.8329	73.6739	75.1106	73.7966
.18935E+11	73.6822	72.6187	73.5961	72.5833	73.8397	72.6917
.22090E+11	72.5686	71.6192	72.4915	71.5874	72.7091	71.6844
.25246E+11	71.5561	70.6980	71.4863	70.6691	71.6823	70.7562
.28402E+11	70.6541	69.8669	70.5897	69.8401	70.7706	69.9212
.31558E+11	69.8583	69.1263	69.7981	69.1011	69.9668	69.1769

* Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 94759.540 TIME= 15:42:52
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1070 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1220 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 1035 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	8 TEMP	smidside	26.14	.1000E-05	100.9	.6312E+09
3 NSOL	1070 TEMP	swpeside	26.14	.1000E-05	93.53	.6312E+09
4 NSOL	38 TEMP	smidtop	26.14	.1000E-05	100.4	.6312E+09
5 NSOL	1220 TEMP	swpetop	26.14	.1000E-05	93.29	.6312E+09
6 NSOL	2 TEMP	smidbot	26.14	.1000E-05	102.1	.6312E+09
7 NSOL	1035 TEMP	swpebot	26.14	.1000E-05	94.04	.6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:42:55 JAN 22, 1995 CP= 94761.690
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1070 TEMP swpeside	38 TEMP smidtop	1220 TEMP swpetop	2 TEMP smidbot	1035 TEMP swpebot
.10000E-05	26.1404	26.1402	26.1361	26.1373	26.1440	26.1423
.20000E-05	57.5032	48.8603	57.4774	48.8212	57.5268	49.0079
31.558	57.5032	48.8603	57.4774	48.8212	57.5268	49.0079
.31558E+07	75.0986	63.5397	74.2431	63.1744	76.6819	64.2779
.63116E+07	78.8520	67.3212	77.9872	66.9537	80.4555	68.0682
.94673E+07	81.2063	69.7598	80.3440	69.3942	82.8168	70.5094
.12623E+08	82.9546	71.5931	82.0943	71.2296	84.5590	72.3391
.15779E+08	84.3503	73.0700	83.4943	72.7088	85.9545	73.8157
.18935E+08	85.5075	74.3022	84.6546	73.9433	87.1052	75.0440
.22090E+08	86.5011	75.3650	85.6520	75.0080	88.0965	76.1058
.25246E+08	87.3708	76.2973	86.5247	75.9422	88.9607	77.0345
.28402E+08	88.1398	77.1258	87.2970	76.7724	89.7265	77.8617
.31558E+08	88.8420	77.8810	88.0022	77.5293	90.4240	78.6139
.63115E+08	93.2860	82.7519	92.4711	82.4130	94.8313	83.4654
.94673E+08	95.6622	85.4343	94.8664	85.1048	97.1747	86.1303
.12623E+09	97.1881	87.2107	96.4085	86.8886	98.6720	87.8926
.15779E+09	98.2819	88.5227	97.5168	88.2073	99.7383	89.1903
.18935E+09	99.1281	89.5654	98.3765	89.2557	100.560	90.2210
.22090E+09	99.7958	90.4160	99.0567	90.1118	101.203	91.0598
.25246E+09	100.453	91.2243	99.7240	90.9249	101.840	91.8577
.28402E+09	100.522	91.5349	99.8109	91.2430	101.874	92.1522
.31558E+09	100.653	91.8512	99.9565	91.5652	101.979	92.4551
.63115E+09	100.945	93.5316	100.353	93.2899	102.066	94.0398
.94673E+09	99.6249	93.2088	99.1113	92.9993	100.595	93.6478
.12623E+10	97.2135	91.6452	96.7676	91.4633	98.0515	92.0238
.15779E+10	95.0026	90.0617	94.6070	89.9001	95.7435	90.3968
.18935E+10	93.0775	88.6216	92.7208	88.4757	93.7432	88.9227
.22090E+10	91.3879	87.3210	91.0623	87.1877	91.9937	87.5951
.25246E+10	89.5976	85.8921	89.3009	85.7705	90.1477	86.1411
.28402E+10	88.2364	84.7926	87.9607	84.6794	88.7465	85.0235
.31558E+10	87.0609	83.8385	86.8028	83.7325	87.5372	84.0543
.63115E+10	80.7715	78.7374	80.6076	78.6693	81.0696	78.8728
.94673E+10	77.8769	76.2566	77.7460	76.2020	78.1130	76.3636
.12623E+11	76.2297	74.8530	76.1183	74.8064	76.4302	74.9445
.15779E+11	74.9873	73.7838	74.8897	73.7430	75.1619	73.8631
.18935E+11	73.7312	72.6795	73.6457	72.6435	73.8840	72.7494
.22090E+11	72.6121	71.6733	72.5355	71.6410	72.7484	71.7358
.25246E+11	71.5952	70.7467	71.5257	70.7174	71.7179	70.8026
.28402E+11	70.6898	69.9116	70.6259	69.8843	70.8028	69.9635
.31558E+11	69.8914	69.1677	69.8316	69.1421	69.9966	69.2161

 * Waste Package Center and Bottom of Invert *

 wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell

wwpecent = end of WP center surface
imidbot = midlength bottom of invert
iwpebot = end of WP bottom of invert
idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 94762.100 TIME= 15:42:56
NSOL command erases all previously stored or calculated data
unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 1040 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1761 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2788 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2776 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	1 TEMP	wmidcent	26.14	.1000E-05	149.5	.1893E+09
3	NSOL	1040 TEMP	shellcnt	26.14	.1000E-05	95.10	.6312E+09
4	NSOL	1761 TEMP	wwpecent	26.14	.1000E-05	94.71	.6312E+09
5	NSOL	147 TEMP	imidbot	26.16	.2000E-05	84.23	.9467E+09
6	NSOL	2788 TEMP	iwpebot	26.16	.2000E-05	82.00	.9467E+09
7	NSOL	2776 TEMP	idfebot	26.16	.2000E-05	77.86	.1262E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:42:59 JAN 22, 1995 CP= 94764.360
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	1040 TEMP shellcnt	1761 TEMP wwpecent	147 TEMP imidbot	2788 TEMP iwpebot	2776 TEMP idfebot
.10000E-05	26.1402	26.1400	26.1400	26.1709	26.1700	26.1703
.20000E-05	113.755	51.8241	51.3063	26.1631	26.1631	26.1631
31.558	113.755	51.8241	51.3063	26.1631	26.1631	26.1631
.31558E+07	130.913	65.8674	65.3137	43.7883	39.6487	31.4707
.63116E+07	134.674	69.6104	69.0550	48.7555	44.4415	35.2656
.94673E+07	136.954	72.0229	71.4706	51.7728	47.4550	38.0446
.12623E+08	138.629	73.8531	73.2989	53.9851	49.6957	40.2562
.15779E+08	139.923	75.3147	74.7640	55.7429	51.4896	42.0931
.18935E+08	140.981	76.5455	75.9935	57.2043	52.9881	43.6610
.22090E+08	141.865	77.5964	77.0478	58.4567	54.2760	45.0262
.25246E+08	142.640	78.5275	77.9778	59.5544	55.4066	46.2338
.28402E+08	143.298	79.3457	78.7993	60.5300	56.4132	47.3151
.31558E+08	143.901	80.0998	79.5524	61.4093	57.3207	48.2921
.63115E+08	147.309	84.9163	84.3817	67.2190	63.3442	54.8448
.94673E+08	148.702	87.5577	87.0313	70.5035	66.7721	58.6203
.12623E+09	149.296	89.2901	88.7750	72.7396	69.1208	61.2379
.15779E+09	149.516	90.5679	90.0597	74.4369	70.9130	63.2537
.18935E+09	149.518	91.5717	91.0738	75.8102	72.3702	64.9066
.22090E+09	149.390	92.3886	91.8987	76.9703	73.6071	66.3218
.25246E+09	149.402	93.1731	92.6878	78.0328	74.7334	67.5963
.28402E+09	148.195	93.4283	92.9574	78.7163	75.5110	68.5848
.31558E+09	147.386	93.7097	93.2463	79.3166	76.1846	69.4250
.63115E+09	140.413	95.0969	94.7052	83.1039	80.5085	74.9498

.94673E+09	133.603	94.5518	94.2161	84.2304	82.0046	77.2576
.12623E+10	126.397	92.8012	92.5111	83.8694	81.9484	77.8622
.15779E+10	120.647	91.0748	90.8214	83.1649	81.4671	77.8617
.18935E+10	116.006	89.5275	89.3008	82.4037	80.8766	77.6373
.22090E+10	112.156	88.1416	87.9363	81.6466	80.2556	77.3074
.25246E+10	108.367	86.6339	86.4483	80.7201	79.4548	76.7744
.28402E+10	105.573	85.4778	85.3063	79.9846	78.8099	76.3227
.31558E+10	103.195	84.4763	84.3168	79.3391	78.2409	75.9167
.63115E+10	90.6679	79.1285	79.0307	75.8988	75.2089	73.7516
.94673E+10	85.6577	76.5672	76.4886	73.9939	73.4452	72.2869
.12623E+11	82.7879	75.1120	75.0474	72.9298	72.4635	71.4792
.15779E+11	80.6893	74.0120	73.9542	72.1026	71.6954	70.8363
.18935E+11	78.6842	72.8748	72.8262	71.2097	70.8537	70.1021
.22090E+11	77.0108	71.8467	71.8036	70.3610	70.0431	69.3721
.25246E+11	75.5536	70.9058	70.8653	69.5616	69.2744	68.6683
.28402E+11	74.3033	70.0538	70.0185	68.8241	68.5603	68.0035
.31558E+11	73.2393	69.2993	69.2667	68.1573	67.9119	67.3938

* Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfecent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 94764.740 TIME= 15:43:00
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2798 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2780 ITEM= TEMP COMP= NAME= idfecent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2851 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2841 ITEM= TEMP COMP= NAME= idfeeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	92.03	.6312E+09
3	NSOL	2798 TEMP	iwpecent	26.14	.2000E-05	87.45	.9467E+09
4	NSOL	2780 TEMP	idfecent	26.14	.2000E-05	80.66	.1262E+10
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	88.02	.9467E+09
6	NSOL	2851 TEMP	iwpeedge	26.14	.2000E-05	85.01	.9467E+09
7	NSOL	2841 TEMP	idfeeedge	26.14	.2000E-05	79.79	.1262E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:43:03 JAN 22, 1995 CP= 94766.880
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2798 TEMP iwpecent	2780 TEMP idfecent	157 TEMP imidedge	2851 TEMP iwpeedge	2841 TEMP idfeeedge
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.10000E-05	26.1491	26.1470	26.1462	26.1526	26.1527	26.1552
.20000E-05	26.1398	26.1398	26.1398	26.1398	26.1398	26.1398
31.558	26.1491	26.1447	26.1399	26.1424	26.1412	26.1399
.31558E+07	58.3784	49.6538	35.5343	50.3119	44.5585	34.0743
.63116E+07	62.8568	54.1706	39.8608	55.0262	49.1979	38.1937
.94673E+07	65.6338	57.0458	42.8444	57.9605	52.1650	41.1037
.12623E+08	67.6949	59.1994	45.1537	60.1337	54.3871	43.3810
.15779E+08	69.3340	60.9259	47.0418	61.8674	56.1716	45.2548
.18935E+08	70.6989	62.3691	48.6379	63.3117	57.6644	46.8451
.22090E+08	71.8675	63.6091	50.0190	64.5506	58.9483	48.2250
.25246E+08	72.8925	64.6978	51.2360	65.6371	60.0760	49.4432
.28402E+08	73.7998	65.6648	52.3220	66.6016	61.0792	50.5320
.31558E+08	74.6216	66.5386	53.3001	67.4717	61.9838	51.5135
.63115E+08	79.9462	72.2679	59.8212	73.1784	67.9593	58.0822
.94673E+08	82.8753	75.4698	63.5372	76.3625	71.3275	61.8443
.12623E+09	84.8150	77.6251	66.0894	78.5021	73.6139	64.4389
.15779E+09	86.2540	79.2470	68.0412	80.1098	75.3464	66.4291
.18935E+09	87.3937	80.5481	69.6292	81.3967	76.7440	68.0525
.22090E+09	88.3334	81.6372	70.9825	82.4733	77.9229	69.4390
.25246E+09	89.2170	82.6440	72.2066	83.4695	79.0034	70.6907
.28402E+09	89.5979	83.2109	73.0868	84.0152	79.6772	71.6136
.31558E+09	89.9702	83.7256	73.8436	84.5139	80.2745	72.4047
.63115E+09	92.0280	86.8377	78.7162	87.5041	83.9909	77.5272
.94673E+09	91.9051	87.4456	80.5095	88.0193	85.0088	79.4955
.12623E+10	90.4798	86.6273	80.6562	87.1201	84.5262	79.7880
.15779E+10	88.9926	85.5846	80.3136	86.0175	83.7279	79.5519
.18935E+10	87.6297	84.5628	79.8259	84.9501	82.8932	79.1453
.22090E+10	86.3925	83.5978	79.2856	83.9489	82.0774	78.6695
.25246E+10	85.0223	82.4792	78.5578	82.7967	81.0963	78.0010
.28402E+10	83.9669	81.6055	77.9656	81.8990	80.3218	77.4515
.31558E+10	83.0520	80.8440	77.4418	81.1175	79.6442	76.9635
.63115E+10	78.1938	76.8054	74.6698	76.9748	76.0534	74.3788
.94673E+10	75.8051	74.6999	73.0002	74.8335	74.1020	72.7723
.12623E+11	74.4593	73.5208	72.0770	73.6339	73.0134	71.8851
.15779E+11	73.4344	72.6141	71.3526	72.7126	72.1710	71.1864
.18935E+11	72.3679	71.6511	70.5481	71.7372	71.2642	70.4040
.22090E+11	71.3905	70.7505	69.7654	70.8273	70.4054	69.6379
.25246E+11	70.4885	69.9099	69.0192	69.9791	69.5982	68.9051
.28402E+11	69.6703	69.1392	68.3213	69.2030	68.8536	68.2175
.31558E+11	68.9409	68.4468	67.6855	68.5062	68.1813	67.5900

* Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 94767.280 TIME= 15:43:04
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2934 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2902 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3119 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 3097 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	88.51	.9467E+09
3	NSOL	2934 TEMP	dwpside	26.14	.2000E-05	85.53	.9467E+09
4	NSOL	2902 TEMP	ddfeside	26.14	.2000E-05	80.29	.1262E+10
5	NSOL	229 TEMP	dmidtop	26.13	.1000E-05	87.63	.9467E+09
6	NSOL	3119 TEMP	dwpetop	26.13	.1000E-05	85.19	.9467E+09
7	NSOL	3097 TEMP	ddfetop	26.12	.1000E-05	80.31	.1262E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:43:08 JAN 22, 1995 CP= 94769.420
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2934 TEMP dwpside	2902 TEMP ddfeside	229 TEMP dmidtop	3119 TEMP dwpetop	3097 TEMP ddfetop
.10000E-05	26.1398	26.1406	26.1418	26.1277	26.1263	26.1207
.20000E-05	26.1398	26.1398	26.1398	26.1398	26.1398	26.1398
31.558	26.1432	26.1417	26.1399	26.1428	26.1415	26.1399
.31558E+07	51.3061	45.5277	34.8822	49.6017	44.8427	34.9596
.63116E+07	55.9593	50.1380	39.1053	54.2673	49.4718	39.2122
.94673E+07	58.8674	53.0892	42.0483	57.1996	52.4423	42.1727
.12623E+08	61.0253	55.3011	44.3369	59.3800	54.6699	44.4733
.15779E+08	62.7483	57.0780	46.2137	61.1226	56.4596	46.3584
.18935E+08	64.1843	58.5645	47.8033	62.5758	57.9568	47.9541
.22090E+08	65.4163	59.8431	49.1809	63.8230	59.2444	49.3362
.25246E+08	66.4969	60.9661	50.3961	64.9170	60.3751	50.5548
.28402E+08	67.4559	61.9648	51.4817	65.8885	61.3807	51.6429
.31558E+08	68.3216	62.8656	52.4598	66.7650	62.2874	52.6230
.63115E+08	73.9898	68.8079	58.9985	72.5148	68.2697	59.1669
.94673E+08	77.1472	72.1521	62.7385	75.7246	71.6356	62.9012
.12623E+09	79.2661	74.4196	65.3158	77.8830	73.9167	65.4684
.15779E+09	80.8564	76.1362	67.2918	79.5058	75.6431	67.4330
.18935E+09	82.1284	77.5197	68.9024	80.8062	77.0346	69.0325
.22090E+09	83.1907	78.6851	70.2768	81.8948	78.2075	70.3968
.25246E+09	84.1753	79.7548	71.5186	82.9011	79.2831	71.6299
.28402E+09	84.7027	80.4098	72.4223	83.4625	79.9488	72.5247
.31558E+09	85.1874	80.9927	73.1985	83.9732	80.5395	73.2932
.63115E+09	88.0697	84.5969	78.2024	87.0523	84.2086	78.2541
.94673E+09	88.5073	85.5315	80.0788	87.6297	85.1925	80.1109
.12623E+10	87.5426	84.9776	80.2913	86.7819	84.6806	80.3106
.15779E+10	86.3914	84.1261	79.9952	85.7168	83.8607	80.0067
.18935E+10	85.2860	83.2502	79.5420	84.6777	83.0092	79.5483
.22090E+10	84.2543	82.4013	79.0288	83.6988	82.1798	79.0312
.25246E+10	83.0739	81.3895	78.3257	82.5671	81.1860	78.3245
.28402E+10	82.1554	80.5926	77.7509	81.6840	80.4023	77.7474
.31558E+10	81.3563	79.8961	77.2416	80.9146	79.7168	77.2363
.63115E+10	77.1200	76.2057	74.5457	76.8376	76.0864	74.5317
.94673E+10	74.9467	74.2202	72.9012	74.7205	74.1233	72.8869
.12623E+11	73.7288	73.1123	71.9928	73.5358	73.0288	71.9788
.15779E+11	72.7946	72.2564	71.2790	72.6252	72.1824	71.2653
.18935E+11	71.8079	71.3378	70.4838	71.6589	71.2720	70.4701
.22090E+11	70.8895	70.4701	69.7079	70.7557	70.4104	69.6941
.25246E+11	70.0344	69.6556	68.9671	69.9127	69.6006	68.9531
.28402E+11	69.2527	68.9053	68.2733	69.1402	68.8537	68.2589
.31558E+11	68.5515	68.2284	67.6407	68.4460	68.1794	67.6256

 * 1 meter Rock Temperatures *

 1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top

1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 94769.840 TIME= 15:43:09
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2892 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 3087 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2890 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	167 TEMP	1midside	26.14	.2000E-05	81.27	.1262E+10
3 NSOL	2892 TEMP	1dfeside	26.14	.2000E-05	77.08	.1578E+10
4 NSOL	219 TEMP	1midtop	26.10	.1000E-05	80.82	.1262E+10
5 NSOL	3087 TEMP	1dfetop	26.10	.1000E-05	77.01	.1578E+10
6 NSOL	165 TEMP	1midbot	26.19	.2000E-05	79.14	.1262E+10
7 NSOL	2890 TEMP	1dfebot	26.19	.2000E-05	75.71	.1893E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:43:13 JAN 22, 1995 CP= 94772.000
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2892 TEMP 1dfeside	219 TEMP 1midtop	3087 TEMP 1dfetop	165 TEMP 1midbot	2890 TEMP 1dfebot
.10000E-05	26.1414	26.1423	26.1002	26.0967	26.1917	26.1918
.20000E-05	26.1412	26.1412	26.1095	26.1095	26.1852	26.1852
31.558	26.1412	26.1412	26.1095	26.1095	26.1852	26.1852
.31558E+07	38.5725	30.4624	37.8155	30.5005	35.0010	28.8924
.63116E+07	43.3149	33.9446	42.5259	34.0279	39.6738	31.9281
.94673E+07	46.2878	36.5738	45.5157	36.6886	42.6277	34.3738
.12623E+08	48.4904	38.6944	47.7397	38.8323	44.8211	36.4028
.15779E+08	50.2522	40.4705	49.5208	40.6254	46.5774	38.1276
.18935E+08	51.7241	41.9952	51.0094	42.1629	48.0464	39.6213
.22090E+08	52.9902	43.3285	52.2900	43.5060	49.3113	40.9347
.25246E+08	54.1029	44.5119	53.4150	44.6971	50.4237	42.1044
.28402E+08	55.0947	45.5742	54.4177	45.7656	51.4167	43.1571
.31558E+08	55.9896	46.5364	55.3222	46.7329	52.3133	44.1127
.63115E+08	61.9631	53.0345	61.3542	53.2509	58.3296	50.5939
.94673E+08	65.3946	56.8188	64.8087	57.0290	61.8099	54.3849
.12623E+09	67.7662	59.4665	67.1866	59.6582	64.2247	57.0403
.15779E+09	69.5879	61.5196	69.0073	61.6884	66.0842	59.1004
.18935E+09	71.0763	63.2116	70.4925	63.3576	67.6089	60.8015
.22090E+09	72.3438	64.6647	71.7571	64.7896	68.9126	62.2648
.25246E+09	73.4964	65.9720	72.9065	66.0787	70.0936	63.5797
.28402E+09	74.3117	67.0083	73.7255	67.0974	70.9791	64.6538
.31558E+09	75.0173	67.8895	74.4324	67.9630	71.7381	65.5648
.63115E+09	79.5619	73.6978	79.0153	73.6895	76.7288	71.6439
.94673E+09	81.2052	76.1982	80.7074	76.1586	78.7431	74.3977

.12623E+10	81.2698	76.9623	80.8204	76.9056	79.1429	75.4010
.15779E+10	80.8742	77.0757	80.4642	77.0111	79.0025	75.7006
.18935E+10	80.3470	76.9360	79.9689	76.8672	78.6744	75.7075
.22090E+10	79.7751	76.6721	79.4229	76.6008	78.2630	75.5628
.25246E+10	79.0193	76.1999	78.6909	76.1259	77.6557	75.2010
.28402E+10	78.4055	75.7904	78.0953	75.7157	77.1512	74.8735
.31558E+10	77.8622	75.4193	77.5674	75.3440	76.6996	74.5714
.63115E+10	74.9640	73.4355	74.7537	73.3602	74.2754	72.9412
.94673E+10	73.2457	72.0322	73.0714	71.9644	72.7180	71.6584
.12623E+11	72.2917	71.2609	72.1393	71.1986	71.8532	70.9524
.15779E+11	71.5436	70.6444	71.4070	70.5861	71.1674	70.3816
.18935E+11	70.7191	69.9328	70.5956	69.8774	70.3967	69.7091
.22090E+11	69.9211	69.2194	69.8073	69.1660	69.6394	69.0255
.25246E+11	69.1620	68.5287	69.0556	68.4764	68.9135	68.3594
.28402E+11	68.4551	67.8735	68.3537	67.8214	68.2328	67.7237
.31558E+11	67.8117	67.2707	67.7136	67.2183	67.6106	67.1370

* 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 94772.370 TIME= 15:43:13

NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 3667 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 3927 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3664 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	74.73	.1893E+10
3	NSOL	3667 TEMP	3dfeside	26.14	.2000E-05	73.46	.2209E+10
4	NSOL	309 TEMP	3midtop	26.06	.1000E-05	74.25	.1893E+10
5	NSOL	3927 TEMP	3dfetop	26.05	.1000E-05	73.10	.2209E+10
6	NSOL	276 TEMP	3midbot	26.23	.2000E-05	73.72	.2209E+10
7	NSOL	3664 TEMP	3dfebot	26.23	.2000E-05	72.61	.2209E+10

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:43:17 JAN 22, 1995 CP= 94774.470
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3667 TEMP 3dfeside	309 TEMP 3midtop	3927 TEMP 3dfetop	276 TEMP 3midbot	3664 TEMP 3dfebot
.10000E-05	26.1425	26.1427	26.0560	26.0548	26.2323	26.2325

.20000E-05	26.1425	26.1425	26.0625	26.0625	26.2276	26.2276
31.558	26.1425	26.1425	26.0625	26.0625	26.2276	26.2276
.31558E+07	28.4980	26.9721	28.2185	26.8796	27.7333	26.7066
.63116E+07	31.6186	28.7851	31.2633	28.7053	30.4450	28.1435
.94673E+07	33.9585	30.5626	33.6078	30.5099	32.6354	29.7200
.12623E+08	35.8138	32.1684	35.4821	32.1422	34.4137	31.2107
.15779E+08	37.3560	33.6020	37.0444	33.5983	35.9084	32.5730
.18935E+08	38.6796	34.8846	38.3862	34.8995	37.1995	33.8084
.22090E+08	39.8411	36.0386	39.5637	36.0690	38.3376	34.9296
.25246E+08	40.8773	37.0843	40.6139	37.1274	39.3562	35.9512
.28402E+08	41.8136	38.0381	41.5623	38.0920	40.2788	36.8868
.31558E+08	42.6675	38.9136	42.4268	38.9766	41.1221	37.7481
.63115E+08	48.5951	45.0479	48.4090	45.1518	47.0080	43.8210
.94673E+08	52.1946	48.7916	52.0061	48.8826	50.5865	47.5306
.12623E+09	54.7854	51.4939	54.5637	51.5429	53.1476	50.1922
.15779E+09	56.8346	53.6361	56.5680	53.6326	55.1629	52.2911
.18935E+09	58.5488	55.4322	58.2368	55.3763	56.8458	54.0474
.22090E+09	60.0351	56.9922	59.6815	56.8885	58.3057	55.5733
.25246E+09	61.3731	58.3925	60.9829	58.2471	59.6203	56.9439
.28402E+09	62.4911	59.5953	62.0717	59.4134	60.7359	58.1345
.31558E+09	63.4488	60.6248	63.0031	60.4105	61.6924	59.1556
.63115E+09	69.8651	67.5425	69.3105	67.1773	68.1958	66.1075
.94673E+09	72.8823	70.9001	72.3223	70.5013	71.3724	69.5890
.12623E+10	74.1211	72.4159	73.5820	72.0151	72.7834	71.2483
.15779E+10	74.5930	73.0897	74.0826	72.7009	73.4021	72.0481
.18935E+10	74.7282	73.3783	74.2451	73.0043	73.6590	72.4427
.22090E+10	74.6828	73.4551	74.2239	73.0951	73.7158	72.6092
.25246E+10	74.4122	73.2967	73.9750	72.9491	73.5397	72.5339
.28402E+10	74.1482	73.1137	73.7303	72.7788	73.3502	72.4174
.31558E+10	73.8976	72.9314	73.4960	72.6072	73.1626	72.2912
.63115E+10	72.5226	71.9180	72.2130	71.6561	72.1112	71.5653
.94673E+10	71.3249	70.8454	71.0649	70.6229	71.0274	70.5942
.12623E+11	70.6679	70.2602	70.4381	70.0622	70.4288	70.0604
.15779E+11	70.1324	69.7770	69.9242	69.5965	69.9333	69.6121
.18935E+11	69.4900	69.1791	69.2990	69.0122	69.3250	69.0439
.22090E+11	68.8284	68.5510	68.6503	68.3942	68.6901	68.4392
.25246E+11	68.1793	67.9288	68.0103	67.7790	68.0633	67.8368
.28402E+11	67.5559	67.3260	67.3929	67.1804	67.4587	67.2507
.31558E+11	66.9779	66.7641	66.8183	66.6206	66.8967	66.7033

* Upper Rock Layer Interface Temperatures *

surfTCw = center ground surface
 TCwPTn = center TCw and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 849 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 94774.880 TIME= 15:43:17

NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 828 ITEM= TEMP COMP= NAME= TCwPTn

VARIABLE 4 IS AT NODE 771 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 645 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 469 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 405 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
 VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2 NSOL	849 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3 NSOL	828 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4 NSOL	771 TEMP	PTnTSw1	21.24	.1000E-05	33.91	.3156E+11
5 NSOL	645 TEMP	TSw1TSw2	24.25	.1000E-05	53.61	.3156E+11
6 NSOL	469 TEMP	upmodel	25.74	.1000E-05	65.12	.1578E+11
7 NSOL	405 TEMP	midddrift	26.14	.1000E-05	68.09	.6312E+10

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:43:21 JAN 22, 1995 CP= 94777.090
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	849 TEMP surfTCw	828 TEMP TCwPTn	771 TEMP PTnTSw1	645 TEMP TSw1TSw2	469 TEMP upmodel	405 TEMP midddrift
.10000E-05	18.7000	19.5282	21.2399	24.2509	25.7389	26.1432
.20000E-05	18.7000	19.5285	21.2408	24.2530	25.7417	26.1435
31.558	18.7000	19.5285	21.2408	24.2530	25.7417	26.1435
.31558E+07	18.7000	19.5285	21.2408	24.2530	25.7417	26.1435
.63116E+07	18.7000	19.5285	21.2408	24.2530	25.7417	26.1436
.94673E+07	18.7000	19.5285	21.2408	24.2530	25.7418	26.1440
.12623E+08	18.7000	19.5285	21.2408	24.2530	25.7424	26.1461
.15779E+08	18.7000	19.5285	21.2408	24.2530	25.7443	26.1521
.18935E+08	18.7000	19.5285	21.2408	24.2530	25.7484	26.1648
.22090E+08	18.7000	19.5285	21.2408	24.2530	25.7559	26.1868
.25246E+08	18.7000	19.5285	21.2408	24.2530	25.7679	26.2203
.28402E+08	18.7000	19.5285	21.2408	24.2530	25.7852	26.2670
.31558E+08	18.7000	19.5285	21.2408	24.2530	25.8084	26.3277
.63115E+08	18.7000	19.5285	21.2408	24.2530	26.3808	27.6286
.94673E+08	18.7000	19.5285	21.2408	24.2530	27.3613	29.6301
.12623E+09	18.7000	19.5285	21.2408	24.2530	28.4754	31.7705
.15779E+09	18.7000	19.5285	21.2408	24.2530	29.6080	33.8363
.18935E+09	18.7000	19.5285	21.2408	24.2530	30.7230	35.7643
.22090E+09	18.7000	19.5285	21.2408	24.2530	31.8100	37.5455
.25246E+09	18.7000	19.5285	21.2408	24.2531	32.8656	39.1886
.28402E+09	18.7000	19.5285	21.2408	24.2534	33.8895	40.7089
.31558E+09	18.7000	19.5285	21.2408	24.2540	34.8796	42.1158
.63115E+09	18.7000	19.5285	21.2408	24.3296	42.9449	51.9336
.94673E+09	18.7000	19.5285	21.2408	24.6950	48.4444	57.5022
.12623E+10	18.7000	19.5285	21.2409	25.4174	52.2584	60.9141
.15779E+10	18.7000	19.5285	21.2414	26.4119	54.9154	63.0210
.18935E+10	18.7000	19.5285	21.2435	27.5675	56.8307	64.4027
.22090E+10	18.7000	19.5287	21.2493	28.7944	58.2536	65.3440
.25246E+10	18.7000	19.5292	21.2619	30.0318	59.3199	65.9689
.28402E+10	18.7000	19.5304	21.2846	31.2419	60.1172	66.3679
.31558E+10	18.7000	19.5330	21.3206	32.4027	60.7479	66.6617
.63115E+10	18.7000	19.7631	22.6168	40.8703	63.9950	68.0863
.94673E+10	18.7000	20.4177	24.9570	45.4685	64.6038	67.8523
.12623E+11	18.7000	21.1950	27.2956	48.2760	64.9550	67.7368
.15779E+11	18.7000	21.8859	29.2481	50.1910	65.1238	67.5853
.18935E+11	18.7000	22.4409	30.7804	51.5408	65.0768	67.2760
.22090E+11	18.7000	22.8697	31.9504	52.4609	64.8641	66.8620
.25246E+11	18.7000	23.1931	32.8239	53.0605	64.5657	66.4094
.28402E+11	18.7000	23.4314	33.4603	53.4217	64.2139	65.9405
.31558E+11	18.7000	23.6023	33.9102	53.6061	63.8402	65.4811

* Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP
 TSw2TSw3 = center TSw2 and TSw3 interface
 TSw3CHnv = center TSw3 and CHn1v interface
 CHnvCHnz = center CHn1v and CHn1z interface

CHnzCHn2 = center CHn1z and CHn2 interface
CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 94777.490 TIME= 15:43:22
NSOL command erases all previously stored or calculated data
unless STORE, MERGE is used.

VARIABLE 5 IS AT NODE 708 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 6 IS AT NODE 870 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 7 IS AT NODE 890 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 909 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 966 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.55	.2000E-05	65.97	.1578E+11
3	NSOL	828 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	771 TEMP	PTnTSw1	21.24	.1000E-05	33.91	.3156E+11
5	NSOL	708 TEMP	TSw2TSw3	27.68	.2525E+08	59.37	.3156E+11
6	NSOL	870 TEMP	TSw3CHnv	28.15	.2000E-05	57.19	.3156E+11
7	NSOL	966 TEMP	CHn2bot	31.87	.6312E+08	43.35	.3156E+11

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:43:25 JAN 22, 1995 CP= 94779.670
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	828 TEMP TCwPTn	771 TEMP PTnTSw1	708 TEMP TSw2TSw3	870 TEMP TSw3CHnv	966 TEMP CHn2bot
.10000E-05	26.5477	19.5282	21.2399	27.6846	28.1560	31.8687
.20000E-05	26.5458	19.5285	21.2408	27.6829	28.1543	31.8673
31.558	26.5458	19.5285	21.2408	27.6829	28.1543	31.8673
.31558E+07	26.5458	19.5285	21.2408	27.6829	28.1543	31.8673
.63116E+07	26.5458	19.5285	21.2408	27.6829	28.1543	31.8673
.94673E+07	26.5459	19.5285	21.2408	27.6829	28.1543	31.8673
.12623E+08	26.5464	19.5285	21.2408	27.6829	28.1543	31.8673
.15779E+08	26.5482	19.5285	21.2408	27.6829	28.1543	31.8673
.18935E+08	26.5521	19.5285	21.2408	27.6829	28.1543	31.8673
.22090E+08	26.5594	19.5285	21.2408	27.6829	28.1543	31.8673
.25246E+08	26.5710	19.5285	21.2408	27.6829	28.1543	31.8673
.28402E+08	26.5879	19.5285	21.2408	27.6829	28.1543	31.8673
.31558E+08	26.6108	19.5285	21.2408	27.6829	28.1543	31.8673
.63115E+08	27.1739	19.5285	21.2408	27.6829	28.1543	31.8673
.94673E+08	28.1309	19.5285	21.2408	27.6829	28.1543	31.8673
.12623E+09	29.2146	19.5285	21.2408	27.6829	28.1543	31.8673
.15779E+09	30.3178	19.5285	21.2408	27.6830	28.1543	31.8673
.18935E+09	31.4069	19.5285	21.2408	27.6834	28.1544	31.8673
.22090E+09	32.4714	19.5285	21.2408	27.6843	28.1544	31.8673
.25246E+09	33.5076	19.5285	21.2408	27.6864	28.1545	31.8673
.28402E+09	34.5144	19.5285	21.2408	27.6905	28.1547	31.8673
.31558E+09	35.4895	19.5285	21.2408	27.6975	28.1552	31.8673
.63115E+09	43.4747	19.5285	21.2408	28.0897	28.2263	31.8673
.94673E+09	48.9575	19.5285	21.2408	29.1951	28.5753	31.8673
.12623E+10	52.7846	19.5285	21.2409	30.7847	29.2700	31.8673

WELCOME TO THE ANSYS PROGRAM

***** ANSYS COMMAND LINE ARGUMENTS *****

JOB NAME = c12j5a
 MEMORY REQUESTED (MB) = 64.0
 BATCH MODE REQUESTED
 start.ans FILE

***** ANSYS DYNAMIC MEMORY ALLOCATION *****

WORK SPACE REQUESTED	=	16777216	64.000	MB	COMMAND LINE
MINIMUM WORK SPACE REQUIRED	=	4718592	18.000	MB	
MINIMUM WORK SPACE RECOMMENDED	=	6702496	25.568	MB	
WORK SPACE OBTAINED	=	16777214	64.000	MB	
BYTES PER WORD	=	4			

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 RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

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ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON TO START THE ANSYS MENU SYSTEM
ENTER HELP FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 1/16/1995
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c12j5a.inp
7 /COM, *
8 /COM, * 12 PWR WP/MPC (10 cm overpack)
9 /COM, * Average SNF: 22 years old, 42.2 Gwd/MTU burnup
10 /COM, * 5.0 m Diameter Drift with Concrete Invert
11 /COM, * 25 MTU/acre (6.18 kgU/m^2) AML (Low Thermal Loading)
12 /COM, * Drift spacing = 67.5 m (33.75 m model half width)
13 /COM, * WP c/c spacing = 12.317 m
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat
16 /COM, * SNF Heat Loads file: snf2242.dat
17 /COM, *
18 /COM, *****
    
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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,12 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.76525,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.647,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,12.317,
42 *SET,WPNUM,12.0,
43 *SET,MODEL,33.75,
44 *SET,OFFST,0.27255,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD-OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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89 TME100=TMI100+TM_START
90 TME1000=TMI1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM,      Model is 6 elements wide
372 LSEL,S,LINE,, 9,12,1,      (3+7=10 divisions)
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 7,4.0,
378 /COM,      Extrude WP 5 elements
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM,      1 element thick steel
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM,      Extrude drift 5 elements with smallest
386 /COM,      elements at WP mid-length
387 LESIZE, 58,,, 5,4.0,
388 LESIZE, 59,,, 5,4.0,
389 /COM,      *****
390 /COM,      Set element sizes in rock layers
391 /COM,      3 element thick TCW
392 LESIZE, 24,,, 3,
393 /COM,      3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM,      9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM,      12 elements above and below near field
398 /COM,      with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,, 7,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,, 7,
403 LSEL,ALL,
404 /COM,      3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM,      2 element thick CHN1v
407 LESIZE, 46,,, 2,
408 /COM,      7 element thick CHN1z
409 LESIZE, 49,,, 7,
410 /COM,      12 element thick CHN2 with smaller elements
411 /COM,      near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM,      *****
416 /COM,      Concatenate lines for mapped meshing
417 /COM,      (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM,      *****
425 /COM,      Mesh 2-D areas
426 /COM,      (first WP, then invert, DF wall and rock layers)
427 /COM,      Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM,      Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM,      Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM,          TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM,          PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM,          TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM,          TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM,          CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM,          CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM,          CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM,          Delete concatenated lines
469 /COM,          (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM,          Extrude 2-D waste package into 3-D
478 /COM,          (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM,          ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM,          (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM,          Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM,          Extrude 2-D rock into front half 3-D
506 /COM,          Invert
507 /COM,          (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,          Rock around drift
513 /COM,          (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,,58,
527 VMESH,41,
528 /COM,          Mid-drift rock
529 /COM,          (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,,58,
535 /COM,          Concatenate to mesh volume 45
536 /COM,          (L's 311,312 used and freed up)
537 /COM,          (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,          Extrude rest of TSw2
546 /COM,          (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,          Extrude TSw1
549 /COM,          (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,          Extrude PTn
553 /COM,          (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,          Extrude TCw
557 /COM,          (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,          Extrude TSw3
561 /COM,          (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,          Extrude CHn1v
565 /COM,          (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,          Extrude CHn1z
569 /COM,          (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,          Extrude CHn2
573 /COM,          (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,          *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM, Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM, Define edge elements for radiation
659 /COM, Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM, Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM, Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM, Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TM1100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM, *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TM10,
883      SET,NEAR,,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0)))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0)))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0)))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0)))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TM11,
902      SET,NEAR,,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0)))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0)))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0)))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0)))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TM110,
921      SET,NEAR,,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0)))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0)))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0)))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0)))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TMI100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0)))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0)))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0)))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0)))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAB,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 75.0,
984 /VCON,1, 25.000,
985 /TYPE,1,HIDP,
986 /SHADE,,GOUR,
987 /GLINE,,0,
988 /TITLE,
989 VSEL,S,LOC,Z,0,100
990 ESLV,S
991 /SHOW,meshdrift,grph,0,8,
992 EPLOT
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1,+90,YS,1
995 /DIST,1, 13.3,
996 VSEL,S,LOC,X,-100,0
997 ESLV,S
998 /SHOW,meshside,grph,0,8,

```

```

999  EPLOT
1000 /COM, *****
1001 /COM,          Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM,          Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT , 1,
1009 /WIND,1, -1.0000 , 1.00000 , -1.0000 , 1.0000,
1010 /VIEW,1, -.36934 , .15899 , -.91559,
1011 /FOC, 1, 2.7776 , -.97308 , 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088 ,ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM,          Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM,          Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0 ,100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05 ,100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1 ,100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5 ,100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10 ,100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50 ,100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100 ,100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500 ,100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k ,100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM,          View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPLOT
1065 /COM, *****
1066 /COM,          Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM,          Set view settings

```

```

1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT , 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC, 1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG, 1, -.52088,ZS,
1079 /VCON,1, 25.000,
1080 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM, Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM, Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM, View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLOT
1131 FINISH
1132 /COM, *****
1133 /COM, Print time/temperature output at specific locations
1134 /POST26,
1135 /COM, *****
1136 /COM, *****
1137 /COM, * Waste Package Surface Temperatures *
1138 /COM, *****

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```

1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE( WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE( WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpside,
1147 NSOL,4,(NODE( 0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE( 0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE( 0.0, (0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE( 0.0, (0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWLL), 0.0,      0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWLL), 0.0, (WPLEN/2.0-WPWLL))),TEMP,,swpside,
1164 NSOL,4,(NODE(0.0,      (WPRAD-WPWLL), 0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0,      (WPRAD-WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWLL), 0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE( 0.0,      0.0,      0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE( 0.0,      0.0, (WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE( 0.0,      0.0,      (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE( 0.0, (DFCENT-DFRAD), 0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE( 0.0, (DFCENT-DFRAD), (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE( 0.0, (DFCENT-DFRAD), (WSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfcent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE( 0.0,      YYY,      0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE( 0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE( 0.0,      YYY,      (WSPC/2.0))),TEMP,,idfcent,
1199 NSOL,5,(NODE( XXX,      YYY,      0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE( XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE( XXX,      YYY,      (WSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpside = end of WP drift wall side surface

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1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddfetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmidside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WSPC/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,, dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,, dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WSPC/2.0))),TEMP,, ddfetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *      1 meter Rock Temperatures      *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dfetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WSPC/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,, 1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WSPC/2.0))),TEMP,, 1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,, 1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WSPC/2.0))),TEMP,, 1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *      3 meter Rock Temperatures      *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WSPC/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,, 3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WSPC/2.0))),TEMP,, 3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,, 3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WSPC/2.0))),TEMP,, 3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *      Upper Rock Layer Interface Temperatures      *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *      Lower Rock Layer Interface Temperatures      *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHnvCHnz = center CHn1v and CHn1z interface

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1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL), 0.0)),TEMP,,dwnmodel,
1282 NSOL,5,(NODE( 0.0,(GSURF-393.5), 0.0)),TEMP,,TSw2TSw3,
1283 NSOL,6,(NODE( 0.0,(GSURF-409.3), 0.0)),TEMP,,TSw3CHnv,
1284 NSOL,7,(NODE( 0.0,(GSURF-414.5), 0.0)),TEMP,,CHnvCHnz,
1285 NSOL,7,(NODE( 0.0,(GSURF-518.5), 0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2), 0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM,          *****
1291 /COM,          End of batch input file
1292 /COM,          *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE= 0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,1,

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ABBREVIATION= RAS /show,,,0,
ABBREVIATION= ON /menu,on,
ABBREVIATION= OFF /menu,off,
ABBREVIATION= NVP /config,nvpag,512,
ABBREVIATION= QUIT /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

END start.ans

To start ANSYS menu:

type: x3d for console
x11 for X-term

type: on

ANSYS REVISION 5.0A 1/16/1995
3-D Model of Waste Package Drift Emplacement R.Bahney III

* *
* File name: c12j5a.inp *
* *
* 12 PWR WP/MPC (10 cm overpack) *
* Average SNF: 22 years old, 42.2 GWd/MTU burnup *
* 5.0 m Diameter Drift with Concrete Invert *
* 25 MTU/acre (6.18 kgU/m²) AML (Low Thermal Loading) *
* Drift spacing = 67.5 m (33.75 m model half width) *
* WP c/c spacing = 12.317 m *
* *
* Material Properties file: Proprep.dat *
* SNF Heat Loads file: snf2242.dat *
* *

Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512

Work space must also be increased (-m 64)

TITLE=

12 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
MASS = KILOGRAMS(KG)
TIME = SECONDS(SEC)
TEMPERATURE = CENTIGRADE
CURRENT = AMPS

Define emplacement parameters

WPRAD = radius of waste package (m)
DFRAD = radius of drift (m)
INVRT = height of invert backfill floor (m)
WPLEN = length of waste package (m)
WPWLL = thickness of outer barrier (m)
WSPC = waste package c/c spacing (m)
WPNUM = number of assemblies per WP
MODEL = model half width (m)
OFFST = WP center below drift center (m)

PARAMETER WPRAD = .7652500
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.647000
 PARAMETER WPWLL = .1000000
 PARAMETER WPSPC = 12.31700
 PARAMETER WPNUM = 12.00000
 PARAMETER MODEL = 33.75000
 PARAMETER OFFST = .2725500

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1

PARAMETER GSURF = 308.7726
 PARAMETER DFCENT = .2725500
 PARAMETER XXX = 1.734935

PARAMETER YYY = -1.527450
PARAMETER WPVOL = 7.573152
PARAMETER TM_START = 31.55760
PARAMETER TM10 = 3155760.
PARAMETER TM11 = .3155760E+08
PARAMETER TM110 = .3155760E+09
PARAMETER TM1100 = .3155760E+10
PARAMETER TM11000 = .3155760E+11
PARAMETER TME0 = .2840187E+08
PARAMETER TME1 = .3155763E+08
PARAMETER TME9 = .2840184E+09
PARAMETER TME10 = .3155760E+09
PARAMETER TME90 = .2840184E+10
PARAMETER TME100 = .3155760E+10
PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:55 JAN 27, 1995 CP= .780
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCW	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smeared Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m^3) **

** Emissivity EMIS **

** Conductivity: KXX (W/m/K) **

** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m^3/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***
SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C MAT= 4 NUM. POINTS= 8
SLOC= 5 .1046900E+08 .1019840E+08 2006500. 2111400.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 11
SLOC= 9 2191200. 2269200. 2341000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 4
SLOC= 1 1844300. 2031500. 2283100. 4559000.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 8
SLOC= 5 4518800. 4480000. 2295300. 2448900.

PROPERTY TABLE C MAT= 5 NUM. POINTS= 11
SLOC= 9 2574000. 2679200. 2770200.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 4
SLOC= 1 2443600. 2555700. 2696000. .3660130E+08

PROPERTY TABLE C MAT= 6 NUM. POINTS= 8
SLOC= 5 .3532630E+08 .3417640E+08 1501300. 1601800.

PROPERTY TABLE C MAT= 6 NUM. POINTS= 11
SLOC= 9 1683600. 1752500. 1812000.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 4
SLOC= 1 2603200. 2664700. 2744700. .3660690E+08

PROPERTY TABLE C MAT= 7 NUM. POINTS= 8
SLOC= 5 .3534400E+08 .3420530E+08 2791400. 2741900.

PROPERTY TABLE C MAT= 7 NUM. POINTS= 11
SLOC= 9 2670700. 1581400. 1632000.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 4
SLOC= 1 2430900. 2538500. 2680250. .2798690E+08

PROPERTY TABLE C MAT= 8 NUM. POINTS= 8
SLOC= 5 .2705530E+08 .2621460E+08 2564400. 2593500.

PROPERTY TABLE C MAT= 8 NUM. POINTS= 11
SLOC= 9 2598500. 1981950. 2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***
SLOC= 1 21.11000 37.78000 65.56000
93.33000 121.1100 148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***
SLOC= 7 176.6700 204.4400 232.2200
260.0000 287.7800 315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***
SLOC= 13 343.3300 371.1100 398.8900
426.6700 454.4400 482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***
SLOC= 19 510.0000 537.7800 565.5600

593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***
 SLOC= 25 676.6700 704.4400 732.2200
 760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
 SLOC= 1 40.84000 41.36000 41.88000 42.23000
 42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
 SLOC= 7 42.06000 41.88000 41.36000 41.02000
 40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
 SLOC= 13 39.29000 38.77000 38.08000 37.56000
 36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
 SLOC= 19 35.48000 34.61000 33.92000 33.23000
 32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
 SLOC= 25 30.29000 28.90000 27.35000 26.48000
 26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
 SLOC= 1 428.7200 444.9500 460.9400 476.8700
 486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
 SLOC= 7 506.0900 517.0700 525.6400 536.9900
 543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
 SLOC= 13 562.2100 577.3200 589.1000 600.5700
 611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
 SLOC= 19 645.3200 665.1200 682.0700 694.5200
 724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
 SLOC= 25 806.3100 888.6000 1095.040 1638.780
 808.6800 736.9000

 ** End of Material Property List **

 Read in single assembly heat loads from "heat2242.dat"
 and calculate the volumetric heat generation
 (Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

 ** Waste Package Heat Generation Rates **
 ** File name: snf2242.dat **
 ** Age 22.0 years 0.428 MTU/Assy **
 ** 42200 MWD/MTU burnup, type P **
 ** 12-8-1994 **
 ** Initial enrichment average for burnup **
 ** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
 482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
 477.0000 467.8000

PARAMETER ASSY(13,1) =	459.2000 429.3000	451.1000 423.7000	443.5000	436.2000
PARAMETER ASSY(19,1) =	412.6000 252.6000	404.5000 222.0000	341.6000	294.1000
PARAMETER ASSY(25,1) =	198.5000 139.7000	179.8000 85.70000	162.5000	150.1000
PARAMETER ASSY(31,1) =	67.40000 38.10000	56.80000 34.30000	49.40000	42.90000
PARAMETER ASSY(37,1) =	31.30000 11.10000	29.00000 10.00000	15.50000	12.80000
PARAMETER ASSY(43,1) =	9.200000 7.200000	8.600000	8.000000	7.600000
PARAMETER ASSY(1,0) =	.1000000E-05 .4000000	.1000000 .5000000	.2000000	.3000000
PARAMETER ASSY(7,0) =	.6000000 1.000000	.7000000 2.000000	.8000000	.9000000
PARAMETER ASSY(13,0) =	3.000000 7.000000	4.000000 8.000000	5.000000	6.000000
PARAMETER ASSY(19,0) =	9.000000 40.00000	10.00000 50.00000	20.00000	30.00000
PARAMETER ASSY(25,0) =	60.00000 100.0000	70.00000 200.0000	80.00000	90.00000
PARAMETER ASSY(31,0) =	300.0000 700.0000	400.0000 800.0000	500.0000	600.0000
PARAMETER ASSY(37,0) =	900.0000 4000.000	1000.000 5000.000	2000.000	3000.000
PARAMETER ASSY(43,0) =	6000.000 10000.00	7000.000	8000.000	9000.000

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)

INPUT MATRIX= ASSY(1,0)
 INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
 RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.5845
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
 WPHOT(1) = COPY ASSY(1)
 SCALE FACTORS RESULT= 1.5845 INPUT= 1.0000
 VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000
 PARAMETER WPTOP(0,1) = 1.000000
 PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
 (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-33.7500	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	3	X,Y,Z=	33.7500	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	-33.7500	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	33.7500	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	-33.7500	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	33.7500	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	-33.7500	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	33.7500	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	-33.7500	34.0226	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.000000E+00	34.0226	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	33.7500	34.0226	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	-33.7500	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	33.7500	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	-33.7500	-33.4774	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.000000E+00	-33.4774	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	33.7500	-33.4774	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	-33.7500	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	33.7500	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	-33.7500	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	33.7500	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	-33.7500	-105.727	.000000E+00	IN CSYS=	0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.727	.000000E+00	IN CSYS=	0

KEYPOINT 29 X,Y,Z= 33.7500 -105.727 .000000E+00 IN CSYS= 0
 KEYPOINT 30 X,Y,Z= -33.7500 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 31 X,Y,Z= .000000E+00 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 32 X,Y,Z= 33.7500 -209.727 .000000E+00 IN CSYS= 0
 KEYPOINT 33 X,Y,Z= -33.7500 -991.227 .000000E+00 IN CSYS= 0
 KEYPOINT 34 X,Y,Z= .000000E+00 -991.227 .000000E+00 IN CSYS= 0
 KEYPOINT 35 X,Y,Z= 33.7500 -991.227 .000000E+00 IN CSYS= 0

Define lines connecting rock layers
 (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
 (36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
 (52,53)

LINE CONNECTS KEYPOINTS 1 2
 LINE NO.= 1 KP1= 1 TAN1= -1.0000 .0000 .0000
 KP2= 2 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 2 3
 LINE NO.= 2 KP1= 2 TAN1= -1.0000 .0000 .0000
 KP2= 3 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 4 5
 LINE NO.= 3 KP1= 4 TAN1= -1.0000 .0000 .0000
 KP2= 5 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 5 6
 LINE NO.= 4 KP1= 5 TAN1= -1.0000 .0000 .0000
 KP2= 6 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 7 8
 LINE NO.= 5 KP1= 7 TAN1= -1.0000 .0000 .0000
 KP2= 8 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 8 9
 LINE NO.= 6 KP1= 8 TAN1= -1.0000 .0000 .0000
 KP2= 9 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 10 11
 LINE NO.= 7 KP1= 10 TAN1= -1.0000 .0000 .0000
 KP2= 11 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 11 12
 LINE NO.= 8 KP1= 11 TAN1= -1.0000 .0000 .0000
 KP2= 12 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 13 14
 LINE NO.= 9 KP1= 13 TAN1= -1.0000 .0000 .0000
 KP2= 14 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 14 15
 LINE NO.= 10 KP1= 14 TAN1= -1.0000 .0000 .0000
 KP2= 15 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 18 19
 LINE NO.= 11 KP1= 18 TAN1= -1.0000 .0000 .0000
 KP2= 19 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 19 20
 LINE NO.= 12 KP1= 19 TAN1= -1.0000 .0000 .0000
 KP2= 20 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 21 22
 LINE NO.= 13 KP1= 21 TAN1= -1.0000 .0000 .0000
 KP2= 22 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.=	31	KP1=	9	TAN1=	.0000	1.0000	.0000
		KP2=	12	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13							
LINE NO.=	32	KP1=	10	TAN1=	.0000	1.0000	.0000
		KP2=	13	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14							
LINE NO.=	33	KP1=	11	TAN1=	.0000	1.0000	.0000
		KP2=	14	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15							
LINE NO.=	34	KP1=	12	TAN1=	.0000	1.0000	.0000
		KP2=	15	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16							
LINE NO.=	35	KP1=	13	TAN1=	.0000	1.0000	.0000
		KP2=	16	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17							
LINE NO.=	36	KP1=	15	TAN1=	.0000	1.0000	.0000
		KP2=	17	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18							
LINE NO.=	37	KP1=	16	TAN1=	.0000	1.0000	.0000
		KP2=	18	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20							
LINE NO.=	38	KP1=	17	TAN1=	.0000	1.0000	.0000
		KP2=	20	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21							
LINE NO.=	39	KP1=	18	TAN1=	.0000	1.0000	.0000
		KP2=	21	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22							
LINE NO.=	40	KP1=	19	TAN1=	.0000	1.0000	.0000
		KP2=	22	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23							
LINE NO.=	41	KP1=	20	TAN1=	.0000	1.0000	.0000
		KP2=	23	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24							
LINE NO.=	42	KP1=	21	TAN1=	.0000	1.0000	.0000
		KP2=	24	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25							
LINE NO.=	43	KP1=	22	TAN1=	.0000	1.0000	.0000
		KP2=	25	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26							
LINE NO.=	44	KP1=	23	TAN1=	.0000	1.0000	.0000
		KP2=	26	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27							
LINE NO.=	45	KP1=	24	TAN1=	.0000	1.0000	.0000
		KP2=	27	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28							
LINE NO.=	46	KP1=	25	TAN1=	.0000	1.0000	.0000
		KP2=	28	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29							
LINE NO.=	47	KP1=	26	TAN1=	.0000	1.0000	.0000
		KP2=	29	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30							
LINE NO.=	48	KP1=	27	TAN1=	.0000	1.0000	.0000
		KP2=	30	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES

LINE LIST = 39 13 40 11
(TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES

LINE LIST = 40 14 41 12
(TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES

LINE LIST = 42 15 43 13
(TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES

LINE LIST = 43 16 44 14
(TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES

LINE LIST = 45 17 46 15
(TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES

LINE LIST = 46 18 47 16
(TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES

LINE LIST = 48 19 49 17
(TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES

LINE LIST = 49 20 50 18
(TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES

LINE LIST = 51 21 52 19
(TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES

LINE LIST = 52 22 53 20
(TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
(K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS= 0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.72350	IN CSYS= 0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.82350	IN CSYS= 0

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.72350 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.82350 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .272550 6.15850 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .272550 -6.15850 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .6653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .7653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.22745 .000000E+00 IN CSYS= 0
 KEYPOINT 53 X,Y,Z= 1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .272550 .000000E+00 IN CSYS= 0

KEYPOINT 55 X,Y,Z= .000000E+00 2.77255 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.52745 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS		36	45			
LINE NO.=	83 KP1=	36	TAN1=	-1.0000	.0000	.0000
	KP2=	45	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		36	46			
LINE NO.=	84 KP1=	36	TAN1=	.0000	-1.0000	.0000
	KP2=	46	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS		36	47			
LINE NO.=	85 KP1=	36	TAN1=	1.0000	.0000	.0000
	KP2=	47	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		44	48			
LINE NO.=	86 KP1=	44	TAN1=	.0000	1.0000	.0000
	KP2=	48	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		45	49			
LINE NO.=	87 KP1=	45	TAN1=	-1.0000	.0000	.0000
	KP2=	49	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		46	50			
LINE NO.=	88 KP1=	46	TAN1=	.0000	-1.0000	.0000
	KP2=	50	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS		47	51			
LINE NO.=	89 KP1=	47	TAN1=	1.0000	.0000	.0000
	KP2=	51	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		50	55			
LINE NO.=	90 KP1=	50	TAN1=	.0000	-1.0000	.0000
	KP2=	55	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS		48	58			
LINE NO.=	91 KP1=	48	TAN1=	.0000	1.0000	.0000
	KP2=	58	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		58	52			
LINE NO.=	92 KP1=	58	TAN1=	.0000	1.0000	.0000
	KP2=	52	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		57	58			
LINE NO.=	93 KP1=	57	TAN1=	-1.0000	.0000	.0000
	KP2=	58	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		58	53			
LINE NO.=	94 KP1=	58	TAN1=	-1.0000	.0000	.0000
	KP2=	53	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		52	59			
LINE NO.=	95 KP1=	52	TAN1=	.0000	1.0000	.0000
	KP2=	59	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		54	60			
LINE NO.=	96 KP1=	54	TAN1=	-1.0000	.0000	.0000
	KP2=	60	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		55	61			
LINE NO.=	97 KP1=	55	TAN1=	.0000	-1.0000	.0000
	KP2=	61	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS		56	62			
LINE NO.=	98 KP1=	56	TAN1=	1.0000	.0000	.0000
	KP2=	62	TAN2=	-1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS		59	63			
LINE NO.=	99 KP1=	59	TAN1=	.0000	1.0000	.0000
	KP2=	63	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS		60	64			
LINE NO.=	100 KP1=	60	TAN1=	-1.0000	.0000	.0000

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      KP2=   64 TAN2=   1.0000   .0000   .0000
LINE CONNECTS KEYPOINTS   61   65
LINE NO.=  101 KP1=   61 TAN1=   .0000  -1.0000   .0000
      KP2=   65 TAN2=   .0000   1.0000   .0000

LINE CONNECTS KEYPOINTS   62   66
LINE NO.=  102 KP1=   62 TAN1=   1.0000   .0000   .0000
      KP2=   66 TAN2=  -1.0000   .0000   .0000

LINE CONNECTS KEYPOINTS   63   19
LINE NO.=  103 KP1=   63 TAN1=   .0000   1.0000   .0000
      KP2=   19 TAN2=   .0000  -1.0000   .0000

LINE CONNECTS KEYPOINTS   64   17
LINE NO.=  104 KP1=   64 TAN1=  -1.0000   .0000   .0000
      KP2=   17 TAN2=   1.0000   .0000   .0000

LINE CONNECTS KEYPOINTS   65   14
LINE NO.=  105 KP1=   65 TAN1=   .0000  -1.0000   .0000
      KP2=   14 TAN2=   .0000   1.0000   .0000

```

Define areas around drift
 (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
 (35,36,37,38,39,40)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 82 60 83
 (TRAVERSED IN SAME DIRECTION AS LINE 82)

AREA NUMBER = 19

DEFINE AREA BY LIST OF LINES
 LINE LIST = 83 61 84
 (TRAVERSED IN SAME DIRECTION AS LINE 83)

AREA NUMBER = 20

DEFINE AREA BY LIST OF LINES
 LINE LIST = 85 84 62
 (TRAVERSED IN SAME DIRECTION AS LINE 85)

AREA NUMBER = 21

DEFINE AREA BY LIST OF LINES
 LINE LIST = 63 82 85
 (TRAVERSED IN SAME DIRECTION AS LINE 63)

AREA NUMBER = 22

DEFINE AREA BY LIST OF LINES
 LINE LIST = 86 64 87 60
 (TRAVERSED IN SAME DIRECTION AS LINE 86)

AREA NUMBER = 23

DEFINE AREA BY LIST OF LINES
 LINE LIST = 61 87 65 88
 (TRAVERSED IN SAME DIRECTION AS LINE 61)

AREA NUMBER = 24

DEFINE AREA BY LIST OF LINES
 LINE LIST = 89 62 88 66
 (TRAVERSED IN SAME DIRECTION AS LINE 89)

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES
LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES
LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES
LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES
LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES
LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES
LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES
LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES
LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES
LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES
LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES
LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES
LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1
3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1
1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1
2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1
10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1
106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1
4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide
(3*7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 4.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 4.000

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 5, SPACING RATIO = 4.000

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TS_{w3}

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CHN_{1v}

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CHN_{1z}

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN₂ with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES
LINES = 36 10

COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14

CONCATENATE LINES

LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES

LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)
Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS

IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS

IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132

Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS

IN AREAS 27 TO 28 IN STEPS OF 1

** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144

Drift wall and Tsw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS

IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS

IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 275
 MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
 IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 395
 MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
 IN AREAS 37 TO 40 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 675
 MAXIMUM ELEMENT NUMBER = 624

GENERATE NODES AND ELEMENTS
 IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
 MAXIMUM NODE NUMBER = 773
 MAXIMUM ELEMENT NUMBER = 708

Tsw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
 IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 836
 MAXIMUM ELEMENT NUMBER = 762

PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
 IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 857
 MAXIMUM ELEMENT NUMBER = 780

TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
 IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 878
 MAXIMUM ELEMENT NUMBER = 798

Tsw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
 IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 899
 MAXIMUM ELEMENT NUMBER = 816

Chn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
 IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 913
 MAXIMUM ELEMENT NUMBER = 828
 CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
 IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 962
 MAXIMUM ELEMENT NUMBER = 870
 CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
 IN AREAS 17 TO 18 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 1046
 MAXIMUM ELEMENT NUMBER = 942

Delete concatenated lines
 (L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
 (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 54,

DRAG AREAS
 23, 24, 25, 26,
 ALONG LINES
 54,

DRAG AREAS
 19, 20, 21, 22,

ALONG LINES

56,

DRAG AREAS

23, 24, 25, 26,

ALONG LINES

56,

(plot area numbers before next drag commands)

DRAG AREAS

44, 47, 50, 52,

ALONG LINES

55,

DRAG AREAS

57, 61, 65, 68,

ALONG LINES

55,

DRAG AREAS

72, 75, 78, 80,

ALONG LINES

57,

DRAG AREAS

85, 89, 93, 96,

ALONG LINES

57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172

LINE 175 USED FOR LINE(S) 187
 LINE 176 USED FOR LINE(S) 193
 LINE 177 USED FOR LINE(S) 192
 LINE 179 USED FOR LINE(S) 194
 LINE 180 USED FOR LINE(S) 195
 LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151

Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1651
 MAXIMUM ELEMENT NUMBER = 1482

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1771
 MAXIMUM ELEMENT NUMBER = 1602

GENERATE NODES AND ELEMENTS
 IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 1916
 MAXIMUM ELEMENT NUMBER = 1734

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
 IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4

MAXIMUM NODE NUMBER = 2521
MAXIMUM ELEMENT NUMBER = 2274

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2641
MAXIMUM ELEMENT NUMBER = 2394

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2786
MAXIMUM ELEMENT NUMBER = 2526

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2881
MAXIMUM ELEMENT NUMBER = 2586
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3196
MAXIMUM ELEMENT NUMBER = 2786

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3361
MAXIMUM ELEMENT NUMBER = 2886

GENERATE NODES AND ELEMENTS

IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 3526
MAXIMUM ELEMENT NUMBER = 2986

DRAG AREAS
33, 34,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3946
MAXIMUM ELEMENT NUMBER = 3286

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 4166
MAXIMUM ELEMENT NUMBER = 3436

GENERATE NODES AND ELEMENTS
IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 4386
MAXIMUM ELEMENT NUMBER = 3586
Mid-drift rock
(V's 43,44,45,46)

DRAG AREAS
37, 38,
ALONG LINES
58,

*** WARNING *** CP= 26.890 TIME= 13:16:27
Meshing of volume 43 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
3682 3683 3684 3685 3686 3687 3688 3689
3690 3691

*** WARNING *** CP= 27.750 TIME= 13:16:28
Meshing of volume 44 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
4207 4208 4209 4210 4211 4212 4213 4214
4215 4216

MAXIMUM NODE NUMBER = 5226
MAXIMUM ELEMENT NUMBER = 4286

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 28.770 TIME= 13:16:29
Meshing of volume 46 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
4322 4323 4324 4325 4326 4372 4373 4374
4375 4376

MAXIMUM NODE NUMBER = 5666
MAXIMUM ELEMENT NUMBER = 4636
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 28.950 TIME= 13:16:29
Meshing of area 197 produced 3 poorly shaped faces.

*** NOTE *** CP= 28.950 TIME= 13:16:29
Worst aspect ratio is 20.5374211 : 1.

*** WARNING *** CP= 30.050 TIME= 13:16:30
Meshing of volume 45 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
4887 4888 4894 4895 4901 4902 4908 4909
4915 4916

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 6106
MAXIMUM ELEMENT NUMBER = 4986

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS

Extrude rest of TSw2
(V's 47,48,49,50)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6666
MAXIMUM ELEMENT NUMBER = 5406
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7016
MAXIMUM ELEMENT NUMBER = 5676
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7156
MAXIMUM ELEMENT NUMBER = 5766
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7296
MAXIMUM ELEMENT NUMBER = 5856
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7436
MAXIMUM ELEMENT NUMBER = 5946
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7541
MAXIMUM ELEMENT NUMBER = 6006

Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 7821
MAXIMUM ELEMENT NUMBER = 6216
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 34.700 TIME= 13:16:35
Meshing of volume 63 produced 33 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***			
6257	6262	6263	6267
6274	6275	6276	6317
6329	6332	6333	6334
6383	6387	6388	6389
6396			

*** WARNING *** CP= 35.160 TIME= 13:16:35
Meshing of volume 64 produced 33 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***			
6437	6442	6443	6447
6454	6455	6456	6497
6509	6512	6513	6514
6563	6567	6568	6569
6576			

MAXIMUM NODE NUMBER = 8276
MAXIMUM ELEMENT NUMBER = 6576

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 6139	USED FOR NODES 6715
NODE 6140	USED FOR NODES 6716
NODE 6141	USED FOR NODES 6717
NODE 6142	USED FOR NODES 6718
NODE 7017	USED FOR NODES 7158
NODE 5319	USED FOR NODES 6419
NODE 5320	USED FOR NODES 6420
NODE 5321	USED FOR NODES 6421
NODE 5322	USED FOR NODES 6422
NODE 6388	USED FOR NODES 7297
NODE 5227	USED FOR NODES 5667
NODE 5228	USED FOR NODES 6387
NODE 6427	USED FOR NODES 7313
NODE 6428	USED FOR NODES 7314
NODE 7582	USED FOR NODES 7874
NODE 7583	USED FOR NODES 7875
NODE 7584	USED FOR NODES 7876
NODE 7585	USED FOR NODES 7877
NODE 7298	USED FOR NODES 7437
NODE 7438	USED FOR NODES 7542

NODE	6107	USED	FOR	NODES	6668
NODE	5707	USED	FOR	NODES	6108
NODE	5708	USED	FOR	NODES	6147
NODE	5709	USED	FOR	NODES	6148
NODE	5710	USED	FOR	NODES	6149
NODE	6429	USED	FOR	NODES	7315
NODE	5711	USED	FOR	NODES	6150
NODE	6430	USED	FOR	NODES	7316
NODE	7321	USED	FOR	NODES	7449
NODE	7322	USED	FOR	NODES	7450
NODE	7323	USED	FOR	NODES	7451
NODE	7324	USED	FOR	NODES	7452
NODE	5315	USED	FOR	NODES	5668
NODE	5316	USED	FOR	NODES	5669
NODE	5317	USED	FOR	NODES	5670
NODE	5318	USED	FOR	NODES	5671
NODE	7457	USED	FOR	NODES	7574
NODE	7458	USED	FOR	NODES	7575
NODE	7459	USED	FOR	NODES	7576
NODE	7460	USED	FOR	NODES	7577
NODE	7543	USED	FOR	NODES	7822
NODE	6707	USED	FOR	NODES	7041
NODE	7033	USED	FOR	NODES	7181
NODE	7034	USED	FOR	NODES	7182
NODE	7035	USED	FOR	NODES	7183
NODE	7036	USED	FOR	NODES	7184
NODE	6667	USED	FOR	NODES	7018
NODE	6708	USED	FOR	NODES	7042
NODE	6709	USED	FOR	NODES	7043
NODE	6710	USED	FOR	NODES	7044
NODE	5260	USED	FOR	NODES	5678
NODE	5447	USED	FOR	NODES	5703
NODE	5448	USED	FOR	NODES	5704
NODE	5449	USED	FOR	NODES	5705
NODE	5450	USED	FOR	NODES	5706
NODE	5750	USED	FOR	NODES	6164
NODE	5751	USED	FOR	NODES	6165
NODE	5752	USED	FOR	NODES	6166
NODE	6723	USED	FOR	NODES	7057
NODE	6724	USED	FOR	NODES	7058
NODE	6725	USED	FOR	NODES	7059
NODE	6726	USED	FOR	NODES	7060
NODE	6155	USED	FOR	NODES	6731
NODE	6156	USED	FOR	NODES	6732
NODE	6157	USED	FOR	NODES	6733
NODE	6158	USED	FOR	NODES	6734
NODE	6396	USED	FOR	NODES	7307
NODE	6443	USED	FOR	NODES	7329
NODE	6444	USED	FOR	NODES	7330
NODE	6445	USED	FOR	NODES	7331
NODE	6446	USED	FOR	NODES	7332
NODE	5236	USED	FOR	NODES	6405
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NODE	2975	USED FOR NODES	3595
NODE	2976	USED FOR NODES	3596
NODE	2977	USED FOR NODES	3597
NODE	2888	USED FOR NODES	3546
NODE	2978	USED FOR NODES	3598
NODE	3862	USED FOR NODES	4982
NODE	3859	USED FOR NODES	4979
NODE	3755	USED FOR NODES	4851
NODE	3861	USED FOR NODES	4981
NODE	3860	USED FOR NODES	4980
NODE	3628	USED FOR NODES	4532
NODE	3533	USED FOR NODES	4413
NODE	3629	USED FOR NODES	4533
NODE	3627	USED FOR NODES	4531
NODE	3630	USED FOR NODES	4534
NODE	2842	USED FOR NODES	2897
NODE	2851	USED FOR NODES	2920
NODE	2853	USED FOR NODES	2922
NODE	2852	USED FOR NODES	2921
NODE	2850	USED FOR NODES	2919
NODE	3143	USED FOR NODES	3817
NODE	3144	USED FOR NODES	3818
NODE	3053	USED FOR NODES	3765
NODE	3141	USED FOR NODES	3815
NODE	3142	USED FOR NODES	3816
NODE	2979	USED FOR NODES	3599
NODE	2981	USED FOR NODES	3601
NODE	2982	USED FOR NODES	3602
NODE	2889	USED FOR NODES	3547
NODE	2980	USED FOR NODES	3600
NODE	3052	USED FOR NODES	3764
NODE	3140	USED FOR NODES	3814
NODE	3137	USED FOR NODES	3811
NODE	3139	USED FOR NODES	3813
NODE	3138	USED FOR NODES	3812

NODE	2984	USED	FOR	NODES	3604
NODE	2890	USED	FOR	NODES	3548
NODE	2985	USED	FOR	NODES	3605
NODE	2986	USED	FOR	NODES	3606
NODE	2983	USED	FOR	NODES	3603
NODE	3856	USED	FOR	NODES	4976
NODE	3754	USED	FOR	NODES	4850
NODE	3855	USED	FOR	NODES	4975
NODE	3858	USED	FOR	NODES	4978
NODE	3857	USED	FOR	NODES	4977
NODE	3632	USED	FOR	NODES	4536
NODE	3634	USED	FOR	NODES	4538
NODE	3534	USED	FOR	NODES	4414
NODE	3631	USED	FOR	NODES	4535
NODE	3633	USED	FOR	NODES	4537
NODE	3134	USED	FOR	NODES	3808
NODE	3133	USED	FOR	NODES	3807
NODE	3135	USED	FOR	NODES	3809
NODE	3136	USED	FOR	NODES	3810
NODE	3051	USED	FOR	NODES	3763
NODE	2891	USED	FOR	NODES	3549
NODE	2989	USED	FOR	NODES	3609
NODE	2987	USED	FOR	NODES	3607
NODE	2988	USED	FOR	NODES	3608
NODE	2990	USED	FOR	NODES	3610
NODE	3130	USED	FOR	NODES	3804
NODE	3050	USED	FOR	NODES	3762
NODE	3129	USED	FOR	NODES	3803
NODE	3131	USED	FOR	NODES	3805
NODE	3132	USED	FOR	NODES	3806
NODE	2993	USED	FOR	NODES	3613
NODE	2992	USED	FOR	NODES	3612
NODE	2892	USED	FOR	NODES	3550
NODE	2991	USED	FOR	NODES	3611
NODE	2994	USED	FOR	NODES	3614
NODE	3852	USED	FOR	NODES	4972
NODE	3853	USED	FOR	NODES	4973
NODE	3854	USED	FOR	NODES	4974
NODE	3753	USED	FOR	NODES	4849
NODE	3851	USED	FOR	NODES	4971
NODE	3638	USED	FOR	NODES	4542
NODE	3535	USED	FOR	NODES	4415
NODE	3635	USED	FOR	NODES	4539
NODE	3637	USED	FOR	NODES	4541
NODE	3636	USED	FOR	NODES	4540
NODE	3128	USED	FOR	NODES	3802
NODE	3127	USED	FOR	NODES	3801
NODE	3049	USED	FOR	NODES	3761
NODE	3125	USED	FOR	NODES	3799
NODE	3126	USED	FOR	NODES	3800
NODE	2995	USED	FOR	NODES	3615
NODE	2997	USED	FOR	NODES	3617
NODE	2998	USED	FOR	NODES	3618
NODE	2996	USED	FOR	NODES	3616
NODE	2893	USED	FOR	NODES	3551
NODE	3048	USED	FOR	NODES	3760
NODE	3123	USED	FOR	NODES	3797
NODE	3124	USED	FOR	NODES	3798
NODE	3122	USED	FOR	NODES	3796
NODE	3121	USED	FOR	NODES	3795
NODE	2999	USED	FOR	NODES	3619
NODE	3000	USED	FOR	NODES	3620
NODE	3002	USED	FOR	NODES	3622
NODE	2894	USED	FOR	NODES	3552
NODE	3001	USED	FOR	NODES	3621
NODE	2931	USED	FOR	NODES	3575
NODE	2932	USED	FOR	NODES	3576
NODE	2933	USED	FOR	NODES	3577
NODE	2934	USED	FOR	NODES	3578
NODE	2885	USED	FOR	NODES	3541

NODE	3752	USED	FOR	NODES	4848
NODE	3850	USED	FOR	NODES	4970
NODE	3847	USED	FOR	NODES	4967
NODE	3848	USED	FOR	NODES	4968
NODE	3849	USED	FOR	NODES	4969
NODE	3639	USED	FOR	NODES	4543
NODE	3642	USED	FOR	NODES	4546
NODE	3536	USED	FOR	NODES	4416
NODE	3640	USED	FOR	NODES	4544
NODE	3641	USED	FOR	NODES	4545
NODE	3846	USED	FOR	NODES	4966
NODE	3845	USED	FOR	NODES	4965
NODE	3751	USED	FOR	NODES	4847
NODE	3844	USED	FOR	NODES	4964
NODE	3843	USED	FOR	NODES	4963
NODE	3646	USED	FOR	NODES	4550
NODE	3643	USED	FOR	NODES	4547
NODE	3537	USED	FOR	NODES	4417
NODE	3644	USED	FOR	NODES	4548
NODE	3645	USED	FOR	NODES	4549
NODE	3842	USED	FOR	NODES	4962
NODE	3839	USED	FOR	NODES	4959
NODE	3750	USED	FOR	NODES	4846
NODE	3840	USED	FOR	NODES	4960
NODE	3841	USED	FOR	NODES	4961
NODE	3648	USED	FOR	NODES	4552
NODE	3647	USED	FOR	NODES	4551
NODE	3538	USED	FOR	NODES	4418
NODE	3649	USED	FOR	NODES	4553
NODE	3650	USED	FOR	NODES	4554
NODE	3835	USED	FOR	NODES	4955
NODE	3836	USED	FOR	NODES	4956
NODE	3837	USED	FOR	NODES	4957
NODE	3838	USED	FOR	NODES	4958
NODE	3749	USED	FOR	NODES	4845
NODE	3652	USED	FOR	NODES	4556
NODE	3651	USED	FOR	NODES	4555
NODE	3539	USED	FOR	NODES	4419
NODE	3654	USED	FOR	NODES	4558
NODE	3653	USED	FOR	NODES	4557
NODE	3832	USED	FOR	NODES	4952
NODE	3833	USED	FOR	NODES	4953
NODE	3834	USED	FOR	NODES	4954
NODE	3748	USED	FOR	NODES	4844
NODE	3831	USED	FOR	NODES	4951
NODE	3658	USED	FOR	NODES	4562
NODE	3656	USED	FOR	NODES	4560
NODE	3657	USED	FOR	NODES	4561
NODE	3540	USED	FOR	NODES	4420
NODE	3655	USED	FOR	NODES	4559
NODE	3586	USED	FOR	NODES	4494
NODE	3531	USED	FOR	NODES	4405
NODE	3583	USED	FOR	NODES	4491
NODE	3584	USED	FOR	NODES	4492
NODE	3585	USED	FOR	NODES	4493
NODE	6299	USED	FOR	NODES	6913
NODE	6300	USED	FOR	NODES	6914
NODE	7378	USED	FOR	NODES	7502
NODE	6548	USED	FOR	NODES	7383
NODE	7522	USED	FOR	NODES	7734
NODE	7523	USED	FOR	NODES	7735
NODE	7524	USED	FOR	NODES	7736
NODE	4835	USED	FOR	NODES	6268
NODE	7525	USED	FOR	NODES	7737
NODE	6587	USED	FOR	NODES	7397
NODE	6277	USED	FOR	NODES	6868
NODE	6588	USED	FOR	NODES	7398
NODE	6589	USED	FOR	NODES	7399
NODE	6590	USED	FOR	NODES	7400
NODE	7405	USED	FOR	NODES	7514

NODE	7406	USED	FOR	NODES	7515
NODE	7407	USED	FOR	NODES	7516
NODE	7408	USED	FOR	NODES	7517
NODE	6301	USED	FOR	NODES	6915
NODE	6302	USED	FOR	NODES	6916
NODE	7117	USED	FOR	NODES	7265
NODE	7742	USED	FOR	NODES	8129
NODE	4919	USED	FOR	NODES	6307
NODE	4920	USED	FOR	NODES	6308
NODE	4921	USED	FOR	NODES	6309
NODE	4922	USED	FOR	NODES	6310
NODE	6905	USED	FOR	NODES	7125
NODE	7743	USED	FOR	NODES	8130
NODE	7118	USED	FOR	NODES	7266
NODE	4396	USED	FOR	NODES	6557
NODE	6906	USED	FOR	NODES	7126
NODE	6907	USED	FOR	NODES	7127
NODE	6908	USED	FOR	NODES	7128
NODE	7498	USED	FOR	NODES	7712
NODE	7103	USED	FOR	NODES	7238
NODE	6879	USED	FOR	NODES	7098
NODE	7119	USED	FOR	NODES	7267
NODE	7744	USED	FOR	NODES	8131
NODE	4495	USED	FOR	NODES	6579
NODE	4496	USED	FOR	NODES	6580
NODE	4497	USED	FOR	NODES	6581
NODE	4498	USED	FOR	NODES	6582
NODE	7703	USED	FOR	NODES	8097
NODE	7745	USED	FOR	NODES	8132
NODE	7120	USED	FOR	NODES	7268
NODE	7746	USED	FOR	NODES	8133
NODE	7747	USED	FOR	NODES	8134
NODE	7748	USED	FOR	NODES	8135
NODE	7749	USED	FOR	NODES	8136
NODE	7121	USED	FOR	NODES	7269
NODE	7122	USED	FOR	NODES	7270
NODE	7123	USED	FOR	NODES	7271
NODE	7124	USED	FOR	NODES	7272
NODE	7379	USED	FOR	NODES	7503
NODE	4836	USED	FOR	NODES	6269
NODE	6549	USED	FOR	NODES	7384
NODE	7526	USED	FOR	NODES	7738
NODE	7527	USED	FOR	NODES	7739
NODE	7528	USED	FOR	NODES	7740
NODE	7529	USED	FOR	NODES	7741
NODE	6278	USED	FOR	NODES	6869
NODE	6591	USED	FOR	NODES	7401
NODE	6592	USED	FOR	NODES	7402
NODE	6593	USED	FOR	NODES	7403
NODE	6594	USED	FOR	NODES	7404
NODE	7409	USED	FOR	NODES	7518
NODE	7410	USED	FOR	NODES	7519
NODE	7411	USED	FOR	NODES	7520
NODE	7412	USED	FOR	NODES	7521
NODE	6303	USED	FOR	NODES	6917
NODE	6304	USED	FOR	NODES	6918
NODE	6305	USED	FOR	NODES	6919
NODE	6306	USED	FOR	NODES	6920
NODE	4923	USED	FOR	NODES	6311
NODE	4924	USED	FOR	NODES	6312
NODE	4925	USED	FOR	NODES	6313
NODE	4926	USED	FOR	NODES	6314
NODE	6909	USED	FOR	NODES	7129
NODE	7499	USED	FOR	NODES	7713
NODE	7104	USED	FOR	NODES	7239
NODE	4397	USED	FOR	NODES	6558
NODE	6880	USED	FOR	NODES	7099
NODE	6910	USED	FOR	NODES	7130
NODE	6911	USED	FOR	NODES	7131
NODE	6912	USED	FOR	NODES	7132

NODE 4499 USED FOR NODES 6583
 NODE 4500 USED FOR NODES 6584
 NODE 4501 USED FOR NODES 6585
 NODE 4502 USED FOR NODES 6586
 NODE 7704 USED FOR NODES 8098
 NODE 4913 USED FOR NODES 6297
 NODE 4914 USED FOR NODES 6298
 NODE 7377 USED FOR NODES 7500
 NODE 6547 USED FOR NODES 7380
 NODE 4827 USED FOR NODES 6267
 NODE 6270 USED FOR NODES 6867
 NODE 6575 USED FOR NODES 7389
 NODE 6576 USED FOR NODES 7390
 NODE 6577 USED FOR NODES 7391
 NODE 6578 USED FOR NODES 7392
 NODE 7393 USED FOR NODES 7506
 NODE 7394 USED FOR NODES 7507
 NODE 7395 USED FOR NODES 7508
 NODE 7396 USED FOR NODES 7509
 NODE 4483 USED FOR NODES 6571
 NODE 6897 USED FOR NODES 7113
 NODE 4911 USED FOR NODES 6295
 NODE 4912 USED FOR NODES 6296
 NODE 4484 USED FOR NODES 6572
 NODE 4485 USED FOR NODES 6573
 NODE 4486 USED FOR NODES 6574
 NODE 4395 USED FOR NODES 6550
 NODE 6291 USED FOR NODES 6901
 NODE 7497 USED FOR NODES 7705
 NODE 6898 USED FOR NODES 7114
 NODE 6899 USED FOR NODES 7115
 NODE 6900 USED FOR NODES 7116
 NODE 7100 USED FOR NODES 7237
 NODE 6870 USED FOR NODES 7097
 NODE 7510 USED FOR NODES 7726
 NODE 7511 USED FOR NODES 7727
 NODE 7512 USED FOR NODES 7728
 NODE 7513 USED FOR NODES 7729
 NODE 6292 USED FOR NODES 6902
 NODE 6293 USED FOR NODES 6903
 NODE 6294 USED FOR NODES 6904
 NODE 7702 USED FOR NODES 8085
 NODE 7730 USED FOR NODES 8121
 NODE 7731 USED FOR NODES 8122
 NODE 7732 USED FOR NODES 8123
 NODE 7733 USED FOR NODES 8124
 NODE 7109 USED FOR NODES 7253
 NODE 7110 USED FOR NODES 7254
 NODE 7111 USED FOR NODES 7255
 NODE 7112 USED FOR NODES 7256

*** WARNING *** CP= 51.130 TIME= 13:16:52
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	67 USED FOR KEYPOINT(S)	115		
KEYPOINT	72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT	76 USED FOR KEYPOINT(S)	89		
KEYPOINT	80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85 USED FOR KEYPOINT(S)	122		
KEYPOINT	91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93 USED FOR KEYPOINT(S)	104		
KEYPOINT	98 USED FOR KEYPOINT(S)	117		
KEYPOINT	101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121 USED FOR KEYPOINT(S)	137		
KEYPOINT	123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126 USED FOR KEYPOINT(S)	129	141	150

KEYPOINT	134	USED FOR KEYPOINT(S)	148	160
KEYPOINT	135	USED FOR KEYPOINT(S)	162	
KEYPOINT	138	USED FOR KEYPOINT(S)	155	
KEYPOINT	139	USED FOR KEYPOINT(S)	144	153
KEYPOINT	142	USED FOR KEYPOINT(S)	146	
KEYPOINT	143	USED FOR KEYPOINT(S)	152	
KEYPOINT	147	USED FOR KEYPOINT(S)	157	
KEYPOINT	151	USED FOR KEYPOINT(S)	164	
KEYPOINT	154	USED FOR KEYPOINT(S)	165	
KEYPOINT	156	USED FOR KEYPOINT(S)	167	
KEYPOINT	158	USED FOR KEYPOINT(S)	181	
KEYPOINT	159	USED FOR KEYPOINT(S)	184	
KEYPOINT	161	USED FOR KEYPOINT(S)	186	
KEYPOINT	163	USED FOR KEYPOINT(S)	170	
KEYPOINT	166	USED FOR KEYPOINT(S)	171	
KEYPOINT	168	USED FOR KEYPOINT(S)	173	
KEYPOINT	169	USED FOR KEYPOINT(S)	176	
KEYPOINT	172	USED FOR KEYPOINT(S)	177	
KEYPOINT	174	USED FOR KEYPOINT(S)	179	
KEYPOINT	182	USED FOR KEYPOINT(S)	187	
KEYPOINT	183	USED FOR KEYPOINT(S)	190	
KEYPOINT	185	USED FOR KEYPOINT(S)	192	
KEYPOINT	188	USED FOR KEYPOINT(S)	193	
KEYPOINT	189	USED FOR KEYPOINT(S)	196	
KEYPOINT	191	USED FOR KEYPOINT(S)	198	
KEYPOINT	194	USED FOR KEYPOINT(S)	199	
KEYPOINT	195	USED FOR KEYPOINT(S)	202	
KEYPOINT	197	USED FOR KEYPOINT(S)	204	
LINE	108	USED FOR LINE(S)	240	
LINE	121	USED FOR LINE(S)	241	
LINE	126	USED FOR LINE(S)	154	239
LINE	134	USED FOR LINE(S)	174	
LINE	137	USED FOR LINE(S)	172	
LINE	141	USED FOR LINE(S)	238	
LINE	159	USED FOR LINE(S)	236	246 270
LINE	160	USED FOR LINE(S)	252	
LINE	161	USED FOR LINE(S)	251	
LINE	187	USED FOR LINE(S)	257	
LINE	192	USED FOR LINE(S)	220	256 264
LINE	193	USED FOR LINE(S)	225	
LINE	194	USED FOR LINE(S)	226	
LINE	200	USED FOR LINE(S)	244	
LINE	203	USED FOR LINE(S)	243	
LINE	205	USED FOR LINE(S)	233	259 272
LINE	207	USED FOR LINE(S)	265	
LINE	228	USED FOR LINE(S)	271	
LINE	245	USED FOR LINE(S)	269	
LINE	247	USED FOR LINE(S)	268	275 307
LINE	248	USED FOR LINE(S)	283	
LINE	249	USED FOR LINE(S)	282	
LINE	253	USED FOR LINE(S)	290	
LINE	254	USED FOR LINE(S)	262	289 299
LINE	255	USED FOR LINE(S)	263	
LINE	258	USED FOR LINE(S)	273	
LINE	260	USED FOR LINE(S)	267	292 309
LINE	261	USED FOR LINE(S)	300	
LINE	266	USED FOR LINE(S)	308	
LINE	274	USED FOR LINE(S)	306	
LINE	276	USED FOR LINE(S)	305	330
LINE	277	USED FOR LINE(S)	336	
LINE	278	USED FOR LINE(S)	335	
LINE	285	USED FOR LINE(S)	320	
LINE	286	USED FOR LINE(S)	319	
LINE	287	USED FOR LINE(S)	297	315
LINE	288	USED FOR LINE(S)	298	
LINE	291	USED FOR LINE(S)	310	
LINE	293	USED FOR LINE(S)	302	
LINE	295	USED FOR LINE(S)	313	
LINE	296	USED FOR LINE(S)	314	
LINE	303	USED FOR LINE(S)	325	

LINE	304	USED FOR LINE(S)	331
LINE	312	USED FOR LINE(S)	339
LINE	317	USED FOR LINE(S)	341
LINE	318	USED FOR LINE(S)	340
LINE	322	USED FOR LINE(S)	346
LINE	323	USED FOR LINE(S)	345
LINE	326	USED FOR LINE(S)	377
LINE	327	USED FOR LINE(S)	383
LINE	328	USED FOR LINE(S)	382
LINE	332	USED FOR LINE(S)	388
LINE	333	USED FOR LINE(S)	387
LINE	338	USED FOR LINE(S)	352
LINE	343	USED FOR LINE(S)	354
LINE	344	USED FOR LINE(S)	353
LINE	348	USED FOR LINE(S)	359
LINE	349	USED FOR LINE(S)	358
LINE	351	USED FOR LINE(S)	365
LINE	356	USED FOR LINE(S)	367
LINE	357	USED FOR LINE(S)	366
LINE	361	USED FOR LINE(S)	372
LINE	362	USED FOR LINE(S)	371
LINE	378	USED FOR LINE(S)	390
LINE	379	USED FOR LINE(S)	396
LINE	380	USED FOR LINE(S)	395
LINE	384	USED FOR LINE(S)	401
LINE	385	USED FOR LINE(S)	400
LINE	391	USED FOR LINE(S)	403
LINE	392	USED FOR LINE(S)	409
LINE	393	USED FOR LINE(S)	408
LINE	397	USED FOR LINE(S)	414
LINE	398	USED FOR LINE(S)	413
LINE	404	USED FOR LINE(S)	416
LINE	405	USED FOR LINE(S)	422
LINE	406	USED FOR LINE(S)	421
LINE	410	USED FOR LINE(S)	427
LINE	411	USED FOR LINE(S)	426
AREA	56	USED FOR AREA(S)	161
AREA	84	USED FOR AREA(S)	123
AREA	95	USED FOR AREA(S)	160
AREA	112	USED FOR AREA(S)	168
AREA	142	USED FOR AREA(S)	172
AREA	148	USED FOR AREA(S)	156
AREA	154	USED FOR AREA(S)	163
AREA	155	USED FOR AREA(S)	177
AREA	159	USED FOR AREA(S)	181
AREA	165	USED FOR AREA(S)	180
AREA	166	USED FOR AREA(S)	188
AREA	170	USED FOR AREA(S)	193
AREA	171	USED FOR AREA(S)	176
AREA	174	USED FOR AREA(S)	182
AREA	175	USED FOR AREA(S)	199
AREA	179	USED FOR AREA(S)	204
AREA	184	USED FOR AREA(S)	203
AREA	185	USED FOR AREA(S)	223
AREA	191	USED FOR AREA(S)	212
AREA	192	USED FOR AREA(S)	198
AREA	195	USED FOR AREA(S)	205
AREA	197	USED FOR AREA(S)	208
AREA	202	USED FOR AREA(S)	219
AREA	210	USED FOR AREA(S)	226
AREA	214	USED FOR AREA(S)	230
AREA	217	USED FOR AREA(S)	255
AREA	221	USED FOR AREA(S)	259
AREA	228	USED FOR AREA(S)	235
AREA	232	USED FOR AREA(S)	239
AREA	237	USED FOR AREA(S)	244
AREA	241	USED FOR AREA(S)	248
AREA	253	USED FOR AREA(S)	264
AREA	257	USED FOR AREA(S)	268
AREA	262	USED FOR AREA(S)	273

AREA 266 USED FOR AREA(S) 277
AREA 271 USED FOR AREA(S) 282
AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
Invert
(V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8371
MAXIMUM ELEMENT NUMBER = 6636
Rock around drift
(V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8686
MAXIMUM ELEMENT NUMBER = 6836

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8851
MAXIMUM ELEMENT NUMBER = 6936

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 9016
MAXIMUM ELEMENT NUMBER = 7036

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9436
MAXIMUM ELEMENT NUMBER = 7336

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 9656
MAXIMUM ELEMENT NUMBER = 7486

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 9876
MAXIMUM ELEMENT NUMBER = 7636
Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 59.930 TIME= 13:17:00
Meshing of volume 75 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
7732 7733 7734 7735 7736 7737 7738 7739
7740 7741

*** WARNING *** CP= 60.810 TIME= 13:17:01
Meshing of volume 76 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
8257 8258 8259 8260 8261 8262 8263 8264
8265 8266

MAXIMUM NODE NUMBER = 10716
MAXIMUM ELEMENT NUMBER = 8336

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
59,

*** WARNING *** CP= 61.860 TIME= 13:17:02
Meshing of volume 78 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
8372 8373 8374 8375 8376 8422 8423 8424
8425 8426

MAXIMUM NODE NUMBER = 11156
MAXIMUM ELEMENT NUMBER = 8686
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 62.040 TIME= 13:17:02
Meshing of area 311 produced 3 poorly shaped faces.

*** NOTE *** CP= 62.040 TIME= 13:17:02
Worst aspect ratio is 20.5374211 : 1.

*** WARNING *** CP= 63.140 TIME= 13:17:04
Meshing of volume 77 produced 10 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
8957 8958 8959 8960 8961 8962 8963 8964
8965 8966

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 11596
MAXIMUM ELEMENT NUMBER = 9036

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 79,80,81,82)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12156
MAXIMUM ELEMENT NUMBER = 9456
Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12506
MAXIMUM ELEMENT NUMBER = 9726
Extrude PTn
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12646
MAXIMUM ELEMENT NUMBER = 9816
Extrude TCw
(V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12786
MAXIMUM ELEMENT NUMBER = 9906
Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 12926
MAXIMUM ELEMENT NUMBER = 9996
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13031
MAXIMUM ELEMENT NUMBER = 10056
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 13311
MAXIMUM ELEMENT NUMBER = 10266
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 67.920 TIME= 13:17:08
Meshing of volume 95 produced 33 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

10307	10312	10313	10317	10318	10319	10322	10323
10324	10325	10326	10367	10372	10373	10377	10378
10379	10382	10383	10384	10385	10386	10427	10432
10433	10437	10438	10439	10442	10443	10444	10445
10446							

*** WARNING *** CP= 68.400 TIME= 13:17:09
Meshing of volume 96 produced 33 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

10487	10492	10493	10497	10498	10499	10502	10503
10504	10505	10506	10547	10552	10553	10557	10558
10559	10562	10563	10564	10565	10566	10607	10612
10613	10617	10618	10619	10622	10623	10624	10625
10626							

MAXIMUM NODE NUMBER = 13766
MAXIMUM ELEMENT NUMBER = 10626

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 10805	USED FOR NODES	11158
NODE 12197	USED FOR NODES	12531
NODE 11917	USED FOR NODES	12803
NODE 10806	USED FOR NODES	11159
NODE 12198	USED FOR NODES	12532
NODE 12199	USED FOR NODES	12533
NODE 12200	USED FOR NODES	12534
NODE 10807	USED FOR NODES	11160
NODE 11629	USED FOR NODES	12205
NODE 11630	USED FOR NODES	12206
NODE 11631	USED FOR NODES	12207
NODE 11632	USED FOR NODES	12208
NODE 10808	USED FOR NODES	11161
NODE 12928	USED FOR NODES	13032
NODE 11918	USED FOR NODES	12804
NODE 13033	USED FOR NODES	13312
NODE 11919	USED FOR NODES	12805
NODE 12811	USED FOR NODES	12939
NODE 10809	USED FOR NODES	11909
NODE 12812	USED FOR NODES	12940
NODE 10810	USED FOR NODES	11910
NODE 12947	USED FOR NODES	13064
NODE 12948	USED FOR NODES	13065
NODE 12949	USED FOR NODES	13066
NODE 12950	USED FOR NODES	13067
NODE 10811	USED FOR NODES	11911
NODE 12813	USED FOR NODES	12941
NODE 10812	USED FOR NODES	11912
NODE 12814	USED FOR NODES	12942
NODE 11920	USED FOR NODES	12806
NODE 13072	USED FOR NODES	13364
NODE 13073	USED FOR NODES	13365
NODE 10718	USED FOR NODES	11877
NODE 13074	USED FOR NODES	13366
NODE 13075	USED FOR NODES	13367

NODE 10717	USED FOR NODES	11157
NODE 11197	USED FOR NODES	11598
NODE 11198	USED FOR NODES	11637
NODE 11199	USED FOR NODES	11638
NODE 11200	USED FOR NODES	11639
NODE 11201	USED FOR NODES	11640
NODE 11878	USED FOR NODES	12787
NODE 12507	USED FOR NODES	12648
NODE 12157	USED FOR NODES	12508
NODE 12523	USED FOR NODES	12671
NODE 12524	USED FOR NODES	12672
NODE 12525	USED FOR NODES	12673
NODE 12526	USED FOR NODES	12674
NODE 12788	USED FOR NODES	12927
NODE 11597	USED FOR NODES	12158
NODE 10750	USED FOR NODES	11168
NODE 10937	USED FOR NODES	11193
NODE 10938	USED FOR NODES	11194
NODE 10939	USED FOR NODES	11195
NODE 10940	USED FOR NODES	11196
NODE 11615	USED FOR NODES	12168
NODE 12179	USED FOR NODES	12512
NODE 10726	USED FOR NODES	11895
NODE 12213	USED FOR NODES	12547
NODE 12214	USED FOR NODES	12548
NODE 12215	USED FOR NODES	12549
NODE 12216	USED FOR NODES	12550
NODE 11645	USED FOR NODES	12221
NODE 11646	USED FOR NODES	12222
NODE 11647	USED FOR NODES	12223
NODE 11648	USED FOR NODES	12224
NODE 10827	USED FOR NODES	11927
NODE 10828	USED FOR NODES	11928
NODE 13041	USED FOR NODES	13340
NODE 12931	USED FOR NODES	13050
NODE 10825	USED FOR NODES	11925
NODE 10826	USED FOR NODES	11926
NODE 12963	USED FOR NODES	13080
NODE 12964	USED FOR NODES	13081
NODE 12965	USED FOR NODES	13082
NODE 12966	USED FOR NODES	13083
NODE 13088	USED FOR NODES	13380
NODE 13089	USED FOR NODES	13381
NODE 13090	USED FOR NODES	13382
NODE 13091	USED FOR NODES	13383
NODE 11933	USED FOR NODES	12819
NODE 11934	USED FOR NODES	12820
NODE 11237	USED FOR NODES	11606
NODE 11239	USED FOR NODES	11653
NODE 11240	USED FOR NODES	11654
NODE 11241	USED FOR NODES	11655
NODE 11242	USED FOR NODES	11656
NODE 11935	USED FOR NODES	12821
NODE 11936	USED FOR NODES	12822
NODE 12827	USED FOR NODES	12955
NODE 12828	USED FOR NODES	12956
NODE 12829	USED FOR NODES	12957
NODE 12830	USED FOR NODES	12958
NODE 12517	USED FOR NODES	12652
NODE 12539	USED FOR NODES	12687
NODE 12540	USED FOR NODES	12688
NODE 12541	USED FOR NODES	12689
NODE 12542	USED FOR NODES	12690
NODE 11886	USED FOR NODES	12797
NODE 12792	USED FOR NODES	12935
NODE 10933	USED FOR NODES	11189
NODE 10749	USED FOR NODES	11167
NODE 10934	USED FOR NODES	11190
NODE 10935	USED FOR NODES	11191
NODE 10936	USED FOR NODES	11192

NODE 10748	USED FOR NODES	11166		
NODE 10929	USED FOR NODES	11185		
NODE 10930	USED FOR NODES	11186		
NODE 10931	USED FOR NODES	11187		
NODE 10932	USED FOR NODES	11188		
NODE 10926	USED FOR NODES	11182		
NODE 10927	USED FOR NODES	11183		
NODE 10928	USED FOR NODES	11184		
NODE 10747	USED FOR NODES	11165		
NODE 10925	USED FOR NODES	11181		
NODE 11616	USED FOR NODES	12169		
NODE 12180	USED FOR NODES	12513		
NODE 10727	USED FOR NODES	11896		
NODE 12217	USED FOR NODES	12551		
NODE 12218	USED FOR NODES	12552		
NODE 12219	USED FOR NODES	12553		
NODE 12220	USED FOR NODES	12554		
NODE 11649	USED FOR NODES	12225		
NODE 11650	USED FOR NODES	12226		
NODE 11651	USED FOR NODES	12227		
NODE 11652	USED FOR NODES	12228		
NODE 13042	USED FOR NODES	13341		
NODE 12932	USED FOR NODES	13051		
NODE 10829	USED FOR NODES	11929		
NODE 10830	USED FOR NODES	11930		
NODE 10831	USED FOR NODES	11931		
NODE 10832	USED FOR NODES	11932		
NODE 12831	USED FOR NODES	12959		
NODE 12832	USED FOR NODES	12960		
NODE 12833	USED FOR NODES	12961		
NODE 12834	USED FOR NODES	12962		
NODE 12967	USED FOR NODES	13084		
NODE 12968	USED FOR NODES	13085		
NODE 12969	USED FOR NODES	13086		
NODE 12970	USED FOR NODES	13087		
NODE 13092	USED FOR NODES	13384		
NODE 13093	USED FOR NODES	13385		
NODE 13094	USED FOR NODES	13386		
NODE 13095	USED FOR NODES	13387		
NODE 11238	USED FOR NODES	11607		
NODE 11243	USED FOR NODES	11657		
NODE 11244	USED FOR NODES	11658		
NODE 11245	USED FOR NODES	11659		
NODE 11246	USED FOR NODES	11660		
NODE 11937	USED FOR NODES	12823		
NODE 11938	USED FOR NODES	12824		
NODE 11939	USED FOR NODES	12825		
NODE 11940	USED FOR NODES	12826		
NODE 12518	USED FOR NODES	12653		
NODE 12543	USED FOR NODES	12691		
NODE 12544	USED FOR NODES	12692		
NODE 12545	USED FOR NODES	12693		
NODE 12546	USED FOR NODES	12694		
NODE 12793	USED FOR NODES	12936		
NODE 11887	USED FOR NODES	12798		
NODE 10924	USED FOR NODES	11180		
NODE 10921	USED FOR NODES	11177		
NODE 10746	USED FOR NODES	11164		
NODE 10922	USED FOR NODES	11178		
NODE 10923	USED FOR NODES	11179		
NODE 10919	USED FOR NODES	11175		
NODE 10920	USED FOR NODES	11176		
NODE 10917	USED FOR NODES	11173		
NODE 10918	USED FOR NODES	11174		
NODE 10745	USED FOR NODES	11163		
NODE 9493	USED FOR NODES	9658	10821	11169
NODE 9494	USED FOR NODES	9659	10822	11170
NODE 9495	USED FOR NODES	9660	10823	11171
NODE 9496	USED FOR NODES	9661	10824	11172
NODE 9437	USED FOR NODES	9657	10735	11162

NODE 9691	USED FOR NODES	11323		
NODE 9692	USED FOR NODES	11324		
NODE 9693	USED FOR NODES	11325		
NODE 9694	USED FOR NODES	11326		
NODE 9682	USED FOR NODES	11290		
NODE 9533	USED FOR NODES	10857		
NODE 9534	USED FOR NODES	10858		
NODE 9535	USED FOR NODES	10859		
NODE 9536	USED FOR NODES	10860		
NODE 9439	USED FOR NODES	10736		
NODE 9695	USED FOR NODES	11319		
NODE 9696	USED FOR NODES	11320		
NODE 9697	USED FOR NODES	11321		
NODE 9698	USED FOR NODES	11322		
NODE 9683	USED FOR NODES	11289		
NODE 9539	USED FOR NODES	10863		
NODE 9540	USED FOR NODES	10864		
NODE 9440	USED FOR NODES	10737		
NODE 9537	USED FOR NODES	10861		
NODE 9538	USED FOR NODES	10862		
NODE 9699	USED FOR NODES	11315		
NODE 9700	USED FOR NODES	11316		
NODE 9701	USED FOR NODES	11317		
NODE 9702	USED FOR NODES	11318		
NODE 9684	USED FOR NODES	11288		
NODE 9441	USED FOR NODES	10738		
NODE 9541	USED FOR NODES	10865		
NODE 9543	USED FOR NODES	10867		
NODE 9542	USED FOR NODES	10866		
NODE 9544	USED FOR NODES	10868		
NODE 9584	USED FOR NODES	9676		
NODE 9581	USED FOR NODES	9673		
NODE 9462	USED FOR NODES	9664		
NODE 9582	USED FOR NODES	9674		
NODE 9583	USED FOR NODES	9675		
NODE 9703	USED FOR NODES	11311		
NODE 9704	USED FOR NODES	11312		
NODE 9705	USED FOR NODES	11313		
NODE 9706	USED FOR NODES	11314		
NODE 9685	USED FOR NODES	11287		
NODE 9545	USED FOR NODES	10869		
NODE 9442	USED FOR NODES	10739		
NODE 9548	USED FOR NODES	10872		
NODE 9546	USED FOR NODES	10870		
NODE 9547	USED FOR NODES	10871		
NODE 9461	USED FOR NODES	9663		
NODE 9577	USED FOR NODES	9669		
NODE 9578	USED FOR NODES	9670		
NODE 9579	USED FOR NODES	9671		
NODE 9580	USED FOR NODES	9672		
NODE 9707	USED FOR NODES	11307		
NODE 9708	USED FOR NODES	11308		
NODE 9709	USED FOR NODES	11309		
NODE 9710	USED FOR NODES	11310		
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NODE 9551	USED FOR NODES	10875		
NODE 9549	USED FOR NODES	10873		
NODE 9552	USED FOR NODES	10876		
NODE 9550	USED FOR NODES	10874		
NODE 9443	USED FOR NODES	10740		
NODE 8739	USED FOR NODES	8856	9488	9668
NODE 8736	USED FOR NODES	8853	9485	9665
NODE 8687	USED FOR NODES	8852	9451	9662
NODE 8737	USED FOR NODES	8854	9486	9666
NODE 8738	USED FOR NODES	8855	9487	9667
NODE 8881	USED FOR NODES	9783		
NODE 8882	USED FOR NODES	9784		
NODE 8883	USED FOR NODES	9785		
NODE 8884	USED FOR NODES	9786		
NODE 8872	USED FOR NODES	9750		

NODE	8773	USED FOR NODES	9498
NODE	8689	USED FOR NODES	9452
NODE	8775	USED FOR NODES	9500
NODE	8772	USED FOR NODES	9497
NODE	8774	USED FOR NODES	9499
NODE	8885	USED FOR NODES	9779
NODE	8886	USED FOR NODES	9780
NODE	8887	USED FOR NODES	9781
NODE	8888	USED FOR NODES	9782
NODE	8873	USED FOR NODES	9749
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NODE	8778	USED FOR NODES	9503
NODE	8779	USED FOR NODES	9504
NODE	8690	USED FOR NODES	9453
NODE	8776	USED FOR NODES	9501
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NODE	9712	USED FOR NODES	11304
NODE	9713	USED FOR NODES	11305
NODE	9714	USED FOR NODES	11306
NODE	9687	USED FOR NODES	11285
NODE	9444	USED FOR NODES	10741
NODE	9554	USED FOR NODES	10878
NODE	9553	USED FOR NODES	10877
NODE	9556	USED FOR NODES	10880
NODE	9555	USED FOR NODES	10879
NODE	8889	USED FOR NODES	9775
NODE	8890	USED FOR NODES	9776
NODE	8891	USED FOR NODES	9777
NODE	8892	USED FOR NODES	9778
NODE	8874	USED FOR NODES	9748
NODE	8780	USED FOR NODES	9505
NODE	8691	USED FOR NODES	9454
NODE	8781	USED FOR NODES	9506
NODE	8782	USED FOR NODES	9507
NODE	8783	USED FOR NODES	9508
NODE	8815	USED FOR NODES	8866
NODE	8710	USED FOR NODES	8858
NODE	8812	USED FOR NODES	8863
NODE	8813	USED FOR NODES	8864
NODE	8814	USED FOR NODES	8865
NODE	8893	USED FOR NODES	9771
NODE	8894	USED FOR NODES	9772
NODE	8895	USED FOR NODES	9773
NODE	8896	USED FOR NODES	9774
NODE	8875	USED FOR NODES	9747
NODE	8692	USED FOR NODES	9455
NODE	8786	USED FOR NODES	9511
NODE	8784	USED FOR NODES	9509
NODE	8787	USED FOR NODES	9512
NODE	8785	USED FOR NODES	9510
NODE	8704	USED FOR NODES	8857
NODE	8724	USED FOR NODES	8859
NODE	8725	USED FOR NODES	8860
NODE	8726	USED FOR NODES	8861
NODE	8727	USED FOR NODES	8862
NODE	9715	USED FOR NODES	11299
NODE	9716	USED FOR NODES	11300
NODE	9717	USED FOR NODES	11301
NODE	9718	USED FOR NODES	11302
NODE	9688	USED FOR NODES	11284
NODE	9557	USED FOR NODES	10881
NODE	9445	USED FOR NODES	10742
NODE	9558	USED FOR NODES	10882
NODE	9559	USED FOR NODES	10883
NODE	9560	USED FOR NODES	10884
NODE	8897	USED FOR NODES	9767
NODE	8898	USED FOR NODES	9768
NODE	8899	USED FOR NODES	9769
NODE	8900	USED FOR NODES	9770
NODE	8876	USED FOR NODES	9746

NODE	8789	USED FOR NODES	9514
NODE	8790	USED FOR NODES	9515
NODE	8791	USED FOR NODES	9516
NODE	8693	USED FOR NODES	9456
NODE	8788	USED FOR NODES	9513
NODE	8901	USED FOR NODES	9763
NODE	8902	USED FOR NODES	9764
NODE	8903	USED FOR NODES	9765
NODE	8904	USED FOR NODES	9766
NODE	8877	USED FOR NODES	9745
NODE	8793	USED FOR NODES	9518
NODE	8795	USED FOR NODES	9520
NODE	8792	USED FOR NODES	9517
NODE	8794	USED FOR NODES	9519
NODE	8694	USED FOR NODES	9457
NODE	8295	USED FOR NODES	8731
NODE	8292	USED FOR NODES	8728
NODE	8293	USED FOR NODES	8729
NODE	8277	USED FOR NODES	8700
NODE	8294	USED FOR NODES	8730
NODE	9719	USED FOR NODES	11295
NODE	9720	USED FOR NODES	11296
NODE	9721	USED FOR NODES	11297
NODE	9722	USED FOR NODES	11298
NODE	9689	USED FOR NODES	11283
NODE	9564	USED FOR NODES	10888
NODE	9446	USED FOR NODES	10743
NODE	9561	USED FOR NODES	10885
NODE	9562	USED FOR NODES	10886
NODE	9563	USED FOR NODES	10887
NODE	8905	USED FOR NODES	9759
NODE	8906	USED FOR NODES	9760
NODE	8907	USED FOR NODES	9761
NODE	8908	USED FOR NODES	9762
NODE	8878	USED FOR NODES	9744
NODE	8695	USED FOR NODES	9458
NODE	8798	USED FOR NODES	9523
NODE	8799	USED FOR NODES	9524
NODE	8796	USED FOR NODES	9521
NODE	8797	USED FOR NODES	9522
NODE	8300	USED FOR NODES	8760
NODE	8301	USED FOR NODES	8761
NODE	8302	USED FOR NODES	8762
NODE	8303	USED FOR NODES	8763
NODE	8279	USED FOR NODES	8701
NODE	8909	USED FOR NODES	9755
NODE	8910	USED FOR NODES	9756
NODE	8911	USED FOR NODES	9757
NODE	8912	USED FOR NODES	9758
NODE	8879	USED FOR NODES	9743
NODE	8801	USED FOR NODES	9526
NODE	8696	USED FOR NODES	9459
NODE	8803	USED FOR NODES	9528
NODE	8800	USED FOR NODES	9525
NODE	8802	USED FOR NODES	9527
NODE	8304	USED FOR NODES	8764
NODE	8305	USED FOR NODES	8765
NODE	8306	USED FOR NODES	8766
NODE	8307	USED FOR NODES	8767
NODE	8280	USED FOR NODES	8702
NODE	9723	USED FOR NODES	11291
NODE	9724	USED FOR NODES	11292
NODE	9725	USED FOR NODES	11293
NODE	9726	USED FOR NODES	11294
NODE	9690	USED FOR NODES	11282
NODE	9566	USED FOR NODES	10890
NODE	9568	USED FOR NODES	10892
NODE	9565	USED FOR NODES	10889
NODE	9567	USED FOR NODES	10891
NODE	9447	USED FOR NODES	10744

NODE 8913	USED FOR NODES	9751	
NODE 8914	USED FOR NODES	9752	
NODE 8915	USED FOR NODES	9753	
NODE 8916	USED FOR NODES	9754	
NODE 8880	USED FOR NODES	9742	
NODE 8805	USED FOR NODES	9530	
NODE 8697	USED FOR NODES	9460	
NODE 8806	USED FOR NODES	9531	
NODE 8807	USED FOR NODES	9532	
NODE 8804	USED FOR NODES	9529	
NODE 8281	USED FOR NODES	8703	
NODE 8308	USED FOR NODES	8768	
NODE 8309	USED FOR NODES	8769	
NODE 8310	USED FOR NODES	8770	
NODE 8311	USED FOR NODES	8771	
NODE 12529	USED FOR NODES	12677	
NODE 12528	USED FOR NODES	12676	
NODE 12514	USED FOR NODES	12651	
NODE 12527	USED FOR NODES	12675	
NODE 12530	USED FOR NODES	12678	
NODE 12202	USED FOR NODES	12536	
NODE 12201	USED FOR NODES	12535	
NODE 12170	USED FOR NODES	12511	
NODE 12204	USED FOR NODES	12538	
NODE 12203	USED FOR NODES	12537	
NODE 13079	USED FOR NODES	13371	
NODE 13076	USED FOR NODES	13368	
NODE 13040	USED FOR NODES	13328	
NODE 13077	USED FOR NODES	13369	
NODE 13078	USED FOR NODES	13370	
NODE 12952	USED FOR NODES	13069	
NODE 12954	USED FOR NODES	13071	
NODE 12951	USED FOR NODES	13068	
NODE 12953	USED FOR NODES	13070	
NODE 12930	USED FOR NODES	13043	
NODE 11636	USED FOR NODES	12212	
NODE 11608	USED FOR NODES	12167	
NODE 11635	USED FOR NODES	12211	
NODE 11633	USED FOR NODES	12209	
NODE 11634	USED FOR NODES	12210	
NODE 12818	USED FOR NODES	12946	
NODE 12816	USED FOR NODES	12944	
NODE 12791	USED FOR NODES	12933	
NODE 12815	USED FOR NODES	12943	
NODE 12817	USED FOR NODES	12945	
NODE 11922	USED FOR NODES	12808	
NODE 11921	USED FOR NODES	12807	
NODE 11885	USED FOR NODES	12794	
NODE 11924	USED FOR NODES	12810	
NODE 11923	USED FOR NODES	12809	
NODE 9972	USED FOR NODES	10816	11916
NODE 10324	USED FOR NODES	11232	11605
NODE 10399	USED FOR NODES	11235	11643
NODE 10397	USED FOR NODES	11233	11641
NODE 9970	USED FOR NODES	10814	11914
NODE 9878	USED FOR NODES	10725	11888
NODE 9971	USED FOR NODES	10815	11915
NODE 10398	USED FOR NODES	11234	11642
NODE 9969	USED FOR NODES	10813	11913
NODE 10400	USED FOR NODES	11236	11644
NODE 10499	USED FOR NODES	11260	
NODE 10500	USED FOR NODES	11261	
NODE 10333	USED FOR NODES	11252	
NODE 10497	USED FOR NODES	11258	
NODE 10498	USED FOR NODES	11259	
NODE 10332	USED FOR NODES	11253	
NODE 10495	USED FOR NODES	11264	
NODE 10496	USED FOR NODES	11265	
NODE 10494	USED FOR NODES	11263	
NODE 10493	USED FOR NODES	11262	

NODE 10491	USED FOR NODES	11268		
NODE 10331	USED FOR NODES	11254		
NODE 10492	USED FOR NODES	11269		
NODE 10489	USED FOR NODES	11266		
NODE 10490	USED FOR NODES	11267		
NODE 10330	USED FOR NODES	11255		
NODE 10487	USED FOR NODES	11272		
NODE 10488	USED FOR NODES	11273		
NODE 10485	USED FOR NODES	11270		
NODE 10486	USED FOR NODES	11271		
NODE 10484	USED FOR NODES	11277		
NODE 10329	USED FOR NODES	11256		
NODE 10483	USED FOR NODES	11276		
NODE 10482	USED FOR NODES	11275		
NODE 10481	USED FOR NODES	11274		
NODE 10479	USED FOR NODES	11280		
NODE 10328	USED FOR NODES	11257		
NODE 10478	USED FOR NODES	11279		
NODE 10480	USED FOR NODES	11281		
NODE 10477	USED FOR NODES	11278		
NODE 9071	USED FOR NODES	9491	9979	10819
NODE 9018	USED FOR NODES	9438	9877	10728
NODE 9281	USED FOR NODES	9678	10405	11248
NODE 9069	USED FOR NODES	9489	9977	10817
NODE 9282	USED FOR NODES	9679	10406	11249
NODE 9070	USED FOR NODES	9490	9978	10818
NODE 9284	USED FOR NODES	9681	10408	11251
NODE 9237	USED FOR NODES	9677	10327	11247
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NODE 9248	USED FOR NODES	9733		
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NODE 9358	USED FOR NODES	9739		
NODE 8373	USED FOR NODES	8688	9017	9448
NODE 8418	USED FOR NODES	8733	9062	9482
NODE 8420	USED FOR NODES	8735	9064	9484
NODE 8571	USED FOR NODES	8868	9277	9728
NODE 8537	USED FOR NODES	8867	9247	9727
NODE 8573	USED FOR NODES	8870	9279	9730
NODE 8417	USED FOR NODES	8732	9061	9481
NODE 8419	USED FOR NODES	8734	9063	9483
NODE 8572	USED FOR NODES	8869	9278	9729
NODE 8574	USED FOR NODES	8871	9280	9731
NODE 8647	USED FOR NODES	8923		
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NODE 8569	USED FOR NODES	8920		
NODE 8290	USED FOR NODES	8407	8722	
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NODE 10057	USED FOR NODES	10897
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NODE 8496	USED FOR NODES	8811
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NODE 8350	USED FOR NODES	8431
NODE 8351	USED FOR NODES	8432

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NODE	12897	USED FOR NODES	13006
NODE	12898	USED FOR NODES	13007
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NODE	13013	USED FOR NODES	13225
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NODE	13015	USED FOR NODES	13227
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NODE	10410	USED FOR NODES	11798
NODE	9985	USED FOR NODES	12069
NODE	9986	USED FOR NODES	12070
NODE	9987	USED FOR NODES	12071
NODE	10411	USED FOR NODES	11799
NODE	9988	USED FOR NODES	12072
NODE	9886	USED FOR NODES	12047
NODE	10412	USED FOR NODES	11800
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NODE	12077	USED FOR NODES	12887
NODE	12078	USED FOR NODES	12888
NODE	12079	USED FOR NODES	12889
NODE	11790	USED FOR NODES	12404
NODE	12080	USED FOR NODES	12890
NODE	11791	USED FOR NODES	12405
NODE	11792	USED FOR NODES	12406
NODE	11767	USED FOR NODES	12358
NODE	12369	USED FOR NODES	12588

NODE 10325	USED FOR NODES	11758
NODE 13193	USED FOR NODES	13587
NODE 12395	USED FOR NODES	12615
NODE 12396	USED FOR NODES	12616
NODE 12397	USED FOR NODES	12617
NODE 12398	USED FOR NODES	12618
NODE 13232	USED FOR NODES	13619
NODE 13233	USED FOR NODES	13620
NODE 13234	USED FOR NODES	13621
NODE 13235	USED FOR NODES	13622
NODE 12593	USED FOR NODES	12728
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NODE 12608	USED FOR NODES	12756
NODE 12609	USED FOR NODES	12757
NODE 12610	USED FOR NODES	12758
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NODE 12869	USED FOR NODES	12993
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NODE 12900	USED FOR NODES	13009
NODE 12901	USED FOR NODES	13010
NODE 12902	USED FOR NODES	13011
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NODE 13019	USED FOR NODES	13231
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NODE 9989	USED FOR NODES	12073
NODE 9990	USED FOR NODES	12074
NODE 10413	USED FOR NODES	11801
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NODE 12081	USED FOR NODES	12891
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NODE 11794	USED FOR NODES	12408
NODE 11768	USED FOR NODES	12359
NODE 11795	USED FOR NODES	12409
NODE 12082	USED FOR NODES	12892
NODE 12083	USED FOR NODES	12893
NODE 12084	USED FOR NODES	12894
NODE 11796	USED FOR NODES	12410
NODE 12370	USED FOR NODES	12589
NODE 13194	USED FOR NODES	13588
NODE 12399	USED FOR NODES	12619
NODE 12400	USED FOR NODES	12620
NODE 12401	USED FOR NODES	12621
NODE 12402	USED FOR NODES	12622
NODE 13236	USED FOR NODES	13623
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NODE 13239	USED FOR NODES	13626
NODE 10326	USED FOR NODES	11759
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NODE 12612	USED FOR NODES	12760
NODE 12613	USED FOR NODES	12761
NODE 12614	USED FOR NODES	12762
NODE 9885	USED FOR NODES	12040
NODE 12987	USED FOR NODES	13195
NODE 12867	USED FOR NODES	12990
NODE 12883	USED FOR NODES	12996
NODE 12884	USED FOR NODES	12997
NODE 12885	USED FOR NODES	12998
NODE 12886	USED FOR NODES	12999
NODE 13000	USED FOR NODES	13216
NODE 13001	USED FOR NODES	13217
NODE 13002	USED FOR NODES	13218

NODE 13003 USED FOR NODES 13219
 NODE 10401 USED FOR NODES 11785
 NODE 9973 USED FOR NODES 12061
 NODE 9974 USED FOR NODES 12062
 NODE 9975 USED FOR NODES 12063
 NODE 9976 USED FOR NODES 12064
 NODE 12065 USED FOR NODES 12879
 NODE 12066 USED FOR NODES 12880
 NODE 12067 USED FOR NODES 12881
 NODE 12068 USED FOR NODES 12882
 NODE 10402 USED FOR NODES 11786
 NODE 10403 USED FOR NODES 11787
 NODE 10404 USED FOR NODES 11788
 NODE 10317 USED FOR NODES 11757
 NODE 11760 USED FOR NODES 12357
 NODE 12360 USED FOR NODES 12587
 NODE 13192 USED FOR NODES 13575
 NODE 12387 USED FOR NODES 12603
 NODE 12388 USED FOR NODES 12604
 NODE 12389 USED FOR NODES 12605
 NODE 12390 USED FOR NODES 12606
 NODE 11781 USED FOR NODES 12391
 NODE 11782 USED FOR NODES 12392
 NODE 11783 USED FOR NODES 12393
 NODE 11784 USED FOR NODES 12394
 NODE 13220 USED FOR NODES 13611
 NODE 13221 USED FOR NODES 13612
 NODE 13222 USED FOR NODES 13613
 NODE 13223 USED FOR NODES 13614
 NODE 12590 USED FOR NODES 12727
 NODE 12599 USED FOR NODES 12743
 NODE 12600 USED FOR NODES 12744
 NODE 12601 USED FOR NODES 12745
 NODE 12602 USED FOR NODES 12746
 NODE 12037 USED FOR NODES 12870

*** WARNING *** CP= 112.890 TIME= 13:17:53
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78 USED FOR KEYPOINT(S)	132		
KEYPOINT	89 USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104 USED FOR KEYPOINT(S)	117		
KEYPOINT	111 USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114 USED FOR KEYPOINT(S)	144		
KEYPOINT	119 USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122 USED FOR KEYPOINT(S)	128		
KEYPOINT	124 USED FOR KEYPOINT(S)	133		
KEYPOINT	125 USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140 USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141 USED FOR KEYPOINT(S)	170		
KEYPOINT	145 USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149 USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164 USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165 USED FOR KEYPOINT(S)	212		
KEYPOINT	171 USED FOR KEYPOINT(S)	205		
KEYPOINT	173 USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179 USED FOR KEYPOINT(S)	187		
KEYPOINT	181 USED FOR KEYPOINT(S)	199		
KEYPOINT	190 USED FOR KEYPOINT(S)	207		
KEYPOINT	198 USED FOR KEYPOINT(S)	214		
KEYPOINT	204 USED FOR KEYPOINT(S)	215		
KEYPOINT	206 USED FOR KEYPOINT(S)	217		
KEYPOINT	208 USED FOR KEYPOINT(S)	231		
KEYPOINT	209 USED FOR KEYPOINT(S)	234		
KEYPOINT	211 USED FOR KEYPOINT(S)	236		
KEYPOINT	213 USED FOR KEYPOINT(S)	220		
KEYPOINT	216 USED FOR KEYPOINT(S)	221		

KEYPOINT	218	USED FOR KEYPOINT(S)	223	
KEYPOINT	219	USED FOR KEYPOINT(S)	226	
KEYPOINT	222	USED FOR KEYPOINT(S)	227	
KEYPOINT	224	USED FOR KEYPOINT(S)	229	
KEYPOINT	232	USED FOR KEYPOINT(S)	237	
KEYPOINT	233	USED FOR KEYPOINT(S)	240	
KEYPOINT	235	USED FOR KEYPOINT(S)	242	
KEYPOINT	238	USED FOR KEYPOINT(S)	243	
KEYPOINT	239	USED FOR KEYPOINT(S)	246	
KEYPOINT	241	USED FOR KEYPOINT(S)	248	
KEYPOINT	244	USED FOR KEYPOINT(S)	249	
KEYPOINT	245	USED FOR KEYPOINT(S)	252	
KEYPOINT	247	USED FOR KEYPOINT(S)	254	
LINE	154	USED FOR LINE(S)	297	
LINE	172	USED FOR LINE(S)	298	
LINE	174	USED FOR LINE(S)	240	292
LINE	233	USED FOR LINE(S)	257	
LINE	236	USED FOR LINE(S)	256	
LINE	239	USED FOR LINE(S)	290	
LINE	241	USED FOR LINE(S)	289	306 359
LINE	243	USED FOR LINE(S)	314	
LINE	244	USED FOR LINE(S)	313	
LINE	259	USED FOR LINE(S)	330	
LINE	262	USED FOR LINE(S)	271	325 345
LINE	263	USED FOR LINE(S)	272	
LINE	264	USED FOR LINE(S)	273	
LINE	267	USED FOR LINE(S)	302	
LINE	268	USED FOR LINE(S)	300	
LINE	269	USED FOR LINE(S)	283	335 366
LINE	270	USED FOR LINE(S)	346	
LINE	282	USED FOR LINE(S)	365	
LINE	305	USED FOR LINE(S)	358	
LINE	307	USED FOR LINE(S)	354	372 439
LINE	308	USED FOR LINE(S)	396	
LINE	309	USED FOR LINE(S)	395	
LINE	315	USED FOR LINE(S)	414	
LINE	319	USED FOR LINE(S)	340	413 431
LINE	320	USED FOR LINE(S)	341	
LINE	331	USED FOR LINE(S)	367	
LINE	336	USED FOR LINE(S)	353	421 441
LINE	339	USED FOR LINE(S)	432	
LINE	352	USED FOR LINE(S)	440	
LINE	371	USED FOR LINE(S)	438	
LINE	377	USED FOR LINE(S)	437	462
LINE	382	USED FOR LINE(S)	468	
LINE	383	USED FOR LINE(S)	467	
LINE	401	USED FOR LINE(S)	452	
LINE	403	USED FOR LINE(S)	451	
LINE	408	USED FOR LINE(S)	429	447
LINE	409	USED FOR LINE(S)	430	
LINE	416	USED FOR LINE(S)	442	
LINE	422	USED FOR LINE(S)	434	
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LINE	436	USED FOR LINE(S)	463	
LINE	444	USED FOR LINE(S)	471	
LINE	449	USED FOR LINE(S)	473	
LINE	450	USED FOR LINE(S)	472	
LINE	454	USED FOR LINE(S)	478	
LINE	455	USED FOR LINE(S)	477	
LINE	458	USED FOR LINE(S)	509	
LINE	459	USED FOR LINE(S)	515	
LINE	460	USED FOR LINE(S)	514	
LINE	464	USED FOR LINE(S)	520	
LINE	465	USED FOR LINE(S)	519	
LINE	470	USED FOR LINE(S)	484	
LINE	475	USED FOR LINE(S)	486	
LINE	476	USED FOR LINE(S)	485	
LINE	480	USED FOR LINE(S)	491	

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LINE 481 USED FOR LINE(S) 490
LINE 483 USED FOR LINE(S) 497
LINE 488 USED FOR LINE(S) 499
LINE 489 USED FOR LINE(S) 498
LINE 493 USED FOR LINE(S) 504
LINE 494 USED FOR LINE(S) 503
LINE 510 USED FOR LINE(S) 522
LINE 511 USED FOR LINE(S) 528
LINE 512 USED FOR LINE(S) 527
LINE 516 USED FOR LINE(S) 533
LINE 517 USED FOR LINE(S) 532
LINE 523 USED FOR LINE(S) 535
LINE 524 USED FOR LINE(S) 541
LINE 525 USED FOR LINE(S) 540
LINE 529 USED FOR LINE(S) 546
LINE 530 USED FOR LINE(S) 545
LINE 536 USED FOR LINE(S) 548
LINE 537 USED FOR LINE(S) 554
LINE 538 USED FOR LINE(S) 553
LINE 542 USED FOR LINE(S) 559
LINE 543 USED FOR LINE(S) 558
AREA 123 USED FOR AREA(S) 230
AREA 163 USED FOR AREA(S) 182
AREA 176 USED FOR AREA(S) 226
AREA 177 USED FOR AREA(S) 264
AREA 193 USED FOR AREA(S) 282
AREA 198 USED FOR AREA(S) 208
AREA 204 USED FOR AREA(S) 239
AREA 205 USED FOR AREA(S) 291
AREA 223 USED FOR AREA(S) 295
AREA 248 USED FOR AREA(S) 294
AREA 255 USED FOR AREA(S) 302
AREA 273 USED FOR AREA(S) 307
AREA 277 USED FOR AREA(S) 290
AREA 288 USED FOR AREA(S) 296
AREA 289 USED FOR AREA(S) 313
AREA 293 USED FOR AREA(S) 318
AREA 298 USED FOR AREA(S) 317
AREA 299 USED FOR AREA(S) 337
AREA 305 USED FOR AREA(S) 326
AREA 306 USED FOR AREA(S) 312
AREA 309 USED FOR AREA(S) 319
AREA 311 USED FOR AREA(S) 322
AREA 316 USED FOR AREA(S) 333
AREA 324 USED FOR AREA(S) 340
AREA 328 USED FOR AREA(S) 344
AREA 331 USED FOR AREA(S) 369
AREA 335 USED FOR AREA(S) 373
AREA 342 USED FOR AREA(S) 349
AREA 346 USED FOR AREA(S) 353
AREA 351 USED FOR AREA(S) 358
AREA 355 USED FOR AREA(S) 362
AREA 367 USED FOR AREA(S) 378
AREA 371 USED FOR AREA(S) 382
AREA 376 USED FOR AREA(S) 387
AREA 380 USED FOR AREA(S) 391
AREA 385 USED FOR AREA(S) 396
AREA 389 USED FOR AREA(S) 400

```

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE ***

CP= 116.660 TIME= 13:17:57
Nodes cannot be cleared from area 1 because volume 55 is meshed. Only

elements are deleted.

*** NOTE *** CP= 116.660 TIME= 13:17:57
Nodes cannot be cleared from area 2 because volume 56 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.670 TIME= 13:17:57
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.670 TIME= 13:17:57
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.680 TIME= 13:17:57
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.690 TIME= 13:17:57
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.700 TIME= 13:17:57
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.710 TIME= 13:17:57
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.720 TIME= 13:17:57
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.730 TIME= 13:17:57
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.740 TIME= 13:17:57
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.750 TIME= 13:17:57
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.750 TIME= 13:17:57
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.760 TIME= 13:17:57
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.760 TIME= 13:17:57
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.770 TIME= 13:17:57
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.780 TIME= 13:17:57
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.800 TIME= 13:17:57
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.810 TIME= 13:17:57
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.820 TIME= 13:17:57
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.840 TIME= 13:17:57
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.850 TIME= 13:17:57
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.860 TIME= 13:17:57
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.870 TIME= 13:17:57
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.870 TIME= 13:17:57
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.870 TIME= 13:17:57
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.880 TIME= 13:17:57
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.880 TIME= 13:17:57
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.890 TIME= 13:17:57
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.900 TIME= 13:17:57
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.910 TIME= 13:17:57
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.920 TIME= 13:17:57
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.930 TIME= 13:17:57
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.940 TIME= 13:17:57
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.950 TIME= 13:17:57
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only
elements are deleted.

*** NOTE *** CP= 116.970 TIME= 13:17:57
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only

elements are deleted.

*** NOTE *** CP= 116.980 TIME= 13:17:57
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only
elements are deleted.

*** NOTE *** CP= 117.010 TIME= 13:17:57
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only
elements are deleted.

*** NOTE *** CP= 117.040 TIME= 13:17:58
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only
elements are deleted.

*** NOTE *** CP= 117.060 TIME= 13:17:58
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only
elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 88 TO 88 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 91 TO 91 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 94 TO 94 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 138 TO 138 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 144 TO 144 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 147 TO 147 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 150 TO 150 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

312 NODES (OF 11796 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 100 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 103 TO 103 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 106 TO 106 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 108 TO 108 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 113 TO 113 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 11796 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

99 NODES (OF 11796 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 80
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

363 NODES (OF 11796 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 320

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 13766 STEP 1

11796 NODES (OF 11796 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE *** CP= 167.620 TIME= 13:18:48
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 168.150

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:18:49 JAN 27, 1995 CP= 168.150
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 10636 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

994 NODES (OF 11796 DEFINED) SELECTED FROM
952 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c12j5a.sub

*** WARNING *** CP= 168.690 TIME= 13:18:49
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 952 NUMBER OF NODES= 994
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11578 STEP 1

10636 ELEMENTS (OF 10636 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 13766 STEP 1

11796 NODES (OF 11796 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2058.150

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:50:53 JAN 27, 1995 CP= 2058.150
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 11579 c12j5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 11579

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 11579
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

952 ELEMENTS (OF 10637 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11579 STEP 1

9685 ELEMENTS (OF 9685 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 2059.120

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions
Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 2059.150 TIME= 13:50:54
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.77 AND 308.77
KABS= 0. TOLERANCE= 1.54386

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 11796 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 13766 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.23 AND -991.23
KABS= 0. TOLERANCE= 4.95614

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

77 NODES (OF 11796 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 13766 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 13766 STEP 1

11796 NODES (OF 11796 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2061.980 TIME= 13:50:58
All shape tests were bypassed for elements associated with the solid model, because most of them were already done at AMESH or VMESH. Use CHECK if desired to perform all of the element tests.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:50:58 JAN 27, 1995 CP= 2061.980
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPE.TRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO. . . . 273.15
NEWTON-RAPHSON OPTION.PROGRAM CHOSEN

*** NOTE *** CP= 2064.250 TIME= 13:51:00
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2064.260 TIME= 13:51:00
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER.1
TIME AT END OF THE LOAD STEP.10000E-05
AUTOMATIC TIME STEPPING.ON
INITIAL NUMBER OF SUBSTEPS.0
MAXIMUM NUMBER OF SUBSTEPS.0
MINIMUM NUMBER OF SUBSTEPS.1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS.NO
TRANSIENT (INERTIA) EFFECTS.OFF
TERMINATE ANALYSIS IF NOT CONVERGED.YES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLS.NO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .11838E+07

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.57328E-09	IXX = .2775E+12	IXX = .1625E+12
YC = -.311.62	IYY = .4133E+09	IYY = .4133E+09
ZC = -.53782E-17	IZZ = .2778E+12	IZZ = .1629E+12
	IXY = -.5071	IXY = -.2957

IYZ = .7462E-07 IYZ = .7661E-07
IZX = -.4708E-08 IZX = -.4708E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
2 .118376E+07

Range of element maximum matrix coefficients in global coordinates
Maximum= 507.042013 at element 10322.
Minimum= 4.312751602E-08 at element 11579.

*** WARNING *** CP= 2120.980 TIME= 13:52:07
Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

2	9684	SOLID70	40.840	.004
18	1	MATRIX50	1.080	1.080

Time at end of element matrix formulation CP= 2120.98.
HT FLOW CONVERGENCE VALUE= 275.6 CRITERION= .2756

Estimated number of active DOF= 11642.
Maximum wavefront= 1299.

Time at end of matrix triangularization CP= 2644.77.
Equation solver maximum pivot= 1835.25458 at node 1010 TEMP.
Equation solver minimum pivot= 0.888984925 at node 1640 TEMP.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
HT FLOW CONVERGENCE VALUE= .1274 CRITERION= .5666E-02
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3740E-02
HT FLOW CONVERGENCE VALUE= .6010E-05 CRITERION= .5666E-02 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

2	9684	SOLID70	26.400	.003
18	1	MATRIX50	1.560	1.560

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

2	9684	SOLID70	2.240	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 11642
R.M.S. WAVEFRONT SIZE = 506.1

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096
15.609 MB WRITTEN ON ELEMENT MATRIX FILE: c12j5a.emat
8.719 MB WRITTEN ON ELEMENT SAVED DATA FILE: c12j5a.esav
37.078 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c12j5a.tri
.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c12j5a.dsub
7.578 MB WRITTEN ON RESULTS FILE: c12j5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 3325.160

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:14:06 JAN 27, 1995 CP= 3325.240
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.14065

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 3337.860

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1
7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 11796 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 13766 BY 1
REAL= 26.1406456 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 13766 STEP 1

11796 NODES (OF 11796 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11579 STEP 1

9685 ELEMENTS (OF 9685 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:14:30 JAN 27, 1995 CP= 3338.790
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPETRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO 273.15
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** WARNING *** CP= 3340.970 TIME= 14:14:33
This load step will be a static (steady-state) step.

*** NOTE *** CP= 3341.740 TIME= 14:14:34
The step data was checked and warning messages were found.
Please review output or errors file (c12j5a.err) for these warning
messages.

*** NOTE *** CP= 3341.760 TIME= 14:14:34
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:14:34 JAN 27, 1995 CP= 3342.210
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
TIME AT END OF THE LOAD STEP.20000E-05
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 0
MAXIMUM NUMBER OF SUBSTEPS 0
MINIMUM NUMBER OF SUBSTEPS 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS OFF
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 167.5 CRITERION= .1676
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 92.78
HT FLOW CONVERGENCE VALUE= 55.45 CRITERION= .1676
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.831
HT FLOW CONVERGENCE VALUE= 1.996 CRITERION= .1676

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9952E-01
HT FLOW CONVERGENCE VALUE= .1959E-01 CRITERION= .1676 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

440 NODES (OF 11796 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 13766 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 440

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 13766 STEP 1

11796 NODES (OF 11796 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE 80 SUBSTEPS AS A MAXIMUM
USE 4 SUBSTEPS AS A MINIMUM
USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.
Begin Transient
Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07
TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11579 STEP 1

9685 ELEMENTS (OF 9685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 3765.900 TIME= 14:22:51
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:22:51 JAN 27, 1995 CP= 3765.900

FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 31.558
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 307.8 CRITERION= .1676
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5890E-04
HT FLOW CONVERGENCE VALUE= .3550E-04 CRITERION= .3505 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
*** TIME = .394472 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9942E-05 OSCILLATION LIMIT = .3922E-05
*** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

HT FLOW CONVERGENCE VALUE= 615.7 CRITERION= .3505
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1178E-03
HT FLOW CONVERGENCE VALUE= .7100E-04 CRITERION= .3505 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
*** TIME = .788942 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9941E-05 OSCILLATION LIMIT = .3922E-05
*** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 615.7 CRITERION= .3505
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3534E-03
HT FLOW CONVERGENCE VALUE= .2130E-03 CRITERION= .3505 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
*** TIME = 1.97235 TIME INC = 1.18341
*** RESPONSE EIGENVALUE = .9940E-05 OSCILLATION LIMIT = .1176E-04
*** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 615.7 CRITERION= .3505
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1060E-02
HT FLOW CONVERGENCE VALUE= .6389E-03 CRITERION= .3505 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
*** TIME = 5.52258 TIME INC = 3.55023
*** RESPONSE EIGENVALUE = .9937E-05 OSCILLATION LIMIT = .3528E-04
*** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 615.7 CRITERION= .3505
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2356E-02
HT FLOW CONVERGENCE VALUE= .1420E-02 CRITERION= .3504 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11

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*** TIME = 17.14720 TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9928E-05 OSCILLATION LIMIT = .7833E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

HT FLOW CONVERGENCE VALUE= 615.6 CRITERION= .3505
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2355E-02
HT FLOW CONVERGENCE VALUE= .1419E-02 CRITERION= .3504 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
*** TIME = 21.3014 TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9918E-05 OSCILLATION LIMIT = .7824E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 615.5 CRITERION= .3505
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1531E-02
HT FLOW CONVERGENCE VALUE= .9223E-03 CRITERION= .3504 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
*** TIME = 26.4295 TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9909E-05 OSCILLATION LIMIT = .5082E-04
*** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 615.5 CRITERION= .3504
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1530E-02
HT FLOW CONVERGENCE VALUE= .9222E-03 CRITERION= .3504 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
*** TIME = 31.5576 TIME INC = 5.12811
*** RESPONSE EIGENVALUE = .9903E-05 OSCILLATION LIMIT = .5078E-04

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:55:47 JAN 27, 1995 CP= 5430.140
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 615.4 CRITERION= .3504
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.114
HT FLOW CONVERGENCE VALUE= 4.816 CRITERION= .2629
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1289
HT FLOW CONVERGENCE VALUE= .1042 CRITERION= .2628 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
*** TIME = 39478.6 TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .8028E-05 OSCILLATION LIMIT = .3167
*** AUTO STEP TIME: NEXT TIME INC = 39447. UNCHANGED

HT FLOW CONVERGENCE VALUE= 416.6 CRITERION= .2719
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.401
HT FLOW CONVERGENCE VALUE= 2.777 CRITERION= .2354
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6058E-01
HT FLOW CONVERGENCE VALUE= .5733E-01 CRITERION= .2360 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
*** TIME = 78925.6 TIME INC = 39447.0
*** RESPONSE EIGENVALUE = .4814E-05 OSCILLATION LIMIT = .1899
*** AUTO STEP TIME: NEXT TIME INC = .10387E+06 INCREASED (FACTOR = 2.6330)

HT FLOW CONVERGENCE VALUE= 353.8 CRITERION= .2511
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.714
HT FLOW CONVERGENCE VALUE= 4.902 CRITERION= .2170
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1471
HT FLOW CONVERGENCE VALUE= .1568 CRITERION= .2181 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 20
 *** TIME = 182791. TIME INC = 103865.
 *** RESPONSE EIGENVALUE = .2505E-05 OSCILLATION LIMIT = .2602
 *** AUTO TIME STEP: NEXT TIME INC = .19956E+06 INCREASED (FACTOR = 1.9214)

HT FLOW CONVERGENCE VALUE= 305.5 CRITERION= .2351
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.612
 HT FLOW CONVERGENCE VALUE= 6.074 CRITERION= .2091
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1920
 HT FLOW CONVERGENCE VALUE= .2315 CRITERION= .2102
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6832E-02
 HT FLOW CONVERGENCE VALUE= .6404E-02 CRITERION= .2101 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
 *** TIME = 382354. TIME INC = 199563.
 *** RESPONSE EIGENVALUE = .1109E-05 OSCILLATION LIMIT = .2213
 *** AUTO STEP TIME: NEXT TIME INC = .19956E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 276.6 CRITERION= .2241
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.252
 HT FLOW CONVERGENCE VALUE= 4.154 CRITERION= .2067
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1262
 HT FLOW CONVERGENCE VALUE= .1569 CRITERION= .2073 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 25
 *** TIME = 581916. TIME INC = 199563.
 *** RESPONSE EIGENVALUE = .6746E-06 OSCILLATION LIMIT = .1346
 *** AUTO TIME STEP: NEXT TIME INC = .59869E+06 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 260.6 CRITERION= .2170
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.692
 HT FLOW CONVERGENCE VALUE= 8.783 CRITERION= .2018
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3650
 HT FLOW CONVERGENCE VALUE= .4650 CRITERION= .2025
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1981E-01
 HT FLOW CONVERGENCE VALUE= .2375E-01 CRITERION= .2024 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 28
 *** TIME = .118060E+07 TIME INC = 598688.
 *** RESPONSE EIGENVALUE = .4271E-06 OSCILLATION LIMIT = .2557
 *** AUTO STEP TIME: NEXT TIME INC = .59869E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 237.0 CRITERION= .2078
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.332
 HT FLOW CONVERGENCE VALUE= 5.423 CRITERION= .2001
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2343
 HT FLOW CONVERGENCE VALUE= .2997 CRITERION= .2005
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1182E-01
 HT FLOW CONVERGENCE VALUE= .1422E-01 CRITERION= .2004 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 31
 *** TIME = .177929E+07 TIME INC = 598688.
 *** RESPONSE EIGENVALUE = .2618E-06 OSCILLATION LIMIT = .1567
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3178)

HT FLOW CONVERGENCE VALUE= 226.5 CRITERION= .2037
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.219
 HT FLOW CONVERGENCE VALUE= 5.381 CRITERION= .1998
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2434
 HT FLOW CONVERGENCE VALUE= .3123 CRITERION= .2000
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1330E-01
 HT FLOW CONVERGENCE VALUE= .1666E-01 CRITERION= .2000 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 34
 *** TIME = .256823E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1792E-06 OSCILLATION LIMIT = .1414
 *** AUTO TIME STEP: NEXT TIME INC = .58756E+06 DECREASED (FACTOR = .7447)

HT FLOW CONVERGENCE VALUE= 225.0 CRITERION= .2032
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.842

HT FLOW CONVERGENCE VALUE= 3.148 CRITERION= .2006
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1336
 HT FLOW CONVERGENCE VALUE= .1714 CRITERION= .2008 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 36
 *** TIME = .315579E+07 TIME INC = 587559.
 *** RESPONSE EIGENVALUE = .1325E-06 OSCILLATION LIMIT = .7785E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:07:12 JAN 27, 1995 CP= 9339.900
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 225.7 CRITERION= .2027
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.576
 HT FLOW CONVERGENCE VALUE= 2.712 CRITERION= .2006
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1139
 HT FLOW CONVERGENCE VALUE= .1458 CRITERION= .2008 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 38
 *** TIME = .374335E+07 TIME INC = 587559.
 *** RESPONSE EIGENVALUE = .1098E-06 OSCILLATION LIMIT = .6450E-01
 *** AUTO STEP TIME: NEXT TIME INC = .58756E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 226.7 CRITERION= .2032
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.377
 HT FLOW CONVERGENCE VALUE= 2.374 CRITERION= .2014
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9963E-01
 HT FLOW CONVERGENCE VALUE= .1275 CRITERION= .2015 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 40
 *** TIME = .433091E+07 TIME INC = 587559.
 *** RESPONSE EIGENVALUE = .9424E-07 OSCILLATION LIMIT = .5537E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3427)

HT FLOW CONVERGENCE VALUE= 227.7 CRITERION= .2029
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.644
 HT FLOW CONVERGENCE VALUE= 2.822 CRITERION= .2015
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1250
 HT FLOW CONVERGENCE VALUE= .1596 CRITERION= .2015 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 42
 *** TIME = .511985E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .8143E-07 OSCILLATION LIMIT = .6424E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 229.1 CRITERION= .2035
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.464
 HT FLOW CONVERGENCE VALUE= 2.483 CRITERION= .2022
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1097
 HT FLOW CONVERGENCE VALUE= .1397 CRITERION= .2023 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 44
 *** TIME = .590879E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7058E-07 OSCILLATION LIMIT = .5568E-01
 *** AUTO TIME STEP: NEXT TIME INC = .40276E+06 DECREASED (FACTOR = .5105)

HT FLOW CONVERGENCE VALUE= 230.2 CRITERION= .2033
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6894
 HT FLOW CONVERGENCE VALUE= 1.156 CRITERION= .2020
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4326E-01
 HT FLOW CONVERGENCE VALUE= .5474E-01 CRITERION= .2020 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 46
 *** TIME = .631155E+07 TIME INC = 402762.

*** RESPONSE EIGENVALUE = .6432E-07 OSCILLATION LIMIT = .2591E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 18:27:14 JAN 27, 1995 CP= 11258.380
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 230.7 CRITERION= .2037
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6574
HT FLOW CONVERGENCE VALUE= 1.096 CRITERION= .2025
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4112E-01
HT FLOW CONVERGENCE VALUE= .5203E-01 CRITERION= .2025 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 48
*** TIME = .671431E+07 TIME INC = 402762.
*** RESPONSE EIGENVALUE = .6068E-07 OSCILLATION LIMIT = .2444E-01
*** AUTO STEP TIME: NEXT TIME INC = .40276E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 231.2 CRITERION= .2034
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6281
HT FLOW CONVERGENCE VALUE= 1.048 CRITERION= .2022
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3902E-01
HT FLOW CONVERGENCE VALUE= .4925E-01 CRITERION= .2023 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 50
*** TIME = .711707E+07 TIME INC = 402762.
*** RESPONSE EIGENVALUE = .5751E-07 OSCILLATION LIMIT = .2316E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.9588)

HT FLOW CONVERGENCE VALUE= 231.6 CRITERION= .2038
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.157
HT FLOW CONVERGENCE VALUE= 1.933 CRITERION= .2028
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8411E-01
HT FLOW CONVERGENCE VALUE= .1065 CRITERION= .2028 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 52
*** TIME = .790601E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .5326E-07 OSCILLATION LIMIT = .4202E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 232.3 CRITERION= .2035
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.071
HT FLOW CONVERGENCE VALUE= 1.784 CRITERION= .2025
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7696E-01
HT FLOW CONVERGENCE VALUE= .9712E-01 CRITERION= .2026 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 54
*** TIME = .869495E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .4867E-07 OSCILLATION LIMIT = .3839E-01
*** AUTO TIME STEP: NEXT TIME INC = .77236E+06 DECREASED (FACTOR = .9790)

HT FLOW CONVERGENCE VALUE= 232.8 CRITERION= .2039
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9773
HT FLOW CONVERGENCE VALUE= 1.618 CRITERION= .2030
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6939E-01
HT FLOW CONVERGENCE VALUE= .8739E-01 CRITERION= .2030 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 56
*** TIME = .946731E+07 TIME INC = 772357.
*** RESPONSE EIGENVALUE = .4484E-07 OSCILLATION LIMIT = .3463E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

TRW ENVIRONMENT VERSION=HP 9000/7XX 19:45:01 JAN 27, 1995 CP= 13169.970
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 233.2 CRITERION= .2036
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9172
HT FLOW CONVERGENCE VALUE= 1.514 CRITERION= .2027
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6444E-01
HT FLOW CONVERGENCE VALUE= .8093E-01 CRITERION= .2027 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 58
*** TIME = .102397E+08 TIME INC = 772357.
*** RESPONSE EIGENVALUE = .4164E-07 OSCILLATION LIMIT = .3216E-01
*** AUTO STEP TIME: NEXT TIME INC = .77236E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 233.6 CRITERION= .2040
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8644
HT FLOW CONVERGENCE VALUE= 1.421 CRITERION= .2031
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6037E-01
HT FLOW CONVERGENCE VALUE= .7569E-01 CRITERION= .2031 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 60
*** TIME = .110120E+08 TIME INC = 772357.
*** RESPONSE EIGENVALUE = .3886E-07 OSCILLATION LIMIT = .3001E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0215)

HT FLOW CONVERGENCE VALUE= 233.8 CRITERION= .2035
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8346
HT FLOW CONVERGENCE VALUE= 1.369 CRITERION= .2027
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5801E-01
HT FLOW CONVERGENCE VALUE= .7254E-01 CRITERION= .2027 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 62
*** TIME = .118010E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .3644E-07 OSCILLATION LIMIT = .2875E-01
*** AUTO TIME STEP: NEXT TIME INC = .41105E+06 DECREASED (FACTOR = .5210)

HT FLOW CONVERGENCE VALUE= 233.9 CRITERION= .2039
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4175
HT FLOW CONVERGENCE VALUE= .6771 CRITERION= .2031
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2475E-01
HT FLOW CONVERGENCE VALUE= .3079E-01 CRITERION= .2031 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 64
*** TIME = .122120E+08 TIME INC = 411053.
*** RESPONSE EIGENVALUE = .3497E-07 OSCILLATION LIMIT = .1438E-01
*** AUTO STEP TIME: NEXT TIME INC = .41105E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 234.0 CRITERION= .2035
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4061
HT FLOW CONVERGENCE VALUE= .6591 CRITERION= .2027
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2394E-01
HT FLOW CONVERGENCE VALUE= .2973E-01 CRITERION= .2027 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 66
*** TIME = .126231E+08 TIME INC = 411053.
*** RESPONSE EIGENVALUE = .3393E-07 OSCILLATION LIMIT = .1395E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 21:04:12 JAN 27, 1995 CP= 15079.530
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 234.0 CRITERION= .2038
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3955
 HT FLOW CONVERGENCE VALUE= .6402 CRITERION= .2031
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2334E-01
 HT FLOW CONVERGENCE VALUE= .2897E-01 CRITERION= .2031 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 68
 *** TIME = .130341E+08 TIME INC = 411053.
 *** RESPONSE EIGENVALUE = .3292E-07 OSCILLATION LIMIT = .1353E-01
 *** AUTO STEP TIME: NEXT TIME INC = .41105E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 234.0 CRITERION= .2034
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3855
 HT FLOW CONVERGENCE VALUE= .6239 CRITERION= .2027
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2260E-01
 HT FLOW CONVERGENCE VALUE= .2801E-01 CRITERION= .2027 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 70
 *** TIME = .134452E+08 TIME INC = 411053.
 *** RESPONSE EIGENVALUE = .3201E-07 OSCILLATION LIMIT = .1316E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.9193)

HT FLOW CONVERGENCE VALUE= 234.0 CRITERION= .2037
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7128
 HT FLOW CONVERGENCE VALUE= 1.158 CRITERION= .2030
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4872E-01
 HT FLOW CONVERGENCE VALUE= .6055E-01 CRITERION= .2030 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 72
 *** TIME = .142341E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3050E-07 OSCILLATION LIMIT = .2406E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 234.0 CRITERION= .2032
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6808
 HT FLOW CONVERGENCE VALUE= 1.104 CRITERION= .2025
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4615E-01
 HT FLOW CONVERGENCE VALUE= .5722E-01 CRITERION= .2025 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 74
 *** TIME = .150231E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2900E-07 OSCILLATION LIMIT = .2288E-01
 *** AUTO TIME STEP: NEXT TIME INC = .75577E+06 DECREASED (FACTOR = .9580)

HT FLOW CONVERGENCE VALUE= 233.9 CRITERION= .2035
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6244
 HT FLOW CONVERGENCE VALUE= 1.008 CRITERION= .2028
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4180E-01
 HT FLOW CONVERGENCE VALUE= .5174E-01 CRITERION= .2028 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 76
 *** TIME = .157788E+08 TIME INC = 755774.
 *** RESPONSE EIGENVALUE = .2764E-07 OSCILLATION LIMIT = .2089E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:22:16 JAN 27, 1995 CP= 16987.730
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 233.9 CRITERION= .2030
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5994
 HT FLOW CONVERGENCE VALUE= .9683 CRITERION= .2024
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3985E-01
 HT FLOW CONVERGENCE VALUE= .4923E-01 CRITERION= .2024 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP      9  SUBSTEP      1  COMPLETED.    CUM ITER =      78
*** TIME = .165346E+08    TIME INC = 755774.
*** RESPONSE EIGENVALUE = .2646E-07    OSCILLATION LIMIT = .2000E-01
*** AUTO STEP TIME: NEXT TIME INC = .75577E+06    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 233.8    CRITERION= .2033
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5764
    HT FLOW CONVERGENCE VALUE= .9298    CRITERION= .2027
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3823E-01
    HT FLOW CONVERGENCE VALUE= .4716E-01    CRITERION= .2027    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      9  SUBSTEP      2  COMPLETED.    CUM ITER =      80
*** TIME = .172904E+08    TIME INC = 755774.
*** RESPONSE EIGENVALUE = .2535E-07    OSCILLATION LIMIT = .1916E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06    INCREASED (FACTOR = 1.0439)

    HT FLOW CONVERGENCE VALUE= 233.6    CRITERION= .2028
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5789
    HT FLOW CONVERGENCE VALUE= .9360    CRITERION= .2022
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3848E-01
    HT FLOW CONVERGENCE VALUE= .4737E-01    CRITERION= .2022    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      9  SUBSTEP      3  COMPLETED.    CUM ITER =      82
*** TIME = .180793E+08    TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2432E-07    OSCILLATION LIMIT = .1919E-01
*** AUTO TIME STEP: NEXT TIME INC = .42764E+06    DECREASED (FACTOR = .5420)

    HT FLOW CONVERGENCE VALUE= 233.5    CRITERION= .2031
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3050
    HT FLOW CONVERGENCE VALUE= .4888    CRITERION= .2025
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1754E-01
    HT FLOW CONVERGENCE VALUE= .2147E-01    CRITERION= .2025    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      9  SUBSTEP      4  COMPLETED.    CUM ITER =      84
*** TIME = .185070E+08    TIME INC = 427636.
*** RESPONSE EIGENVALUE = .2379E-07    OSCILLATION LIMIT = .1017E-01
*** AUTO STEP TIME: NEXT TIME INC = .42764E+06    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 233.4    CRITERION= .2027
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2988
    HT FLOW CONVERGENCE VALUE= .4804    CRITERION= .2021
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1710E-01
    HT FLOW CONVERGENCE VALUE= .2090E-01    CRITERION= .2021    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      9  SUBSTEP      5  COMPLETED.    CUM ITER =      86
*** TIME = .189346E+08    TIME INC = 427636.
*** RESPONSE EIGENVALUE = .2330E-07    OSCILLATION LIMIT = .9966E-02

***** ANSYS SOLVE    COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT    VERSION=HP 9000/7XX    23:40:05 JAN 27, 1995 CP= 18902.280
FOR SUPPORT CALL BOB BAHNEY    PHONE (702) 794-5337    FAX

12 PWR MPC, 5 m Tunnel

    HT FLOW CONVERGENCE VALUE= 233.3    CRITERION= .2030
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2930
    HT FLOW CONVERGENCE VALUE= .4711    CRITERION= .2024
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1680E-01
    HT FLOW CONVERGENCE VALUE= .2051E-01    CRITERION= .2024    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      10  SUBSTEP      1  COMPLETED.    CUM ITER =      88
*** TIME = .193622E+08    TIME INC = 427636.
*** RESPONSE EIGENVALUE = .2279E-07    OSCILLATION LIMIT = .9747E-02
*** AUTO STEP TIME: NEXT TIME INC = .42764E+06    UNCHANGED

    HT FLOW CONVERGENCE VALUE= 233.2    CRITERION= .2025

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2874
HT FLOW CONVERGENCE VALUE= .4645 CRITERION= .2020
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1640E-01
HT FLOW CONVERGENCE VALUE= .1997E-01 CRITERION= .2020 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 90
*** TIME = .197899E+08 TIME INC = 427636.
*** RESPONSE EIGENVALUE = .2235E-07 OSCILLATION LIMIT = .9559E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.8449)

HT FLOW CONVERGENCE VALUE= 233.1 CRITERION= .2028
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5157
HT FLOW CONVERGENCE VALUE= .8390 CRITERION= .2022
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3394E-01
HT FLOW CONVERGENCE VALUE= .4147E-01 CRITERION= .2022 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 92
*** TIME = .205788E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2148E-07 OSCILLATION LIMIT = .1695E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 233.0 CRITERION= .2023
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4987
HT FLOW CONVERGENCE VALUE= .8130 CRITERION= .2017
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3258E-01
HT FLOW CONVERGENCE VALUE= .3975E-01 CRITERION= .2017 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 94
*** TIME = .213677E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2074E-07 OSCILLATION LIMIT = .1636E-01
*** AUTO TIME STEP: NEXT TIME INC = .72261E+06 DECREASED (FACTOR = .9159)

HT FLOW CONVERGENCE VALUE= 232.8 CRITERION= .2025
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4425
HT FLOW CONVERGENCE VALUE= .7191 CRITERION= .2020
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2834E-01
HT FLOW CONVERGENCE VALUE= .3450E-01 CRITERION= .2020 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 96
*** TIME = .220904E+08 TIME INC = 722607.
*** RESPONSE EIGENVALUE = .2007E-07 OSCILLATION LIMIT = .1450E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:58:41 JAN 28, 1995 CP= 20816.100
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 232.6 CRITERION= .2021
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4297
HT FLOW CONVERGENCE VALUE= .7007 CRITERION= .2015
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2736E-01
HT FLOW CONVERGENCE VALUE= .3324E-01 CRITERION= .2015 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 98
*** TIME = .228130E+08 TIME INC = 722607.
*** RESPONSE EIGENVALUE = .1947E-07 OSCILLATION LIMIT = .1407E-01
*** AUTO STEP TIME: NEXT TIME INC = .72261E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 232.4 CRITERION= .2023
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4179
HT FLOW CONVERGENCE VALUE= .6811 CRITERION= .2018
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2658E-01
HT FLOW CONVERGENCE VALUE= .3227E-01 CRITERION= .2018 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 100

*** TIME = .235356E+08 TIME INC = 722607.
 *** RESPONSE EIGENVALUE = .1889E-07 OSCILLATION LIMIT = .1365E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0918)

HT FLOW CONVERGENCE VALUE= 232.3 CRITERION= .2018
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4433
 HT FLOW CONVERGENCE VALUE= .7236 CRITERION= .2013
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2855E-01
 HT FLOW CONVERGENCE VALUE= .3462E-01 CRITERION= .2013 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 102
 *** TIME = .243245E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1832E-07 OSCILLATION LIMIT = .1445E-01
 *** AUTO TIME STEP: NEXT TIME INC = .46080E+06 DECREASED (FACTOR = .5841)

HT FLOW CONVERGENCE VALUE= 232.1 CRITERION= .2021
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2532
 HT FLOW CONVERGENCE VALUE= .4099 CRITERION= .2016
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1443E-01
 HT FLOW CONVERGENCE VALUE= .1739E-01 CRITERION= .2016 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 104
 *** TIME = .247853E+08 TIME INC = 460803.
 *** RESPONSE EIGENVALUE = .1807E-07 OSCILLATION LIMIT = .8328E-02
 *** AUTO STEP TIME: NEXT TIME INC = .46080E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 232.0 CRITERION= .2017
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2489
 HT FLOW CONVERGENCE VALUE= .4039 CRITERION= .2012
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1411E-01
 HT FLOW CONVERGENCE VALUE= .1699E-01 CRITERION= .2012 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 106
 *** TIME = .252461E+08 TIME INC = 460803.
 *** RESPONSE EIGENVALUE = .1778E-07 OSCILLATION LIMIT = .8193E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 02:16:56 JAN 28, 1995 CP= 22730.690
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 231.9 CRITERION= .2019
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2448
 HT FLOW CONVERGENCE VALUE= .3960 CRITERION= .2015
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1391E-01
 HT FLOW CONVERGENCE VALUE= .1674E-01 CRITERION= .2015 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 108
 *** TIME = .257069E+08 TIME INC = 460803.
 *** RESPONSE EIGENVALUE = .1746E-07 OSCILLATION LIMIT = .8045E-02
 *** AUTO STEP TIME: NEXT TIME INC = .46080E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 231.7 CRITERION= .2015
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2408
 HT FLOW CONVERGENCE VALUE= .3900 CRITERION= .2011
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1361E-01
 HT FLOW CONVERGENCE VALUE= .1635E-01 CRITERION= .2011 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 110
 *** TIME = .261677E+08 TIME INC = 460803.
 *** RESPONSE EIGENVALUE = .1719E-07 OSCILLATION LIMIT = .7923E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.7121)

HT FLOW CONVERGENCE VALUE= 231.6 CRITERION= .2017
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4030

HT FLOW CONVERGENCE VALUE= .6548 CRITERION= .2013
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2574E-01
 HT FLOW CONVERGENCE VALUE= .3105E-01 CRITERION= .2013 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 112
 *** TIME = .269567E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1660E-07 OSCILLATION LIMIT = .1310E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 231.4 CRITERION= .2013
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3923
 HT FLOW CONVERGENCE VALUE= .6385 CRITERION= .2008
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2490E-01
 HT FLOW CONVERGENCE VALUE= .2997E-01 CRITERION= .2008 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 114
 *** TIME = .277456E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1616E-07 OSCILLATION LIMIT = .1275E-01
 *** AUTO TIME STEP: NEXT TIME INC = .65627E+06 DECREASED (FACTOR = .8318)

HT FLOW CONVERGENCE VALUE= 231.2 CRITERION= .2015
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3185
 HT FLOW CONVERGENCE VALUE= .5161 CRITERION= .2011
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1943E-01
 HT FLOW CONVERGENCE VALUE= .2334E-01 CRITERION= .2011 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 116
 *** TIME = .284019E+08 TIME INC = 656275.
 *** RESPONSE EIGENVALUE = .1580E-07 OSCILLATION LIMIT = .1037E-01
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
 TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 755.827987 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 11579 STEP 1

9685 ELEMENTS (OF 9685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 24639.850 TIME= 03:35:25
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 03:35:25 JAN 28, 1995 CP= 24639.850
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
 TIME AT END OF THE LOAD STEP.31558E+08
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 231.1 CRITERION= .2010
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3117
 HT FLOW CONVERGENCE VALUE= .5061 CRITERION= .2006
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1892E-01
 HT FLOW CONVERGENCE VALUE= .2269E-01 CRITERION= .2006 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 118
 *** TIME = .290581E+08 TIME INC = 656275.
 *** RESPONSE EIGENVALUE = .1547E-07 OSCILLATION LIMIT = .1015E-01
 *** AUTO STEP TIME: NEXT TIME INC = .65627E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 230.9 CRITERION= .2013
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3053
 HT FLOW CONVERGENCE VALUE= .4948 CRITERION= .2009
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1854E-01
 HT FLOW CONVERGENCE VALUE= .2222E-01 CRITERION= .2009 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 120
 *** TIME = .297144E+08 TIME INC = 656275.
 *** RESPONSE EIGENVALUE = .1513E-07 OSCILLATION LIMIT = .9927E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.2021)

HT FLOW CONVERGENCE VALUE= 230.8 CRITERION= .2008
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3589
 HT FLOW CONVERGENCE VALUE= .5830 CRITERION= .2004
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2253E-01
 HT FLOW CONVERGENCE VALUE= .2700E-01 CRITERION= .2004 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 122
 *** TIME = .305034E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1475E-07 OSCILLATION LIMIT = .1164E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 230.6 CRITERION= .2010
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3505
 HT FLOW CONVERGENCE VALUE= .5674 CRITERION= .2006
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2199E-01
 HT FLOW CONVERGENCE VALUE= .2633E-01 CRITERION= .2006 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 124
 *** TIME = .312923E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1438E-07 OSCILLATION LIMIT = .1135E-01
 *** AUTO STEP TIME: NEXT TIME INC = .26533E+06 DECREASED (FACTOR = .3363)

HT FLOW CONVERGENCE VALUE= 230.4 CRITERION= .2006
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1162
 HT FLOW CONVERGENCE VALUE= .1864 CRITERION= .2003 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 125
 *** TIME = .315576E+08 TIME INC = 265330.
 *** RESPONSE EIGENVALUE = .1507E-07 OSCILLATION LIMIT = .4000E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 04:48:39 JAN 28, 1995 CP= 26413.710
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 230.3 CRITERION= .2009
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1711
 HT FLOW CONVERGENCE VALUE= .2737 CRITERION= .2006
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9183E-02
 HT FLOW CONVERGENCE VALUE= .1090E-01 CRITERION= .2006 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 127
 *** TIME = .319521E+08 TIME INC = 394470.
 *** RESPONSE EIGENVALUE = .1431E-07 OSCILLATION LIMIT = .5643E-02
 *** AUTO STEP TIME: NEXT TIME INC = .39447E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 230.2 CRITERION= .2005
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1700
 HT FLOW CONVERGENCE VALUE= .2691 CRITERION= .2001
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9023E-02
 HT FLOW CONVERGENCE VALUE= .1070E-01 CRITERION= .2002 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 129
 *** TIME = .323466E+08 TIME INC = 394470.
 *** RESPONSE EIGENVALUE = .1420E-07 OSCILLATION LIMIT = .5603E-02
 *** AUTO TIME STEP: NEXT TIME INC = .11834E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 230.1 CRITERION= .2007
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4951
 HT FLOW CONVERGENCE VALUE= .8019 CRITERION= .2003
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3306E-01
 HT FLOW CONVERGENCE VALUE= .3956E-01 CRITERION= .2003 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 131
 *** TIME = .335300E+08 TIME INC = .118341E+07
 *** RESPONSE EIGENVALUE = .1348E-07 OSCILLATION LIMIT = .1596E-01
 *** AUTO TIME STEP: NEXT TIME INC = .35502E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 229.9 CRITERION= .2000
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.394
 HT FLOW CONVERGENCE VALUE= 2.266 CRITERION= .1995
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1067
 HT FLOW CONVERGENCE VALUE= .1266 CRITERION= .1995 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 133
 *** TIME = .370802E+08 TIME INC = .355023E+07
 *** RESPONSE EIGENVALUE = .1259E-07 OSCILLATION LIMIT = .4471E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.2222)

HT FLOW CONVERGENCE VALUE= 229.1 CRITERION= .1995
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.698
 HT FLOW CONVERGENCE VALUE= 4.335 CRITERION= .1989
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2157
 HT FLOW CONVERGENCE VALUE= .2522 CRITERION= .1988
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1907E-01

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HT FLOW CONVERGENCE VALUE= .2822E-01 CRITERION= .1988 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 136
*** TIME = .449696E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1095E-07 OSCILLATION LIMIT = .8640E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 227.6 CRITERION= .1980
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.252
HT FLOW CONVERGENCE VALUE= 3.564 CRITERION= .1975
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1766
HT FLOW CONVERGENCE VALUE= .2044 CRITERION= .1974
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1526E-01
HT FLOW CONVERGENCE VALUE= .2239E-01 CRITERION= .1974 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 139
*** TIME = .528590E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .9206E-08 OSCILLATION LIMIT = .7263E-01
*** AUTO TIME STEP: NEXT TIME INC = .51281E+07 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 226.1 CRITERION= .1975
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.284
HT FLOW CONVERGENCE VALUE= 2.011 CRITERION= .1971
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9600E-01
HT FLOW CONVERGENCE VALUE= .1106 CRITERION= .1970 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 141
*** TIME = .579871E+08 TIME INC = .512811E+07
*** RESPONSE EIGENVALUE = .8117E-08 OSCILLATION LIMIT = .4163E-01
*** AUTO STEP TIME: NEXT TIME INC = .51281E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 225.2 CRITERION= .1965
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.173
HT FLOW CONVERGENCE VALUE= 1.809 CRITERION= .1961
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8639E-01
HT FLOW CONVERGENCE VALUE= .9900E-01 CRITERION= .1961 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 143
*** TIME = .631152E+08 TIME INC = .512811E+07
*** RESPONSE EIGENVALUE = .7446E-08 OSCILLATION LIMIT = .3818E-01

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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 07:03:07 JAN 28, 1995 CP= 29742.120
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 224.4 CRITERION= .1962
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.077
HT FLOW CONVERGENCE VALUE= 1.645 CRITERION= .1959
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7813E-01
HT FLOW CONVERGENCE VALUE= .8903E-01 CRITERION= .1958 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 145
*** TIME = .682433E+08 TIME INC = .512811E+07
*** RESPONSE EIGENVALUE = .6856E-08 OSCILLATION LIMIT = .3516E-01
*** AUTO STEP TIME: NEXT TIME INC = .51281E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 223.6 CRITERION= .1952
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9955
HT FLOW CONVERGENCE VALUE= 1.507 CRITERION= .1949
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7157E-01
HT FLOW CONVERGENCE VALUE= .8113E-01 CRITERION= .1949 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 147
*** TIME = .733715E+08 TIME INC = .512811E+07

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*** RESPONSE EIGENVALUE = .6344E-08 OSCILLATION LIMIT = .3253E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.5385)

HT FLOW CONVERGENCE VALUE= 223.0 CRITERION= .1948
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.398
HT FLOW CONVERGENCE VALUE= 2.084 CRITERION= .1944
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1025
HT FLOW CONVERGENCE VALUE= .1153 CRITERION= .1944 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 149
*** TIME = .812609E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .5791E-08 OSCILLATION LIMIT = .4569E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.1 CRITERION= .1935
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.259
HT FLOW CONVERGENCE VALUE= 1.839 CRITERION= .1933
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9070E-01
HT FLOW CONVERGENCE VALUE= .1014 CRITERION= .1932 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 151
*** TIME = .891503E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .5214E-08 OSCILLATION LIMIT = .4114E-01
*** AUTO TIME STEP: NEXT TIME INC = .55226E+07 DECREASED (FACTOR = .7000)

HT FLOW CONVERGENCE VALUE= 221.4 CRITERION= .1932
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8096
HT FLOW CONVERGENCE VALUE= 1.159 CRITERION= .1931
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5562E-01
HT FLOW CONVERGENCE VALUE= .6193E-01 CRITERION= .1930 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 153
*** TIME = .946728E+08 TIME INC = .552258E+07
*** RESPONSE EIGENVALUE = .4798E-08 OSCILLATION LIMIT = .2650E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:20:45 JAN 28, 1995 CP= 31654.350
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 220.9 CRITERION= .1924
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7591
HT FLOW CONVERGENCE VALUE= 1.078 CRITERION= .1922
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5167E-01
HT FLOW CONVERGENCE VALUE= .5723E-01 CRITERION= .1922 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 155
*** TIME = .100195E+09 TIME INC = .552258E+07
*** RESPONSE EIGENVALUE = .4465E-08 OSCILLATION LIMIT = .2466E-01
*** AUTO STEP TIME: NEXT TIME INC = .55226E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 220.5 CRITERION= .1922
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7150
HT FLOW CONVERGENCE VALUE= 1.004 CRITERION= .1920
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4815E-01
HT FLOW CONVERGENCE VALUE= .5311E-01 CRITERION= .1920 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 157
*** TIME = .105718E+09 TIME INC = .552258E+07
*** RESPONSE EIGENVALUE = .4176E-08 OSCILLATION LIMIT = .2306E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.4286)

HT FLOW CONVERGENCE VALUE= 220.1 CRITERION= .1912
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9541
HT FLOW CONVERGENCE VALUE= 1.308 CRITERION= .1910

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6890E-01
HT FLOW CONVERGENCE VALUE= .7455E-01 CRITERION= .1910 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 159
*** TIME = .113607E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .3867E-08 OSCILLATION LIMIT = .3051E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 219.7 CRITERION= .1908
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8818
HT FLOW CONVERGENCE VALUE= 1.168 CRITERION= .1907
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6885E-01
HT FLOW CONVERGENCE VALUE= .7395E-01 CRITERION= .1906 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 161
*** TIME = .121497E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .3554E-08 OSCILLATION LIMIT = .2804E-01
*** AUTO TIME STEP: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 219.3 CRITERION= .1900
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4968
HT FLOW CONVERGENCE VALUE= .6366 CRITERION= .1899
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3538E-01
HT FLOW CONVERGENCE VALUE= .3772E-01 CRITERION= .1899 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 163
*** TIME = .126230E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .3337E-08 OSCILLATION LIMIT = .1580E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 09:37:11 JAN 28, 1995 CP= 33564.310
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 219.1 CRITERION= .1900
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4753
HT FLOW CONVERGENCE VALUE= .6026 CRITERION= .1899
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3333E-01
HT FLOW CONVERGENCE VALUE= .3552E-01 CRITERION= .1899 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 165
*** TIME = .130964E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .3153E-08 OSCILLATION LIMIT = .1492E-01
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 218.9 CRITERION= .1893
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4563
HT FLOW CONVERGENCE VALUE= .5734 CRITERION= .1892
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3046E-01
HT FLOW CONVERGENCE VALUE= .3268E-01 CRITERION= .1892 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 167
*** TIME = .135698E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .2990E-08 OSCILLATION LIMIT = .1416E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 218.7 CRITERION= .1890
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7228
HT FLOW CONVERGENCE VALUE= .8973 CRITERION= .1889
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4955E-01
HT FLOW CONVERGENCE VALUE= .5374E-01 CRITERION= .1889 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 169
*** TIME = .143587E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2796E-08 OSCILLATION LIMIT = .2206E-01

*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 218.5 CRITERION= .1881
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6796
 HT FLOW CONVERGENCE VALUE= .8237 CRITERION= .1880
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4434E-01
 HT FLOW CONVERGENCE VALUE= .4736E-01 CRITERION= .1879 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 171
 *** TIME = .151477E+09 TIME INC = .78894E+07
 *** RESPONSE EIGENVALUE = .2588E-08 OSCILLATION LIMIT = .2042E-01
 *** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)

HT FLOW CONVERGENCE VALUE= 218.2 CRITERION= .1879
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5159
 HT FLOW CONVERGENCE VALUE= .6038 CRITERION= .1878
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3252E-01
 HT FLOW CONVERGENCE VALUE= .3454E-01 CRITERION= .1878 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 173
 *** TIME = .157788E+09 TIME INC = .63115E+07
 *** RESPONSE EIGENVALUE = .2434E-08 OSCILLATION LIMIT = .1536E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 10:53:58 JAN 28, 1995 CP= 35473.150
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 218.0 CRITERION= .1871
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4934
 HT FLOW CONVERGENCE VALUE= .5703 CRITERION= .1870
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3022E-01
 HT FLOW CONVERGENCE VALUE= .3199E-01 CRITERION= .1870 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 175
 *** TIME = .164100E+09 TIME INC = .63115E+07
 *** RESPONSE EIGENVALUE = .2289E-08 OSCILLATION LIMIT = .1445E-01
 *** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 217.8 CRITERION= .1869
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4726
 HT FLOW CONVERGENCE VALUE= .5341 CRITERION= .1869
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2973E-01
 HT FLOW CONVERGENCE VALUE= .3148E-01 CRITERION= .1869 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 177
 *** TIME = .170411E+09 TIME INC = .63115E+07
 *** RESPONSE EIGENVALUE = .2170E-08 OSCILLATION LIMIT = .1370E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2500)

HT FLOW CONVERGENCE VALUE= 217.6 CRITERION= .1860
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5640
 HT FLOW CONVERGENCE VALUE= .6258 CRITERION= .1860
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3716E-01
 HT FLOW CONVERGENCE VALUE= .3974E-01 CRITERION= .1859 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 179
 *** TIME = .178300E+09 TIME INC = .78894E+07
 *** RESPONSE EIGENVALUE = .2059E-08 OSCILLATION LIMIT = .1624E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 217.3 CRITERION= .1858
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5383
 HT FLOW CONVERGENCE VALUE= .5846 CRITERION= .1857
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3414E-01

HT FLOW CONVERGENCE VALUE= .3710E-01 CRITERION= .1857 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 181
 *** TIME = .186190E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1946E-08 OSCILLATION LIMIT = .1535E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31558E+07 DECREASED (FACTOR = .4000)

HT FLOW CONVERGENCE VALUE= 217.0 CRITERION= .1852
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2084
 HT FLOW CONVERGENCE VALUE= .2212 CRITERION= .1851
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1069E-01
 HT FLOW CONVERGENCE VALUE= .1128E-01 CRITERION= .1851 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 183
 *** TIME = .189346E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1912E-08 OSCILLATION LIMIT = .6035E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 12:10:36 JAN 28, 1995 CP= 37386.460
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 216.9 CRITERION= .1853
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2047
 HT FLOW CONVERGENCE VALUE= .2168 CRITERION= .1852
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1041E-01
 HT FLOW CONVERGENCE VALUE= .1097E-01 CRITERION= .1852 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 185
 *** TIME = .192501E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1848E-08 OSCILLATION LIMIT = .5833E-02
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 216.8 CRITERION= .1847
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2012
 HT FLOW CONVERGENCE VALUE= .2091 CRITERION= .1847
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1032E-01
 HT FLOW CONVERGENCE VALUE= .1083E-01 CRITERION= .1847 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 187
 *** TIME = .195657E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1807E-08 OSCILLATION LIMIT = .5703E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 216.7 CRITERION= .1845
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4884
 HT FLOW CONVERGENCE VALUE= .4922 CRITERION= .1845
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2926E-01
 HT FLOW CONVERGENCE VALUE= .3100E-01 CRITERION= .1844 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 189
 *** TIME = .203547E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1713E-08 OSCILLATION LIMIT = .1351E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 216.4 CRITERION= .1836
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4687
 HT FLOW CONVERGENCE VALUE= .4545 CRITERION= .1836
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2696E-01
 HT FLOW CONVERGENCE VALUE= .2822E-01 CRITERION= .1835 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 191
 *** TIME = .211436E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1638E-08 OSCILLATION LIMIT = .1293E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 216.1 CRITERION= .1836
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2722
HT FLOW CONVERGENCE VALUE= .2506 CRITERION= .1835
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1422E-01
HT FLOW CONVERGENCE VALUE= .1467E-01 CRITERION= .1835 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 193
*** TIME = .216170E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1600E-08 OSCILLATION LIMIT = .7572E-02
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 215.9 CRITERION= .1829
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2666
HT FLOW CONVERGENCE VALUE= .2409 CRITERION= .1828
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1355E-01
HT FLOW CONVERGENCE VALUE= .1400E-01 CRITERION= .1828 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 6 COMPLETED. CUM ITER = 195
*** TIME = .220903E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1568E-08 OSCILLATION LIMIT = .7422E-02

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:41:35 JAN 28, 1995 CP= 39676.840
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 215.7 CRITERION= .1829
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2614
HT FLOW CONVERGENCE VALUE= .2405 CRITERION= .1829
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1313E-01
HT FLOW CONVERGENCE VALUE= .1344E-01 CRITERION= .1829 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 197
*** TIME = .225637E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1458E-08 OSCILLATION LIMIT = .6901E-02
*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 215.5 CRITERION= .1823
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2564
HT FLOW CONVERGENCE VALUE= .2390 CRITERION= .1823
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1307E-01
HT FLOW CONVERGENCE VALUE= .1333E-01 CRITERION= .1822 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 199
*** TIME = .230371E+09 TIME INC = .473364E+07
*** RESPONSE EIGENVALUE = .1398E-08 OSCILLATION LIMIT = .6619E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6667)

HT FLOW CONVERGENCE VALUE= 215.3 CRITERION= .1822
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4169
HT FLOW CONVERGENCE VALUE= .3851 CRITERION= .1821
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2425E-01
HT FLOW CONVERGENCE VALUE= .2531E-01 CRITERION= .1821 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 201
*** TIME = .238260E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1344E-08 OSCILLATION LIMIT = .1061E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 214.9 CRITERION= .1814
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4047
HT FLOW CONVERGENCE VALUE= .3780 CRITERION= .1813
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2294E-01
HT FLOW CONVERGENCE VALUE= .2403E-01 CRITERION= .1813 <<< CONVERGED


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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 203
*** TIME = .246149E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1297E-08 OSCILLATION LIMIT = .1023E-01
*** AUTO TIME STEP: NEXT TIME INC = .63115E+07 DECREASED (FACTOR = .8000)
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HT FLOW CONVERGENCE VALUE= 214.6 CRITERION= .1813
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3155
HT FLOW CONVERGENCE VALUE= .2855 CRITERION= .1812
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1665E-01
HT FLOW CONVERGENCE VALUE= .1726E-01 CRITERION= .1812 <<< CONVERGED
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```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 205
*** TIME = .252461E+09 TIME INC = .631152E+07
*** RESPONSE EIGENVALUE = .1266E-08 OSCILLATION LIMIT = .7992E-02
```

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:59:14 JAN 28, 1995 CP= 41590.980
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 214.3 CRITERION= .1803
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3086
HT FLOW CONVERGENCE VALUE= .2186 CRITERION= .1802
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1505E-01
HT FLOW CONVERGENCE VALUE= .1631E-01 CRITERION= .1802 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 207
*** TIME = .258772E+09 TIME INC = .631152E+07
*** RESPONSE EIGENVALUE = .1677E-08 OSCILLATION LIMIT = .1058E-01
*** AUTO STEP TIME: NEXT TIME INC = .63115E+07 UNCHANGED
```

```
HT FLOW CONVERGENCE VALUE= 214.0 CRITERION= .1799
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3018
HT FLOW CONVERGENCE VALUE= .1625 CRITERION= .1798 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 208
*** TIME = .265084E+09 TIME INC = .631152E+07
*** RESPONSE EIGENVALUE = .1854E-08 OSCILLATION LIMIT = .1170E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2500)
```

```
HT FLOW CONVERGENCE VALUE= 213.7 CRITERION= .1787
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3691
HT FLOW CONVERGENCE VALUE= .1701 CRITERION= .1786 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 209
*** TIME = .272973E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1849E-08 OSCILLATION LIMIT = .1459E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED
```

```
HT FLOW CONVERGENCE VALUE= 213.2 CRITERION= .1781
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3607
HT FLOW CONVERGENCE VALUE= .1345 CRITERION= .1780 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 210
*** TIME = .280863E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1962E-08 OSCILLATION LIMIT = .1548E-01
*** AUTO TIME STEP: NEXT TIME INC = .31558E+07 DECREASED (FACTOR = .4000)
```

```
HT FLOW CONVERGENCE VALUE= 212.7 CRITERION= .1773
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1419
HT FLOW CONVERGENCE VALUE= .4667E-01 CRITERION= .1773 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 211
*** TIME = .284018E+09 TIME INC = .315576E+07
```

*** RESPONSE EIGENVALUE = .2017E-08 OSCILLATION LIMIT = .6366E-02
Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
640.948474 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 11579 STEP 1

9685 ELEMENTS (OF 9685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 42936.650 TIME= 15:52:10
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:52:10 JAN 28, 1995 CP= 42936.650
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

. LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
TIME AT END OF THE LOAD STEP.31558E+09
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 212.4 CRITERION= .1774
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1405

HT FLOW CONVERGENCE VALUE= .4493E-01 CRITERION= .1773 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 212
 *** TIME = .287174E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1820E-08 OSCILLATION LIMIT = .5745E-02
 *** AUTO STEP TIME: NEXT TIME INC = .31558E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 212.2 CRITERION= .1767
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1392
 HT FLOW CONVERGENCE VALUE= .5032E-01 CRITERION= .1767 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 213
 *** TIME = .290330E+09 TIME INC = .315576E+07
 *** RESPONSE EIGENVALUE = .1651E-08 OSCILLATION LIMIT = .5209E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.5000)

HT FLOW CONVERGENCE VALUE= 212.0 CRITERION= .1764
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3420
 HT FLOW CONVERGENCE VALUE= .1282 CRITERION= .1763 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 214
 *** TIME = .298219E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1581E-08 OSCILLATION LIMIT = .1247E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 211.4 CRITERION= .1754
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3359
 HT FLOW CONVERGENCE VALUE= .1243 CRITERION= .1752 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 215
 *** TIME = .306109E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .1517E-08 OSCILLATION LIMIT = .1197E-01
 *** AUTO TIME STEP: NEXT TIME INC = .47336E+07 DECREASED (FACTOR = .6000)

HT FLOW CONVERGENCE VALUE= 210.8 CRITERION= .1752
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1988
 HT FLOW CONVERGENCE VALUE= .6806E-01 CRITERION= .1751 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 216
 *** TIME = .310842E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1562E-08 OSCILLATION LIMIT = .7393E-02
 *** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 210.4 CRITERION= .1744
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1968
 HT FLOW CONVERGENCE VALUE= .6465E-01 CRITERION= .1743 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 22 SUBSTEP 6 COMPLETED. CUM ITER = 217
 *** TIME = .315576E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1536E-08 OSCILLATION LIMIT = .7273E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=IP 9000/7XX 16:48:20 JAN 28, 1995 CP= 44375.850
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 210.0 CRITERION= .1744
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1948
 HT FLOW CONVERGENCE VALUE= .6872E-01 CRITERION= .1743 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 218
 *** TIME = .320310E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1390E-08 OSCILLATION LIMIT = .6578E-02

*** AUTO STEP TIME: NEXT TIME INC = .47336E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 209.6 CRITERION= .1737
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1928
 HT FLOW CONVERGENCE VALUE= .7448E-01 CRITERION= .1736 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 219
 *** TIME = .325043E+09 TIME INC = .473364E+07
 *** RESPONSE EIGENVALUE = .1307E-08 OSCILLATION LIMIT = .6186E-02
 *** AUTO TIME STEP: NEXT TIME INC = .14201E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 209.2 CRITERION= .1731
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5691
 HT FLOW CONVERGENCE VALUE= .2277 CRITERION= .1728
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1835E-01
 HT FLOW CONVERGENCE VALUE= .1985E-01 CRITERION= .1727 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 221
 *** TIME = .339244E+09 TIME INC = .142009E+08
 *** RESPONSE EIGENVALUE = .1260E-08 OSCILLATION LIMIT = .1789E-01
 *** AUTO STEP TIME: NEXT TIME INC = .14201E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 208.1 CRITERION= .1716
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5571
 HT FLOW CONVERGENCE VALUE= .2157 CRITERION= .1713
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1716E-01
 HT FLOW CONVERGENCE VALUE= .1839E-01 CRITERION= .1713 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 223
 *** TIME = .353445E+09 TIME INC = .142009E+08
 *** RESPONSE EIGENVALUE = .1216E-08 OSCILLATION LIMIT = .1727E-01
 *** AUTO TIME STEP: NEXT TIME INC = .42603E+08 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 206.9 CRITERION= .1693
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.611
 HT FLOW CONVERGENCE VALUE= .5405 CRITERION= .1684
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6144E-01
 HT FLOW CONVERGENCE VALUE= .6968E-01 CRITERION= .1683 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 225
 *** TIME = .396048E+09 TIME INC = .426028E+08
 *** RESPONSE EIGENVALUE = .1193E-08 OSCILLATION LIMIT = .5084E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8519)

HT FLOW CONVERGENCE VALUE= 203.6 CRITERION= .1637
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.737
 HT FLOW CONVERGENCE VALUE= .6323 CRITERION= .1619
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1022
 HT FLOW CONVERGENCE VALUE= .1211 CRITERION= .1617 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 227
 *** TIME = .474942E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1211E-08 OSCILLATION LIMIT = .9556E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 197.1 CRITERION= .1577
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.429
 HT FLOW CONVERGENCE VALUE= .5194 CRITERION= .1558
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7735E-01
 HT FLOW CONVERGENCE VALUE= .8999E-01 CRITERION= .1556 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 229
 *** TIME = .553836E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1304E-08 OSCILLATION LIMIT = .1029
 *** AUTO TIME STEP: NEXT TIME INC = .77316E+08 DECREASED (FACTOR = .9800)

HT FLOW CONVERGENCE VALUE= 190.3 CRITERION= .1512
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.597
 HT FLOW CONVERGENCE VALUE= .6894 CRITERION= .1492
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6321E-01

HT FLOW CONVERGENCE VALUE= .6902E-01 CRITERION= .1490 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 231
 *** TIME = .631152E+09 TIME INC = .773161E+08
 *** RESPONSE EIGENVALUE = .1436E-08 OSCILLATION LIMIT = .1110

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:38:29 JAN 28, 1995 CP= 47151.380
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 183.4 CRITERION= .1462
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.008
 HT FLOW CONVERGENCE VALUE= .5507 CRITERION= .1442
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4616E-01
 HT FLOW CONVERGENCE VALUE= .4851E-01 CRITERION= .1441 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 233
 *** TIME = .708468E+09 TIME INC = .773161E+08
 *** RESPONSE EIGENVALUE = .1200E-08 OSCILLATION LIMIT = .9278E-01
 *** AUTO STEP TIME: NEXT TIME INC = .77316E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 176.6 CRITERION= .1407
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.993
 HT FLOW CONVERGENCE VALUE= .5223 CRITERION= .1388
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4399E-01
 HT FLOW CONVERGENCE VALUE= .4458E-01 CRITERION= .1387 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 235
 *** TIME = .785784E+09 TIME INC = .773161E+08
 *** RESPONSE EIGENVALUE = .1150E-08 OSCILLATION LIMIT = .8888E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0204)

HT FLOW CONVERGENCE VALUE= 170.3 CRITERION= .1358
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.212
 HT FLOW CONVERGENCE VALUE= .6585 CRITERION= .1340
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4319E-01
 HT FLOW CONVERGENCE VALUE= .4093E-01 CRITERION= .1339 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 237
 *** TIME = .864678E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1261E-08 OSCILLATION LIMIT = .9949E-01
 *** AUTO TIME STEP: NEXT TIME INC = .41025E+08 DECREASED (FACTOR = .5200)

HT FLOW CONVERGENCE VALUE= 164.2 CRITERION= .1319
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.188
 HT FLOW CONVERGENCE VALUE= .3848 CRITERION= .1310
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1666E-01
 HT FLOW CONVERGENCE VALUE= .1433E-01 CRITERION= .1310 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 239
 *** TIME = .905703E+09 TIME INC = .410249E+08
 *** RESPONSE EIGENVALUE = .1324E-08 OSCILLATION LIMIT = .5431E-01
 *** AUTO STEP TIME: NEXT TIME INC = .41025E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 161.0 CRITERION= .1296
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.248
 HT FLOW CONVERGENCE VALUE= .4233 CRITERION= .1287
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1745E-01
 HT FLOW CONVERGENCE VALUE= .1424E-01 CRITERION= .1287 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 241
 *** TIME = .946728E+09 TIME INC = .410249E+08
 *** RESPONSE EIGENVALUE = .1416E-08 OSCILLATION LIMIT = .5808E-01

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 19:55:05 JAN 28, 1995 CP= 49072.080
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 157.9 CRITERION= .1269
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.102
 HT FLOW CONVERGENCE VALUE= .3851 CRITERION= .1260
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1505E-01
 HT FLOW CONVERGENCE VALUE= .1172E-01 CRITERION= .1260 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 243
 *** TIME = .987753E+09 TIME INC = .410249E+08
 *** RESPONSE EIGENVALUE = .1297E-08 OSCILLATION LIMIT = .5322E-01
 *** AUTO STEP TIME: NEXT TIME INC = .41025E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 154.9 CRITERION= .1248
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.110
 HT FLOW CONVERGENCE VALUE= .3767 CRITERION= .1239
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1524E-01
 HT FLOW CONVERGENCE VALUE= .1180E-01 CRITERION= .1239 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 245
 *** TIME = .102878E+10 TIME INC = .410249E+08
 *** RESPONSE EIGENVALUE = .1295E-08 OSCILLATION LIMIT = .5311E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.9231)

HT FLOW CONVERGENCE VALUE= 152.0 CRITERION= .1208
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.175
 HT FLOW CONVERGENCE VALUE= .7343 CRITERION= .1192
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3850E-01
 HT FLOW CONVERGENCE VALUE= .2965E-01 CRITERION= .1191 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 247
 *** TIME = .110767E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1364E-08 OSCILLATION LIMIT = .1076
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 146.5 CRITERION= .1166
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.275
 HT FLOW CONVERGENCE VALUE= .7874 CRITERION= .1150
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4050E-01
 HT FLOW CONVERGENCE VALUE= .2940E-01 CRITERION= .1150 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 249
 *** TIME = .118657E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1491E-08 OSCILLATION LIMIT = .1176
 *** AUTO TIME STEP: NEXT TIME INC = .75738E+08 DECREASED (FACTOR = .9600)

HT FLOW CONVERGENCE VALUE= 141.2 CRITERION= .1119
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.263
 HT FLOW CONVERGENCE VALUE= .8054 CRITERION= .1105
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3990E-01
 HT FLOW CONVERGENCE VALUE= .2736E-01 CRITERION= .1104 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 251
 *** TIME = .126230E+10 TIME INC = .757382E+08
 *** RESPONSE EIGENVALUE = .1639E-08 OSCILLATION LIMIT = .1241

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:12:05 JAN 28, 1995 CP= 50989.550
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 136.2 CRITERION= .1087
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.746
 HT FLOW CONVERGENCE VALUE= .6442 CRITERION= .1073
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2980E-01
 HT FLOW CONVERGENCE VALUE= .1933E-01 CRITERION= .1073 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 253
 *** TIME = .133804E+10 TIME INC = .757382E+08
 *** RESPONSE EIGENVALUE = .1296E-08 OSCILLATION LIMIT = .9813E-01
 *** AUTO STEP TIME: NEXT TIME INC = .75738E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 131.5 CRITERION= .1050
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.658
 HT FLOW CONVERGENCE VALUE= .5694 CRITERION= .1037
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2953E-01
 HT FLOW CONVERGENCE VALUE= .1950E-01 CRITERION= .1037 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 255
 *** TIME = .141378E+10 TIME INC = .757382E+08
 *** RESPONSE EIGENVALUE = .1205E-08 OSCILLATION LIMIT = .9123E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0417)

HT FLOW CONVERGENCE VALUE= 127.1 CRITERION= .1019
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.800
 HT FLOW CONVERGENCE VALUE= .6170 CRITERION= .1006
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2973E-01
 HT FLOW CONVERGENCE VALUE= .1864E-01 CRITERION= .1006 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 257
 *** TIME = .149267E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1304E-08 OSCILLATION LIMIT = .1029
 *** AUTO TIME STEP: NEXT TIME INC = .42603E+08 DECREASED (FACTOR = .5400)

HT FLOW CONVERGENCE VALUE= 122.9 CRITERION= .9916E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9714
 HT FLOW CONVERGENCE VALUE= .3395 CRITERION= .9852E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1315E-01
 HT FLOW CONVERGENCE VALUE= .7819E-02 CRITERION= .9850E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 259
 *** TIME = .153528E+10 TIME INC = .426028E+08
 *** RESPONSE EIGENVALUE = .1339E-08 OSCILLATION LIMIT = .5705E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42603E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 120.7 CRITERION= .9767E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.009
 HT FLOW CONVERGENCE VALUE= .3527 CRITERION= .9705E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1326E-01
 HT FLOW CONVERGENCE VALUE= .7712E-02 CRITERION= .9703E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 261
 *** TIME = .157788E+10 TIME INC = .426028E+08
 *** RESPONSE EIGENVALUE = .1429E-08 OSCILLATION LIMIT = .6088E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:28:03 JAN 28, 1995 CP= 52906.240
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 118.6 CRITERION= .9585E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7881

HT FLOW CONVERGENCE VALUE= .2851 CRITERION= .9524E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9727E-02
HT FLOW CONVERGENCE VALUE= .5415E-02 CRITERION= .9522E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 263
*** TIME = .162048E+10 TIME INC = .426028E+08
*** RESPONSE EIGENVALUE = .1130E-08 OSCILLATION LIMIT = .4816E-01
*** AUTO STEP TIME: NEXT TIME INC = .42603E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 116.5 CRITERION= .9466E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7673
HT FLOW CONVERGENCE VALUE= .2581 CRITERION= .9409E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9420E-02
HT FLOW CONVERGENCE VALUE= .5253E-02 CRITERION= .9407E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 265
*** TIME = .166309E+10 TIME INC = .426028E+08
*** RESPONSE EIGENVALUE = .1060E-08 OSCILLATION LIMIT = .4515E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8519)

HT FLOW CONVERGENCE VALUE= 114.5 CRITERION= .9215E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.412
HT FLOW CONVERGENCE VALUE= .4606 CRITERION= .9114E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2018E-01
HT FLOW CONVERGENCE VALUE= .1116E-01 CRITERION= .9110E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 267
*** TIME = .174198E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1076E-08 OSCILLATION LIMIT = .8490E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 111.1 CRITERION= .8981E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.438
HT FLOW CONVERGENCE VALUE= .4642 CRITERION= .8886E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2109E-01
HT FLOW CONVERGENCE VALUE= .1165E-01 CRITERION= .8883E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 269
*** TIME = .182087E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1122E-08 OSCILLATION LIMIT = .8852E-01
*** AUTO TIME STEP: NEXT TIME INC = .72582E+08 DECREASED (FACTOR = .9200)

HT FLOW CONVERGENCE VALUE= 107.8 CRITERION= .8704E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.339
HT FLOW CONVERGENCE VALUE= .4300 CRITERION= .8621E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1809E-01
HT FLOW CONVERGENCE VALUE= .9456E-02 CRITERION= .8619E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 271
*** TIME = .189346E+10 TIME INC = .725825E+08
*** RESPONSE EIGENVALUE = .1181E-08 OSCILLATION LIMIT = .8573E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 23:44:52 JAN 28, 1995 CP= 54828.200
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 105.0 CRITERION= .8532E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.106
HT FLOW CONVERGENCE VALUE= .3552 CRITERION= .8454E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1386E-01
HT FLOW CONVERGENCE VALUE= .6901E-02 CRITERION= .8451E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 273
*** TIME = .196604E+10 TIME INC = .725825E+08

*** RESPONSE EIGENVALUE = .9775E-09 OSCILLATION LIMIT = .7095E-01
 *** AUTO STEP TIME: NEXT TIME INC = .72582E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 102.3 CRITERION= .8302E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.060
 HT FLOW CONVERGENCE VALUE= .3227 CRITERION= .8229E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1291E-01
 HT FLOW CONVERGENCE VALUE= .6320E-02 CRITERION= .8226E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 275
 *** TIME = .203862E+10 TIME INC = .725825E+08
 *** RESPONSE EIGENVALUE = .9283E-09 OSCILLATION LIMIT = .6738E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0870)

HT FLOW CONVERGENCE VALUE= 99.79 CRITERION= .8130E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.187
 HT FLOW CONVERGENCE VALUE= .3563 CRITERION= .8055E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1444E-01
 HT FLOW CONVERGENCE VALUE= .6895E-02 CRITERION= .8052E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 277
 *** TIME = .211751E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9791E-09 OSCILLATION LIMIT = .7725E-01
 *** AUTO TIME STEP: NEXT TIME INC = .45759E+08 DECREASED (FACTOR = .5800)

HT FLOW CONVERGENCE VALUE= 97.22 CRITERION= .7946E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6822
 HT FLOW CONVERGENCE VALUE= .2069 CRITERION= .7905E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6968E-02
 HT FLOW CONVERGENCE VALUE= .3295E-02 CRITERION= .7904E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 279
 *** TIME = .216327E+10 TIME INC = .457585E+08
 *** RESPONSE EIGENVALUE = .9939E-09 OSCILLATION LIMIT = .4548E-01
 *** AUTO STEP TIME: NEXT TIME INC = .45759E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 95.79 CRITERION= .7860E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7052
 HT FLOW CONVERGENCE VALUE= .2122 CRITERION= .7821E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7140E-02
 HT FLOW CONVERGENCE VALUE= .3331E-02 CRITERION= .7819E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 281
 *** TIME = .220903E+10 TIME INC = .457585E+08
 *** RESPONSE EIGENVALUE = .1044E-08 OSCILLATION LIMIT = .4779E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:02:31 JAN 29, 1995 CP= 56751.830
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 94.41 CRITERION= .7719E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6503
 HT FLOW CONVERGENCE VALUE= .1982 CRITERION= .7680E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6416E-02
 HT FLOW CONVERGENCE VALUE= .2967E-02 CRITERION= .7679E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 283
 *** TIME = .225479E+10 TIME INC = .457585E+08
 *** RESPONSE EIGENVALUE = .9794E-09 OSCILLATION LIMIT = .4481E-01
 *** AUTO STEP TIME: NEXT TIME INC = .45759E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 93.05 CRITERION= .7641E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6604
 HT FLOW CONVERGENCE VALUE= .1962 CRITERION= .7603E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6498E-02
HT FLOW CONVERGENCE VALUE= .2959E-02 CRITERION= .7602E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 285
*** TIME = .230055E+10 TIME INC = .457585E+08
*** RESPONSE EIGENVALUE = .9940E-09 OSCILLATION LIMIT = .4548E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7241)

HT FLOW CONVERGENCE VALUE= 91.75 CRITERION= .7452E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.133
HT FLOW CONVERGENCE VALUE= .3304 CRITERION= .7388E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1257E-01
HT FLOW CONVERGENCE VALUE= .5478E-02 CRITERION= .7387E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 287
*** TIME = .237944E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1018E-08 OSCILLATION LIMIT = .8028E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 89.56 CRITERION= .7299E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.160
HT FLOW CONVERGENCE VALUE= .3331 CRITERION= .7238E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1257E-01
HT FLOW CONVERGENCE VALUE= .5344E-02 CRITERION= .7237E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 289
*** TIME = .245834E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1072E-08 OSCILLATION LIMIT = .8457E-01
*** AUTO TIME STEP: NEXT TIME INC = .66271E+08 DECREASED (FACTOR = .8400)

HT FLOW CONVERGENCE VALUE= 87.47 CRITERION= .7106E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9794
HT FLOW CONVERGENCE VALUE= .2819 CRITERION= .7056E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9819E-02
HT FLOW CONVERGENCE VALUE= .4117E-02 CRITERION= .7055E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 291
*** TIME = .252461E+10 TIME INC = .662710E+08
*** RESPONSE EIGENVALUE = .1117E-08 OSCILLATION LIMIT = .7403E-01

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:19:54 JAN 29, 1995 CP= 58673.200
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 85.76 CRITERION= .7014E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7516
HT FLOW CONVERGENCE VALUE= .2244 CRITERION= .6967E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7300E-02
HT FLOW CONVERGENCE VALUE= .3055E-02 CRITERION= .6965E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 293
*** TIME = .259088E+10 TIME INC = .662710E+08
*** RESPONSE EIGENVALUE = .8497E-09 OSCILLATION LIMIT = .5631E-01
*** AUTO STEP TIME: NEXT TIME INC = .66271E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 84.13 CRITERION= .6863E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6978
HT FLOW CONVERGENCE VALUE= .1961 CRITERION= .6817E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6797E-02
HT FLOW CONVERGENCE VALUE= .2772E-02 CRITERION= .6816E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 295
*** TIME = .265715E+10 TIME INC = .662710E+08
*** RESPONSE EIGENVALUE = .7663E-09 OSCILLATION LIMIT = .5078E-01

*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1905)

HT FLOW CONVERGENCE VALUE= 82.57 CRITERION= .6762E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8513
 HT FLOW CONVERGENCE VALUE= .2331 CRITERION= .6712E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8589E-02
 HT FLOW CONVERGENCE VALUE= .3412E-02 CRITERION= .6710E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 297
 *** TIME = .273604E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .7918E-09 OSCILLATION LIMIT = .6247E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52070E+08 DECREASED (FACTOR = .6600)

HT FLOW CONVERGENCE VALUE= 80.84 CRITERION= .6623E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5486
 HT FLOW CONVERGENCE VALUE= .1500 CRITERION= .6591E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4858E-02
 HT FLOW CONVERGENCE VALUE= .1960E-02 CRITERION= .6590E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 299
 *** TIME = .278811E+10 TIME INC = .520700E+08
 *** RESPONSE EIGENVALUE = .7866E-09 OSCILLATION LIMIT = .4096E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52070E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 79.74 CRITERION= .6565E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5678
 HT FLOW CONVERGENCE VALUE= .1528 CRITERION= .6535E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5005E-02
 HT FLOW CONVERGENCE VALUE= .1991E-02 CRITERION= .6534E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 301
 *** TIME = .284018E+10 TIME INC = .520700E+08
 *** RESPONSE EIGENVALUE = .8220E-09 OSCILLATION LIMIT = .4280E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 221.360946 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 11579 STEP 1

9685 ELEMENTS (OF 9685 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 60596.760 TIME= 03:37:51
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

TRW ENVIRONMENT VERSION=HP 9000/7XX 03:37:51 JAN 29, 1995 CP= 60596.760
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
TIME AT END OF THE LOAD STEP.31558E+10
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 78.68 CRITERION= .6455E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4773
HT FLOW CONVERGENCE VALUE= .1320 CRITERION= .6425E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4077E-02
HT FLOW CONVERGENCE VALUE= .1641E-02 CRITERION= .6425E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 303
*** TIME = .289225E+10 TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .7040E-09 OSCILLATION LIMIT = .3666E-01
*** AUTO STEP TIME: NEXT TIME INC = .52070E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 77.65 CRITERION= .6408E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4774
HT FLOW CONVERGENCE VALUE= .1260 CRITERION= .6380E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4124E-02
HT FLOW CONVERGENCE VALUE= .1609E-02 CRITERION= .6379E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 305
*** TIME = .294432E+10 TIME INC = .520700E+08
*** RESPONSE EIGENVALUE = .6875E-09 OSCILLATION LIMIT = .3580E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5152)

HT FLOW CONVERGENCE VALUE= 76.67 CRITERION= .6277E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7095
HT FLOW CONVERGENCE VALUE= .1841 CRITERION= .6235E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6687E-02
HT FLOW CONVERGENCE VALUE= .2504E-02 CRITERION= .6234E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 307
*** TIME = .302322E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .6856E-09 OSCILLATION LIMIT = .5409E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 75.22 CRITERION= .6194E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7222
HT FLOW CONVERGENCE VALUE= .1823 CRITERION= .6154E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6744E-02
HT FLOW CONVERGENCE VALUE= .2486E-02 CRITERION= .6153E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 309

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*** TIME = .310211E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .7027E-09 OSCILLATION LIMIT = .5544E-01
*** AUTO TIME STEP: NEXT TIME INC = .53648E+08 DECREASED (FACTOR = .6800)

HT FLOW CONVERGENCE VALUE= 73.86 CRITERION= .6073E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4857
HT FLOW CONVERGENCE VALUE= .1231 CRITERION= .6047E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4000E-02
HT FLOW CONVERGENCE VALUE= .1519E-02 CRITERION= .6046E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 311
*** TIME = .315576E+10 TIME INC = .536479E+08
*** RESPONSE EIGENVALUE = .7146E-09 OSCILLATION LIMIT = .3834E-01

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 04:56:33 JAN 29, 1995 CP= 62520.630
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 72.95 CRITERION= .6052E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2939
HT FLOW CONVERGENCE VALUE= .8123E-01 CRITERION= .6027E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2331E-02
HT FLOW CONVERGENCE VALUE= .9559E-03 CRITERION= .6026E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 313
*** TIME = .320941E+10 TIME INC = .536479E+08
*** RESPONSE EIGENVALUE = .4702E-09 OSCILLATION LIMIT = .2522E-01
*** AUTO STEP TIME: NEXT TIME INC = .53648E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 72.08 CRITERION= .5969E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2408
HT FLOW CONVERGENCE VALUE= .5929E-01 CRITERION= .5946E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 314
*** TIME = .326306E+10 TIME INC = .536479E+08
*** RESPONSE EIGENVALUE = .3804E-09 OSCILLATION LIMIT = .2041E-01
*** AUTO TIME STEP: NEXT TIME INC = .16094E+09 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 71.26 CRITERION= .5901E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7163
HT FLOW CONVERGENCE VALUE= .1594 CRITERION= .5836E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7900E-02
HT FLOW CONVERGENCE VALUE= .2832E-02 CRITERION= .5834E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 316
*** TIME = .342400E+10 TIME INC = .160944E+09
*** RESPONSE EIGENVALUE = .3569E-09 OSCILLATION LIMIT = .5745E-01
*** AUTO STEP TIME: NEXT TIME INC = .16094E+09 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 69.04 CRITERION= .5727E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6735
HT FLOW CONVERGENCE VALUE= .1395 CRITERION= .5671E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7550E-02
HT FLOW CONVERGENCE VALUE= .2725E-02 CRITERION= .5669E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 318
*** TIME = .358494E+10 TIME INC = .160944E+09
*** RESPONSE EIGENVALUE = .3308E-09 OSCILLATION LIMIT = .5324E-01
*** AUTO TIME STEP: NEXT TIME INC = .48283E+09 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 67.11 CRITERION= .5475E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.054

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HT FLOW CONVERGENCE VALUE= .3804 CRITERION= .5332E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2933E-01
 HT FLOW CONVERGENCE VALUE= .1059E-01 CRITERION= .5327E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 320
 *** TIME = .406777E+10 TIME INC = .482831E+09
 *** RESPONSE EIGENVALUE = .3332E-09 OSCILLATION LIMIT = .1609
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6340)

HT FLOW CONVERGENCE VALUE= 62.31 CRITERION= .4930E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.531
 HT FLOW CONVERGENCE VALUE= .5860 CRITERION= .4736E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5057E-01
 HT FLOW CONVERGENCE VALUE= .1647E-01 CRITERION= .4731E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 322
 *** TIME = .485671E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .3706E-09 OSCILLATION LIMIT = .2924
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 55.65 CRITERION= .4397E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.907
 HT FLOW CONVERGENCE VALUE= .6141 CRITERION= .4233E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4638E-01
 HT FLOW CONVERGENCE VALUE= .1272E-01 CRITERION= .4229E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 324
 *** TIME = .564565E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .4651E-09 OSCILLATION LIMIT = .3669
 *** AUTO TIME STEP: NEXT TIME INC = .66587E+09 DECREASED (FACTOR = .8440)

HT FLOW CONVERGENCE VALUE= 50.03 CRITERION= .3894E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -3.592
 HT FLOW CONVERGENCE VALUE= .5421 CRITERION= .3771E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3443E-01
 HT FLOW CONVERGENCE VALUE= .7944E-02 CRITERION= .3768E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 326
 *** TIME = .631152E+10 TIME INC = .665865E+09
 *** RESPONSE EIGENVALUE = .5860E-09 OSCILLATION LIMIT = .3902

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 06:53:22 JAN 29, 1995 CP= 65451.550
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 45.64 CRITERION= .3695E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.447
 HT FLOW CONVERGENCE VALUE= .2568 CRITERION= .3598E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1147E-01
 HT FLOW CONVERGENCE VALUE= .2431E-02 CRITERION= .3596E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 328
 *** TIME = .697739E+10 TIME INC = .665865E+09
 *** RESPONSE EIGENVALUE = .2471E-09 OSCILLATION LIMIT = .1645
 *** AUTO STEP TIME: NEXT TIME INC = .66587E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 42.13 CRITERION= .3463E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.118
 HT FLOW CONVERGENCE VALUE= .1585 CRITERION= .3393E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1013E-01
 HT FLOW CONVERGENCE VALUE= .2161E-02 CRITERION= .3391E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 330
 *** TIME = .764325E+10 TIME INC = .665865E+09

*** RESPONSE EIGENVALUE = .1795E-09 OSCILLATION LIMIT = .1195
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1848)

HT FLOW CONVERGENCE VALUE= 39.37 CRITERION= .3299E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.453
 HT FLOW CONVERGENCE VALUE= .2028 CRITERION= .3236E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1231E-01
 HT FLOW CONVERGENCE VALUE= .2421E-02 CRITERION= .3234E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 332
 *** TIME = .843219E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .1986E-09 OSCILLATION LIMIT = .1567
 *** AUTO TIME STEP: NEXT TIME INC = .51754E+09 DECREASED (FACTOR = .6560)

HT FLOW CONVERGENCE VALUE= 36.61 CRITERION= .3123E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9007
 HT FLOW CONVERGENCE VALUE= .1195 CRITERION= .3091E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6823E-02
 HT FLOW CONVERGENCE VALUE= .1288E-02 CRITERION= .3090E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 334
 *** TIME = .894974E+10 TIME INC = .517545E+09
 *** RESPONSE EIGENVALUE = .1890E-09 OSCILLATION LIMIT = .9783E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51754E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 34.96 CRITERION= .3040E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9923
 HT FLOW CONVERGENCE VALUE= .1330 CRITERION= .3013E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6867E-02
 HT FLOW CONVERGENCE VALUE= .1219E-02 CRITERION= .3013E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 336
 *** TIME = .946728E+10 TIME INC = .517545E+09
 *** RESPONSE EIGENVALUE = .2200E-09 OSCILLATION LIMIT = .1139

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:09:37 JAN 29, 1995 CP= 67380.210
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 33.46 CRITERION= .2936E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6200
 HT FLOW CONVERGENCE VALUE= .7798E-01 CRITERION= .2916E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3773E-02
 HT FLOW CONVERGENCE VALUE= .6514E-03 CRITERION= .2915E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 338
 *** TIME = .998482E+10 TIME INC = .517545E+09
 *** RESPONSE EIGENVALUE = .1415E-09 OSCILLATION LIMIT = .7323E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51754E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 32.05 CRITERION= .2899E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5871
 HT FLOW CONVERGENCE VALUE= .6978E-01 CRITERION= .2885E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3748E-02
 HT FLOW CONVERGENCE VALUE= .6386E-03 CRITERION= .2884E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 340
 *** TIME = .105024E+11 TIME INC = .517545E+09
 *** RESPONSE EIGENVALUE = .1343E-09 OSCILLATION LIMIT = .6950E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5244)

HT FLOW CONVERGENCE VALUE= 30.83 CRITERION= .2785E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8368
 HT FLOW CONVERGENCE VALUE= .9713E-01 CRITERION= .2773E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5912E-02
 HT FLOW CONVERGENCE VALUE= .9785E-03 CRITERION= .2772E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 342
 *** TIME = .112913E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 29.08 CRITERION= .2733E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8520
 HT FLOW CONVERGENCE VALUE= .9747E-01 CRITERION= .2730E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5839E-02
 HT FLOW CONVERGENCE VALUE= .9221E-03 CRITERION= .2729E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 344
 *** TIME = .120802E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .54279E+09 DECREASED (FACTOR = .6880)

HT FLOW CONVERGENCE VALUE= 27.53 CRITERION= .2654E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5822
 HT FLOW CONVERGENCE VALUE= .6677E-01 CRITERION= .2657E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3494E-02
 HT FLOW CONVERGENCE VALUE= .5275E-03 CRITERION= .2657E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 346
 *** TIME = .126230E+11 TIME INC = .542791E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:26:33 JAN 29, 1995 CP= 69309.080
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 26.51 CRITERION= .2653E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4775
 HT FLOW CONVERGENCE VALUE= .5169E-01 CRITERION= .2659E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2519E-02
 HT FLOW CONVERGENCE VALUE= .3706E-03 CRITERION= .2659E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 348
 *** TIME = .131658E+11 TIME INC = .542791E+09
 *** AUTO STEP TIME: NEXT TIME INC = .54279E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.59 CRITERION= .2599E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4545
 HT FLOW CONVERGENCE VALUE= .4363E-01 CRITERION= .2608E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2298E-02
 HT FLOW CONVERGENCE VALUE= .3328E-03 CRITERION= .2608E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 350
 *** TIME = .137086E+11 TIME INC = .542791E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4535)

HT FLOW CONVERGENCE VALUE= 24.72 CRITERION= .2590E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6221
 HT FLOW CONVERGENCE VALUE= .6525E-01 CRITERION= .2608E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3717E-02
 HT FLOW CONVERGENCE VALUE= .5212E-03 CRITERION= .2608E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 352
 *** TIME = .144976E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.58 CRITERION= .2537E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5998
 HT FLOW CONVERGENCE VALUE= .6178E-01 CRITERION= .2559E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3494E-02

HT FLOW CONVERGENCE VALUE= .4720E-03 CRITERION= .2559E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 354
 *** TIME = .152865E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .49230E+09 DECREASED (FACTOR = .6240)

HT FLOW CONVERGENCE VALUE= 22.49 CRITERION= .2558E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4030
 HT FLOW CONVERGENCE VALUE= .4171E-01 CRITERION= .2573E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2016E-02
 HT FLOW CONVERGENCE VALUE= .2660E-03 CRITERION= .2573E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 356
 *** TIME = .157788E+11 TIME INC = .492299E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 10:44:33 JAN 29, 1995 CP= 71240.350
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 21.88 CRITERION= .2524E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3421
 HT FLOW CONVERGENCE VALUE= .3567E-01 CRITERION= .2541E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1650E-02
 HT FLOW CONVERGENCE VALUE= .2142E-03 CRITERION= .2540E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 358
 *** TIME = .162711E+11 TIME INC = .492299E+09
 *** AUTO STEP TIME: NEXT TIME INC = .49230E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 21.28 CRITERION= .2543E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3627
 HT FLOW CONVERGENCE VALUE= .3663E-01 CRITERION= .2560E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1722E-02
 HT FLOW CONVERGENCE VALUE= .2185E-03 CRITERION= .2560E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 360
 *** TIME = .167634E+11 TIME INC = .492299E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6026)

HT FLOW CONVERGENCE VALUE= 20.74 CRITERION= .2500E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5658
 HT FLOW CONVERGENCE VALUE= .5555E-01 CRITERION= .2528E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2860E-02
 HT FLOW CONVERGENCE VALUE= .3472E-03 CRITERION= .2528E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 362
 *** TIME = .175523E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 19.88 CRITERION= .2517E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6008
 HT FLOW CONVERGENCE VALUE= .5739E-01 CRITERION= .2547E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2884E-02
 HT FLOW CONVERGENCE VALUE= .3378E-03 CRITERION= .2547E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 364
 *** TIME = .183413E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .59328E+09 DECREASED (FACTOR = .7520)

HT FLOW CONVERGENCE VALUE= 19.11 CRITERION= .2499E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4468
 HT FLOW CONVERGENCE VALUE= .4294E-01 CRITERION= .2521E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1927E-02
 HT FLOW CONVERGENCE VALUE= .2240E-03 CRITERION= .2521E-01 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 366
*** TIME = .189346E+11 TIME INC = .593283E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:01:19 JAN 29, 1995 CP= 73169.620
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 18.54 CRITERION= .2525E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3727
HT FLOW CONVERGENCE VALUE= .3650E-01 CRITERION= .2548E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1504E-02
HT FLOW CONVERGENCE VALUE= .1760E-03 CRITERION= .2548E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 368
*** TIME = .195278E+11 TIME INC = .593283E+09
*** AUTO STEP TIME: NEXT TIME INC = .59328E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 18.04 CRITERION= .2508E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3416
HT FLOW CONVERGENCE VALUE= .3260E-01 CRITERION= .2531E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1373E-02
HT FLOW CONVERGENCE VALUE= .1565E-03 CRITERION= .2530E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 370
*** TIME = .201211E+11 TIME INC = .593283E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.3298)

HT FLOW CONVERGENCE VALUE= 17.53 CRITERION= .2529E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4843
HT FLOW CONVERGENCE VALUE= .4433E-01 CRITERION= .2559E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2002E-02
HT FLOW CONVERGENCE VALUE= .2161E-03 CRITERION= .2558E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 372
*** TIME = .209101E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 16.95 CRITERION= .2516E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4697
HT FLOW CONVERGENCE VALUE= .4235E-01 CRITERION= .2545E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1878E-02
HT FLOW CONVERGENCE VALUE= .1985E-03 CRITERION= .2545E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 374
*** TIME = .216990E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .39131E+09 DECREASED (FACTOR = .4960)

HT FLOW CONVERGENCE VALUE= 16.38 CRITERION= .2554E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2517
HT FLOW CONVERGENCE VALUE= .2256E-01 CRITERION= .2568E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 375
*** TIME = .220903E+11 TIME INC = .391314E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 13:13:00 JAN 29, 1995 CP= 74954.240
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 16.13 CRITERION= .2540E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1954
 HT FLOW CONVERGENCE VALUE= .1857E-01 CRITERION= .2554E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 376
 *** TIME = .224816E+11 TIME INC = .391314E+09
 *** AUTO STEP TIME: NEXT TIME INC = .39131E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 15.88 CRITERION= .2565E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2111
 HT FLOW CONVERGENCE VALUE= .1874E-01 CRITERION= .2579E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 377
 *** TIME = .228729E+11 TIME INC = .391314E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.0161)

HT FLOW CONVERGENCE VALUE= 15.65 CRITERION= .2544E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3968
 HT FLOW CONVERGENCE VALUE= .3509E-01 CRITERION= .2570E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1403E-02
 HT FLOW CONVERGENCE VALUE= .1462E-03 CRITERION= .2570E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 379
 *** TIME = .236619E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 15.18 CRITERION= .2573E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4174
 HT FLOW CONVERGENCE VALUE= .3542E-01 CRITERION= .2598E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1463E-02
 HT FLOW CONVERGENCE VALUE= .1455E-03 CRITERION= .2598E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 381
 *** TIME = .244508E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .79525E+09 INCREASED (FACTOR = 1.0080)

HT FLOW CONVERGENCE VALUE= 14.79 CRITERION= .2565E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4098
 HT FLOW CONVERGENCE VALUE= .3461E-01 CRITERION= .2590E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1386E-02
 HT FLOW CONVERGENCE VALUE= .1373E-03 CRITERION= .2590E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 383
 *** TIME = .252461E+11 TIME INC = .795252E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 14:17:49 JAN 29, 1995 CP= 76597.620
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 14.39 CRITERION= .2595E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3629
 HT FLOW CONVERGENCE VALUE= .3077E-01 CRITERION= .2618E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1147E-02
 HT FLOW CONVERGENCE VALUE= .1163E-03 CRITERION= .2618E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 385
 *** TIME = .260350E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 14.05 CRITERION= .2590E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3389
 HT FLOW CONVERGENCE VALUE= .2839E-01 CRITERION= .2612E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1054E-02

HT FLOW CONVERGENCE VALUE= .1057E-03 CRITERION= .2612E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 387
 *** TIME = .268240E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 13.71 CRITERION= .2617E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3599
 HT FLOW CONVERGENCE VALUE= .2903E-01 CRITERION= .2637E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1098E-02
 HT FLOW CONVERGENCE VALUE= .1056E-03 CRITERION= .2637E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 389
 *** TIME = .276129E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 13.43 CRITERION= .2611E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3454
 HT FLOW CONVERGENCE VALUE= .2782E-01 CRITERION= .2630E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1020E-02
 HT FLOW CONVERGENCE VALUE= .9910E-04 CRITERION= .2630E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 391
 *** TIME = .284018E+11 TIME INC = .788940E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:20:15 JAN 29, 1995 CP= 78145.430
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 13.14 CRITERION= .2637E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3085
 HT FLOW CONVERGENCE VALUE= .2505E-01 CRITERION= .2655E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 392
 *** TIME = .291908E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 12.90 CRITERION= .2632E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2821
 HT FLOW CONVERGENCE VALUE= .2285E-01 CRITERION= .2648E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 393
 *** TIME = .299797E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 12.64 CRITERION= .2656E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3015
 HT FLOW CONVERGENCE VALUE= .2344E-01 CRITERION= .2671E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 394
 *** TIME = .307687E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 12.44 CRITERION= .2649E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2846
 HT FLOW CONVERGENCE VALUE= .2224E-01 CRITERION= .2663E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 395
 *** TIME = .315576E+11 TIME INC = .788940E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 79111.030

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12j5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:58:01 JAN 29, 1995 CP= 79124.800
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 57.21951

PARAMETER WPSID(JINC) = 57.21098

PARAMETER WPBOT(JINC) = 57.19778

PARAMETER DFTOP(JINC) = 26.14113

PARAMETER DFSID(JINC) = 26.14111

PARAMETER DFEDG(JINC) = 26.14096

PARAMETER DFBOT(JINC) = 26.16402

PARAMETER WPTOP(JINC,0) = 31.55760

PARAMETER WPSID(JINC,0) = 31.55760

PARAMETER WPBOT(JINC,0) = 31.55760

PARAMETER DFTOP(JINC,0) = 31.55760

PARAMETER DFSID(JINC,0) = 31.55760

PARAMETER DFEDG(JINC,0) = 31.55760

PARAMETER DFBOT(JINC,0) = 31.55760

PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 125
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 98.18774
PARAMETER WPSID(JINC) = 98.93539
PARAMETER WPBOT(JINC) = 100.5007
PARAMETER DFTOP(JINC) = 69.79298
PARAMETER DFSID(JINC) = 69.72420
PARAMETER DFEDG(JINC) = 68.07514
PARAMETER DFBOT(JINC) = 62.78858
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08
PARAMETER DFSID(JINC,0) = .3155763E+08
PARAMETER DFEDG(JINC,0) = .3155763E+08
PARAMETER DFBOT(JINC,0) = .3155763E+08
PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 217
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 117.1264
PARAMETER WPSID(JINC) = 117.7270
PARAMETER WPBOT(JINC) = 119.0225
PARAMETER DFTOP(JINC) = 96.78900
PARAMETER DFSID(JINC) = 96.72525
PARAMETER DFEDG(JINC) = 95.42776
PARAMETER DFBOT(JINC) = 90.56357
PARAMETER WPTOP(JINC,0) = .3155760E+09
PARAMETER WPSID(JINC,0) = .3155760E+09
PARAMETER WPBOT(JINC,0) = .3155760E+09
PARAMETER DFTOP(JINC,0) = .3155760E+09
PARAMETER DFSID(JINC,0) = .3155760E+09

PARAMETER DFEDG(JINC,0) = .3155760E+09

PARAMETER DFBOT(JINC,0) = .3155760E+09

PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 311
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 93.38275

PARAMETER WPSID(JINC) = 93.61368

PARAMETER WPBOT(JINC) = 94.08777

PARAMETER DFTOP(JINC) = 85.34452

PARAMETER DFSID(JINC) = 85.35055

PARAMETER DFEDG(JINC) = 84.88337

PARAMETER DFBOT(JINC) = 83.25694

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10

PARAMETER DFTOP(JINC,0) = .3155760E+10

PARAMETER DFSID(JINC,0) = .3155760E+10

PARAMETER DFEDG(JINC,0) = .3155760E+10

PARAMETER DFBOT(JINC,0) = .3155760E+10

PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 81519.640

*** NOTE *** CP= 81519.650 TIME= 17:09:58
Write parameters to file= c12j5a.parm.

*** NOTE *** CP= 81519.740 TIME= 17:09:59
Parameters written. Lines= 770.

*** WARNING *** CP= 81519.740 TIME= 17:09:59
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c12j5a.parm.

Create element mesh plots to illustrate model

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:09:59 JAN 29, 1995 CP= 81519.810
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE
TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 75.00

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE
TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4842 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:
VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 13.30

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4842 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 16.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4842 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81549.900 TIME= 17:11:04
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 76
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81573.890 TIME= 17:11:51
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 125
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81597.880 TIME= 17:12:38
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 173
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81622.370 TIME= 17:13:20
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 217
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81647.060 TIME= 17:14:02
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 261

TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81671.330 TIME= 17:14:47
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 311
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81695.450 TIME= 17:15:32
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 356
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81719.570 TIME= 17:16:17
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 4 CUMULATIVE ITERATION= 395
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81743.740 TIME= 17:17:02
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2421 ELEMENTS (OF 9685 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81769.090 TIME= 17:17:49
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 76
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81790.240 TIME= 17:18:29
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 125
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81811.360 TIME= 17:19:08
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 5 CUMULATIVE ITERATION= 173
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81832.340 TIME= 17:19:49
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 217
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81853.440 TIME= 17:20:28
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 261
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81874.480 TIME= 17:21:07
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 311
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81896.010 TIME= 17:21:43
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 356
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81917.340 TIME= 17:22:10
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 4 CUMULATIVE ITERATION= 395
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 81938.380 TIME= 17:22:49
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 81944.650

1 Print time/temperature output at specific locations

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:00 JAN 29, 1995 CP= 81944.660
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside
VARIABLE 3 IS AT NODE 1894 ITEM= TEMP COMP= NAME= wwpeside
VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop
VARIABLE 5 IS AT NODE 1900 ITEM= TEMP COMP= NAME= wwpetop

VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot

VARIABLE 7 IS AT NODE 1893 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	117.7	.3156E+09
3	NSOL	1894 TEMP	wwpeside	26.14	.1000E-05	110.9	.3156E+09
4	NSOL	129 TEMP	wmidtop	26.14	.1000E-05	117.1	.3156E+09
5	NSOL	1900 TEMP	wwpetop	26.14	.1000E-05	110.7	.3156E+09
6	NSOL	122 TEMP	wmidbot	26.15	.1000E-05	119.0	.3156E+09
7	NSOL	1893 TEMP	wwpebot	26.14	.1000E-05	111.4	.3156E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:11 JAN 29, 1995 CP= 81947.000
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1894 TEMP wwpeside	129 TEMP wmidtop	1900 TEMP wwpetop	122 TEMP wmidbot	1893 TEMP wwpebot
.10000E-05	26.1413	26.1413	26.1366	26.1380	26.1452	26.1438
.20000E-05	57.2110	49.7691	57.2195	49.8057	57.1978	49.8179
31.558	57.2110	49.7691	57.2195	49.8057	57.1978	49.8179
.31558E+07	78.0268	68.3283	77.2329	68.0570	79.6138	69.0081
.63116E+07	83.4159	73.8656	82.6248	73.5980	85.0240	74.5570
.94673E+07	86.9282	77.5219	86.1426	77.2582	88.5269	78.2100
.12623E+08	89.6096	80.3246	88.8322	80.0651	91.2086	81.0134
.15779E+08	91.7791	82.5986	91.0074	82.3424	93.3682	83.2830
.18935E+08	93.6074	84.5189	92.8420	84.2656	95.1942	85.2027
.22090E+08	95.1829	86.1758	94.4223	85.9252	96.7618	86.8556
.25246E+08	96.5763	87.6415	95.8205	87.3930	98.1522	88.3204
.28402E+08	97.8110	88.9431	97.0593	88.6968	99.3800	89.6183
.31558E+08	98.9354	90.1275	98.1877	89.8830	100.501	90.8015
.63115E+08	106.283	97.9225	105.566	97.6914	107.805	98.5765
.94673E+08	110.329	102.269	109.634	102.047	111.812	102.906
.12623E+09	112.904	105.083	112.227	104.868	114.359	105.707
.15779E+09	114.663	107.036	114.000	106.826	116.089	107.647
.18935E+09	115.913	108.455	115.263	108.249	117.315	109.056
.22090E+09	116.823	109.512	116.185	109.310	118.200	110.103
.25246E+09	117.587	110.396	116.958	110.198	118.943	110.977
.28402E+09	117.689	110.685	117.076	110.492	119.010	111.251
.31558E+09	117.727	110.863	117.126	110.674	119.022	111.418
.63115E+09	116.258	110.425	115.746	110.264	117.356	110.894
.94673E+09	113.064	107.971	112.617	107.830	114.015	108.376
.12623E+10	108.946	104.490	108.555	104.366	109.772	104.841
.15779E+10	105.324	101.345	104.976	101.234	106.056	101.656
.18935E+10	102.319	98.7131	102.003	98.6118	102.979	98.9942
.22090E+10	99.7737	96.4704	99.4846	96.3773	100.374	96.7256
.25246E+10	97.2190	94.1987	96.9547	94.1131	97.7657	94.4317
.28402E+10	95.2651	92.4510	95.0189	92.3711	95.7713	92.6664
.31558E+10	93.6137	90.9745	93.3827	90.8991	94.0878	91.1768
.63115E+10	84.8498	83.1643	84.7014	83.1146	85.1481	83.2922
.94673E+10	81.0789	79.7306	80.9599	79.6904	81.3151	79.8316
.12623E+11	78.9344	77.7865	78.8328	77.7517	79.1357	77.8731
.15779E+11	77.3434	76.3380	77.2542	76.3075	77.5183	76.4129
.18935E+11	75.7818	74.9021	75.7035	74.8750	75.9355	74.9685
.22090E+11	74.4284	73.6428	74.3582	73.6185	74.5645	73.7012
.25246E+11	73.2420	72.5304	73.1781	72.5079	73.3662	72.5842
.28402E+11	72.1880	71.5354	72.1290	71.5145	72.3019	71.5849
.31558E+11	71.2797	70.6728	71.2245	70.6531	71.3858	70.7190

 * Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 81947.350 TIME= 17:23:11
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 1082 ITEM= TEMP COMP= NAME= swpeside

VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop

VARIABLE 5 IS AT NODE 1232 ITEM= TEMP COMP= NAME= swpetop

VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot

VARIABLE 7 IS AT NODE 1047 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	118.2 .3156E+09
3	NSOL	1082 TEMP	swpeside	26.14	.1000E-05	111.4 .3156E+09
4	NSOL	38 TEMP	smidtop	26.14	.1000E-05	117.6 .3156E+09
5	NSOL	1232 TEMP	swpetop	26.14	.1000E-05	111.2 .3156E+09
6	NSOL	2 TEMP	smidbot	26.15	.1000E-05	119.4 .3156E+09
7	NSOL	1047 TEMP	swpebot	26.14	.1000E-05	111.9 .3156E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:14 JAN 29, 1995 CP= 81949.250
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1082 TEMP swpeside	38 TEMP smidtop	1232 TEMP swpetop	2 TEMP smidbot	1047 TEMP swpebot
.10000E-05	26.1413	26.1413	26.1366	26.1381	26.1451	26.1437
.20000E-05	57.7683	50.3553	57.7767	50.3902	57.7522	50.4009
31.558	57.7683	50.3554	57.7767	50.3902	57.7522	50.4009
.31558E+07	78.5762	68.9521	77.7864	68.6759	80.1141	69.6079
.63116E+07	83.9662	74.4880	83.1792	74.2152	85.5242	75.1544
.94673E+07	87.4774	78.1413	86.6957	77.8723	89.0264	78.8045
.12623E+08	90.1583	80.9412	89.3848	80.6762	91.7071	81.6049
.15779E+08	92.3265	83.2125	91.5584	82.9508	93.8660	83.8719
.18935E+08	94.1540	85.1303	93.3921	84.8713	95.6910	85.7890
.22090E+08	95.7284	86.7848	94.9712	86.5284	97.2581	87.4397
.25246E+08	97.1212	88.2484	96.3687	87.9940	98.6475	88.9021
.28402E+08	98.3547	89.5477	97.6063	89.2956	99.8747	90.1981
.31558E+08	99.4783	90.7301	98.7340	90.4796	100.994	91.3791
.63115E+08	106.817	98.5085	106.102	98.2713	108.290	99.1383
.94673E+08	110.853	102.842	110.160	102.613	112.289	103.455
.12623E+09	113.419	105.644	112.744	105.423	114.827	106.245
.15779E+09	115.169	107.586	114.508	107.370	116.550	108.175

.18935E+09	116.412	108.995	115.764	108.783	117.768	109.574
.22090E+09	117.314	110.044	116.677	109.836	118.646	110.612
.25246E+09	118.071	110.920	117.444	110.716	119.384	111.480
.28402E+09	118.160	111.195	117.550	110.996	119.439	111.740
.31558E+09	118.189	111.363	117.591	111.169	119.443	111.898
.63115E+09	116.648	110.848	116.138	110.682	117.711	111.300
.94673E+09	113.399	108.336	112.954	108.191	114.321	108.726
.12623E+10	109.234	104.805	108.845	104.678	110.034	105.144
.15779E+10	105.578	101.623	105.231	101.509	106.286	101.923
.18935E+10	102.546	98.9626	102.231	98.8588	103.184	99.2333
.22090E+10	99.9785	96.6970	99.6908	96.6017	100.560	96.9429
.25246E+10	97.4043	94.4041	97.1413	94.3166	97.9336	94.6285
.28402E+10	95.4360	92.6412	95.1910	92.5594	95.9266	92.8488
.31558E+10	93.7729	91.1519	93.5431	91.0748	94.2320	91.3468
.63115E+10	84.9476	83.2745	84.8000	83.2238	85.2365	83.3976
.94673E+10	81.1558	79.8176	81.0374	79.7766	81.3849	79.9150
.12623E+11	78.9994	77.8600	78.8983	77.8247	79.1943	77.9435
.15779E+11	77.3997	76.4021	77.3110	76.3711	77.5695	76.4744
.18935E+11	75.8309	74.9579	75.7531	74.9304	75.9797	75.0218
.22090E+11	74.4718	73.6924	74.4021	73.6677	74.6041	73.7489
.25246E+11	73.2813	72.5751	73.2178	72.5524	73.4015	72.6269
.28402E+11	72.2238	71.5763	72.1653	71.5551	72.3341	71.6239
.31558E+11	71.3129	70.7107	71.2581	70.6908	71.4156	70.7552

* Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
shellcnt = end of WP center inside shell
wwpecent = end of WP center surface
imidbot = midlength bottom of invert
iwpebot = end of WP bottom of invert
idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 81949.590 TIME= 17:23:15
NSOL command erases all previously stored or calculated data
unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 1052 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1773 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2800 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2788 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	1 TEMP	wmidcent	26.14	.1000E-05	167.1 .2525E+09
3	NSOL	1052 TEMP	shellcnt	26.14	.1000E-05	113.8 .3156E+09
4	NSOL	1773 TEMP	wwpecent	26.14	.1000E-05	113.4 .3156E+09
5	NSOL	147 TEMP	imidbot	26.16	.2000E-05	98.44 .6312E+09
6	NSOL	2800 TEMP	iwpebot	26.16	.2000E-05	96.34 .6312E+09
7	NSOL	2788 TEMP	idfebot	26.16	.2000E-05	93.29 .6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:18 JAN 29, 1995 CP= 81951.490
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	1052 TEMP shellcnt	1773 TEMP wwpcent	147 TEMP imidbot	2800 TEMP iwpebot	2788 TEMP idfecbot
.10000E-05	26.1411	26.1411	26.1411	26.1723	26.1719	26.1717
.20000E-05	114.034	53.8354	53.3522	26.1640	26.1640	26.1640
31.558	114.034	53.8355	53.3522	26.1640	26.1640	26.1640
.31558E+07	134.311	71.9990	71.4937	45.9526	42.1813	36.6505
.63116E+07	139.745	77.5076	77.0044	52.5435	48.7260	42.9868
.94673E+07	143.218	81.1589	80.6533	56.7873	53.0346	47.3821
.12623E+08	145.826	83.9409	83.4389	60.0072	56.3246	50.7863
.15779E+08	147.909	86.2096	85.7059	62.6201	59.0005	53.5681
.18935E+08	149.635	88.1119	87.6117	64.8219	61.2576	55.9185
.22090E+08	151.111	89.7629	89.2613	66.7254	63.2095	57.9521
.25246E+08	152.407	91.2134	90.7150	68.4030	64.9297	59.7440
.28402E+08	153.537	92.5087	92.0092	69.9006	66.4657	61.3443
.31558E+08	154.558	93.6792	93.1827	71.2526	67.8522	62.7886
.63115E+08	160.876	101.391	100.903	80.2652	77.1044	72.4337
.94673E+08	163.932	105.669	105.188	85.3691	82.3577	77.9266
.12623E+09	165.571	108.415	107.944	88.7491	85.8498	81.5949
.15779E+09	166.447	110.312	109.847	91.1583	88.3473	84.2302
.18935E+09	166.848	111.671	111.215	92.9645	90.2281	86.2262
.22090E+09	166.954	112.675	112.227	94.3587	91.6870	87.7835
.25246E+09	167.065	113.519	113.074	95.5113	92.8992	89.0759
.28402E+09	165.879	113.722	113.291	96.2005	93.6585	89.9432
.31558E+09	164.969	113.840	113.418	96.6801	94.1941	90.5636
.63115E+09	156.154	112.939	112.582	98.4367	96.3385	93.2915
.94673E+09	147.406	110.140	109.831	97.5291	95.7034	93.0535
.12623E+10	138.444	106.353	106.090	95.3640	93.7672	91.4552
.15779E+10	131.243	102.989	102.755	93.2005	91.7791	89.7163
.18935E+10	125.496	100.182	99.9753	91.3328	90.0453	88.1763
.22090E+10	120.763	97.8054	97.6164	89.7107	88.5314	86.8188
.25246E+10	116.191	95.4039	95.2348	88.0150	86.9366	85.3699
.28402E+10	112.785	93.5682	93.4103	86.6899	85.6850	84.2245
.31558E+10	109.922	92.0125	91.8673	85.5696	84.6271	83.2569
.63115E+10	94.8529	83.8044	83.7155	79.7152	79.1134	78.2374
.94673E+10	88.9414	80.2379	80.1663	76.9713	76.4898	75.7880
.12623E+11	85.5637	78.2119	78.1532	75.4352	75.0249	74.4267
.15779E+11	83.1050	76.7112	76.6584	74.2798	73.9206	73.3967
.18935E+11	80.7889	75.2238	75.1796	73.0994	72.7848	72.3256
.22090E+11	78.8713	73.9315	73.8906	72.0346	71.7537	71.3434
.25246E+11	77.2454	72.7877	72.7526	71.0722	70.8173	70.4451
.28402E+11	75.8412	71.7703	71.7383	70.1989	69.9650	69.6233
.31558E+11	74.6645	70.8904	70.8608	69.4311	69.2134	68.8953

 * Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfeccent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 81951.850 TIME= 17:23:19
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2808 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2792 ITEM= TEMP COMP= NAME= idfeccent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2852 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2842 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	151 TEMP	imidcent	26.14	.2000E-05	108.8	.3156E+09
3 NSOL	2808 TEMP	iwpecent	26.14	.2000E-05	104.5	.6312E+09
4 NSOL	2792 TEMP	idfecent	26.14	.2000E-05	99.31	.6312E+09
5 NSOL	157 TEMP	imidedge	26.14	.2000E-05	104.2	.6312E+09
6 NSOL	2852 TEMP	iwpeedge	26.14	.2000E-05	101.2	.6312E+09
7 NSOL	2842 TEMP	idfeedge	26.14	.2000E-05	97.44	.6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:22 JAN 29, 1995 CP= 81953.710
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2808 TEMP iwpecent	2792 TEMP idfecent	157 TEMP imidedge	2852 TEMP iwpeedge	2842 TEMP idfeedge
.10000E-05	26.1503	26.1488	26.1476	26.1539	26.1547	26.1565
.20000E-05	26.1406	26.1406	26.1406	26.1406	26.1406	26.1406
31.558	26.1500	26.1457	26.1413	26.1433	26.1421	26.1410
.31558E+07	62.1147	54.3623	44.0677	53.7584	48.3601	41.3459
.63116E+07	68.4090	60.8533	50.8643	60.3087	54.9561	47.9611
.94673E+07	72.4918	65.1080	55.4029	64.5707	59.3162	52.4632
.12623E+08	75.5786	68.3402	58.8703	67.8075	62.6434	55.9272
.15779E+08	78.0809	70.9621	61.6856	70.4327	65.3469	58.7498
.18935E+08	80.1801	73.1651	64.0540	72.6403	67.6233	61.1303
.22090E+08	81.9927	75.0673	66.0983	74.5474	69.5905	63.1882
.25246E+08	83.5873	76.7410	67.8964	76.2263	71.3227	65.0005
.28402E+08	85.0064	78.2317	69.4989	77.7224	72.8673	66.6174
.31558E+08	86.2872	79.5763	70.9426	79.0718	74.2603	68.0751
.63115E+08	94.7333	88.4750	80.5258	88.0150	83.5147	77.7822
.94673E+08	99.4192	93.4455	85.9118	93.0150	88.7143	83.2643
.12623E+09	102.448	96.6893	89.4596	96.2736	92.1311	86.8919
.15779E+09	104.557	98.9670	91.9737	98.5624	94.5457	89.4736
.18935E+09	106.092	100.646	93.8504	100.256	96.3383	91.4097
.22090E+09	107.243	101.920	95.2921	101.542	97.7110	92.9043
.25246E+09	108.202	102.980	96.4871	102.612	98.8533	94.1434
.28402E+09	108.564	103.487	97.1830	103.135	99.4785	94.8996
.31558E+09	108.792	103.824	97.6616	103.479	99.9031	95.4278
.63115E+09	108.666	104.479	99.3146	104.194	101.189	97.4415
.94673E+09	106.375	102.731	98.2418	102.479	99.8724	96.6247
.12623E+10	103.014	99.8287	95.9056	99.6052	97.3340	94.5043
.15779E+10	99.9609	97.1180	93.6136	96.9136	94.8920	92.3745
.18935E+10	97.4060	94.8300	91.6522	94.6401	92.8141	90.5378
.22090E+10	95.2328	92.8730	89.9598	92.6967	91.0275	88.9454
.25246E+10	93.0274	90.8692	88.2024	90.7057	89.1821	87.2805
.28402E+10	91.3326	89.3213	86.8345	89.1676	87.7501	85.9799
.31558E+10	89.9023	88.0157	85.6814	87.8704	86.5424	84.8834
.63115E+10	82.4038	81.1987	79.7031	81.1030	80.2613	79.2074
.94673E+10	79.0949	78.1301	76.9308	78.0526	77.3811	76.5392
.12623E+11	77.2305	76.4087	75.3859	76.3422	75.7711	75.0547
.15779E+11	75.8430	75.1232	74.2268	75.0647	74.5654	73.9386
.18935E+11	74.4600	73.8297	73.0439	73.7783	73.3416	72.7931
.22090E+11	73.2433	72.6802	71.9778	72.6343	72.2448	71.7552
.25246E+11	72.1620	71.6514	71.0137	71.6097	71.2569	70.8131
.28402E+11	71.1935	70.7249	70.1393	70.6869	70.3634	69.9565
.31558E+11	70.3522	69.9160	69.3707	69.8808	69.5801	69.2016

 * Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 81954.060 TIME= 17:23:23
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2925 ITEM= TEMP COMP= NAME= dwpeside

VARIABLE 4 IS AT NODE 2895 ITEM= TEMP COMP= NAME= ddfeside

VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop

VARIABLE 6 IS AT NODE 3079 ITEM= TEMP COMP= NAME= dwpetop

VARIABLE 7 IS AT NODE 3057 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	105.1	.6312E+09
3	NSOL	2925 TEMP	dwpeside	26.14	.2000E-05	102.1	.6312E+09
4	NSOL	2895 TEMP	ddfeside	26.14	.2000E-05	98.54	.6312E+09
5	NSOL	229 TEMP	dmidtop	26.13	.1000E-05	104.2	.6312E+09
6	NSOL	3079 TEMP	dwpetop	26.13	.1000E-05	101.7	.6312E+09
7	NSOL	3057 TEMP	ddfetop	26.12	.1000E-05	98.58	.6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:26 JAN 29, 1995 CP= 81955.950
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2925 TEMP dwpeside	2895 TEMP ddfeside	229 TEMP dmidtop	3079 TEMP dwpetop	3057 TEMP ddfetop
.10000E-05	26.1406	26.1415	26.1423	26.1276	26.1257	26.1219
.20000E-05	26.1406	26.1406	26.1406	26.1406	26.1406	26.1406
31.558	26.1441	26.1426	26.1411	26.1437	26.1424	26.1411
.31558E+07	55.1730	49.7008	42.9514	53.5108	48.9528	42.9487
.63116E+07	61.7142	56.3212	49.6544	60.0806	55.5958	49.6678
.94673E+07	65.9667	60.6836	54.1700	64.3707	59.9837	54.1967
.12623E+08	69.1929	64.0062	57.6305	67.6294	63.3282	57.6688
.15779E+08	71.8072	66.7029	60.4450	70.2713	66.0430	60.4922
.18935E+08	74.0039	68.9715	62.8158	72.4917	68.3266	62.8698
.22090E+08	75.9006	70.9310	64.8641	74.4090	70.2988	64.9232
.25246E+08	77.5698	72.6557	66.6670	76.0961	72.0343	66.7302
.28402E+08	79.0565	74.1929	68.2750	77.5991	73.5812	68.3412
.31558E+08	80.3973	75.5790	69.7242	78.9544	74.9756	69.7930
.63115E+08	89.2712	84.7757	79.3618	87.9294	84.2262	79.4403
.94673E+08	94.2225	89.9322	84.7918	92.9433	89.4134	84.8714
.12623E+09	97.4328	93.3133	88.3763	96.2055	92.8160	88.4548
.15779E+09	99.6983	95.6938	90.9214	98.5002	95.2145	90.9986
.18935E+09	101.361	97.4595	92.8252	100.197	96.9907	92.9003

.22090E+09	102.626	98.8120	94.2902	101.485	98.3542	94.3629
.25246E+09	103.676	99.9346	95.4995	102.558	99.4855	95.5689
.28402E+09	104.172	100.534	96.2241	103.084	100.097	96.2910
.31558E+09	104.496	100.937	96.7252	103.430	100.509	96.7890
.63115E+09	105.056	102.066	98.5423	104.154	101.697	98.5801
.94673E+09	103.231	100.636	97.5801	102.443	100.308	97.6033
.12623E+10	100.262	97.9979	95.3333	99.5708	97.7076	95.3470
.15779E+10	97.4976	95.4804	93.1056	96.8787	95.2179	93.1133
.18935E+10	95.1675	93.3429	91.1948	94.6051	93.1028	91.1983
.22090E+10	93.1778	91.5088	89.5427	92.6619	91.2869	89.5430
.25246E+10	91.1440	89.6194	87.8223	90.6710	89.4144	87.8198
.28402E+10	89.5745	88.1550	86.4812	89.1328	87.9625	86.4767
.31558E+10	88.2506	86.9201	85.3505	87.8354	86.7381	85.3445
.63115E+10	81.3388	80.4931	79.4934	81.0689	80.3699	79.4801
.94673E+10	78.2382	77.5625	76.7628	78.0206	77.4617	76.7492
.12623E+11	76.4986	75.9237	75.2426	76.3124	75.8364	75.2293
.15779E+11	75.2006	74.6975	74.1013	75.0367	74.6200	74.0882
.18935E+11	73.8961	73.4559	72.9339	73.7516	73.3868	72.9208
.22090E+11	72.7384	72.3456	71.8795	72.6086	72.2828	71.8663
.25246E+11	71.7030	71.3471	70.9243	71.5844	71.2890	70.9110
.28402E+11	70.7713	70.4449	70.0571	70.6616	70.3905	70.0433
.31558E+11	69.9583	69.6548	69.2939	69.8553	69.6029	69.2796

 * 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 81956.320 TIME= 17:23:27
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 2885 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 3047 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2883 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	167 TEMP	1midside	26.14	.2000E-05	94.43	.6312E+09
3	NSOL	2885 TEMP	1dfeside	26.14	.2000E-05	91.17	.9467E+09
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	94.08	.6312E+09
5	NSOL	3047 TEMP	1dfetop	26.10	.1000E-05	91.23	.9467E+09
6	NSOL	165 TEMP	1midbot	26.19	.2000E-05	90.84	.9467E+09
7	NSOL	2883 TEMP	1dfebot	26.19	.2000E-05	88.43	.9467E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:29 JAN 29, 1995 CP= 81958.240
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2885 TEMP 1dfeside	219 TEMP 1midtop	3047 TEMP 1dfetop	165 TEMP 1midbot	2883 TEMP 1dfebot
.10000E-05	26.1423	26.1429	26.1001	26.0977	26.1933	26.1932
.20000E-05	26.1421	26.1421	26.1102	26.1102	26.1862	26.1862
31.558	26.1421	26.1421	26.1102	26.1102	26.1862	26.1862
.31558E+07	40.4124	34.7283	39.6693	34.7254	36.0831	31.7350
.63116E+07	46.6949	40.6131	45.9289	40.6335	42.0352	37.0521
.94673E+07	50.8678	44.8180	50.1321	44.8656	46.0681	41.0482
.12623E+08	54.0637	48.1094	53.3630	48.1834	49.1905	44.2376
.15779E+08	56.6717	50.8157	56.0015	50.9115	51.7552	46.8844
.18935E+08	58.8789	53.1130	58.2345	53.2263	53.9360	49.1431
.22090E+08	60.7934	55.1074	60.1706	55.2348	55.8334	51.1107
.25246E+08	62.4847	56.8697	61.8804	57.0086	57.5135	52.8531
.28402E+08	63.9982	58.4472	63.4098	58.5957	59.0202	54.4156
.31558E+08	65.3669	59.8738	64.7924	60.0302	60.3849	55.8308
.63115E+08	74.5554	69.4617	74.0643	69.6570	69.6003	65.3888
.94673E+08	79.8145	74.9693	79.3652	75.1767	74.9250	70.9232
.12623E+09	83.3237	78.6716	82.9048	78.8827	78.5166	74.6706
.15779E+09	85.8524	81.3471	85.4467	81.5577	81.1203	77.3968
.18935E+09	87.7572	83.3858	87.3703	83.5933	83.1083	79.4876
.22090E+09	89.2534	84.9853	88.8686	85.1873	84.6714	81.1395
.25246E+09	90.4931	86.3139	90.1179	86.5090	85.9714	82.5139
.28402E+09	91.3171	87.2445	90.9464	87.4324	86.8852	83.5213
.31558E+09	91.9018	87.9217	91.5346	88.1006	87.5525	84.2657
.63115E+09	94.4308	91.0848	94.0795	91.1886	90.6971	87.9330
.94673E+09	94.0763	91.1709	93.7412	91.2298	90.8366	88.4326
.12623E+10	92.3796	89.8445	92.0668	89.8735	89.5855	87.4876
.15779E+10	90.5605	88.3056	90.2667	88.3156	88.1098	86.2409
.18935E+10	88.9552	86.9167	88.6789	86.9140	86.7687	85.0764
.22090E+10	87.5430	85.6775	87.2816	85.6658	85.5670	84.0171
.25246E+10	86.0413	84.3368	85.7940	84.3170	84.2599	82.8427
.28402E+10	84.8561	83.2688	84.6196	83.2437	83.2168	81.8962
.31558E+10	83.8532	82.3652	83.6261	82.3359	82.3328	81.0943
.63115E+10	78.6244	77.6774	78.4534	77.6305	77.7195	76.9289
.94673E+10	76.0982	75.3414	75.9537	75.2954	75.4014	74.7689
.12623E+11	74.6908	74.0463	74.5631	74.0022	74.1102	73.5711
.15779E+11	73.6275	73.0636	73.5121	73.0211	73.1282	72.6563
.18935E+11	72.5271	72.0334	72.4219	71.9917	72.0983	71.6848
.22090E+11	71.5223	71.0816	71.4247	71.0405	71.1467	70.7776
.25246E+11	70.6062	70.2066	70.5140	70.1653	70.2727	69.9377
.28402E+11	69.7695	69.4030	69.6811	69.3610	69.4703	69.1629
.31558E+11	69.0294	68.6884	68.9433	68.6453	68.7573	68.4711

 * 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 81958.600 TIME= 17:23:30
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 3531 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 3747 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3528 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	83.03 .9467E+09
3	NSOL	3531 TEMP	3dfeside	26.14	.2000E-05	82.22 .9467E+09
4	NSOL	309 TEMP	3midtop	26.06	.1000E-05	82.78 .9467E+09
5	NSOL	3747 TEMP	3dfetop	26.06	.1000E-05	82.09 .9467E+09
6	NSOL	276 TEMP	3midbot	26.23	.2000E-05	81.36 .1262E+10
7	NSOL	3528 TEMP	3dfebot	26.23	.2000E-05	80.76 .1262E+10

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:34 JAN 29, 1995 CP= 81960.430
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3531 TEMP 3dfeside	309 TEMP 3midtop	3747 TEMP 3dfetop	276 TEMP 3midbot	3528 TEMP 3dfebot
.10000E-05	26.1434	26.1435	26.0560	26.0555	26.2339	26.2339
.20000E-05	26.1434	26.1434	26.0629	26.0629	26.2288	26.2288
31.558	26.1434	26.1434	26.0629	26.0629	26.2288	26.2288
.31558E+07	28.7256	27.8042	28.4248	27.6517	27.8326	27.2091
.63116E+07	32.6186	31.1220	32.2240	30.9370	31.1032	29.8924
.94673E+07	35.7619	34.1326	35.3791	33.9676	33.9791	32.6059
.12623E+08	38.3633	36.7187	38.0128	36.5854	36.4347	35.0324
.15779E+08	40.5850	38.9557	40.2672	38.8531	38.5654	37.1718
.18935E+08	42.5254	40.9182	42.2369	40.8426	40.4443	39.0688
.22090E+08	44.2476	42.6627	43.9846	42.6104	42.1226	40.7666
.25246E+08	45.7956	44.2313	45.5546	44.1989	43.6380	42.3003
.28402E+08	47.2011	45.6554	46.9790	45.6401	45.0185	43.6973
.31558E+08	48.4872	46.9585	48.2818	46.9581	46.2852	44.9791
.63115E+08	57.4527	56.0390	57.3417	56.1200	55.1796	53.9742
.94673E+08	62.8419	61.4984	62.7716	61.6116	60.5694	59.4249
.12623E+09	66.5753	65.2855	66.5274	65.4137	64.3233	63.2238
.15779E+09	69.3462	68.0982	69.3071	68.2312	67.1191	66.0551
.18935E+09	71.5078	70.2962	71.4724	70.4271	69.3063	68.2720
.22090E+09	73.2478	72.0661	73.2074	72.1894	71.0687	70.0600
.25246E+09	74.7085	73.5512	74.6608	73.6630	72.5461	71.5587
.28402E+09	75.8646	74.7364	75.8075	74.8353	73.7300	72.7684
.31558E+09	76.7583	75.6563	76.6886	75.7391	74.6514	73.7124
.63115E+09	81.6068	80.6805	81.4187	80.6195	79.6913	78.9019
.94673E+09	83.0280	82.2238	82.7816	82.0875	81.3081	80.6220
.12623E+10	82.8761	82.1744	82.6059	81.9998	81.3607	80.7621
.15779E+10	82.2191	81.5950	81.9408	81.4016	80.8742	80.3413
.18935E+10	81.4981	80.9341	81.2199	80.7324	80.2920	79.8097
.22090E+10	80.7860	80.2698	80.5108	80.0645	79.6949	79.2533
.25246E+10	79.9278	79.4562	79.6565	79.2486	78.9442	78.5406
.28402E+10	79.2097	78.7705	78.9430	78.5631	78.3084	77.9324
.31558E+10	78.5955	78.1839	78.3337	77.9775	77.7642	77.4117
.63115E+10	75.3890	75.1270	75.1637	74.9365	74.9201	74.6953
.94673E+10	73.5544	73.3452	73.3589	73.1773	73.2113	73.0316
.12623E+11	72.5425	72.3642	72.3665	72.2117	72.2651	72.1118
.15779E+11	71.7600	71.6041	71.5983	71.4629	71.5278	71.3938
.18935E+11	70.9025	70.7658	70.7518	70.6330	70.7089	70.5915
.22090E+11	70.0801	69.9582	69.9376	69.8317	69.9168	69.8120
.25246E+11	69.3058	69.1953	69.1687	69.0725	69.1672	69.0721
.28402E+11	68.5823	68.4809	68.4483	68.3600	68.4647	68.3774
.31558E+11	67.9290	67.8346	67.7961	67.7139	67.8290	67.7478

* Upper Rock Layer Interface Temperatures *

surfTCw = center ground surface
 TCwPTn = center TCw and PTn interface
 PTnTSw1 = center PTn and TSw1 interface
 TSw1TSw2 = center TSw1 and TSw2 interface
 upmodel = center TSw2 1/2 drift spacing above WP
 middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 861 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 81960.800 TIME= 17:23:34
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 840 ITEM= TEMP COMP= NAME= TCwPTn

VARIABLE 4 IS AT NODE 783 ITEM= TEMP COMP= NAME= PTnTSw1

VARIABLE 5 IS AT NODE 683 ITEM= TEMP COMP= NAME= TSw1TSw2

VARIABLE 6 IS AT NODE 480 ITEM= TEMP COMP= NAME= upmodel

VARIABLE 7 IS AT NODE 406 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES						
VARI TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2 NSOL	861 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3 NSOL	840 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4 NSOL	783 TEMP	PTnTSw1	21.24	.1000E-05	33.90	.3156E+11
5 NSOL	683 TEMP	TSw1TSw2	24.25	.1000E-05	53.60	.3156E+11
6 NSOL	480 TEMP	upmodel	25.53	.1000E-05	63.21	.1893E+11
7 NSOL	406 TEMP	middrift	26.14	.1000E-05	66.76	.1262E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=IP 9000/7XX 17:23:38 JAN 29, 1995 CP= 81962.690
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	861 TEMP surfTCw	840 TEMP TCwPTn	783 TEMP PTnTSw1	683 TEMP TSw1TSw2	480 TEMP upmodel	406 TEMP middrift
.10000E-05	18.7000	19.5281	21.2397	24.2504	25.5335	26.1441
.20000E-05	18.7000	19.5283	21.2403	24.2520	25.5355	26.1444
31.558	18.7000	19.5283	21.2403	24.2520	25.5355	26.1444
.31558E+07	18.7000	19.5283	21.2403	24.2520	25.5355	26.1444
.63116E+07	18.7000	19.5283	21.2403	24.2520	25.5355	26.1444
.94673E+07	18.7000	19.5283	21.2403	24.2520	25.5355	26.1444
.12623E+08	18.7000	19.5283	21.2403	24.2520	25.5355	26.1444
.15779E+08	18.7000	19.5283	21.2403	24.2520	25.5355	26.1444
.18935E+08	18.7000	19.5283	21.2403	24.2520	25.5356	26.1445
.22090E+08	18.7000	19.5283	21.2403	24.2520	25.5357	26.1447
.25246E+08	18.7000	19.5283	21.2403	24.2520	25.5360	26.1450
.28402E+08	18.7000	19.5283	21.2403	24.2520	25.5365	26.1458
.31558E+08	18.7000	19.5283	21.2403	24.2520	25.5373	26.1472
.63115E+08	18.7000	19.5283	21.2403	24.2520	25.5937	26.1494
.94673E+08	18.7000	19.5283	21.2403	24.2520	25.8098	26.2880
.12623E+09	18.7000	19.5283	21.2403	24.2520	26.2073	26.7738
.15779E+09	18.7000	19.5283	21.2403	24.2520	26.7434	27.6172
.18935E+09	18.7000	19.5283	21.2403	24.2520	27.3671	28.7142
.22090E+09	18.7000	19.5283	21.2403	24.2520	28.0396	29.9601
						31.2782

.25246E+09	18.7000	19.5283	21.2403	24.2522	28.7355	32.6181
.28402E+09	18.7000	19.5283	21.2403	24.2525	29.4394	33.9488
.31558E+09	18.7000	19.5283	21.2403	24.2531	30.1419	35.2506
.63115E+09	18.7000	19.5283	21.2403	24.3305	36.5011	45.6269
.94673E+09	18.7000	19.5283	21.2404	24.6959	41.5071	52.0925
.12623E+10	18.7000	19.5283	21.2404	25.4158	45.3616	56.2696
.15779E+10	18.7000	19.5283	21.2409	26.4072	48.2829	58.9911
.18935E+10	18.7000	19.5284	21.2430	27.5602	50.5229	60.8310
.22090E+10	18.7000	19.5285	21.2488	28.7853	52.2748	62.1282
.25246E+10	18.7000	19.5290	21.2614	30.0213	53.6641	63.0581
.28402E+10	18.7000	19.5303	21.2841	31.2304	54.7659	63.7066
.31558E+10	18.7000	19.5328	21.3200	32.3904	55.6668	64.1946
.63115E+10	18.7000	19.7624	22.6135	40.8560	60.4565	66.5785
.94673E+10	18.7000	20.4164	24.9525	45.4536	61.8188	66.6861
.12623E+11	18.7000	21.1933	27.2901	48.2618	62.5817	66.7582
.15779E+11	18.7000	21.8840	29.2421	50.1775	63.0317	66.7348
.18935E+11	18.7000	22.4390	30.7743	51.5280	63.2132	66.5369
.22090E+11	18.7000	22.8677	31.9442	52.4487	63.1790	66.2056
.25246E+11	18.7000	23.1911	32.8179	53.0489	63.0199	65.8186
.28402E+11	18.7000	23.4295	33.4545	53.4106	62.7762	65.4007
.31558E+11	18.7000	23.6005	33.9048	53.5955	62.4856	64.9817

* Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP
 TSw2TSw3 = center TSw2 and TSw3 interface
 TSw3CHnv = center TSw3 and CHn1v interface
 CHnvCHnz = center CHn1v and CHn1z interface
 CHnzCHn2 = center CHn1z and CHn2 interface
 CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 81963.060 TIME= 17:23:39
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 5 IS AT NODE 732 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 6 IS AT NODE 882 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 7 IS AT NODE 902 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 921 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 978 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.75	.3156E+07	64.49	.1893E+11
3	NSOL	840 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	783 TEMP	PTnTSw1	21.24	.1000E-05	33.90	.3156E+11
5	NSOL	732 TEMP	TSw2TSw3	27.69	.1578E+08	59.36	.3156E+11
6	NSOL	882 TEMP	TSw3CHnv	28.16	.3156E+07	57.18	.3156E+11
7	NSOL	978 TEMP	CHn2bot	31.87	.6312E+08	43.34	.3156E+11

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:23:42 JAN 29, 1995 CP= 81964.920
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	840 TEMP TCwPTn	783 TEMP PTnTsw1	732 TEMP Tsw2Tsw3	882 TEMP Tsw3CHnv	978 TEMP CHn2bot
.10000E-05	26.7547	19.5281	21.2397	27.6868	28.1582	31.8706
.20000E-05	26.7534	19.5283	21.2403	27.6857	28.1571	31.8697
.31558E+07	26.7534	19.5283	21.2403	27.6857	28.1571	31.8697
.63116E+07	26.7534	19.5283	21.2403	27.6857	28.1571	31.8697
.94673E+07	26.7534	19.5283	21.2403	27.6857	28.1571	31.8697
.12623E+08	26.7534	19.5283	21.2403	27.6857	28.1571	31.8697
.15779E+08	26.7535	19.5283	21.2403	27.6857	28.1571	31.8697
.18935E+08	26.7535	19.5283	21.2403	27.6857	28.1571	31.8697
.22090E+08	26.7536	19.5283	21.2403	27.6857	28.1571	31.8697
.25246E+08	26.7539	19.5283	21.2403	27.6857	28.1571	31.8697
.28402E+08	26.7544	19.5283	21.2403	27.6857	28.1571	31.8697
.31558E+08	26.7552	19.5283	21.2403	27.6857	28.1571	31.8697
.63115E+08	26.8116	19.5283	21.2403	27.6857	28.1571	31.8697
.94673E+08	27.0272	19.5283	21.2403	27.6857	28.1571	31.8697
.12623E+09	27.4205	19.5283	21.2403	27.6858	28.1571	31.8697
.15779E+09	27.9473	19.5283	21.2403	27.6859	28.1571	31.8697
.18935E+09	28.5580	19.5283	21.2403	27.6862	28.1571	31.8697
.22090E+09	29.2157	19.5283	21.2403	27.6873	28.1571	31.8697
.25246E+09	29.8964	19.5283	21.2403	27.6897	28.1572	31.8697
.28402E+09	30.5853	19.5283	21.2403	27.6942	28.1575	31.8697
.31558E+09	31.2738	19.5283	21.2403	27.7016	28.1580	31.8697
.63115E+09	37.5413	19.5283	21.2403	28.0993	28.2302	31.8697
.94673E+09	42.5126	19.5283	21.2404	29.2011	28.5786	31.8697
.12623E+10	46.3686	19.5283	21.2404	30.7848	29.2706	31.8697
.15779E+10	49.3190	19.5283	21.2409	32.5752	30.2299	31.8697
.18935E+10	51.6055	19.5284	21.2430	34.3925	31.3513	31.8699
.22090E+10	53.4122	19.5285	21.2488	36.1387	32.5476	31.8707
.25246E+10	54.8579	19.5290	21.2614	37.7694	33.7582	31.8726
.28402E+10	56.0139	19.5303	21.2841	39.2687	34.9453	31.8767
.31558E+10	56.9639	19.5328	21.3200	40.6348	36.0864	31.8841
.63115E+10	61.9452	19.7624	22.6135	49.2936	44.4260	32.3598
.94673E+10	63.2703	20.4164	24.9525	53.2094	48.9119	33.6219
.12623E+11	63.9616	21.1933	27.2901	55.4163	51.6071	35.2462
.15779E+11	64.3487	21.8840	29.2421	56.8601	53.4347	36.9051
.18935E+11	64.4851	22.4390	30.7743	57.8499	54.7443	38.4675
.22090E+11	64.4258	22.8677	31.9442	58.5042	55.6817	39.8935
.25246E+11	64.2622	23.1911	32.8179	58.9314	56.3545	41.1767
.28402E+11	64.0332	23.4295	33.4545	59.2001	56.8373	42.3225
.31558E+11	63.7734	23.6005	33.9048	59.3583	57.1820	43.3426

***** ROUTINE COMPLETED ***** CP = 81964.930

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12j5a.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 46
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```

*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|                                     |
|               REV. 5.0 A               HP 9000/7XX               |
|                                     |
| CP TIME      (sec) =      81974.480      TIME = 17:24:04      |
|                                     |
|-----|
|                                     |
|
```

ELAPSED TIME (sec) = 187693.000 DATE = 01/29/95

```

*-----*
| WELCOME TO THE ANSYS PROGRAM |
*-----*

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```

***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = c12h5a
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

```

```

***** ANSYS DYNAMIC MEMORY ALLOCATION *****
WORK SPACE REQUESTED      = 16777216      64.000 MB  COMMAND LINE
MINIMUM WORK SPACE REQUIRED = 4718592       18.000 MB
MINIMUM WORK SPACE RECOMMENDED = 6702496   25.568 MB
WORK SPACE OBTAINED       = 16777214      64.000 MB
BYTES PER WORD            = 4

```

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ERRORS ENCOUNTERED IN EITHER THE DOCUMENTATION OR THE
RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON   TO START THE ANSYS MENU SYSTEM
ENTER HELP      FOR GENERAL ANSYS HELP INFORMATION
1 /COM, *****
2 /COM, ANSYS REVISION 5.0A 1/16/1995
3 /COM, 3-D Model of Waste Package Drift Emplacement R.Bahney III
4 /COM, *****
5 /COM, *
6 /COM, * File name: c12h5a.inp *
7 /COM, *
8 /COM, * 12 PWR WP/MPC (10 cm overpack) *
9 /COM, * Average SNF: 22 years old, 42.2 GWd/MTU burnup *
10 /COM, * 5.0 m Diameter Drift with Concrete Invert *
11 /COM, * 25 MTU/acre (6.18 kgU/m^2) AML (Low Thermal Loading) *
12 /COM, * Drift spacing = 90.0 m (45.0 m model half width) *
13 /COM, * WP c/c spacing = 9.237 m *
14 /COM, *
15 /COM, * Material Properties file: Proprep.dat *
16 /COM, * SNF Heat Loads file: snf2242.dat *
17 /COM, *
18 /COM, *****

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19 /COM, Increase the number of database pages from 16 (256) to 32 Mb
20 /CONFIG,nvpag,512,
21 /COM, Work space must also be increased (-m 64)
22 /COM, *****
23 /TITLE,12 PWR MPC, 5 m Tunnel
24 /UNITS,SI,
25 /COM, *****
26 /COM, Define emplacement parameters
27 /COM, WPRAD = radius of waste package (m)
28 /COM, DFRAD = radius of drift (m)
29 /COM, INVRT = height of invert backfill floor (m)
30 /COM, WPLEN = length of waste package (m)
31 /COM, WPWLL = thickness of outer barrier (m)
32 /COM, WPSPC = waste package c/c spacing (m)
33 /COM, WPNUM = number of assemblies per WP
34 /COM, MODEL = model half width (m)
35 /COM, OFFST = WP center below drift center (m)
36 *SET,WPRAD,0.76525,
37 *SET,DFRAD,2.5,
38 *SET,INVRT,0.7,
39 *SET,WPLEN,5.647,
40 *SET,WPWLL,0.10,
41 *SET,WPSPC,9.237,
42 *SET,WPNUM,12.0,
43 *SET,MODEL,45.0,
44 *SET,OFFST,0.27255,
45 /COM, Define calculated parameters
46 /COM, ASSY = assembly heat production (W) f(yrs)
47 /COM, WPHOT = WP heat production (W) f(sec)
48 /COM, WPTOP = temp. at center top of WP (C) f(sec)
49 /COM, WPSID = temp. at center side of WP (C) f(sec)
50 /COM, WPBOT = temp. at center bottom of WP (C) f(sec)
51 /COM, DFTOP = temp. at end top of drift (C) f(sec)
52 /COM, DFSID = temp. at end side of drift (C) f(sec)
53 /COM, DFEDG = temp. at end edge of invert (C) f(sec)
54 /COM, DFBOT = temp. at end center of invert (C) f(sec)
55 /COM, GSURF = y coordinate of top of model (m)
56 /COM, DFCENT = y coordinate of drift center (m)
57 /COM, XXX = x coordinate at edge of invert (m)
58 /COM, YYY = y coordinate at edge of invert (m)
59 /COM, TM_START = start time (sec)
60 /COM, TMI* = time increment for solution (sec)
61 /COM, TME* = start and stop for time do-loops (sec)
62 /COM, Note: 1 year = 3.15576e7 seconds
63 /COM, DFAMBT = ambient drift temperature (C)
64 *DIM,ASSY, TABLE,47,1,
65 *DIM,WPHOT, TABLE,47,1,
66 *DIM,WPTOP, TABLE,47,1,
67 *DIM,WPSID, TABLE,47,1,
68 *DIM,WPBOT, TABLE,47,1,
69 *DIM,DFTOP, TABLE,47,1,
70 *DIM,DFSID, TABLE,47,1,
71 *DIM,DFEDG, TABLE,47,1,
72 *DIM,DFBOT, TABLE,47,1,
73 GSURF=311.0-DFRAD-OFFST
74 DFCENT=OFFST
75 XXX=SQRT(DFRAD**2-(DFRAD-INVRT)**2)
76 YYY=DFCENT-DFRAD+INVRT
77 WPVOL=3.14159*(WPRAD-WPWLL)*(WPLEN-2.0*WPWLL)
78 TM_START=(1.0E-6)*(3.15576E7)
79 TMI0=0.1*3.15576E7
80 TMI1=1.0*3.15576E7
81 TMI10=10.0*3.15576E7
82 TMI100=100.0*3.15576E7
83 TMI1000=1000.0*3.15576E7
84 TME0=0.9*3.15576E7+TM_START
85 TME1=TMI1+TM_START
86 TME9=9.0*3.15576E7+TM_START
87 TME10=TMI10+TM_START
88 TME90=90.0*3.15576E7+TM_START

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```

89 TME100=TM100+TM_START
90 TME1000=TM1000+TM_START
91 /COM, *****
92 /COM, Define different element types
93 /PREP7
94 ETYPE
95 ET, 1,55,
96 ET, 2,70,
97 ET, 16,57,
98 ET, 17,32,
99 ET, 18,50,1,
100 ET, 19,31,
101 /COM, *****
102 /COM, Proprep.dat describes material properties and
103 /COM, thier reference numbers related to ET's above
104 MPREAD,proprep.dat,
105 /COM, Read in single assembly heat loads from "heat2242.dat"
106 /COM, and calculate the volumetric heat generation
107 /COM, (Assembly time is in years, WPHOT is in seconds)
108 /INPUT,snf2242.dat,
109 *VFACT,3.15576E7,
110 *MFUN,WPHOT(1,0),COPY,ASSY(1,0),
111 *VFACT,(WPNUM/WPVOL),
112 *VFUN,WPHOT(1),COPY,ASSY(1),
113 WPHOT(0,1)=1.0
114 WPTOP(0,1)=1.0
115 WPSID(0,1)=1.0
116 WPBOT(0,1)=1.0
117 DFTOP(0,1)=1.0
118 DFSID(0,1)=1.0
119 DFEDG(0,1)=1.0
120 DFBOT(0,1)=1.0
121 /COM, *****
122 /COM, Define keypoints for rock layers (top-down)
123 /COM, (K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
124 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
125 K, 1,(0.0-MODEL), GSURF, 0.0,
126 K, 2, 0.0, GSURF, 0.0,
127 K, 3, MODEL, GSURF, 0.0,
128 K, 4,(0.0-MODEL), (GSURF-36.00), 0.0,
129 K, 5, 0.0, (GSURF-36.00), 0.0,
130 K, 6, MODEL, (GSURF-36.00), 0.0,
131 K, 7,(0.0-MODEL), (GSURF-74.10), 0.0,
132 K, 8, 0.0, (GSURF-74.10), 0.0,
133 K, 9, MODEL, (GSURF-74.10), 0.0,
134 K,10,(0.0-MODEL), (GSURF-204.2), 0.0,
135 K,11, 0.0, (GSURF-204.2), 0.0,
136 K,12, MODEL, (GSURF-204.2), 0.0,
137 K,13,(0.0-MODEL), (DFCENT+MODEL), 0.0,
138 K,14, 0.0, (DFCENT+MODEL), 0.0,
139 K,15, MODEL, (DFCENT+MODEL), 0.0,
140 K,16,(0.0-MODEL), DFCENT, 0.0,
141 K,17, MODEL, DFCENT, 0.0,
142 K,18,(0.0-MODEL), (DFCENT-MODEL), 0.0,
143 K,19, 0.0, (DFCENT-MODEL), 0.0,
144 K,20, MODEL, (DFCENT-MODEL), 0.0,
145 K,21,(0.0-MODEL), (GSURF-393.5), 0.0,
146 K,22, 0.0, (GSURF-393.5), 0.0,
147 K,23, MODEL, (GSURF-393.5), 0.0,
148 K,24,(0.0-MODEL), (GSURF-409.3), 0.0,
149 K,25, 0.0, (GSURF-409.3), 0.0,
150 K,26, MODEL, (GSURF-409.3), 0.0,
151 K,27,(0.0-MODEL), (GSURF-414.5), 0.0,
152 K,28, 0.0, (GSURF-414.5), 0.0,
153 K,29, MODEL, (GSURF-414.5), 0.0,
154 K,30,(0.0-MODEL), (GSURF-518.5), 0.0,
155 K,31, 0.0, (GSURF-518.5), 0.0,
156 K,32, MODEL, (GSURF-518.5), 0.0,
157 K,33,(0.0-MODEL), (GSURF-1300.), 0.0,
158 K,34, 0.0, (GSURF-1300.), 0.0,

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159 K,35,      MODEL, (GSURF-1300.), 0.0,
160 /COM,      Define lines connecting rock layers
161 /COM,      (L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
162 /COM,      ( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
163 /COM,      ( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
164 /COM,      ( 52,53)
165 L, 1, 2,
166 L, 2, 3,
167 L, 4, 5,
168 L, 5, 6,
169 L, 7, 8,
170 L, 8, 9,
171 L,10,11,
172 L,11,12,
173 L,13,14,
174 L,14,15,
175 L,18,19,
176 L,19,20,
177 L,21,22,
178 L,22,23,
179 L,24,25,
180 L,25,26,
181 L,27,28,
182 L,28,29,
183 L,30,31,
184 L,31,32,
185 L,33,34,
186 L,34,35,
187 L, 1, 4,
188 L, 2, 5,
189 L, 3, 6,
190 L, 4, 7,
191 L, 5, 8,
192 L, 6, 9,
193 L, 7,10,
194 L, 8,11,
195 L, 9,12,
196 L,10,13,
197 L,11,14,
198 L,12,15,
199 L,13,16,
200 L,15,17,
201 L,16,18,
202 L,17,20,
203 L,18,21,
204 L,19,22,
205 L,20,23,
206 L,21,24,
207 L,22,25,
208 L,23,26,
209 L,24,27,
210 L,25,28,
211 L,26,29,
212 L,27,30,
213 L,28,31,
214 L,29,32,
215 L,30,33,
216 L,31,34,
217 L,32,35,
218 /COM,      Define areas in rock layers
219 /COM,      (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
220 AL,23, 3,24, 1,
221 AL,24, 4,25, 2,
222 AL,26, 5,27, 3,
223 AL,27, 6,28, 4,
224 AL,29, 7,30, 5,
225 AL,30, 8,31, 6,
226 AL,32, 9,33, 7,
227 AL,33,10,34, 8,
228 AL,39,13,40,11,

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229 AL,40,14,41,12,
230 AL,42,15,43,13,
231 AL,43,16,44,14,
232 AL,45,17,46,15,
233 AL,46,18,47,16,
234 AL,48,19,49,17,
235 AL,49,20,50,18,
236 AL,51,21,52,19,
237 AL,52,22,53,20,
238 /COM, *****
239 /COM, Define center and axis keypoints for drift
240 /COM, (K's 36,37,38,39,40,41,42,43)
241 K,36, 0.0, 0.0, 0.0,
242 K,37, 0.0, 0.0, (WPLEN/2.0-WPWLL),
243 K,38, 0.0, 0.0, (WPLEN/2.0),
244 K,39, 0.0, 0.0, -1*(WPLEN/2.0-WPWLL),
245 K,40, 0.0, 0.0, -1*(WPLEN/2.0),
246 K,41, 0.0,DFCENT, 0.0,
247 K,42, 0.0,DFCENT, (WPSPC/2.0),
248 K,43, 0.0,DFCENT, -1*(WPSPC/2.0),
249 /COM, Define extrude lines
250 /COM, (L's 54,55,56,57,58,59)
251 L,36,37,
252 L,37,38,
253 L,36,39,
254 L,39,40,
255 L,41,42,
256 L,41,43,
257 /COM, Define arcs at WP, drift wall, 1 and 3 meter in rock
258 /COM, (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
259 /COM, ( 58,60,61,62,63,64,65,66)
260 /COM, (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
261 /COM, ( 76,77,78,79,80,81)
262 CIRCLE,36,(WPRAD-WPWLL),37,19,360.00,
263 CIRCLE,36,WPRAD,37,19,360.00,
264 K,52, 0.0,(DFCENT-DFRAD), 0.0,
265 K,53, XXX, YYY, 0.0,
266 K,54, DFRAD, DFCENT, 0.0,
267 K,55, 0.0,(DFCENT+DFRAD), 0.0,
268 K,56,(0.0-DFRAD), DFCENT, 0.0,
269 K,57, (0.0-XXX), YYY, 0.0,
270 K,58, 0.0, YYY, 0.0,
271 LARC,52,53,41,DFRAD,
272 LARC,53,54,41,DFRAD,
273 LARC,54,55,41,DFRAD,
274 LARC,55,56,41,DFRAD,
275 LARC,56,57,41,DFRAD,
276 LARC,57,52,41,DFRAD,
277 CIRCLE,41,(DFRAD+1),42,19,360.0,
278 CIRCLE,41,(DFRAD+3),42,19,360.0,
279 /COM, Define lines around drift
280 /COM, (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
281 /COM, ( 98,99,100,101,102,103,104,105,106)
282 L,36,44,
283 L,36,45,
284 L,36,46,
285 L,36,47,
286 L,44,48,
287 L,45,49,
288 L,46,50,
289 L,47,51,
290 L,50,55,
291 L,48,58,
292 L,58,52,
293 L,57,58,
294 L,58,53,
295 L,52,59,
296 L,54,60,
297 L,55,61,
298 L,56,62,

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299 L,59,63,
300 L,60,64,
301 L,61,65,
302 L,62,66,
303 L,63,19,
304 L,64,17,
305 L,65,14,
306 L,66,16,
307 /COM,          Define areas around drift
308 /COM,          (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
309 /COM,          ( 35,36,37,38,39,40)
310 AL,82,60,83,
311 AL,83,61,84,
312 AL,85,84,62,
313 AL,63,82,85,
314 AL,86,64,87,60,
315 AL,61,87,65,88,
316 AL,89,62,88,66,
317 AL,67,86,63,89,
318 AL,73,92,93,
319 AL,68,94,92,
320 AL,95,74,96,69,68,
321 AL,96,75,97,70,
322 AL,98,71,97,76,
323 AL,77,95,73,72,98,
324 AL, 99,78,100,74,
325 AL,100,79,101,75,
326 AL,102,76,101,80,
327 AL, 81,99,77,102,
328 AL,103,12,38,104,78,
329 AL,104,36,10,105,79,
330 AL,106,80,105, 9,35,
331 AL,11,103,81,106,37,
332 NUMMRG,KP,
333 /COM,          *****
334 /COM,          Set element sizes near WP
335 /COM,          Default element size
336 ESIZE,6.0,
337 /COM,          24 elements around WP
338 LSEL,S,LINE,,60,63,1,
339 LESIZE,ALL,,, 6,
340 /COM,          6 elements inside WP
341 LSEL,S,LINE,,82,85,1,
342 LESIZE,ALL,,, 6,
343 /COM,          1 element thick steel
344 LSEL,S,LINE,,86,89,1,
345 LESIZE,ALL,,, 1,
346 /COM,          4 elements in air space
347 LSEL,S,LINE,,90,91,1,
348 LESIZE,ALL,,, 4,
349 /COM,          40 elements around drift
350 /COM,          (4+6=10 divisions)
351 LSEL,S,LINE,,93,94,1,
352 LSEL,A,LINE,,68,
353 LSEL,A,LINE,,73,
354 LESIZE,ALL,,, 4,
355 LSEL,S,LINE,,69,
356 LSEL,A,LINE,,72,
357 LESIZE,ALL,,, 6,
358 LSEL,S,LINE,,70,71,1,
359 LSEL,A,LINE,,74,81,1,
360 LESIZE,ALL,,,10,
361 /COM,          2 element deep invert
362 LSEL,ALL,
363 LESIZE, 92,,, 2,
364 /COM,          2 elements in 1st meter of rock
365 LSEL,S,LINE,,95,98,1,
366 LESIZE,ALL,,, 2,
367 /COM,          3 elements in next 2 meters
368 LSEL,S,LINE,,99,102,1,

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369 LESIZE,ALL,,, 3,
370 /COM,
371 /COM,
372 LSEL,S,LINE,, 9,12,1,
373 LESIZE,ALL,,, 3,
374 LSEL,S,LINE,,35,38,1,
375 LESIZE,ALL,,, 7,
376 LSEL,S,LINE,,103,106,1,
377 LESIZE,ALL,,, 8,5.0,
378 /COM,
379 LSEL,S,LINE,,54,56,2,
380 LESIZE,ALL,,, 5,
381 /COM,
382 LSEL,S,LINE,,55,57,2,
383 LESIZE,ALL,,, 1,
384 LSEL,ALL,
385 /COM,
386 /COM,
387 LESIZE, 58,,, 4,3.6,
388 LESIZE, 59,,, 4,3.6,
389 /COM, *****
390 /COM, Set element sizes in rock layers
391 /COM, 3 element thick TCw
392 LESIZE, 24,,, 3,
393 /COM, 3 element thick PTn
394 LESIZE, 27,,, 3,
395 /COM, 9 element thick TSw1
396 LESIZE, 30,,, 9,
397 /COM, 12 elements above and below near field
398 /COM, with smaller elements near drift
399 LSEL,S,LINE,,32,34,1,
400 LESIZE,ALL,,, 6,
401 LSEL,S,LINE,,39,41,1,
402 LESIZE,ALL,,, 6,
403 LSEL,ALL,
404 /COM, 3 element thick TSw3
405 LESIZE, 43,,, 3,
406 /COM, 2 element thick CHn1v
407 LESIZE, 46,,, 2,
408 /COM, 7 element thick CHn1z
409 LESIZE, 49,,, 7,
410 /COM, 12 element thick CHN2 with smaller elements
411 /COM, near the top
412 LSEL,S,LINE,,51,53,1,
413 LESIZE,ALL,,,12,10,
414 LSEL,ALL,
415 /COM, *****
416 /COM, Concatenate lines for mapped meshing
417 /COM, (L's 107,108,109,110,111,112)
418 LCCAT,68,69,
419 LCCAT,72,73,
420 LCCAT,12,38,
421 LCCAT,36,10,
422 LCCAT, 9,35,
423 LCCAT,37,11,
424 /COM, *****
425 /COM, Mesh 2-D areas
426 /COM, (first WP, then invert, DF wall and rock layers)
427 /COM, Waste package
428 ESHAPE,2,
429 MAT,10,
430 TYPE,1,
431 AMESH,19,22,1,
432 MAT,13,
433 AMESH,23,26,1,
434 /COM, Invert
435 ESHAPE,0,
436 MAT,11,
437 AMESH,27,28,1,
438 /COM, Drift wall and TSw2 areas

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439 ESHAPE,2,
440 MAT, 4,
441 AMESH,29,32,3,
442 AMESH,30,31,1,
443 AMESH,33,36,1,
444 AMESH,37,40,1,
445 AMESH, 7,10,1,
446 /COM, TSw1 areas
447 MAT, 3,
448 AMESH, 5, 6,1,
449 /COM, PTn areas
450 MAT, 2,
451 AMESH, 3, 4,1,
452 /COM, TCw areas
453 MAT, 1,
454 AMESH, 1, 2,1,
455 /COM, TSw3 areas
456 MAT, 5,
457 AMESH,11,12,1,
458 /COM, CHn1v areas
459 MAT, 6,
460 AMESH,13,14,1,
461 /COM, CHn1z areas
462 MAT, 7,
463 AMESH,15,16,1,
464 /COM, CHn2 areas
465 MAT, 8,
466 AMESH,17,18,1,
467 /COM, *****
468 /COM, Delete concatanated lines
469 /COM, (L's freed up 107,108,109,110,111,112)
470 LDELE,107,
471 LDELE,108,
472 LDELE,109,
473 LDELE,110,
474 LDELE,111,
475 LDELE,112,
476 /COM, *****
477 /COM, Extrude 2-D waste package into 3-D
478 /COM, (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
479 /COM, ( 20,21,22,23,24,25,26,27,28,29,30,31,32)
480 TYPE,1,
481 VDRAG,19,20,21,22,,,54,
482 VDRAG,23,24,25,26,,,54,
483 VDRAG,19,20,21,22,,,56,
484 VDRAG,23,24,25,26,,,56,
485 /COM, (plot area numbers before next drag commands)
486 VDRAG,44,47,50,52,,,55,
487 VDRAG,57,61,65,68,,,55,
488 VDRAG,72,75,78,80,,,57,
489 VDRAG,85,89,93,96,,,57,
490 NUMMRG,KP,
491 /COM, Mesh waste package volumes
492 ESHAPE,2,
493 MAT,10,
494 TYPE,2,
495 VMESH, 1, 4,1,
496 MAT,13,
497 VMESH, 5, 8,1,
498 VMESH,17,24,1,
499 MAT,10,
500 VMESH, 9,12,1,
501 MAT,13,
502 VMESH,13,16,1,
503 VMESH,25,32,1,
504 /COM, *****
505 /COM, Extrude 2-D rock into front half 3-D
506 /COM, Invert
507 /COM, (V's 33,34)
508 ESHAPE,2,

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509 TYPE,2,
510 MAT,11,
511 VDRAG,27,28,,,,,58,
512 /COM,      Rock around drift
513 /COM,      (V's 35,36,37,38,39,40,41,42)
514 MAT, 4,
515 TYPE,2,
516 VDRAG,29,30,,,,,58,
517 TYPE,1,
518 VDRAG,31, ,,,,58,
519 TYPE,2,
520 VDRAG,32, ,,,,58,
521 VMESH,37,
522 VDRAG,33,34,,,,,58,
523 TYPE,1,
524 VDRAG,35, ,,,,58,
525 TYPE,2,
526 VDRAG,36, ,,,,58,
527 VMESH,41,
528 /COM,      Mid-drift rock
529 /COM,      (V's 43,44,45,46)
530 VDRAG,37,38,,,,,58,
531 TYPE,1,
532 VDRAG,39, ,,,,58,
533 TYPE,2,
534 VDRAG,40, ,,,,58,
535 /COM,      Concatenate to mesh volume 45
536 /COM,      (L's 311,312 used and freed up)
537 /COM,      (A's 207 used and freed up)
538 ACCAT,197,196,
539 LCCAT,9,35,
540 LCCAT,296,294,
541 VMESH,45,
542 LDELE,311
543 LDELE,312
544 ADELE,207
545 /COM,      Extrude rest of TSw2
546 /COM,      (V's 47,48,49,50)
547 VDRAG,7,8,9,10,,,58,
548 /COM,      Extrude TSw1
549 /COM,      (V's 51,52)
550 MAT, 3,
551 VDRAG, 5, 6,,,,,58,
552 /COM,      Extrude PTn
553 /COM,      (V's 53,54)
554 MAT, 2,
555 VDRAG, 3, 4,,,,,58,
556 /COM,      Extrude TCW
557 /COM,      (V's 55,56)
558 MAT, 1,
559 VDRAG, 1, 2,,,,,58,
560 /COM,      Extrude TSw3
561 /COM,      (V's 57,58)
562 MAT, 5,
563 VDRAG,11,12,,,,,58,
564 /COM,      Extrude CHn1v
565 /COM,      (V's 59,60)
566 MAT, 6,
567 VDRAG,13,14,,,,,58,
568 /COM,      Extrude CHn1z
569 /COM,      (V's 61,62)
570 MAT, 7,
571 VDRAG,15,16,,,,,58,
572 /COM,      Extrude CHn2
573 /COM,      (V's 63,64)
574 MAT, 8,
575 VDRAG,17,18,,,,,58,
576 NUMMRG,NODE,
577 NUMMRG,KP,
578 /COM,      *****

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579 /COM,          Extrude 2-D rock into back half 3-D
580 /COM,          Invert
581 /COM,          (V's 65,66)
582 ESHAPE,2,
583 TYPE,2,
584 MAT,11,
585 VDRAG,27,28,,,,,59,
586 /COM,          Rock around drift
587 /COM,          (V's 67,68,69,70,71,72,73,74)
588 MAT, 4,
589 TYPE,2,
590 VDRAG,29,30,,,,,59,
591 TYPE,1,
592 VDRAG,31, ,,,,59,
593 TYPE,2,
594 VDRAG,32, ,,,,59,
595 VMESH,69,
596 VDRAG,33,34,,,,,59,
597 TYPE,1,
598 VDRAG,35, ,,,,59,
599 TYPE,2,
600 VDRAG,36, ,,,,59,
601 VMESH,73,
602 /COM,          Mid-drift rock
603 /COM,          (V's 75,76,77,78)
604 VDRAG,37,38,,,,,59,
605 TYPE,1,
606 VDRAG,39, ,,,,59,
607 TYPE,2,
608 VDRAG,40, ,,,,59,
609 /COM,          Concatenate to mesh volume 77
610 /COM,          (L's 443,444 used and freed up)
611 /COM,          (A's 321 used and freed up)
612 ACCAT,311,310,
613 LCCAT, 9, 35,
614 LCCAT,428,426,
615 VMESH,77,
616 LDELE,443,
617 LDELE,444,
618 ADELE,321,
619 /COM,          Extrude rest of TSw2
620 /COM,          (V's 79,80,81,82)
621 VDRAG,7,8,9,10,,,,59,
622 /COM,          Extrude TSw1
623 /COM,          (V's 83,84)
624 MAT, 3,
625 VDRAG, 5, 6,,,,,59,
626 /COM,          Extrude PTn
627 /COM,          (V's 85,86)
628 MAT, 2,
629 VDRAG, 3, 4,,,,,59,
630 /COM,          Extrude TCw
631 /COM,          (V's 87,88)
632 MAT, 1,
633 VDRAG, 1, 2,,,,,59,
634 /COM,          Extrude TSw3
635 /COM,          (V's 89,90)
636 MAT, 5,
637 VDRAG,11,12,,,,,59,
638 /COM,          Extrude CHn1v
639 /COM,          (V's 91,92)
640 MAT, 6,
641 VDRAG,13,14,,,,,59,
642 /COM,          Extrude CHn1z
643 /COM,          (V's 93,94)
644 MAT, 7,
645 VDRAG,15,16,,,,,59,
646 /COM,          Extrude CHn2
647 /COM,          (V's 95,96)
648 MAT, 8,

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649 VDRAG,17,18,,,,,59,
650 NUMMRG,NODE,
651 NUMMRG,KP,
652 /COM, *****
653 /COM,          Clear 2-D mesh
654 ASEL,S,TYPE,,1,
655 ACLEAR,ALL,
656 ASEL,ALL,
657 /COM, *****
658 /COM,          Define edge elements for radiation
659 /COM,          Waste package sides
660 MAT,13,
661 TYPE,16,
662 ASEL,S,AREA,, 54,
663 ASEL,A,AREA,, 60,
664 ASEL,A,AREA,, 63,
665 ASEL,A,AREA,, 66,
666 ASEL,A,AREA,,110,
667 ASEL,A,AREA,,116,
668 ASEL,A,AREA,,119,
669 ASEL,A,AREA,,122,
670 ASEL,A,AREA,, 82,
671 ASEL,A,AREA,, 88,
672 ASEL,A,AREA,, 91,
673 ASEL,A,AREA,, 94,
674 ASEL,A,AREA,,138,
675 ASEL,A,AREA,,144,
676 ASEL,A,AREA,,147,
677 ASEL,A,AREA,,150,
678 NSLA,S,1,
679 ESURF,
680 /COM,          Waste package end
681 ASEL,S,AREA,,100,
682 ASEL,A,AREA,,103,
683 ASEL,A,AREA,,106,
684 ASEL,A,AREA,,108,
685 ASEL,A,AREA,,113,
686 ASEL,A,AREA,,117,
687 ASEL,A,AREA,,121,
688 ASEL,A,AREA,,124,
689 ASEL,A,AREA,,128,
690 ASEL,A,AREA,,131,
691 ASEL,A,AREA,,134,
692 ASEL,A,AREA,,136,
693 ASEL,A,AREA,,141,
694 ASEL,A,AREA,,145,
695 ASEL,A,AREA,,149,
696 ASEL,A,AREA,,152,
697 NSLA,S,1,
698 ESURF,
699 /COM,          Drift Floor
700 MAT,11,
701 ASEL,S,AREA,, 64,
702 ASEL,A,AREA,, 86,
703 ASEL,A,AREA,,160,
704 ASEL,A,AREA,,168,
705 NSLA,S,1,
706 ESURF,
707 /COM,          Drift Wall
708 MAT,4,
709 ASEL,S,AREA,,120,
710 ASEL,A,AREA,,151,
711 ASEL,A,AREA,,157,
712 ASEL,A,AREA,,162,
713 ASEL,A,AREA,,181,
714 ASEL,A,AREA,,199,
715 ASEL,A,AREA,,212,
716 ASEL,A,AREA,,235,
717 NSLA,S,1,
718 ESURF,

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719 ASEL,ALL,
720 NSEL,ALL,
721 NUMMRG,NODE,
722 NUMMRG,KP,
723 FINISH
724 /COM, *****
725 /COM,          Generate super-element
726 /AUX12,
727 ESEL,S,TYPE,,16,
728 NSLE,S,
729 STEF,5.67e-8,
730 GEOM,0,
731 VTYPE,0,100,
732 WRITE,
733 ESEL,ALL,
734 NSEL,ALL,
735 FINISH
736 /PREP7,
737 TYPE,18,
738 SE,
739 /COM,          Delete radiation edge elements
740 ESEL,S,TYPE,,16,
741 EDELE,ALL,
742 ESEL,ALL,
743 FINISH
744 /COM, *****
745 /COM,          Set solution parameters and apply B.C.'s
746 /COM,          Repository surface = 18.70 C
747 /COM,          1300 m depth      = 53.05 C
748 /COM,          Solve steady-state for initial drift wall conditions
749 /COM,          Hot waste package radiates heat to the
750 /COM,          steady-state drift temperature of 24.643 C
751 /SOLU
752 ANTYPE,TRAN,NEW,
753 NROPT,AUTO,
754 TRNOPT,FULL,
755 TOFFST,273.15,
756 /COM,          Top and bottom rock boundary conditions
757 ASEL,S,LOC,Y,GSURF,
758 NSLA,S,1,
759 D,ALL,TEMP,18.7,
760 ASEL,S,LOC,Y,(GSURF-1300.),
761 NSLA,S,1,
762 D,ALL,TEMP,53.05,
763 ASEL,ALL,
764 NSEL,ALL,
765 /COM,          Solve for ambient drift wall temperature
766 TIMINT,OFF,
767 TIME,1.0e-6,
768 AUTOTS,ON,
769 KBC,0,
770 SOLVE
771 FINISH
772 /COM,          Store drift side temperature
773 /POST1
774 SET,FIRST,
775 DFAMBT=TEMP(NODE(DFRAD,DFCENT,0.0))
776 FINISH
777 /COM,          Apply initial conditions wall temperature
778 /COM,          as a temporary boundry condition to WP
779 /SOLU
780 ANTYPE,,REST,
781 ASEL,S,AREA,, 64,
782 ASEL,A,AREA,, 86,
783 ASEL,A,AREA,,120,
784 ASEL,A,AREA,,151,
785 ASEL,A,AREA,,157,
786 ASEL,A,AREA,,162,
787 ASEL,A,AREA,,160,
788 ASEL,A,AREA,,168,

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789 ASEL,A,AREA,,181,
790 ASEL,A,AREA,,199,
791 ASEL,A,AREA,,212,
792 ASEL,A,AREA,,235,
793 NSLA,S,1,
794 D,ALL,TEMP,DFAMBT,
795 ASEL,ALL,
796 NSEL,ALL,
797 /COM,          Apply initial heat load
798 VSEL,S,MAT,,10,
799 ESLV,S,
800 BFE,ALL,HGEN,,(WPHOT(TM_START)),
801 VSEL,ALL,
802 ESEL,ALL,
803 /COM,          Solve for WP intial conditions
804 TIMINT,OFF,
805 TIME,2.0e-6,
806 AUTOTS,ON,
807 KBC,0,
808 SOLVE
809 /COM,          Release drift wall temperatures
810 ASEL,S,AREA,, 64,
811 ASEL,A,AREA,, 86,
812 ASEL,A,AREA,,120,
813 ASEL,A,AREA,,151,
814 ASEL,A,AREA,,157,
815 ASEL,A,AREA,,162,
816 ASEL,A,AREA,,160,
817 ASEL,A,AREA,,168,
818 ASEL,A,AREA,,181,
819 ASEL,A,AREA,,199,
820 ASEL,A,AREA,,212,
821 ASEL,A,AREA,,235,
822 NSLA,S,1,
823 DDELE,ALL,TEMP,
824 ASEL,ALL,
825 NSEL,ALL,
826 /COM,          *****
827 /COM,          Set time integration parameters
828 TIMINT,ON,
829 AUTOTS,ON,
830 /COM,          Time substep ranges from 10 sec to loadstep
831 NSUBST,10,80,4,ON,
832 /COM,          Begin Transient
833 /COM,          Apply loads and solve for 0 to .9 years
834 *DO,TM,TM_START,TME0,TM10,
835     TIME,TM,
836     VSEL,S,MAT,,10,
837     ESLV,S,
838     BFE,ALL,HGEN,,(WPHOT(TM)),
839     VSEL,ALL,
840     ESEL,ALL,
841     SOLVE
842 *ENDDO
843 /COM,          Apply loads and solve for 1 to 9 years
844 *DO,TM,TME1,TME9,TM11,
845     TIME,TM,
846     VSEL,S,MAT,,10,
847     ESLV,S,
848     BFE,ALL,HGEN,,(WPHOT(TM)),
849     VSEL,ALL,
850     ESEL,ALL,
851     SOLVE
852 *ENDDO
853 /COM,          Apply loads and solve for 10 to 90 years
854 *DO,TM,TME10,TME90,TM110,
855     TIME,TM,
856     VSEL,S,MAT,,10,
857     ESLV,S,
858     BFE,ALL,HGEN,,(WPHOT(TM)),

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859      VSEL,ALL,
860      ESEL,ALL,
861      SOLVE
862 *ENDDO
863 /COM,          Apply loads and solve for 100 to 1000 years
864 *DO,TM,TME100,TME1000,TM1100,
865      TIME,TM,
866      VSEL,S,MAT,,10,
867      ESLV,S,
868      BFE,ALL,HGEN,,(WPHOT(TM)),
869      VSEL,ALL,
870      ESEL,ALL,
871      SOLVE
872 *ENDDO
873 FINISH
874 SAVE,
875 /COM, *****
876 /COM,          Store temperatures at waste package mid-length surface
877 /COM,          and drift wall end in array tables for use as boundary
878 /COM,          conditions in later analyses
879 /POST1,
880 JINC=1
881 /COM,          0 to .9 years
882 *DO,TM,TM_START,TME0,TM10,
883      SET,NEAR,,,TM,
884      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
885      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
886      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
887      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0))
888      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0))
889      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0))
890      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0))
891      WPTOP(JINC,0)=TM
892      WPSID(JINC,0)=TM
893      WPBOT(JINC,0)=TM
894      DFTOP(JINC,0)=TM
895      DFSID(JINC,0)=TM
896      DFEDG(JINC,0)=TM
897      DFBOT(JINC,0)=TM
898      JINC=JINC+1
899 *ENDDO
900 /COM,          1 to 9 years
901 *DO,TM,TME1,TME9,TM11,
902      SET,NEAR,,,TM,
903      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
904      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
905      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
906      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0))
907      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0))
908      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0))
909      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0))
910      WPTOP(JINC,0)=TM
911      WPSID(JINC,0)=TM
912      WPBOT(JINC,0)=TM
913      DFTOP(JINC,0)=TM
914      DFSID(JINC,0)=TM
915      DFEDG(JINC,0)=TM
916      DFBOT(JINC,0)=TM
917      JINC=JINC+1
918 *ENDDO
919 /COM,          10 to 90 years
920 *DO,TM,TME10,TME90,TM110,
921      SET,NEAR,,,TM,
922      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
923      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
924      WPBOT(JINC)=TEMP(NODE( 0.0,          (0.0-WPRAD),          0.0))
925      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPC/2.0))
926      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPC/2.0))
927      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPC/2.0))
928      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPC/2.0))

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929      WPTOP(JINC,0)=TM
930      WPSID(JINC,0)=TM
931      WPBOT(JINC,0)=TM
932      DFTOP(JINC,0)=TM
933      DFSID(JINC,0)=TM
934      DFEDG(JINC,0)=TM
935      DFBOT(JINC,0)=TM
936      JINC=JINC+1
937 *ENDDO
938 /COM,          100 to 1000 years
939 *DO,TM,TME100,TME1000,TM1100,
940      SET,NEAR,,,TM,
941      WPTOP(JINC)=TEMP(NODE( 0.0,          WPRAD,          0.0))
942      WPSID(JINC)=TEMP(NODE(WPRAD,          0.0,          0.0))
943      WPBOT(JINC)=TEMP(NODE( 0.0, (0.0-WPRAD),          0.0))
944      DFTOP(JINC)=TEMP(NODE( 0.0,(DFCENT+DFRAD),(WSPSP/2.0))
945      DFSID(JINC)=TEMP(NODE(DFRAD,          DFCENT,(WSPSP/2.0))
946      DFEDG(JINC)=TEMP(NODE( XXX,          YYY,(WSPSP/2.0))
947      DFBOT(JINC)=TEMP(NODE( 0.0,(DFCENT-DFRAD),(WSPSP/2.0))
948      WPTOP(JINC,0)=TM
949      WPSID(JINC,0)=TM
950      WPBOT(JINC,0)=TM
951      DFTOP(JINC,0)=TM
952      DFSID(JINC,0)=TM
953      DFEDG(JINC,0)=TM
954      DFBOT(JINC,0)=TM
955      JINC=JINC+1
956 *ENDDO
957 FINISH
958 PARSAB,ALL,,parm,
959 /COM, *****
960 /COM,          Create element mesh plots to illustrate model
961 /POST1,
962 /COM,          View mesh for entire model
963 /RESET
964 /DEVICE,VECT,OFF,
965 /NUM, 1,
966 /TRIAD,OFF,
967 /PNUM,MAT, 1,
968 /TYPE,,HIDP,
969 /SHADE,,GOUR,
970 /GLINE,,0,
971 /TITLE,
972 /SHOW,meshfar,grph,0,8,
973 EPLOT
974 /COM,          View model meshing for drift end view
975 /RESET
976 /DEVICE,VECT,OFF,
977 /NUM, 1,
978 /TRIAD,OFF,
979 /PNUM,MAT, 1,
980 /WIND,1, -1.0000, 1.0000, -1.0000, 1.0000,
981 /VIEW,1, .94709E-16, .00000E+00, -1.0000,
982 /FOC, 1, -.44941E-08, .25326, .88818E-15,
983 /DIST,1, 100.0,
984 /VCON,1, 25.000,
985 /TYPE,1,HIDP,
986 /SHADE,,GOUR,
987 /GLINE,,0,
988 /TITLE,
989 VSEL,S,LOC,Z,0,100
990 ESLV,S
991 /SHOW,meshdrift,grph,0,8,
992 EPLOT
993 /COM,          View model meshing for side cut-away
994 /ANGLE, 1,+90,YS,1
995 /DIST,1, 10.0,
996 VSEL,S,LOC,X,-100,0
997 ESLV,S
998 /SHOW,meshside,grph,0,8,

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999 EPL0T
1000 /COM, *****
1001 /COM,          Create color temp. contour plots for WP end view
1002 /COM,
1003 /COM,          Set view settings
1004 /RESET
1005 /DEVICE,VECT,OFF
1006 /NUM, 1,
1007 /TRIAD,OFF,
1008 /PNUM,MAT , 1,
1009 /WIND,1, -1.0000 , 1.00000 , -1.0000 , 1.0000,
1010 /VIEW,1, -.36934 , .15899 , -.91559,
1011 /FOC, 1, 2.7776 , -.97308 , 7.5978,
1012 /DIST,1, 18.273,
1013 /ANG, 1, 5.1088 ,ZS,
1014 /VCON,1, 25.000,
1015 /LIG, 1,1, 1.0000, -.36934, .15899, -.91559, .00000E+00,
1016 /TYPE,,HIDP,
1017 /GLIN,1,-1,
1018 /CVAL,,40,50,60,70,80,90,100,300,
1019 /COM,          Select end view of WP
1020 VSEL,S,LOC,Z,0,100,
1021 ESLV,S,
1022 /COM,          Select load steps and plot temperatures
1023 SET,3,
1024 /TITLE,
1025 /SHOW,near0 ,100.grph,0,8,
1026 PLNSOL,TEMP,
1027 SET,8,
1028 /TITLE,
1029 /SHOW,near05 ,100.grph,0,8,
1030 PLNSOL,TEMP,
1031 SET,13,
1032 /TITLE,
1033 /SHOW,near1 ,100.grph,0,8,
1034 PLNSOL,TEMP,
1035 SET,17,
1036 /TITLE,
1037 /SHOW,near5 ,100.grph,0,8,
1038 PLNSOL,TEMP,
1039 SET,22,
1040 /TITLE,
1041 /SHOW,near10 ,100.grph,0,8,
1042 PLNSOL,TEMP,
1043 SET,26,
1044 /TITLE,
1045 /SHOW,near50 ,100.grph,0,8,
1046 PLNSOL,TEMP,
1047 SET,31,
1048 /TITLE,
1049 /SHOW,near100 ,100.grph,0,8,
1050 PLNSOL,TEMP,
1051 SET,35,
1052 /TITLE,
1053 /SHOW,near500 ,100.grph,0,8,
1054 PLNSOL,TEMP,
1055 SET,40,
1056 /TITLE,
1057 /SHOW,near1k ,100.grph,0,8,
1058 PLNSOL,TEMP,
1059 /COM,          View mesh for closeup end of model
1060 /GLINE,,0,
1061 /TYPE,,HIDP,
1062 /SHADE,,GOUR,
1063 /SHOW,meshnear,grph,0,8,
1064 EPL0T
1065 /COM, *****
1066 /COM,          Create color temp. contour plots for WP corner view
1067 /COM,
1068 /COM,          Set view settings

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1069 /RESET
1070 /DEVICE,VECT,OFF,
1071 /NUM, 1,
1072 /TRIAD,OFF,
1073 /PNUM,MAT, 1,
1074 /WIND,1, -1.0000, 1.00000, -1.0000, 1.0000,
1075 /VIEW,1, .64865, .48519E-01, -.75954,
1076 /FOC, 1, -.21216E-01, .39180, 2.3739,
1077 /DIST,1, 11.433,
1078 /ANG, 1, -.52088,ZS,
1079 /VCON,1, 25.000,
1080 /LIG, 1,1, 1.0000, .64865, .48519E-01, -.75954 .00000E+00,
1081 /TYPE,1,HIDP,
1082 /GLIN,1,-1,
1083 /CVAL,,40,50,60,70,80,90,100,300,
1084 /COM, Select corner view of WP
1085 VSEL,S,LOC,X,-100,0,
1086 VSEL,R,LOC,Z,0,100,
1087 ESLV,S,
1088 /COM, Select load steps and plot temperatures
1089 SET,3,
1090 /TITLE,
1091 /SHOW,corn0 ,100.grph,0,8,
1092 PLNSOL,TEMP,
1093 SET,8,
1094 /TITLE,
1095 /SHOW,corn05 ,100.grph,0,8,
1096 PLNSOL,TEMP,
1097 SET,13,
1098 /TITLE,
1099 /SHOW,corn1 ,100.grph,0,8,
1100 PLNSOL,TEMP,
1101 SET,17,
1102 /TITLE,
1103 /SHOW,corn5 ,100.grph,0,8,
1104 PLNSOL,TEMP,
1105 SET,22,
1106 /TITLE,
1107 /SHOW,corn10 ,100.grph,0,8,
1108 PLNSOL,TEMP,
1109 SET,26,
1110 /TITLE,
1111 /SHOW,corn50 ,100.grph,0,8,
1112 PLNSOL,TEMP,
1113 SET,31,
1114 /TITLE,
1115 /SHOW,corn100 ,100.grph,0,8,
1116 PLNSOL,TEMP,
1117 SET,35,
1118 /TITLE,
1119 /SHOW,corn500 ,100.grph,0,8,
1120 PLNSOL,TEMP,
1121 SET,40,
1122 /TITLE,
1123 /SHOW,corn1k ,100.grph,0,8,
1124 PLNSOL,TEMP,
1125 /COM, View mesh for corner of model
1126 /GLINE,,0,
1127 /TYPE,,HIDP,
1128 /SHADE,,GOUR,
1129 /SHOW,meshcorn,grph,0,8,
1130 EPLOT
1131 FINISH
1132 /COM, *****
1133 /COM, Print time/temperature output at specific locations
1134 /POST26,
1135 /COM,
1136 /COM, *****
1137 /COM, * Waste Package Surface Temperatures *
1138 /COM, *****

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1139 /COM,          wmidside = midlength side surface
1140 /COM,          wwpside = end of WP side surface
1141 /COM,          wmidtop = midlength top surface
1142 /COM,          wwpetop = end of WP top surface
1143 /COM,          wmidbot = midlength bottom surface
1144 /COM,          wwpebot = end of WP bottom surface
1145 NSOL,2,(NODE(   WPRAD,      0.0,      0.0)),TEMP,,wmidside,
1146 NSOL,3,(NODE(   WPRAD,      0.0,      (WPLEN/2.0))),TEMP,,wwpside,
1147 NSOL,4,(NODE(      0.0,      WPRAD,      0.0)),TEMP,,wmidtop,
1148 NSOL,5,(NODE(      0.0,      WPRAD,      (WPLEN/2.0))),TEMP,,wwpetop,
1149 NSOL,6,(NODE(      0.0, (0.0-WPRAD),      0.0)),TEMP,,wmidbot,
1150 NSOL,7,(NODE(      0.0, (0.0-WPRAD),      (WPLEN/2.0))),TEMP,,wwpebot,
1151 PRVAR,2,3,4,5,6,7,
1152 /COM,
1153 /COM,          *****
1154 /COM,          *      Waste Package Inside Shell Temperatures      *
1155 /COM,          *****
1156 /COM,          smidside = midlength side inside shell
1157 /COM,          swpside = end of WP side inside shell
1158 /COM,          smidtop = midlength top inside shell
1159 /COM,          swpetop = end of WP top inside shell
1160 /COM,          smidbot = midlength bottom inside shell
1161 /COM,          swpebot = end of WP bottom inside shell
1162 NSOL,2,(NODE((WPRAD-WPWLL), 0.0,      0.0)),TEMP,,smidside,
1163 NSOL,3,(NODE((WPRAD-WPWLL), 0.0, (WPLEN/2.0-WPWLL))),TEMP,,swpside,
1164 NSOL,4,(NODE(0.0, (WPRAD-WPWLL), 0.0)),TEMP,,smidtop,
1165 NSOL,5,(NODE(0.0, (WPRAD-WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpetop,
1166 NSOL,6,(NODE(0.0, (0.0-WPRAD+WPWLL), 0.0)),TEMP,,smidbot,
1167 NSOL,7,(NODE(0.0, (0.0-WPRAD+WPWLL), (WPLEN/2.0-WPWLL))),TEMP,,swpebot,
1168 PRVAR,2,3,4,5,6,7,
1169 /COM,
1170 /COM,          *****
1171 /COM,          *      Waste Package Center and Bottom of Invert      *
1172 /COM,          *****
1173 /COM,          wmidcent = midlength center of WP
1174 /COM,          shellcnt = end of WP center inside shell
1175 /COM,          wwpecent = end of WP center surface
1176 /COM,          imidbot = midlength bottom of invert
1177 /COM,          iwpebot = end of WP bottom of invert
1178 /COM,          idfebot = end of drift bottom of invert
1179 NSOL,2,(NODE( 0.0,      0.0,      0.0)),TEMP,,wmidcent,
1180 NSOL,3,(NODE( 0.0,      0.0, (WPLEN/2.0-WPWLL))),TEMP,,shellcnt,
1181 NSOL,4,(NODE( 0.0,      0.0, (WPLEN/2.0))),TEMP,,wwpecent,
1182 NSOL,5,(NODE( 0.0, (DFCENT-DFRAD), 0.0)),TEMP,,imidbot,
1183 NSOL,6,(NODE( 0.0, (DFCENT-DFRAD), (WPLEN/2.0))),TEMP,,iwpebot,
1184 NSOL,7,(NODE( 0.0, (DFCENT-DFRAD), (WPSPC/2.0))),TEMP,,idfebot,
1185 PRVAR,2,3,4,5,6,7,
1186 /COM,
1187 /COM,          *****
1188 /COM,          *      Surface Temperature of Invert      *
1189 /COM,          *****
1190 /COM,          imidcent = midlength center of invert surface
1191 /COM,          iwpecent = end of WP center of invert surface
1192 /COM,          idfecent = end of drift center of invert surface
1193 /COM,          imidedge = midlength corner of invert surface
1194 /COM,          iwpeedge = end of WP corner of invert surface
1195 /COM,          idfeedge = end of drift corner of invert surface
1196 NSOL,2,(NODE( 0.0,      YYY,      0.0)),TEMP,,imidcent,
1197 NSOL,3,(NODE( 0.0,      YYY,      (WPLEN/2.0))),TEMP,,iwpecent,
1198 NSOL,4,(NODE( 0.0,      YYY,      (WPSPC/2.0))),TEMP,,idfecent,
1199 NSOL,5,(NODE( XXX,      YYY,      0.0)),TEMP,,imidedge,
1200 NSOL,6,(NODE( XXX,      YYY,      (WPLEN/2.0))),TEMP,,iwpeedge,
1201 NSOL,7,(NODE( XXX,      YYY,      (WPSPC/2.0))),TEMP,,idfeedge,
1202 PRVAR,2,3,4,5,6,7,
1203 /COM,
1204 /COM,          *****
1205 /COM,          *      Drift Wall Surface Temperatures      *
1206 /COM,          *****
1207 /COM,          dmidside = midlength drift wall side surface
1208 /COM,          dwpside = end of WP drift wall side surface

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1209 /COM,          ddfeside = end of drift side surface
1210 /COM,          dmidtop = midlength drift wall top surface
1211 /COM,          dwpetop = end of WP drift wall top surface
1212 /COM,          ddfetop = end of drift top surface
1213 NSOL,2,(NODE( DFRAD,          DFCENT,          0.0)),TEMP,,dmidside,
1214 NSOL,3,(NODE( DFRAD,          DFCENT,          (WPLEN/2.0))),TEMP,,dwpeside,
1215 NSOL,4,(NODE( DFRAD,          DFCENT,          (WSPC/2.0))),TEMP,,ddfeside,
1216 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD),          0.0)),TEMP,, dmidtop,
1217 NSOL,6,(NODE( 0.0,(DFCENT+DFRAD),          (WPLEN/2.0))),TEMP,, dwpetop,
1218 NSOL,7,(NODE( 0.0,(DFCENT+DFRAD),          (WSPC/2.0))),TEMP,, ddfetop,
1219 PRVAR,2,3,4,5,6,7,
1220 /COM,
1221 /COM,          *****
1222 /COM,          *      1 meter Rock Temperatures      *
1223 /COM,          *****
1224 /COM,          1midside = midlength 1 meter from drift side
1225 /COM,          1dfeside = end of drift 1 meter from drift side
1226 /COM,          1midtop = midlength 1 meter above drift top
1227 /COM,          1dfetop = end of drift 1 meter above drift top
1228 /COM,          1midbot = midlength 1 meter below drift cut
1229 /COM,          1dfebot = end of drift 1 meter below drift cut
1230 NSOL,2,(NODE((DFRAD+1),          DFCENT,          0.0)),TEMP,,1midside,
1231 NSOL,3,(NODE((DFRAD+1),          DFCENT,          (WSPC/2.0))),TEMP,,1dfeside,
1232 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+1),          0.0)),TEMP,, 1midtop,
1233 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+1),          (WSPC/2.0))),TEMP,, 1dfetop,
1234 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-1),          0.0)),TEMP,, 1midbot,
1235 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-1),          (WSPC/2.0))),TEMP,, 1dfebot,
1236 PRVAR,2,3,4,5,6,7,
1237 /COM,
1238 /COM,          *****
1239 /COM,          *      3 meter Rock Temperatures      *
1240 /COM,          *****
1241 /COM,          3midside = midlength 3 meter from drift side
1242 /COM,          3dfeside = end of drift 3 meter from drift side
1243 /COM,          3midtop = midlength 3 meter above drift top
1244 /COM,          3dfetop = end of drift 3 meter above drift top
1245 /COM,          3midbot = midlength 3 meter below drift cut
1246 /COM,          3dfebot = end of drift 3 meter below drift cut
1247 NSOL,2,(NODE((DFRAD+3),          DFCENT,          0.0)),TEMP,,3midside,
1248 NSOL,3,(NODE((DFRAD+3),          DFCENT,          (WSPC/2.0))),TEMP,,3dfeside,
1249 NSOL,4,(NODE( 0.0,(DFCENT+DFRAD+3),          0.0)),TEMP,, 3midtop,
1250 NSOL,5,(NODE( 0.0,(DFCENT+DFRAD+3),          (WSPC/2.0))),TEMP,, 3dfetop,
1251 NSOL,6,(NODE( 0.0,(DFCENT-DFRAD-3),          0.0)),TEMP,, 3midbot,
1252 NSOL,7,(NODE( 0.0,(DFCENT-DFRAD-3),          (WSPC/2.0))),TEMP,, 3dfebot,
1253 PRVAR,2,3,4,5,6,7,
1254 /COM,
1255 /COM,          *****
1256 /COM,          *      Upper Rock Layer Interface Temperatures      *
1257 /COM,          *****
1258 /COM,          surfTCw = center ground surface
1259 /COM,          TCwPTn = center TCw and PTn interface
1260 /COM,          PTnTSw1 = center PTn and TSw1 interface
1261 /COM,          TSw1TSw2 = center TSw1 and TSw2 interface
1262 /COM,          upmodel = center TSw2 1/2 drift spacing above WP
1263 /COM,          middrift = drift to drift midplane at rep. height
1264 NSOL,2,(NODE( 0.0,          GSURF,          0.0)),TEMP,, surfTCw,
1265 NSOL,3,(NODE( 0.0, (GSURF-36.00),          0.0)),TEMP,, TCwPTn,
1266 NSOL,4,(NODE( 0.0, (GSURF-74.10),          0.0)),TEMP,, PTnTSw1,
1267 NSOL,5,(NODE( 0.0, (GSURF-204.2),          0.0)),TEMP,, TSw1TSw2,
1268 NSOL,6,(NODE( 0.0,(DFCENT+MODEL),          0.0)),TEMP,, upmodel,
1269 NSOL,7,(NODE( MODEL,          DFCENT,          0.0)),TEMP,, middrift,
1270 PRVAR,2,3,4,5,6,7,
1271 /COM,
1272 /COM,          *****
1273 /COM,          *      Lower Rock Layer Interface Temperatures      *
1274 /COM,          *****
1275 /COM,          dwnmodel = center TSw2 1/2 drift spacing below WP
1276 /COM,          TSw2TSw3 = center TSw2 and TSw3 interface
1277 /COM,          TSw3CHnv = center TSw3 and CHn1v interface
1278 /COM,          CHnvCHnz = center CHn1v and CHn1z interface

```

```

1279 /COM,          CHnzCHn2 = center CHn1z and CHn2 interface
1280 /COM,          CHn2bot = center actual lower contact of CHn2
1281 NSOL,2,(NODE( 0.0,(DFCENT-MODEL),          0.0)),TEMP,,dwnmodel,
1282 NSOL,5,(NODE( 0.0,(GSURF-393.5),          0.0)),TEMP,,TSw2TSw3,
1283 NSOL,6,(NODE( 0.0,(GSURF-409.3),          0.0)),TEMP,,TSw3CHnv,
1284 NSOL,7,(NODE( 0.0,(GSURF-414.5),          0.0)),TEMP,,CHnvCHnz,
1285 NSOL,7,(NODE( 0.0,(GSURF-518.5),          0.0)),TEMP,,CHnzCHn2,
1286 NSOL,7,(NODE( 0.0,(GSURF-535.2),          0.0)),TEMP,,CHn2bot,
1287 PRVAR,2,3,4,5,6,7,
1288 FINISH
1289 /EXIT,
1290 /COM,          *****
1291 /COM,          End of batch input file
1292 /COM,          *****
1293 /EOF

```

RUN SETUP PROCEDURE FROM FILE= /ansys50a/docu/start.ans

```

/INPUT FILE= /ansys50a/docu/start.ans LINE=      0
*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP     /input,,inp,
ABBREVIATION= X3D     /show,3d,
ABBREVIATION= X11     /show,x11,
ABBREVIATION= VEC     /show,,1,

```

ABBREVIATION= RAS /show,,,0,
ABBREVIATION= ON /menu,on,
ABBREVIATION= OFF /menu,off,
ABBREVIATION= NVP /config,nvpag,512,
ABBREVIATION= QUIT /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

END start.ans

To start ANSYS menu:

type: x3d for console
x11 for X-term

type: on

ANSYS REVISION 5.0A 1/16/1995
3-D Model of Waste Package Drift Emplacement R.Bahney III

*
* File name: c12h5a.inp *
*
* 12 PWR WP/MPC (10 cm overpack) *
* Average SNF: 22 years old, 42.2 GWd/MTU burnup *
* 5.0 m Diameter Drift with Concrete Invert *
* 25 MTU/acre (6.18 kgU/m²) AML (Low Thermal Loading) *
* Drift spacing = 90.0 m (45.0 m model half width) *
* WP c/c spacing = 9.237 m *
*
* Material Properties file: Proprep.dat *
* SNF Heat Loads file: snf2242.dat *
*

Increase the number of database pages from 16 (256) to 32 Mb

NUMBER OF DATA BASE PAGES IN MEMORY(NVPAGE)= 512
Work space must also be increased (-m 64)

TITLE=
12 PWR MPC, 5 m Tunnel

SI UNITS SPECIFIED

LENGTH = METERS(M)
MASS = KILOGRAMS(KG)
TIME = SECONDS(SEC)
TEMPERATURE = CENTIGRADE
CURRENT = AMPS

Define emplacement parameters
WPRAD = radius of waste package (m)
DFRAD = radius of drift (m)
INVRT = height of invert backfill floor (m)
WPLEN = length of waste package (m)
WPWLL = thickness of outer barrier (m)
WPSPC = waste package c/c spacing (m)
WPNUM = number of assemblies per WP
MODEL = model half width (m)
OFFST = WP center below drift center (m)

PARAMETER WPRAD = .7652500
 PARAMETER DFRAD = 2.500000
 PARAMETER INVRT = .7000000
 PARAMETER WPLEN = 5.647000
 PARAMETER WPWLL = .1000000
 PARAMETER WSPC = 9.237000
 PARAMETER WPNUM = 12.00000
 PARAMETER MODEL = 45.00000
 PARAMETER OFFST = .2725500

Define calculated parameters

ASSY = assembly heat production (W) f(yrs)
 WPHOT = WP heat production (W) f(sec)
 WPTOP = temp. at center top of WP (C) f(sec)
 WPSID = temp. at center side of WP (C) f(sec)
 WPBOT = temp. at center bottom of WP (C) f(sec)
 DFTOP = temp. at end top of drift (C) f(sec)
 DFSID = temp. at end side of drift (C) f(sec)
 DFEDG = temp. at end edge of invert (C) f(sec)
 DFBOT = temp. at end center of invert (C) f(sec)
 GSURF = y coordinate of top of model (m)
 DFCENT = y coordinate of drift center (m)
 XXX = x coordinate at edge of invert (m)
 YYY = y coordinate at edge of invert (m)
 TM_START = start time (sec)
 TMI* = time increment for solution (sec)
 TME* = start and stop for time do-loops (sec)
 Note: 1 year = 3.15576e7 seconds
 DFAMBT = ambient drift temperature (C)

SET PARAMETER DIMENSIONS ON ASSY TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPHOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON WPBOT TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFTOP TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFSID TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFEDG TYPE=TABL DIMENSIONS= 47 1 1
 SET PARAMETER DIMENSIONS ON DFBOT TYPE=TABL DIMENSIONS= 47 1 1

PARAMETER GSURF = 308.7726
 PARAMETER DFCENT = .2725500
 PARAMETER XXX = 1.734935

PARAMETER YYY = -1.527450
 PARAMETER WPVOL = 7.573152
 PARAMETER TM_START = 31.55760
 PARAMETER TM10 = 3155760.
 PARAMETER TM11 = .3155760E+08
 PARAMETER TM110 = .3155760E+09
 PARAMETER TM1100 = .3155760E+10
 PARAMETER TM11000 = .3155760E+11
 PARAMETER TME0 = .2840187E+08
 PARAMETER TME1 = .3155763E+08
 PARAMETER TME9 = .2840184E+09
 PARAMETER TME10 = .3155760E+09
 PARAMETER TME90 = .2840184E+10
 PARAMETER TME100 = .3155760E+10
 PARAMETER TME1000 = .3155760E+11

Define different element types

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 00:47:01 JAN 25, 1995 CP= .780
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE 1 IS PLANE55 2-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID70 3-D THERMAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 16 IS SHELL57 THERMAL SHELL
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 17 IS LINK32 2-D CONDUCTING BAR
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 18 IS MATRIX50 SUBSTRUCTURE MATRIX
 KEYOPT(1-12)= 1 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 19 IS LINK31 RADIATION LINK
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

Proprep.dat describes material properties and
thier reference numbers related to ET's above

READ IN MATERIAL PROPERTY LIBRARY FROM FILE= proprep.dat

/INPUT FILE= proprep.dat LINE= 0

** ANSYS 5.0 MPC MATERIAL PROPERTY TABLES **

** Filename: proprep.dat **

** Compiled by R. Bahney III on 6-16-94 **

TYPE	MATERIAL	
1	TCw	Top Rock layer
2	PTn	
3	TSw1	
4	TSw2	Repository Horizon
5	TSw3	
6	CHn1v	
7	CHn1z	
8	CHn2	Extends to Water Table
9	Packed Crushed Tuff	Alternate invert
10	Hom. Canister	Smeared Props for WP Center
11	Concrete	Trackbed for Rail Emplacement
12	Eff. Radiation	Effective Cond. in drift air
13	A516 Mild Steel	Outer barrier of waste package

** Density: DENS (kg/m³) **

** Emissivity: EMIS **

** Conductivity: KXX (W/m/K) **

** Specific Heat: C (J/kg/K) **

Define densities for all materials with constant values.
Density of rock (1,2,3,4,5,6,7,8,9) is 1.0 because
heat capacitances (J/m³/K) are entered for C

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 1 ***
SLOC= 1 .0000000E+00

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 2 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 3 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 4 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 5 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 6 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 7 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 8 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 9 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 10 NUM. POINTS= 1
SLOC= 1 4547.000

PROPERTY TABLE DENS MAT= 11 NUM. POINTS= 1
SLOC= 1 2300.000

PROPERTY TABLE DENS MAT= 12 NUM. POINTS= 1
SLOC= 1 1.000000

PROPERTY TABLE DENS MAT= 13 NUM. POINTS= 1
SLOC= 1 8131.000

Define emissivity for materials 4, 9, 10, 11, 13

PROPERTY TABLE EMIS MAT= 4 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 9 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE EMIS MAT= 11 NUM. POINTS= 1
SLOC= 1 .8800000

PROPERTY TABLE EMIS MAT= 13 NUM. POINTS= 1
SLOC= 1 .8000000

Define K for materials 1 thru 12

PROPERTY TABLE KXX MAT= 1 NUM. POINTS= 1
SLOC= 1 1.660000

PROPERTY TABLE KXX MAT= 2 NUM. POINTS= 1
SLOC= 1 .8500000

PROPERTY TABLE KXX MAT= 3 NUM. POINTS= 1
SLOC= 1 1.650000

PROPERTY TABLE KXX MAT= 4 NUM. POINTS= 1
SLOC= 1 2.100000

PROPERTY TABLE KXX MAT= 5 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 6 NUM. POINTS= 1
SLOC= 1 1.200000

PROPERTY TABLE KXX MAT= 7 NUM. POINTS= 1
SLOC= 1 1.280000

PROPERTY TABLE KXX MAT= 8 NUM. POINTS= 1
SLOC= 1 1.380000

PROPERTY TABLE KXX MAT= 9 NUM. POINTS= 1
SLOC= 1 .6500000

PROPERTY TABLE KXX MAT= 10 NUM. POINTS= 1
SLOC= 1 1.500000

PROPERTY TABLE KXX MAT= 11 NUM. POINTS= 1
SLOC= 1 1.400000

PROPERTY TABLE KXX MAT= 12 NUM. POINTS= 1
SLOC= 1 20.00000

Define C for materials 9, 10, 11, 12

PROPERTY TABLE C MAT= 9 NUM. POINTS= 1
SLOC= 1 1530000.

PROPERTY TABLE C MAT= 10 NUM. POINTS= 1
SLOC= 1 501.9000

PROPERTY TABLE C MAT= 11 NUM. POINTS= 1
SLOC= 1 880.0000

PROPERTY TABLE C MAT= 12 NUM. POINTS= 1
SLOC= 1 1000.000

Define C for Matls 1, 2, 3, 4, 5, 6, 7, 8

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 4 ***
SLOC= 1 25.00000 50.00000 94.00000
95.00000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 8 ***
SLOC= 5 105.0000 114.0000 115.0000
155.0000

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 11 ***
SLOC= 9 195.0000 235.0000 275.0000

PROPERTY TABLE C MAT= 1 NUM. POINTS= 4
SLOC= 1 1926300. 2018300. 2149400. 9627400.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 8
SLOC= 5 9366500. 9130600. 1927800. 2027200.

PROPERTY TABLE C MAT= 1 NUM. POINTS= 11
SLOC= 9 2105300. 2180200. 2249200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 4
SLOC= 1 2116400. 2219600. 2349800. .3032600E+08

PROPERTY TABLE C MAT= 2 NUM. POINTS= 8
SLOC= 5 .2927670E+08 .2833020E+08 1369500. 1461200.

PROPERTY TABLE C MAT= 2 NUM. POINTS= 11
SLOC= 9 1535800. 1598600. 1652900.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 4
SLOC= 1 1977900. 2065400. 2189100. .1262940E+08

PROPERTY TABLE C MAT= 3 NUM. POINTS= 8
SLOC= 5 .1225340E+08 .1191380E+08 1855500. 1964100.

PROPERTY TABLE C MAT= 3 NUM. POINTS= 11
SLOC= 9 2026400. 2098500. 2164900.

PROPERTY TABLE C MAT= 4 NUM. POINTS= 4
SLOC= 1 2032400. 2128000. 2263800. .1076380E+08

PROPERTY TABLE C	MAT= 4	NUM. POINTS= 8	
SLOC= 5	.1046900E+08	.1019840E+08	2111400.
PROPERTY TABLE C	MAT= 4	NUM. POINTS= 11	
SLOC= 9	2191200.	2269200.	2341000.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 4	
SLOC= 1	1844300.	2031500.	2283100.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 8	
SLOC= 5	4518800.	4480000.	2295300.
PROPERTY TABLE C	MAT= 5	NUM. POINTS= 11	
SLOC= 9	2574000.	2679200.	2770200.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 4	
SLOC= 1	2443600.	2555700.	2696000.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 8	
SLOC= 5	.3532630E+08	.3417640E+08	1501300.
PROPERTY TABLE C	MAT= 6	NUM. POINTS= 11	
SLOC= 9	1683600.	1752500.	1812000.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 4	
SLOC= 1	2603200.	2664700.	2744700.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 8	
SLOC= 5	.3534400E+08	.3420530E+08	2791400.
PROPERTY TABLE C	MAT= 7	NUM. POINTS= 11	
SLOC= 9	2670700.	1581400.	1632000.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 4	
SLOC= 1	2430900.	2538500.	2680250.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 8	
SLOC= 5	.2705530E+08	.2621460E+08	2564400.
PROPERTY TABLE C	MAT= 8	NUM. POINTS= 11	
SLOC= 9	2598500.	1981950.	2047350.

Define K and C for material 13

TEMPERATURE TABLE ERASED.

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 6 ***

SLOC= 1	21.11000	37.78000	65.56000
	93.33000	121.1100	148.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 12 ***

SLOC= 7	176.6700	204.4400	232.2200
	260.0000	287.7800	315.5600

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 18 ***

SLOC= 13	343.3300	371.1100	398.8900
	426.6700	454.4400	482.2200

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 24 ***

SLOC= 19	510.0000	537.7800	565.5600
----------	----------	----------	----------

593.3300 621.1100 648.8900

*** PROPERTY TEMPERATURE TABLE NUM. TEMPS= 30 ***

SLOC= 25 676.6700 704.4400 732.2200
760.0000 787.7800 815.5600

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 6
SLOC= 1 40.84000 41.36000 41.88000 42.23000
42.23000 42.23000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 12
SLOC= 7 42.06000 41.88000 41.36000 41.02000
40.50000 39.98000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 18
SLOC= 13 39.29000 38.77000 38.08000 37.56000
36.69000 36.17000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 24
SLOC= 19 35.48000 34.61000 33.92000 33.23000
32.36000 31.50000

PROPERTY TABLE KXX MAT= 13 NUM. POINTS= 30
SLOC= 25 30.29000 28.90000 27.35000 26.48000
26.13000 26.13000

PROPERTY TABLE C MAT= 13 NUM. POINTS= 6
SLOC= 1 428.7200 444.9500 460.9400 476.8700
486.0800 495.6600

PROPERTY TABLE C MAT= 13 NUM. POINTS= 12
SLOC= 7 506.0900 517.0700 525.6400 536.9900
543.6300 550.6200

PROPERTY TABLE C MAT= 13 NUM. POINTS= 18
SLOC= 13 562.2100 577.3200 589.1000 600.5700
611.3500 629.0900

PROPERTY TABLE C MAT= 13 NUM. POINTS= 24
SLOC= 19 645.3200 665.1200 682.0700 694.5200
724.0700 761.9500

PROPERTY TABLE C MAT= 13 NUM. POINTS= 30
SLOC= 25 806.3100 888.6000 1095.040 1638.780
808.6800 736.9000

** End of Material Property List **

Read in single assembly heat loads from "heat2242.dat"
and calculate the volumetric heat generation
(Assembly time is in years, WPHOT is in seconds)

/INPUT FILE= snf2242.dat LINE= 0

** Waste Package Heat Generation Rates **

** File name: snf2242.dat **

** Age 22.0 years 0.428 MTU/Assy **

** 42200 MWD/MTU burnup, type P **

** 12-8-1994 **

** Initial enrichment average for burnup **

** ASSY time is in years **

PARAMETER ASSY(1,1) = 486.7000 485.7000 484.7000 483.7000
482.8000 481.8000

PARAMETER ASSY(7,1) = 480.8000 479.8000 478.9000 477.9000
477.0000 467.8000

PARAMETER ASSY(13,1) =	459.2000 429.3000	451.1000 423.7000	443.5000	436.2000
PARAMETER ASSY(19,1) =	412.6000 252.6000	404.5000 222.0000	341.6000	294.1000
PARAMETER ASSY(25,1) =	198.5000 139.7000	179.8000 85.70000	162.5000	150.1000
PARAMETER ASSY(31,1) =	67.40000 38.10000	56.80000 34.30000	49.40000	42.90000
PARAMETER ASSY(37,1) =	31.30000 11.10000	29.00000 10.00000	15.50000	12.80000
PARAMETER ASSY(43,1) =	9.200000 7.200000	8.600000	8.000000	7.600000
PARAMETER ASSY(1,0) =	.1000000E-05 .4000000	.1000000 .5000000	.2000000	.3000000
PARAMETER ASSY(7,0) =	.6000000 1.000000	.7000000 2.000000	.8000000	.9000000
PARAMETER ASSY(13,0) =	3.000000 7.000000	4.000000 8.000000	5.000000	6.000000
PARAMETER ASSY(19,0) =	9.000000 40.00000	10.00000 50.00000	20.00000	30.00000
PARAMETER ASSY(25,0) =	60.00000 100.0000	70.00000 200.0000	80.00000	90.00000
PARAMETER ASSY(31,0) =	300.0000 700.0000	400.0000 800.0000	500.0000	600.0000
PARAMETER ASSY(37,0) =	900.0000 4000.000	1000.000 5000.000	2000.000	3000.000
PARAMETER ASSY(43,0) =	6000.000 10000.00	7000.000	8000.000	9000.000

PARAMETER ASSY(0,1) = 1.000000

FACTOR ON VECTOR OPERATION RESULT= .31558E+08
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

MATRIX COPY RESULT MATRIX= WPHOT(1,0)

INPUT MATRIX= ASSY(1,0)
 INPUT MATRIX SIZE= 47 ROWS BY 2 COLUMNS
 RESULT MATRIX SIZE= 47 ROWS BY 2 COLUMNS

FACTOR ON VECTOR OPERATION RESULT= 1.5845
 FACTOR ON FIRST VECTOR PARAMETER = 1.0000
 FACTOR ON SECOND VECTOR PARAMETER= 1.0000
 FACTOR ON THIRD VECTOR PARAMETER = 1.0000

VECTOR PARAMETER OPERATION *VFUN
 WPHOT(1) = COPY ASSY(1)
 SCALE FACTORS RESULT= 1.5845 INPUT= 1.0000
 VECTOR LENGTH= 47

PARAMETER WPHOT(0,1) = 1.000000

PARAMETER WPTOP(0,1) = 1.000000

PARAMETER WPSID(0,1) = 1.000000

PARAMETER WPBOT(0,1) = 1.000000

PARAMETER DFTOP(0,1) = 1.000000

PARAMETER DFSID(0,1) = 1.000000

PARAMETER DFEDG(0,1) = 1.000000

PARAMETER DFBOT(0,1) = 1.000000

Define keypoints for rock layers (top-down)
(K's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
(20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)

KEYPOINT	1	X,Y,Z=	-45.0000	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	2	X,Y,Z=	.000000E+00	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	3	X,Y,Z=	45.0000	308.773	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	-45.0000	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.000000E+00	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	45.0000	272.773	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	-45.0000	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.000000E+00	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	45.0000	234.673	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	-45.0000	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.000000E+00	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	45.0000	104.573	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	-45.0000	45.2726	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.000000E+00	45.2726	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	45.0000	45.2726	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	-45.0000	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	45.0000	.272550	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	-45.0000	-44.7275	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.000000E+00	-44.7275	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	45.0000	-44.7275	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	-45.0000	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	45.0000	-84.7274	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	-45.0000	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.000000E+00	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	45.0000	-100.527	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	-45.0000	-105.727	.000000E+00	IN CSYS=	0
KEYPOINT	28	X,Y,Z=	.000000E+00	-105.727	.000000E+00	IN CSYS=	0

```

KEYPOINT 29 X,Y,Z= 45.0000 -105.727 .000000E+00 IN CSYS= 0
KEYPOINT 30 X,Y,Z= -45.0000 -209.727 .000000E+00 IN CSYS= 0
KEYPOINT 31 X,Y,Z= .000000E+00 -209.727 .000000E+00 IN CSYS= 0
KEYPOINT 32 X,Y,Z= 45.0000 -209.727 .000000E+00 IN CSYS= 0
KEYPOINT 33 X,Y,Z= -45.0000 -991.227 .000000E+00 IN CSYS= 0
KEYPOINT 34 X,Y,Z= .000000E+00 -991.227 .000000E+00 IN CSYS= 0
KEYPOINT 35 X,Y,Z= 45.0000 -991.227 .000000E+00 IN CSYS= 0

```

```

Define lines connecting rock layers
(L's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
( 20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35)
( 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51)
( 52,53)

```

```

LINE CONNECTS KEYPOINTS      1      2
LINE NO.=      1 KP1=      1 TAN1= -1.0000 .0000 .0000
                KP2=      2 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS      2      3
LINE NO.=      2 KP1=      2 TAN1= -1.0000 .0000 .0000
                KP2=      3 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS      4      5
LINE NO.=      3 KP1=      4 TAN1= -1.0000 .0000 .0000
                KP2=      5 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS      5      6
LINE NO.=      4 KP1=      5 TAN1= -1.0000 .0000 .0000
                KP2=      6 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS      7      8
LINE NO.=      5 KP1=      7 TAN1= -1.0000 .0000 .0000
                KP2=      8 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS      8      9
LINE NO.=      6 KP1=      8 TAN1= -1.0000 .0000 .0000
                KP2=      9 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS     10     11
LINE NO.=      7 KP1=     10 TAN1= -1.0000 .0000 .0000
                KP2=     11 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS     11     12
LINE NO.=      8 KP1=     11 TAN1= -1.0000 .0000 .0000
                KP2=     12 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS     13     14
LINE NO.=      9 KP1=     13 TAN1= -1.0000 .0000 .0000
                KP2=     14 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS     14     15
LINE NO.=     10 KP1=     14 TAN1= -1.0000 .0000 .0000
                KP2=     15 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS     18     19
LINE NO.=     11 KP1=     18 TAN1= -1.0000 .0000 .0000
                KP2=     19 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS     19     20
LINE NO.=     12 KP1=     19 TAN1= -1.0000 .0000 .0000
                KP2=     20 TAN2=  1.0000 .0000 .0000

```

```

LINE CONNECTS KEYPOINTS     21     22
LINE NO.=     13 KP1=     21 TAN1= -1.0000 .0000 .0000
                KP2=     22 TAN2=  1.0000 .0000 .0000

```

LINE CONNECTS KEYPOINTS	22	23			
LINE NO.= 14 KP1=	22	TAN1=	-1.0000	.0000	.0000
KP2=	23	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	24	25			
LINE NO.= 15 KP1=	24	TAN1=	-1.0000	.0000	.0000
KP2=	25	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	25	26			
LINE NO.= 16 KP1=	25	TAN1=	-1.0000	.0000	.0000
KP2=	26	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	27	28			
LINE NO.= 17 KP1=	27	TAN1=	-1.0000	.0000	.0000
KP2=	28	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	28	29			
LINE NO.= 18 KP1=	28	TAN1=	-1.0000	.0000	.0000
KP2=	29	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	30	31			
LINE NO.= 19 KP1=	30	TAN1=	-1.0000	.0000	.0000
KP2=	31	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 20 KP1=	31	TAN1=	-1.0000	.0000	.0000
KP2=	32	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	33	34			
LINE NO.= 21 KP1=	33	TAN1=	-1.0000	.0000	.0000
KP2=	34	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	34	35			
LINE NO.= 22 KP1=	34	TAN1=	-1.0000	.0000	.0000
KP2=	35	TAN2=	1.0000	.0000	.0000
LINE CONNECTS KEYPOINTS	1	4			
LINE NO.= 23 KP1=	1	TAN1=	.0000	1.0000	.0000
KP2=	4	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	2	5			
LINE NO.= 24 KP1=	2	TAN1=	.0000	1.0000	.0000
KP2=	5	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	3	6			
LINE NO.= 25 KP1=	3	TAN1=	.0000	1.0000	.0000
KP2=	6	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	4	7			
LINE NO.= 26 KP1=	4	TAN1=	.0000	1.0000	.0000
KP2=	7	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	5	8			
LINE NO.= 27 KP1=	5	TAN1=	.0000	1.0000	.0000
KP2=	8	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	6	9			
LINE NO.= 28 KP1=	6	TAN1=	.0000	1.0000	.0000
KP2=	9	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	7	10			
LINE NO.= 29 KP1=	7	TAN1=	.0000	1.0000	.0000
KP2=	10	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	8	11			
LINE NO.= 30 KP1=	8	TAN1=	.0000	1.0000	.0000
KP2=	11	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS	9	12			

LINE NO.=	31	KP1=	9	TAN1=	.0000	1.0000	.0000
		KP2=	12	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 10 13							
LINE NO.=	32	KP1=	10	TAN1=	.0000	1.0000	.0000
		KP2=	13	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 11 14							
LINE NO.=	33	KP1=	11	TAN1=	.0000	1.0000	.0000
		KP2=	14	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 12 15							
LINE NO.=	34	KP1=	12	TAN1=	.0000	1.0000	.0000
		KP2=	15	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 13 16							
LINE NO.=	35	KP1=	13	TAN1=	.0000	1.0000	.0000
		KP2=	16	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 15 17							
LINE NO.=	36	KP1=	15	TAN1=	.0000	1.0000	.0000
		KP2=	17	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 16 18							
LINE NO.=	37	KP1=	16	TAN1=	.0000	1.0000	.0000
		KP2=	18	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 17 20							
LINE NO.=	38	KP1=	17	TAN1=	.0000	1.0000	.0000
		KP2=	20	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 18 21							
LINE NO.=	39	KP1=	18	TAN1=	.0000	1.0000	.0000
		KP2=	21	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 19 22							
LINE NO.=	40	KP1=	19	TAN1=	.0000	1.0000	.0000
		KP2=	22	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 20 23							
LINE NO.=	41	KP1=	20	TAN1=	.0000	1.0000	.0000
		KP2=	23	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 21 24							
LINE NO.=	42	KP1=	21	TAN1=	.0000	1.0000	.0000
		KP2=	24	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 22 25							
LINE NO.=	43	KP1=	22	TAN1=	.0000	1.0000	.0000
		KP2=	25	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 23 26							
LINE NO.=	44	KP1=	23	TAN1=	.0000	1.0000	.0000
		KP2=	26	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 24 27							
LINE NO.=	45	KP1=	24	TAN1=	.0000	1.0000	.0000
		KP2=	27	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 25 28							
LINE NO.=	46	KP1=	25	TAN1=	.0000	1.0000	.0000
		KP2=	28	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 26 29							
LINE NO.=	47	KP1=	26	TAN1=	.0000	1.0000	.0000
		KP2=	29	TAN2=	.0000	-1.0000	.0000
LINE CONNECTS KEYPOINTS 27 30							
LINE NO.=	48	KP1=	27	TAN1=	.0000	1.0000	.0000
		KP2=	30	TAN2=	.0000	-1.0000	.0000

LINE CONNECTS KEYPOINTS 28 31
 LINE NO.= 49 KP1= 28 TAN1= .0000 1.0000 .0000
 KP2= 31 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 29 32
 LINE NO.= 50 KP1= 29 TAN1= .0000 1.0000 .0000
 KP2= 32 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 30 33
 LINE NO.= 51 KP1= 30 TAN1= .0000 1.0000 .0000
 KP2= 33 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 31 34
 LINE NO.= 52 KP1= 31 TAN1= .0000 1.0000 .0000
 KP2= 34 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS 32 35
 LINE NO.= 53 KP1= 32 TAN1= .0000 1.0000 .0000
 KP2= 35 TAN2= .0000 -1.0000 .0000

Define areas in rock layers
 (A's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)

DEFINE AREA BY LIST OF LINES
 LINE LIST = 23 3 24 1
 (TRAVERSED IN SAME DIRECTION AS LINE 23)

AREA NUMBER = 1

DEFINE AREA BY LIST OF LINES
 LINE LIST = 24 4 25 2
 (TRAVERSED IN SAME DIRECTION AS LINE 24)

AREA NUMBER = 2

DEFINE AREA BY LIST OF LINES
 LINE LIST = 26 5 27 3
 (TRAVERSED IN SAME DIRECTION AS LINE 26)

AREA NUMBER = 3

DEFINE AREA BY LIST OF LINES
 LINE LIST = 27 6 28 4
 (TRAVERSED IN SAME DIRECTION AS LINE 27)

AREA NUMBER = 4

DEFINE AREA BY LIST OF LINES
 LINE LIST = 29 7 30 5
 (TRAVERSED IN SAME DIRECTION AS LINE 29)

AREA NUMBER = 5

DEFINE AREA BY LIST OF LINES
 LINE LIST = 30 8 31 6
 (TRAVERSED IN SAME DIRECTION AS LINE 30)

AREA NUMBER = 6

DEFINE AREA BY LIST OF LINES
 LINE LIST = 32 9 33 7
 (TRAVERSED IN SAME DIRECTION AS LINE 32)

AREA NUMBER = 7

DEFINE AREA BY LIST OF LINES
 LINE LIST = 33 10 34 8
 (TRAVERSED IN SAME DIRECTION AS LINE 33)

AREA NUMBER = 8

DEFINE AREA BY LIST OF LINES

LINE LIST = 39 13 40 11
(TRAVERSED IN SAME DIRECTION AS LINE 39)

AREA NUMBER = 9

DEFINE AREA BY LIST OF LINES

LINE LIST = 40 14 41 12
(TRAVERSED IN SAME DIRECTION AS LINE 40)

AREA NUMBER = 10

DEFINE AREA BY LIST OF LINES

LINE LIST = 42 15 43 13
(TRAVERSED IN SAME DIRECTION AS LINE 42)

AREA NUMBER = 11

DEFINE AREA BY LIST OF LINES

LINE LIST = 43 16 44 14
(TRAVERSED IN SAME DIRECTION AS LINE 43)

AREA NUMBER = 12

DEFINE AREA BY LIST OF LINES

LINE LIST = 45 17 46 15
(TRAVERSED IN SAME DIRECTION AS LINE 45)

AREA NUMBER = 13

DEFINE AREA BY LIST OF LINES

LINE LIST = 46 18 47 16
(TRAVERSED IN SAME DIRECTION AS LINE 46)

AREA NUMBER = 14

DEFINE AREA BY LIST OF LINES

LINE LIST = 48 19 49 17
(TRAVERSED IN SAME DIRECTION AS LINE 48)

AREA NUMBER = 15

DEFINE AREA BY LIST OF LINES

LINE LIST = 49 20 50 18
(TRAVERSED IN SAME DIRECTION AS LINE 49)

AREA NUMBER = 16

DEFINE AREA BY LIST OF LINES

LINE LIST = 51 21 52 19
(TRAVERSED IN SAME DIRECTION AS LINE 51)

AREA NUMBER = 17

DEFINE AREA BY LIST OF LINES

LINE LIST = 52 22 53 20
(TRAVERSED IN SAME DIRECTION AS LINE 52)

AREA NUMBER = 18

Define center and axis keypoints for drift
(K's 36,37,38,39,40,41,42,43)

KEYPOINT	36	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS= 0
KEYPOINT	37	X,Y,Z=	.000000E+00	.000000E+00	2.72350	IN CSYS= 0
KEYPOINT	38	X,Y,Z=	.000000E+00	.000000E+00	2.82350	IN CSYS= 0

KEYPOINT 39 X,Y,Z= .000000E+00 .000000E+00 -2.72350 IN CSYS= 0
 KEYPOINT 40 X,Y,Z= .000000E+00 .000000E+00 -2.82350 IN CSYS= 0
 KEYPOINT 41 X,Y,Z= .000000E+00 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 42 X,Y,Z= .000000E+00 .272550 4.61850 IN CSYS= 0
 KEYPOINT 43 X,Y,Z= .000000E+00 .272550 -4.61850 IN CSYS= 0

Define extrude lines
 (L's 54,55,56,57,58,59)

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 54 KP1= 36 TAN1= .0000 .0000 -1.0000
 KP2= 37 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 37 38
 LINE NO.= 55 KP1= 37 TAN1= .0000 .0000 -1.0000
 KP2= 38 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 36 39
 LINE NO.= 56 KP1= 36 TAN1= .0000 .0000 1.0000
 KP2= 39 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 39 40
 LINE NO.= 57 KP1= 39 TAN1= .0000 .0000 1.0000
 KP2= 40 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 58 KP1= 41 TAN1= .0000 .0000 -1.0000
 KP2= 42 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 41 43
 LINE NO.= 59 KP1= 41 TAN1= .0000 .0000 1.0000
 KP2= 43 TAN2= .0000 .0000 -1.0000

Define arcs at WP, drift wall, 1 and 3 meter in rock
 (K's 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)
 (58,60,61,62,63,64,65,66)
 (L's 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75)
 (76,77,78,79,80,81)

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .6653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 60 KP1= 44 TAN1= -1.0000 .0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000
 LINE NO.= 61 KP1= 45 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= -1.0000 .0000 .0000
 LINE NO.= 62 KP1= 46 TAN1= 1.0000 .0000 .0000
 KP2= 47 TAN2= .0000 -1.0000 .0000
 LINE NO.= 63 KP1= 47 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 36 RADIUS = .7653
 AXIS KEYPOINT = 37 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 64 KP1= 48 TAN1= -1.0000 .0000 .0000
 KP2= 49 TAN2= .0000 1.0000 .0000
 LINE NO.= 65 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 50 TAN2= -1.0000 .0000 .0000
 LINE NO.= 66 KP1= 50 TAN1= 1.0000 .0000 .0000
 KP2= 51 TAN2= .0000 -1.0000 .0000
 LINE NO.= 67 KP1= 51 TAN1= .0000 1.0000 .0000
 KP2= 48 TAN2= 1.0000 .0000 .0000

KEYPOINT 52 X,Y,Z= .000000E+00 -2.22745 .000000E+00 IN CSYS= 0
 KEYPOINT 53 X,Y,Z= 1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 54 X,Y,Z= 2.50000 .272550 .000000E+00 IN CSYS= 0

KEYPOINT 55 X,Y,Z= .000000E+00 2.77255 .000000E+00 IN CSYS= 0
 KEYPOINT 56 X,Y,Z= -2.50000 .272550 .000000E+00 IN CSYS= 0
 KEYPOINT 57 X,Y,Z= -1.73494 -1.52745 .000000E+00 IN CSYS= 0
 KEYPOINT 58 X,Y,Z= .000000E+00 -1.52745 .000000E+00 IN CSYS= 0

ARC BETWEEN KEYPOINTS 52 AND 53 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 68 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= .7200 .6940 .0000

ARC BETWEEN KEYPOINTS 53 AND 54 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 69 KP1= 53 TAN1= -.7200 -.6940 .0000
 KP2= 54 TAN2= .0000 1.0000 .0000

ARC BETWEEN KEYPOINTS 54 AND 55 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 70 KP1= 54 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= -1.0000 .0000 .0000

ARC BETWEEN KEYPOINTS 55 AND 56 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 71 KP1= 55 TAN1= 1.0000 .0000 .0000
 KP2= 56 TAN2= .0000 -1.0000 .0000

ARC BETWEEN KEYPOINTS 56 AND 57 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 72 KP1= 56 TAN1= .0000 1.0000 .0000
 KP2= 57 TAN2= .7200 -.6940 .0000

ARC BETWEEN KEYPOINTS 57 AND 52 ORIENTATION KEYPOINT= 41
 RADIUS= 2.5000
 LINE NO.= 73 KP1= 57 TAN1= -.7200 .6940 .0000
 KP2= 52 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 3.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 74 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= .0000 1.0000 .0000
 LINE NO.= 75 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 61 TAN2= -1.0000 .0000 .0000
 LINE NO.= 76 KP1= 61 TAN1= 1.0000 .0000 .0000
 KP2= 62 TAN2= .0000 -1.0000 .0000
 LINE NO.= 77 KP1= 62 TAN1= .0000 1.0000 .0000
 KP2= 59 TAN2= 1.0000 .0000 .0000

CREATE CIRCLE CENTERED ON KEYPOINT 41 RADIUS = 5.500
 AXIS KEYPOINT = 42 X AXIS KEYPOINT = 19
 ARC = 360. NUMBER OF LINES = 4
 LINE NO.= 78 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000
 LINE NO.= 79 KP1= 64 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= -1.0000 .0000 .0000
 LINE NO.= 80 KP1= 65 TAN1= 1.0000 .0000 .0000
 KP2= 66 TAN2= .0000 -1.0000 .0000
 LINE NO.= 81 KP1= 66 TAN1= .0000 1.0000 .0000
 KP2= 63 TAN2= 1.0000 .0000 .0000

Define lines around drift
 (L's 82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97)
 (98,99,100,101,102,103,104,105,106)

LINE CONNECTS KEYPOINTS 36 44
 LINE NO.= 82 KP1= 36 TAN1= .0000 1.0000 .0000
 KP2= 44 TAN2= .0000 -1.0000 .0000

LINE CONNECTS KEYPOINTS		36	45			
LINE NO.=	83	KP1=	36	TAN1=	-1.0000	.0000
		KP2=	45	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		36	46			
LINE NO.=	84	KP1=	36	TAN1=	.0000	-1.0000
		KP2=	46	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		36	47			
LINE NO.=	85	KP1=	36	TAN1=	1.0000	.0000
		KP2=	47	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		44	48			
LINE NO.=	86	KP1=	44	TAN1=	.0000	1.0000
		KP2=	48	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		45	49			
LINE NO.=	87	KP1=	45	TAN1=	-1.0000	.0000
		KP2=	49	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		46	50			
LINE NO.=	88	KP1=	46	TAN1=	.0000	-1.0000
		KP2=	50	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		47	51			
LINE NO.=	89	KP1=	47	TAN1=	1.0000	.0000
		KP2=	51	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		50	55			
LINE NO.=	90	KP1=	50	TAN1=	.0000	-1.0000
		KP2=	55	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		48	58			
LINE NO.=	91	KP1=	48	TAN1=	.0000	1.0000
		KP2=	58	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		58	52			
LINE NO.=	92	KP1=	58	TAN1=	.0000	1.0000
		KP2=	52	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		57	58			
LINE NO.=	93	KP1=	57	TAN1=	-1.0000	.0000
		KP2=	58	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		58	53			
LINE NO.=	94	KP1=	58	TAN1=	-1.0000	.0000
		KP2=	53	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		52	59			
LINE NO.=	95	KP1=	52	TAN1=	.0000	1.0000
		KP2=	59	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		54	60			
LINE NO.=	96	KP1=	54	TAN1=	-1.0000	.0000
		KP2=	60	TAN2=	1.0000	.0000
LINE CONNECTS KEYPOINTS		55	61			
LINE NO.=	97	KP1=	55	TAN1=	.0000	-1.0000
		KP2=	61	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		56	62			
LINE NO.=	98	KP1=	56	TAN1=	1.0000	.0000
		KP2=	62	TAN2=	-1.0000	.0000
LINE CONNECTS KEYPOINTS		59	63			
LINE NO.=	99	KP1=	59	TAN1=	.0000	1.0000
		KP2=	63	TAN2=	.0000	-1.0000
LINE CONNECTS KEYPOINTS		60	64			
LINE NO.=	100	KP1=	60	TAN1=	-1.0000	.0000

```

      KP2=    64 TAN2=    1.0000    .0000    .0000
LINE CONNECTS KEYPOINTS    61    65
LINE NO.=   101 KP1=    61 TAN1=    .0000   -1.0000    .0000
      KP2=    65 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    62    66
LINE NO.=   102 KP1=    62 TAN1=    1.0000    .0000    .0000
      KP2=    66 TAN2=   -1.0000   .0000    .0000

LINE CONNECTS KEYPOINTS    63    19
LINE NO.=   103 KP1=    63 TAN1=    .0000    1.0000    .0000
      KP2=    19 TAN2=    .0000   -1.0000    .0000

LINE CONNECTS KEYPOINTS    64    17
LINE NO.=   104 KP1=    64 TAN1=   -1.0000    .0000    .0000
      KP2=    17 TAN2=    1.0000    .0000    .0000

LINE CONNECTS KEYPOINTS    65    14
LINE NO.=   105 KP1=    65 TAN1=    .0000   -1.0000    .0000
      KP2=    14 TAN2=    .0000    1.0000    .0000

LINE CONNECTS KEYPOINTS    66    16
LINE NO.=   106 KP1=    66 TAN1=    1.0000    .0000    .0000
      KP2=    16 TAN2=   -1.0000    .0000    .0000
      Define areas around drift
      (A's 19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34)
      ( 35,36,37,38,39,40)

```

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    82    60    83
      (TRAVERSED IN SAME DIRECTION AS LINE    82)

```

AREA NUMBER = 19

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    83    61    84
      (TRAVERSED IN SAME DIRECTION AS LINE    83)

```

AREA NUMBER = 20

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    85    84    62
      (TRAVERSED IN SAME DIRECTION AS LINE    85)

```

AREA NUMBER = 21

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    63    82    85
      (TRAVERSED IN SAME DIRECTION AS LINE    63)

```

AREA NUMBER = 22

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    86    64    87    60
      (TRAVERSED IN SAME DIRECTION AS LINE    86)

```

AREA NUMBER = 23

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    61    87    65    88
      (TRAVERSED IN SAME DIRECTION AS LINE    61)

```

AREA NUMBER = 24

```

DEFINE AREA BY LIST OF LINES
LINE LIST =    89    62    88    66
      (TRAVERSED IN SAME DIRECTION AS LINE    89)

```

AREA NUMBER = 25

DEFINE AREA BY LIST OF LINES

LINE LIST = 67 86 63 89
(TRAVERSED IN SAME DIRECTION AS LINE 67)

AREA NUMBER = 26

DEFINE AREA BY LIST OF LINES

LINE LIST = 73 92 93
(TRAVERSED IN SAME DIRECTION AS LINE 73)

AREA NUMBER = 27

DEFINE AREA BY LIST OF LINES

LINE LIST = 68 94 92
(TRAVERSED IN SAME DIRECTION AS LINE 68)

AREA NUMBER = 28

DEFINE AREA BY LIST OF LINES

LINE LIST = 95 74 96 69 68
(TRAVERSED IN SAME DIRECTION AS LINE 95)

AREA NUMBER = 29

DEFINE AREA BY LIST OF LINES

LINE LIST = 96 75 97 70
(TRAVERSED IN SAME DIRECTION AS LINE 96)

AREA NUMBER = 30

DEFINE AREA BY LIST OF LINES

LINE LIST = 98 71 97 76
(TRAVERSED IN SAME DIRECTION AS LINE 98)

AREA NUMBER = 31

DEFINE AREA BY LIST OF LINES

LINE LIST = 77 95 73 72 98
(TRAVERSED IN SAME DIRECTION AS LINE 77)

AREA NUMBER = 32

DEFINE AREA BY LIST OF LINES

LINE LIST = 99 78 100 74
(TRAVERSED IN SAME DIRECTION AS LINE 99)

AREA NUMBER = 33

DEFINE AREA BY LIST OF LINES

LINE LIST = 100 79 101 75
(TRAVERSED IN SAME DIRECTION AS LINE 100)

AREA NUMBER = 34

DEFINE AREA BY LIST OF LINES

LINE LIST = 102 76 101 80
(TRAVERSED IN SAME DIRECTION AS LINE 102)

AREA NUMBER = 35

DEFINE AREA BY LIST OF LINES

LINE LIST = 81 99 77 102
(TRAVERSED IN SAME DIRECTION AS LINE 81)

AREA NUMBER = 36

DEFINE AREA BY LIST OF LINES

LINE LIST = 103 12 38 104 78
(TRAVERSED IN SAME DIRECTION AS LINE 103)

AREA NUMBER = 37

DEFINE AREA BY LIST OF LINES

LINE LIST = 104 36 10 105 79
(TRAVERSED IN SAME DIRECTION AS LINE 104)

AREA NUMBER = 38

DEFINE AREA BY LIST OF LINES

LINE LIST = 106 80 105 9 35
(TRAVERSED IN SAME DIRECTION AS LINE 106)

AREA NUMBER = 39

DEFINE AREA BY LIST OF LINES

LINE LIST = 11 103 81 106 37
(TRAVERSED IN SAME DIRECTION AS LINE 11)

AREA NUMBER = 40

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

Set element sizes near WP
Default element size

DEFAULT ELEMENT DIVISIONS PER LINE BASED ON ELEMENT SIZE = 6.00
24 elements around WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 60 TO 63 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
6 elements inside WP

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 82 TO 85 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 86 TO 89 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
4 elements in air space

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 90 TO 91 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
40 elements around drift
(4+6=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 93 TO 94 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 68 TO 68 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 73 TO 73 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 69 TO 69 STEP 1

1 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 72 TO 72 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 70 TO 71 STEP 1

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

ALSO SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 74 TO 81 STEP 1

10 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
2 element deep invert

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON LINE 92 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
2 elements in 1st meter of rock

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 95 TO 98 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
3 elements in next 2 meters

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 99 TO 102 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
Model is 6 elements wide
(3+7=10 divisions)

SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 9 TO 12 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 35 TO 38 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 7, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 103 TO 106 STEP 1

4 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 8, SPACING RATIO = 5.000
Extrude WP 5 elements

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 54 TO 56 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 5, SPACING RATIO = 1.000
1 element thick steel

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 55 TO 57 STEP 2

2 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
Extrude drift 5 elements with smallest
elements at WP mid-length

SET DIVISIONS ON LINE 58 (IF SELECTED AND UNMESHED)
TO NDIV = 4, SPACING RATIO = 3.600

SET DIVISIONS ON LINE 59 (IF SELECTED AND UNMESHED)
TO NDIV = 4, SPACING RATIO = 3.600

Set element sizes in rock layers
3 element thick TCw

SET DIVISIONS ON LINE 24 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
3 element thick PTn

SET DIVISIONS ON LINE 27 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
9 element thick TSw1

SET DIVISIONS ON LINE 30 (IF SELECTED AND UNMESHED)
TO NDIV = 9, SPACING RATIO = 1.000
12 elements above and below near field
with smaller elements near drift

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 32 TO 34 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 39 TO 41 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.
3 element thick TS_w3

SET DIVISIONS ON LINE 43 (IF SELECTED AND UNMESHED)
TO NDIV = 3, SPACING RATIO = 1.000
2 element thick CH_n1_v

SET DIVISIONS ON LINE 46 (IF SELECTED AND UNMESHED)
TO NDIV = 2, SPACING RATIO = 1.000
7 element thick CH_n1_z

SET DIVISIONS ON LINE 49 (IF SELECTED AND UNMESHED)
TO NDIV = 7, SPACING RATIO = 1.000
12 element thick CHN2 with smaller elements
near the top

SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 51 TO 53 STEP 1

3 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 12, SPACING RATIO = 10.000

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 106 STEP 1

106 LINES (OF 106 DEFINED) SELECTED BY LSEL COMMAND.

Concatenate lines for mapped meshing
(L's 107,108,109,110,111,112)

CONCATENATE LINES
LINES = 68 69

COMPOSITE LINE NO.= 107 KP1= 52 KP2= 54

CONCATENATE LINES
LINES = 72 73

COMPOSITE LINE NO.= 108 KP1= 56 KP2= 52

CONCATENATE LINES
LINES = 12 38

COMPOSITE LINE NO.= 109 KP1= 19 KP2= 17

CONCATENATE LINES
LINES = 36 10

COMPOSITE LINE NO.= 110 KP1= 17 KP2= 14

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 111 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 37 11

COMPOSITE LINE NO.= 112 KP1= 16 KP2= 19

Mesh 2-D areas
(first WP, then invert, DF wall and rock layers)
Waste package

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 19 TO 22 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 121
MAXIMUM ELEMENT NUMBER = 108

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN AREAS 23 TO 26 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 145
MAXIMUM ELEMENT NUMBER = 132
Invert

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE MIXED ELEMENT SHAPES. (MAY PRODUCE ALL QUADRILATERAL
OR ALL BRICK ELEMENTS UNDER CERTAIN CONDITIONS.)

MATERIAL NUMBER SET TO 11

GENERATE NODES AND ELEMENTS
IN AREAS 27 TO 28 IN STEPS OF 1
** AREA 27 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **
** AREA 28 MESHED WITH 4 QUADRILATERALS, 2 TRIANGLES **

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 164
MAXIMUM ELEMENT NUMBER = 144
Drift wall and TSw2 areas

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS
IN AREAS 29 TO 32 IN STEPS OF 3

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 218
MAXIMUM ELEMENT NUMBER = 184

GENERATE NODES AND ELEMENTS
IN AREAS 30 TO 31 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 275
MAXIMUM ELEMENT NUMBER = 224

GENERATE NODES AND ELEMENTS
IN AREAS 33 TO 36 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 395
MAXIMUM ELEMENT NUMBER = 344

GENERATE NODES AND ELEMENTS
IN AREAS 37 TO 40 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 715
MAXIMUM ELEMENT NUMBER = 664

GENERATE NODES AND ELEMENTS
IN AREAS 7 TO 10 IN STEPS OF 1

NUMBER OF AREAS MESHED = 4
MAXIMUM NODE NUMBER = 799
MAXIMUM ELEMENT NUMBER = 736

Tsw1 areas

MATERIAL NUMBER SET TO 3

GENERATE NODES AND ELEMENTS
IN AREAS 5 TO 6 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 862
MAXIMUM ELEMENT NUMBER = 790

PTn areas

MATERIAL NUMBER SET TO 2

GENERATE NODES AND ELEMENTS
IN AREAS 3 TO 4 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 883
MAXIMUM ELEMENT NUMBER = 808

TCw areas

MATERIAL NUMBER SET TO 1

GENERATE NODES AND ELEMENTS
IN AREAS 1 TO 2 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 904
MAXIMUM ELEMENT NUMBER = 826

TSw3 areas

MATERIAL NUMBER SET TO 5

GENERATE NODES AND ELEMENTS
IN AREAS 11 TO 12 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
MAXIMUM NODE NUMBER = 925
MAXIMUM ELEMENT NUMBER = 844

CHn1v areas

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS
IN AREAS 13 TO 14 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 939
 MAXIMUM ELEMENT NUMBER = 856
 CHn1z areas

MATERIAL NUMBER SET TO 7

GENERATE NODES AND ELEMENTS
 IN AREAS 15 TO 16 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 988
 MAXIMUM ELEMENT NUMBER = 898
 CHn2 areas

MATERIAL NUMBER SET TO 8

GENERATE NODES AND ELEMENTS
 IN AREAS 17 TO 18 IN STEPS OF 1

NUMBER OF AREAS MESHED = 2
 MAXIMUM NODE NUMBER = 1072
 MAXIMUM ELEMENT NUMBER = 970

Delete concatenated lines
 (L's freed up 107,108,109,110,111,112)

DELETE SELECTED LINES FROM 107 TO 107 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 108 TO 108 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 109 TO 109 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 110 TO 110 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 111 TO 111 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 112 TO 112 BY 1

DELETED 1 LINES

Extrude 2-D waste package into 3-D
 (V's 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19)
 (20,21,22,23,24,25,26,27,28,29,30,31,32)

ELEMENT TYPE SET TO 1

DRAG AREAS
 19, 20, 21, 22,
 ALONG LINES
 54,

DRAG AREAS
 23, 24, 25, 26,
 ALONG LINES
 54,

DRAG AREAS
 19, 20, 21, 22,

ALONG LINES
56,

DRAG AREAS
23, 24, 25, 26,
ALONG LINES
56,

(plot area numbers before next drag commands)

DRAG AREAS
44, 47, 50, 52,
ALONG LINES
55,

DRAG AREAS
57, 61, 65, 68,
ALONG LINES
55,

DRAG AREAS
72, 75, 78, 80,
ALONG LINES
57,

DRAG AREAS
85, 89, 93, 96,
ALONG LINES
57,

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	37 USED FOR KEYPOINT(S)	67
KEYPOINT	38 USED FOR KEYPOINT(S)	93
KEYPOINT	39 USED FOR KEYPOINT(S)	80
KEYPOINT	40 USED FOR KEYPOINT(S)	106
KEYPOINT	68 USED FOR KEYPOINT(S)	72
KEYPOINT	69 USED FOR KEYPOINT(S)	75
KEYPOINT	70 USED FOR KEYPOINT(S)	76
KEYPOINT	71 USED FOR KEYPOINT(S)	78
KEYPOINT	81 USED FOR KEYPOINT(S)	85
KEYPOINT	82 USED FOR KEYPOINT(S)	88
KEYPOINT	83 USED FOR KEYPOINT(S)	89
KEYPOINT	84 USED FOR KEYPOINT(S)	91
KEYPOINT	94 USED FOR KEYPOINT(S)	98
KEYPOINT	95 USED FOR KEYPOINT(S)	101
KEYPOINT	96 USED FOR KEYPOINT(S)	102
KEYPOINT	97 USED FOR KEYPOINT(S)	104
KEYPOINT	107 USED FOR KEYPOINT(S)	111
KEYPOINT	108 USED FOR KEYPOINT(S)	114
KEYPOINT	109 USED FOR KEYPOINT(S)	115
KEYPOINT	110 USED FOR KEYPOINT(S)	117

LINE	54 USED FOR LINE(S)	108
LINE	55 USED FOR LINE(S)	174
LINE	56 USED FOR LINE(S)	141
LINE	57 USED FOR LINE(S)	207
LINE	109 USED FOR LINE(S)	121
LINE	110 USED FOR LINE(S)	127
LINE	111 USED FOR LINE(S)	126
LINE	113 USED FOR LINE(S)	128
LINE	114 USED FOR LINE(S)	129
LINE	117 USED FOR LINE(S)	134
LINE	118 USED FOR LINE(S)	137
LINE	119 USED FOR LINE(S)	139
LINE	142 USED FOR LINE(S)	154
LINE	143 USED FOR LINE(S)	160
LINE	144 USED FOR LINE(S)	159
LINE	146 USED FOR LINE(S)	161
LINE	147 USED FOR LINE(S)	162
LINE	150 USED FOR LINE(S)	167
LINE	151 USED FOR LINE(S)	170
LINE	152 USED FOR LINE(S)	172

LINE 175 USED FOR LINE(S) 187
 LINE 176 USED FOR LINE(S) 193
 LINE 177 USED FOR LINE(S) 192
 LINE 179 USED FOR LINE(S) 194
 LINE 180 USED FOR LINE(S) 195
 LINE 183 USED FOR LINE(S) 200
 LINE 184 USED FOR LINE(S) 203
 LINE 185 USED FOR LINE(S) 205
 LINE 208 USED FOR LINE(S) 220
 LINE 209 USED FOR LINE(S) 226
 LINE 210 USED FOR LINE(S) 225
 LINE 212 USED FOR LINE(S) 227
 LINE 213 USED FOR LINE(S) 228
 LINE 216 USED FOR LINE(S) 233
 LINE 217 USED FOR LINE(S) 236
 LINE 218 USED FOR LINE(S) 238
 AREA 42 USED FOR AREA(S) 56
 AREA 45 USED FOR AREA(S) 58
 AREA 49 USED FOR AREA(S) 64
 AREA 51 USED FOR AREA(S) 67
 AREA 70 USED FOR AREA(S) 84
 AREA 73 USED FOR AREA(S) 86
 AREA 77 USED FOR AREA(S) 92
 AREA 79 USED FOR AREA(S) 95
 AREA 98 USED FOR AREA(S) 112
 AREA 101 USED FOR AREA(S) 114
 AREA 105 USED FOR AREA(S) 120
 AREA 107 USED FOR AREA(S) 123
 AREA 126 USED FOR AREA(S) 140
 AREA 129 USED FOR AREA(S) 142
 AREA 133 USED FOR AREA(S) 148
 AREA 135 USED FOR AREA(S) 151
 Mesh waste package volumes

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

MATERIAL NUMBER SET TO 10

ELEMENT TYPE SET TO 2

GENERATE NODES AND ELEMENTS
 IN VOLUMES 1 TO 4 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1677
 MAXIMUM ELEMENT NUMBER = 1510

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
 IN VOLUMES 5 TO 8 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
 MAXIMUM NODE NUMBER = 1797
 MAXIMUM ELEMENT NUMBER = 1630

GENERATE NODES AND ELEMENTS
 IN VOLUMES 17 TO 24 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 1942
 MAXIMUM ELEMENT NUMBER = 1762

MATERIAL NUMBER SET TO 10

GENERATE NODES AND ELEMENTS
 IN VOLUMES 9 TO 12 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4

MAXIMUM NODE NUMBER = 2547
MAXIMUM ELEMENT NUMBER = 2302

MATERIAL NUMBER SET TO 13

GENERATE NODES AND ELEMENTS
IN VOLUMES 13 TO 16 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 4
MAXIMUM NODE NUMBER = 2667
MAXIMUM ELEMENT NUMBER = 2422

GENERATE NODES AND ELEMENTS
IN VOLUMES 25 TO 32 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 2812
MAXIMUM ELEMENT NUMBER = 2554

Extrude 2-D rock into front half 3-D
Invert
(V's 33,34)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
27, 28,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 2888
MAXIMUM ELEMENT NUMBER = 2602
Rock around drift
(V's 35,36,37,38,39,40,41,42)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
29, 30,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3140
MAXIMUM ELEMENT NUMBER = 2762

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
58,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 3272
MAXIMUM ELEMENT NUMBER = 2842

GENERATE NODES AND ELEMENTS

IN VOLUMES 37 TO 37 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 3404
 MAXIMUM ELEMENT NUMBER = 2922

DRAG AREAS
 33, 34,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 3740
 MAXIMUM ELEMENT NUMBER = 3162

ELEMENT TYPE SET TO 1

DRAG AREAS
 35,
 ALONG LINES
 58,

ELEMENT TYPE SET TO 2

DRAG AREAS
 36,
 ALONG LINES
 58,

MAXIMUM NODE NUMBER = 3916
 MAXIMUM ELEMENT NUMBER = 3282

GENERATE NODES AND ELEMENTS
 IN VOLUMES 41 TO 41 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
 MAXIMUM NODE NUMBER = 4092
 MAXIMUM ELEMENT NUMBER = 3402
 Mid-drift rock
 (V's 43,44,45,46)

DRAG AREAS
 37, 38,
 ALONG LINES
 58,

*** WARNING *** CP= 27.600 TIME= 00:47:47
 Meshing of volume 43 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
 3491 3492 3493 3494 3495 3496 3497 3498

*** WARNING *** CP= 28.420 TIME= 00:47:49
 Meshing of volume 44 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
 3971 3972 3973 3974 3975 3976 3977 3978

MAXIMUM NODE NUMBER = 4848
 MAXIMUM ELEMENT NUMBER = 4042

ELEMENT TYPE SET TO 1

DRAG AREAS
 39,
 ALONG LINES
 58,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
58,

*** WARNING *** CP= 29.460 TIME= 00:47:50
Meshing of volume 46 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
4071 4072 4073 4074 4111 4112 4113 4114

MAXIMUM NODE NUMBER = 5244
MAXIMUM ELEMENT NUMBER = 4362
Concatenate to mesh volume 45
(L's 311,312 used and freed up)
(A's 207 used and freed up)

CONCATENATE AREAS
AREAS = 197 196

COMPOSITE AREA NO.= 207
LINE LIST = 9 297 296 294 293 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 311 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 296 294

COMPOSITE LINE NO.= 312 KP1= 144 KP2= 142

GENERATE NODES AND ELEMENTS
IN VOLUMES 45 TO 45 IN STEPS OF 1

*** WARNING *** CP= 29.650 TIME= 00:47:51
Meshing of area 197 produced 3 poorly shaped faces.

*** NOTE *** CP= 29.650 TIME= 00:47:51
Worst aspect ratio is 27.5464094 : 1.

*** WARNING *** CP= 30.720 TIME= 00:47:52
Meshing of volume 45 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
4593 4594 4601 4602 4609 4610 4617 4618

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 5640
MAXIMUM ELEMENT NUMBER = 4682

DELETE SELECTED LINES FROM 311 TO 311 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 312 TO 312 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 207 TO 207 BY 1

DELETED 1 AREAS
Extrude rest of TSW2
(V's 47,48,49,50)

DRAG AREAS

7, 8, 9, 10,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6032
MAXIMUM ELEMENT NUMBER = 4970
Extrude TSw1
(V's 51,52)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6312
MAXIMUM ELEMENT NUMBER = 5186
Extrude PTn
(V's 53,54)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6424
MAXIMUM ELEMENT NUMBER = 5258
Extrude TCw
(V's 55,56)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6536
MAXIMUM ELEMENT NUMBER = 5330
Extrude TSw3
(V's 57,58)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6648
MAXIMUM ELEMENT NUMBER = 5402
Extrude CHn1v
(V's 59,60)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6732
MAXIMUM ELEMENT NUMBER = 5450
Extrude CHn1z
(V's 61,62)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
58,

MAXIMUM NODE NUMBER = 6956
MAXIMUM ELEMENT NUMBER = 5618
Extrude CHn2
(V's 63,64)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
58,

*** WARNING *** CP= 34.810 TIME= 00:47:59
Meshing of volume 63 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 63 WITH EXCESSIVE ASPECT RATIO ***
5655 5659 5660 5663 5664 5665 5703 5707
5708 5711 5712 5713 5751 5755 5756 5759
5760 5761

*** WARNING *** CP= 35.220 TIME= 00:48:00
Meshing of volume 64 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***
5799 5803 5804 5807 5808 5809 5847 5851
5852 5855 5856 5857 5895 5899 5900 5903
5904 5905

MAXIMUM NODE NUMBER = 7320
MAXIMUM ELEMENT NUMBER = 5906

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03
NODE 6033 USED FOR NODES 6314
NODE 5873 USED FOR NODES 6555
NODE 6734 USED FOR NODES 6957
NODE 5641 USED FOR NODES 6034
NODE 5281 USED FOR NODES 5642
NODE 6331 USED FOR NODES 6449
NODE 4951 USED FOR NODES 5865
NODE 6073 USED FOR NODES 6335
NODE 6074 USED FOR NODES 6336
NODE 6075 USED FOR NODES 6337
NODE 5669 USED FOR NODES 6079
NODE 4849 USED FOR NODES 5245
NODE 4850 USED FOR NODES 5837
NODE 5670 USED FOR NODES 6080
NODE 5671 USED FOR NODES 6081
NODE 6771 USED FOR NODES 7009
NODE 6772 USED FOR NODES 7010
NODE 6773 USED FOR NODES 7011
NODE 4952 USED FOR NODES 5866
NODE 6538 USED FOR NODES 6649
NODE 6650 USED FOR NODES 6733
NODE 6559 USED FOR NODES 6661
NODE 6560 USED FOR NODES 6662
NODE 6561 USED FOR NODES 6663
NODE 6667 USED FOR NODES 6765
NODE 5871 USED FOR NODES 6553
NODE 6668 USED FOR NODES 6766
NODE 6669 USED FOR NODES 6767

NODE	5282	USED	FOR	NODES	5675
NODE	5283	USED	FOR	NODES	5676
NODE	5284	USED	FOR	NODES	5677
NODE	4953	USED	FOR	NODES	5867
NODE	5872	USED	FOR	NODES	6554
NODE	4948	USED	FOR	NODES	5246
NODE	4949	USED	FOR	NODES	5247
NODE	4950	USED	FOR	NODES	5248
NODE	5838	USED	FOR	NODES	6537
NODE	6329	USED	FOR	NODES	6447
NODE	6313	USED	FOR	NODES	6426
NODE	6330	USED	FOR	NODES	6448
NODE	5054	USED	FOR	NODES	5279
NODE	5055	USED	FOR	NODES	5280
NODE	4884	USED	FOR	NODES	5256
NODE	5053	USED	FOR	NODES	5278
NODE	5657	USED	FOR	NODES	6044
NODE	5883	USED	FOR	NODES	6565
NODE	5884	USED	FOR	NODES	6566
NODE	6341	USED	FOR	NODES	6459
NODE	6342	USED	FOR	NODES	6460
NODE	6055	USED	FOR	NODES	6318
NODE	5885	USED	FOR	NODES	6567
NODE	4858	USED	FOR	NODES	5853
NODE	6742	USED	FOR	NODES	6985
NODE	6085	USED	FOR	NODES	6347
NODE	6086	USED	FOR	NODES	6348
NODE	5315	USED	FOR	NODES	5687
NODE	6087	USED	FOR	NODES	6349
NODE	5316	USED	FOR	NODES	5688
NODE	5681	USED	FOR	NODES	6091
NODE	5682	USED	FOR	NODES	6092
NODE	5683	USED	FOR	NODES	6093
NODE	6783	USED	FOR	NODES	7021
NODE	6784	USED	FOR	NODES	7022
NODE	6785	USED	FOR	NODES	7023
NODE	6323	USED	FOR	NODES	6430
NODE	6653	USED	FOR	NODES	6751
NODE	6343	USED	FOR	NODES	6461
NODE	5317	USED	FOR	NODES	5689
NODE	4963	USED	FOR	NODES	5877
NODE	6542	USED	FOR	NODES	6657
NODE	5313	USED	FOR	NODES	5649
NODE	5845	USED	FOR	NODES	6547
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NODE	4964	USED	FOR	NODES	5878
NODE	6572	USED	FOR	NODES	6674
NODE	6573	USED	FOR	NODES	6675
NODE	6679	USED	FOR	NODES	6777
NODE	6680	USED	FOR	NODES	6778
NODE	6681	USED	FOR	NODES	6779
NODE	4965	USED	FOR	NODES	5879
NODE	5052	USED	FOR	NODES	5277
NODE	5050	USED	FOR	NODES	5275
NODE	5051	USED	FOR	NODES	5276
NODE	4883	USED	FOR	NODES	5255
NODE	5048	USED	FOR	NODES	5273
NODE	5049	USED	FOR	NODES	5274
NODE	5047	USED	FOR	NODES	5272
NODE	4882	USED	FOR	NODES	5254
NODE	5046	USED	FOR	NODES	5271
NODE	5045	USED	FOR	NODES	5270
NODE	4881	USED	FOR	NODES	5253
NODE	5044	USED	FOR	NODES	5269
NODE	5685	USED	FOR	NODES	6095
NODE	6344	USED	FOR	NODES	6462
NODE	5658	USED	FOR	NODES	6045
NODE	6056	USED	FOR	NODES	6319
NODE	4859	USED	FOR	NODES	5854
NODE	6743	USED	FOR	NODES	6986

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NODE	5886	USED FOR NODES	6568		
NODE	6088	USED FOR NODES	6350		
NODE	6089	USED FOR NODES	6351		
NODE	6090	USED FOR NODES	6352		
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NODE	5684	USED FOR NODES	6094		
NODE	6786	USED FOR NODES	7024		
NODE	6787	USED FOR NODES	7025		
NODE	6788	USED FOR NODES	7026		
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NODE	5318	USED FOR NODES	5690		
NODE	5319	USED FOR NODES	5691		
NODE	6543	USED FOR NODES	6658		
NODE	5314	USED FOR NODES	5650		
NODE	5846	USED FOR NODES	6548		
NODE	5887	USED FOR NODES	6569		
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NODE	5320	USED FOR NODES	5692		
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NODE	6575	USED FOR NODES	6677		
NODE	6576	USED FOR NODES	6678		
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NODE	6683	USED FOR NODES	6781		
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NODE	4967	USED FOR NODES	5881		
NODE	4968	USED FOR NODES	5882		
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NODE	5041	USED FOR NODES	5266		
NODE	4880	USED FOR NODES	5252		
NODE	5043	USED FOR NODES	5268		
NODE	5040	USED FOR NODES	5265		
NODE	5039	USED FOR NODES	5264		
NODE	4879	USED FOR NODES	5251		
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NODE	3743	USED FOR NODES	4869		
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NODE	3744	USED FOR NODES	4870		
NODE	3827	USED FOR NODES	4990		
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NODE	3953	USED FOR NODES	5381		
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NODE	3831	USED FOR NODES	4994		
NODE	3832	USED FOR NODES	4995		
NODE	3745	USED FOR NODES	4871		

NODE 3860	USED FOR NODES	3930		
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NODE 3766	USED FOR NODES	3923		
NODE 3862	USED FOR NODES	3932		
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NODE 3839	USED FOR NODES	5002		
NODE 3841	USED FOR NODES	5004		
NODE 3748	USED FOR NODES	4874		
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NODE 3146	USED FOR NODES	3759		

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NODE	3230	USED	FOR	NODES	3814
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NODE	2813	USED	FOR	NODES	3154
NODE	2827	USED	FOR	NODES	3180
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NODE	3231	USED	FOR	NODES	3815
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NODE	2838	USED	FOR	NODES	3209
NODE	2816	USED	FOR	NODES	3156
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NODE	3971	USED	FOR	NODES	5363
NODE	3972	USED	FOR	NODES	5364
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NODE	3751	USED FOR NODES	4877
NODE	3849	USED FOR NODES	5012
NODE	3848	USED FOR NODES	5011
NODE	3850	USED FOR NODES	5013
NODE	3322	USED FOR NODES	3994
NODE	3323	USED FOR NODES	3995
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NODE	3297	USED FOR NODES	3985
NODE	3237	USED FOR NODES	3821
NODE	3238	USED FOR NODES	3822
NODE	3239	USED FOR NODES	3823
NODE	3151	USED FOR NODES	3764
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NODE	2839	USED FOR NODES	3210
NODE	2840	USED FOR NODES	3211
NODE	2841	USED FOR NODES	3212
NODE	6320	USED FOR NODES	6429
NODE	6334	USED FOR NODES	6452
NODE	6332	USED FOR NODES	6450
NODE	6333	USED FOR NODES	6451
NODE	6077	USED FOR NODES	6339
NODE	6076	USED FOR NODES	6338
NODE	6078	USED FOR NODES	6340
NODE	6046	USED FOR NODES	6317
NODE	6774	USED FOR NODES	7012
NODE	6741	USED FOR NODES	6973
NODE	6775	USED FOR NODES	7013
NODE	6776	USED FOR NODES	7014
NODE	6672	USED FOR NODES	6770
NODE	6652	USED FOR NODES	6744
NODE	6670	USED FOR NODES	6768
NODE	6671	USED FOR NODES	6769
NODE	5674	USED FOR NODES	6084
NODE	5651	USED FOR NODES	6043
NODE	5673	USED FOR NODES	6083
NODE	5672	USED FOR NODES	6082
NODE	6564	USED FOR NODES	6666
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NODE	6562	USED FOR NODES	6664
NODE	6541	USED FOR NODES	6655
NODE	5844	USED FOR NODES	6544
NODE	5874	USED FOR NODES	6556
NODE	5875	USED FOR NODES	6557
NODE	5876	USED FOR NODES	6558
NODE	4195	USED FOR NODES	4954 5868
NODE	4496	USED FOR NODES	5309 5648
NODE	4581	USED FOR NODES	5312 5680
NODE	4197	USED FOR NODES	4956 5870
NODE	4580	USED FOR NODES	5311 5679
NODE	4196	USED FOR NODES	4955 5869
NODE	4579	USED FOR NODES	5310 5678
NODE	4094	USED FOR NODES	4857 5847
NODE	4506	USED FOR NODES	5325
NODE	4657	USED FOR NODES	5332
NODE	4658	USED FOR NODES	5333
NODE	4659	USED FOR NODES	5334
NODE	4656	USED FOR NODES	5337
NODE	4505	USED FOR NODES	5326
NODE	4655	USED FOR NODES	5336
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NODE	4504	USED FOR NODES	5327
NODE	4651	USED FOR NODES	5338
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NODE	4650	USED FOR NODES	5343
NODE	4503	USED FOR NODES	5328
NODE	4648	USED FOR NODES	5341
NODE	4649	USED FOR NODES	5342
NODE	4502	USED FOR NODES	5329
NODE	4647	USED FOR NODES	5346

NODE 4646	USED FOR NODES	5345		
NODE 4645	USED FOR NODES	5344		
NODE 4501	USED FOR NODES	5330		
NODE 4644	USED FOR NODES	5349		
NODE 4643	USED FOR NODES	5348		
NODE 4642	USED FOR NODES	5347		
NODE 4641	USED FOR NODES	5352		
NODE 4500	USED FOR NODES	5331		
NODE 4640	USED FOR NODES	5351		
NODE 4639	USED FOR NODES	5350		
NODE 3626	USED FOR NODES	3936	4587	5324
NODE 3625	USED FOR NODES	3935	4586	5323
NODE 3406	USED FOR NODES	3742	4093	4860
NODE 3457	USED FOR NODES	3793	4203	4959
NODE 3624	USED FOR NODES	3934	4585	5322
NODE 3581	USED FOR NODES	3933	4499	5321
NODE 3455	USED FOR NODES	3791	4201	4957
NODE 3456	USED FOR NODES	3792	4202	4958
NODE 3686	USED FOR NODES	3981		
NODE 3593	USED FOR NODES	3977		
NODE 3685	USED FOR NODES	3980		
NODE 3684	USED FOR NODES	3979		
NODE 3683	USED FOR NODES	3984		
NODE 3682	USED FOR NODES	3983		
NODE 3592	USED FOR NODES	3978		
NODE 3681	USED FOR NODES	3982		
NODE 3021	USED FOR NODES	3285	3591	3973
NODE 3054	USED FOR NODES	3286	3621	3974
NODE 3055	USED FOR NODES	3287	3622	3975
NODE 2933	USED FOR NODES	3185	3451	3787
NODE 2932	USED FOR NODES	3184	3450	3786
NODE 2890	USED FOR NODES	3142	3405	3752
NODE 2931	USED FOR NODES	3183	3449	3785
NODE 3056	USED FOR NODES	3288	3623	3976
NODE 3113	USED FOR NODES	3332		
NODE 3032	USED FOR NODES	3329		
NODE 3112	USED FOR NODES	3331		
NODE 3111	USED FOR NODES	3330		
NODE 3053	USED FOR NODES	3328		
NODE 2826	USED FOR NODES	2924	3176	
NODE 3031	USED FOR NODES	3325		
NODE 2825	USED FOR NODES	2923	3175	
NODE 2824	USED FOR NODES	2922	3174	
NODE 2814	USED FOR NODES	2889	3152	
NODE 3051	USED FOR NODES	3326		
NODE 3052	USED FOR NODES	3327		
NODE 4265	USED FOR NODES	5021		
NODE 4274	USED FOR NODES	5030		
NODE 4097	USED FOR NODES	4863		
NODE 4101	USED FOR NODES	4867		
NODE 3519	USED FOR NODES	3855		
NODE 4264	USED FOR NODES	5020		
NODE 2990	USED FOR NODES	3242		
NODE 4273	USED FOR NODES	5029		
NODE 4259	USED FOR NODES	5015		
NODE 4263	USED FOR NODES	5019		
NODE 2988	USED FOR NODES	3240		
NODE 4278	USED FOR NODES	5034		
NODE 4095	USED FOR NODES	4861		
NODE 2989	USED FOR NODES	3241		
NODE 3407	USED FOR NODES	3753		
NODE 3408	USED FOR NODES	3754		
NODE 4276	USED FOR NODES	5032		
NODE 4268	USED FOR NODES	5024		
NODE 3517	USED FOR NODES	3853		
NODE 4261	USED FOR NODES	5017		
NODE 2891	USED FOR NODES	3153		
NODE 4267	USED FOR NODES	5023		
NODE 4096	USED FOR NODES	4862		
NODE 4275	USED FOR NODES	5031		

NODE	4098	USED	FOR	NODES	4864
NODE	4270	USED	FOR	NODES	5026
NODE	4271	USED	FOR	NODES	5027
NODE	3518	USED	FOR	NODES	3854
NODE	4099	USED	FOR	NODES	4865
NODE	4277	USED	FOR	NODES	5033
NODE	4269	USED	FOR	NODES	5025
NODE	4266	USED	FOR	NODES	5022
NODE	4100	USED	FOR	NODES	4866
NODE	3515	USED	FOR	NODES	3851
NODE	3516	USED	FOR	NODES	3852
NODE	3520	USED	FOR	NODES	3856
NODE	4262	USED	FOR	NODES	5018
NODE	4258	USED	FOR	NODES	5014
NODE	4260	USED	FOR	NODES	5016
NODE	4272	USED	FOR	NODES	5028
NODE	2858	USED	FOR	NODES	2910
NODE	2868	USED	FOR	NODES	2937
NODE	2869	USED	FOR	NODES	2938
NODE	2870	USED	FOR	NODES	2939
NODE	3108	USED	FOR	NODES	3651
NODE	3030	USED	FOR	NODES	3602
NODE	3109	USED	FOR	NODES	3652
NODE	3110	USED	FOR	NODES	3653
NODE	2962	USED	FOR	NODES	3462
NODE	2963	USED	FOR	NODES	3463
NODE	2893	USED	FOR	NODES	3422
NODE	2961	USED	FOR	NODES	3461
NODE	3680	USED	FOR	NODES	4638
NODE	3678	USED	FOR	NODES	4636
NODE	3679	USED	FOR	NODES	4637
NODE	3590	USED	FOR	NODES	4515
NODE	3410	USED	FOR	NODES	4120
NODE	3488	USED	FOR	NODES	4231
NODE	3489	USED	FOR	NODES	4232
NODE	3490	USED	FOR	NODES	4233
NODE	2859	USED	FOR	NODES	2911
NODE	2871	USED	FOR	NODES	2940
NODE	2872	USED	FOR	NODES	2941
NODE	2873	USED	FOR	NODES	2942
NODE	3029	USED	FOR	NODES	3601
NODE	3107	USED	FOR	NODES	3650
NODE	3105	USED	FOR	NODES	3648
NODE	3106	USED	FOR	NODES	3649
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NODE	2966	USED	FOR	NODES	3466
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NODE	2876	USED	FOR	NODES	2945
NODE	2860	USED	FOR	NODES	2912
NODE	2874	USED	FOR	NODES	2943
NODE	3102	USED	FOR	NODES	3645
NODE	3103	USED	FOR	NODES	3646
NODE	3028	USED	FOR	NODES	3600
NODE	3104	USED	FOR	NODES	3647
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NODE	2967	USED	FOR	NODES	3467
NODE	2895	USED	FOR	NODES	3424
NODE	2968	USED	FOR	NODES	3468
NODE	3675	USED	FOR	NODES	4633
NODE	3676	USED	FOR	NODES	4634
NODE	3589	USED	FOR	NODES	4514
NODE	3677	USED	FOR	NODES	4635
NODE	3492	USED	FOR	NODES	4235
NODE	3411	USED	FOR	NODES	4121
NODE	3491	USED	FOR	NODES	4234
NODE	3493	USED	FOR	NODES	4236
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NODE	2866	USED	FOR	NODES	2926

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NODE	2865	USED	FOR	NODES	2925
NODE	3027	USED	FOR	NODES	3599
NODE	3101	USED	FOR	NODES	3644
NODE	3100	USED	FOR	NODES	3643
NODE	3099	USED	FOR	NODES	3642
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NODE	2972	USED	FOR	NODES	3472
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NODE	3026	USED	FOR	NODES	3598
NODE	3097	USED	FOR	NODES	3640
NODE	3098	USED	FOR	NODES	3641
NODE	2897	USED	FOR	NODES	3426
NODE	2973	USED	FOR	NODES	3473
NODE	2974	USED	FOR	NODES	3474
NODE	2975	USED	FOR	NODES	3475
NODE	3588	USED	FOR	NODES	4513
NODE	3672	USED	FOR	NODES	4630
NODE	3674	USED	FOR	NODES	4632
NODE	3673	USED	FOR	NODES	4631
NODE	3412	USED	FOR	NODES	4122
NODE	3495	USED	FOR	NODES	4238
NODE	3494	USED	FOR	NODES	4237
NODE	3496	USED	FOR	NODES	4239
NODE	3093	USED	FOR	NODES	3636
NODE	3095	USED	FOR	NODES	3638
NODE	3025	USED	FOR	NODES	3597
NODE	3094	USED	FOR	NODES	3637
NODE	2898	USED	FOR	NODES	3427
NODE	2977	USED	FOR	NODES	3477
NODE	2978	USED	FOR	NODES	3478
NODE	2976	USED	FOR	NODES	3476
NODE	3091	USED	FOR	NODES	3634
NODE	3024	USED	FOR	NODES	3596
NODE	3090	USED	FOR	NODES	3633
NODE	3092	USED	FOR	NODES	3635
NODE	2981	USED	FOR	NODES	3481
NODE	2980	USED	FOR	NODES	3480
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NODE	2899	USED	FOR	NODES	3428
NODE	3670	USED	FOR	NODES	4628
NODE	3669	USED	FOR	NODES	4627
NODE	3587	USED	FOR	NODES	4512
NODE	3671	USED	FOR	NODES	4629
NODE	3413	USED	FOR	NODES	4123
NODE	3497	USED	FOR	NODES	4240
NODE	3498	USED	FOR	NODES	4241
NODE	3499	USED	FOR	NODES	4242
NODE	3023	USED	FOR	NODES	3595
NODE	3087	USED	FOR	NODES	3630
NODE	3088	USED	FOR	NODES	3631
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NODE	2984	USED	FOR	NODES	3484
NODE	3084	USED	FOR	NODES	3627
NODE	3085	USED	FOR	NODES	3628
NODE	3086	USED	FOR	NODES	3629
NODE	3022	USED	FOR	NODES	3594
NODE	2985	USED	FOR	NODES	3485
NODE	2901	USED	FOR	NODES	3430
NODE	2987	USED	FOR	NODES	3487
NODE	2986	USED	FOR	NODES	3486
NODE	2892	USED	FOR	NODES	3419
NODE	2935	USED	FOR	NODES	3453
NODE	2936	USED	FOR	NODES	3454
NODE	2934	USED	FOR	NODES	3452

NODE	3667	USED	FOR	NODES	4625
NODE	3586	USED	FOR	NODES	4511
NODE	3666	USED	FOR	NODES	4624
NODE	3668	USED	FOR	NODES	4626
NODE	3501	USED	FOR	NODES	4244
NODE	3414	USED	FOR	NODES	4124
NODE	3502	USED	FOR	NODES	4245
NODE	3500	USED	FOR	NODES	4243
NODE	3665	USED	FOR	NODES	4623
NODE	3663	USED	FOR	NODES	4621
NODE	3664	USED	FOR	NODES	4622
NODE	3585	USED	FOR	NODES	4510
NODE	3503	USED	FOR	NODES	4246
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NODE	3505	USED	FOR	NODES	4248
NODE	3661	USED	FOR	NODES	4619
NODE	3662	USED	FOR	NODES	4620
NODE	3660	USED	FOR	NODES	4618
NODE	3584	USED	FOR	NODES	4509
NODE	3507	USED	FOR	NODES	4250
NODE	3508	USED	FOR	NODES	4251
NODE	3416	USED	FOR	NODES	4126
NODE	3506	USED	FOR	NODES	4249
NODE	3657	USED	FOR	NODES	4615
NODE	3658	USED	FOR	NODES	4616
NODE	3659	USED	FOR	NODES	4617
NODE	3583	USED	FOR	NODES	4508
NODE	3511	USED	FOR	NODES	4254
NODE	3510	USED	FOR	NODES	4253
NODE	3417	USED	FOR	NODES	4127
NODE	3509	USED	FOR	NODES	4252
NODE	3655	USED	FOR	NODES	4613
NODE	3656	USED	FOR	NODES	4614
NODE	3582	USED	FOR	NODES	4507
NODE	3654	USED	FOR	NODES	4612
NODE	3513	USED	FOR	NODES	4256
NODE	3512	USED	FOR	NODES	4255
NODE	3514	USED	FOR	NODES	4257
NODE	3418	USED	FOR	NODES	4128
NODE	3459	USED	FOR	NODES	4205
NODE	3460	USED	FOR	NODES	4206
NODE	3409	USED	FOR	NODES	4112
NODE	3458	USED	FOR	NODES	4204
NODE	5780	USED	FOR	NODES	6235
NODE	5781	USED	FOR	NODES	6236
NODE	6396	USED	FOR	NODES	6514
NODE	4103	USED	FOR	NODES	5958
NODE	6602	USED	FOR	NODES	6702
NODE	5950	USED	FOR	NODES	6607
NODE	5782	USED	FOR	NODES	6237
NODE	4209	USED	FOR	NODES	5978
NODE	5982	USED	FOR	NODES	6619
NODE	5983	USED	FOR	NODES	6620
NODE	5984	USED	FOR	NODES	6621
NODE	6625	USED	FOR	NODES	6712
NODE	6626	USED	FOR	NODES	6713
NODE	6627	USED	FOR	NODES	6714
NODE	6395	USED	FOR	NODES	6513
NODE	6205	USED	FOR	NODES	6378
NODE	4588	USED	FOR	NODES	5786
NODE	6397	USED	FOR	NODES	6515
NODE	6718	USED	FOR	NODES	6891
NODE	6719	USED	FOR	NODES	6892
NODE	6720	USED	FOR	NODES	6893
NODE	4497	USED	FOR	NODES	5754
NODE	4589	USED	FOR	NODES	5787
NODE	6698	USED	FOR	NODES	6871
NODE	4590	USED	FOR	NODES	5788
NODE	6897	USED	FOR	NODES	7210

NODE	5762	USED FOR NODES	6194
NODE	6229	USED FOR NODES	6401
NODE	6230	USED FOR NODES	6402
NODE	6231	USED FOR NODES	6403
NODE	6862	USED FOR NODES	7180
NODE	6383	USED FOR NODES	6490
NODE	6898	USED FOR NODES	7211
NODE	6899	USED FOR NODES	7212
NODE	4207	USED FOR NODES	5976
NODE	4208	USED FOR NODES	5977
NODE	6384	USED FOR NODES	6491
NODE	6900	USED FOR NODES	7213
NODE	6901	USED FOR NODES	7214
NODE	6902	USED FOR NODES	7215
NODE	6603	USED FOR NODES	6703
NODE	4104	USED FOR NODES	5959
NODE	5951	USED FOR NODES	6608
NODE	4210	USED FOR NODES	5979
NODE	4211	USED FOR NODES	5980
NODE	5985	USED FOR NODES	6622
NODE	5986	USED FOR NODES	6623
NODE	5987	USED FOR NODES	6624
NODE	6628	USED FOR NODES	6715
NODE	6629	USED FOR NODES	6716
NODE	6630	USED FOR NODES	6717
NODE	4212	USED FOR NODES	5981
NODE	5783	USED FOR NODES	6238
NODE	5784	USED FOR NODES	6239
NODE	5785	USED FOR NODES	6240
NODE	6398	USED FOR NODES	6516
NODE	6399	USED FOR NODES	6517
NODE	6400	USED FOR NODES	6518
NODE	6721	USED FOR NODES	6894
NODE	6722	USED FOR NODES	6895
NODE	4498	USED FOR NODES	5755
NODE	6206	USED FOR NODES	6379
NODE	6699	USED FOR NODES	6872
NODE	6723	USED FOR NODES	6896
NODE	4591	USED FOR NODES	5789
NODE	4592	USED FOR NODES	5790
NODE	4593	USED FOR NODES	5791
NODE	5763	USED FOR NODES	6195
NODE	6232	USED FOR NODES	6404
NODE	6233	USED FOR NODES	6405
NODE	6863	USED FOR NODES	7181
NODE	6234	USED FOR NODES	6406
NODE	4583	USED FOR NODES	5778
NODE	4584	USED FOR NODES	5779
NODE	6389	USED FOR NODES	6504
NODE	6601	USED FOR NODES	6700
NODE	5949	USED FOR NODES	6604
NODE	6709	USED FOR NODES	6885
NODE	6710	USED FOR NODES	6886
NODE	6711	USED FOR NODES	6887
NODE	5973	USED FOR NODES	6613
NODE	5974	USED FOR NODES	6614
NODE	5975	USED FOR NODES	6615
NODE	6616	USED FOR NODES	6706
NODE	6617	USED FOR NODES	6707
NODE	6618	USED FOR NODES	6708
NODE	6196	USED FOR NODES	6377
NODE	6390	USED FOR NODES	6505
NODE	6391	USED FOR NODES	6506
NODE	6223	USED FOR NODES	6392
NODE	6224	USED FOR NODES	6393
NODE	6225	USED FOR NODES	6394
NODE	6888	USED FOR NODES	7204
NODE	6889	USED FOR NODES	7205
NODE	6890	USED FOR NODES	7206
NODE	4489	USED FOR NODES	5753

NODE 4198 USED FOR NODES 5970
 NODE 4102 USED FOR NODES 5952
 NODE 6697 USED FOR NODES 6864
 NODE 4199 USED FOR NODES 5971
 NODE 4582 USED FOR NODES 5777
 NODE 5756 USED FOR NODES 6193
 NODE 4200 USED FOR NODES 5972
 NODE 5774 USED FOR NODES 6226
 NODE 5775 USED FOR NODES 6227
 NODE 6380 USED FOR NODES 6489
 NODE 5776 USED FOR NODES 6228
 NODE 6861 USED FOR NODES 7168

*** WARNING *** CP= 46.800 TIME= 00:48:18

Same node numbers associated with more than one solid model entity.

Future mesh clearing operations could produce unexpected results.

NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	67 USED FOR KEYPOINT(S)	115		
KEYPOINT	72 USED FOR KEYPOINT(S)	78	114	
KEYPOINT	76 USED FOR KEYPOINT(S)	89		
KEYPOINT	80 USED FOR KEYPOINT(S)	111	119	131
KEYPOINT	85 USED FOR KEYPOINT(S)	122		
KEYPOINT	91 USED FOR KEYPOINT(S)	102	124	128
KEYPOINT	93 USED FOR KEYPOINT(S)	104		
KEYPOINT	98 USED FOR KEYPOINT(S)	117		
KEYPOINT	101 USED FOR KEYPOINT(S)	106	125	132
KEYPOINT	120 USED FOR KEYPOINT(S)	130	133	149
KEYPOINT	121 USED FOR KEYPOINT(S)	137		
KEYPOINT	123 USED FOR KEYPOINT(S)	127	140	145
KEYPOINT	126 USED FOR KEYPOINT(S)	129	141	150
KEYPOINT	134 USED FOR KEYPOINT(S)	148	160	
KEYPOINT	135 USED FOR KEYPOINT(S)	162		
KEYPOINT	138 USED FOR KEYPOINT(S)	155		
KEYPOINT	139 USED FOR KEYPOINT(S)	144	153	
KEYPOINT	142 USED FOR KEYPOINT(S)	146		
KEYPOINT	143 USED FOR KEYPOINT(S)	152		
KEYPOINT	147 USED FOR KEYPOINT(S)	157		
KEYPOINT	151 USED FOR KEYPOINT(S)	164		
KEYPOINT	154 USED FOR KEYPOINT(S)	165		
KEYPOINT	156 USED FOR KEYPOINT(S)	167		
KEYPOINT	158 USED FOR KEYPOINT(S)	181		
KEYPOINT	159 USED FOR KEYPOINT(S)	184		
KEYPOINT	161 USED FOR KEYPOINT(S)	186		
KEYPOINT	163 USED FOR KEYPOINT(S)	170		
KEYPOINT	166 USED FOR KEYPOINT(S)	171		
KEYPOINT	168 USED FOR KEYPOINT(S)	173		
KEYPOINT	169 USED FOR KEYPOINT(S)	176		
KEYPOINT	172 USED FOR KEYPOINT(S)	177		
KEYPOINT	174 USED FOR KEYPOINT(S)	179		
KEYPOINT	182 USED FOR KEYPOINT(S)	187		
KEYPOINT	183 USED FOR KEYPOINT(S)	190		
KEYPOINT	185 USED FOR KEYPOINT(S)	192		
KEYPOINT	188 USED FOR KEYPOINT(S)	193		
KEYPOINT	189 USED FOR KEYPOINT(S)	196		
KEYPOINT	191 USED FOR KEYPOINT(S)	198		
KEYPOINT	194 USED FOR KEYPOINT(S)	199		
KEYPOINT	195 USED FOR KEYPOINT(S)	202		
KEYPOINT	197 USED FOR KEYPOINT(S)	204		
LINE	108 USED FOR LINE(S)	240		
LINE	121 USED FOR LINE(S)	241		
LINE	126 USED FOR LINE(S)	154	239	
LINE	134 USED FOR LINE(S)	174		
LINE	137 USED FOR LINE(S)	172		
LINE	141 USED FOR LINE(S)	238		
LINE	159 USED FOR LINE(S)	236	246	270
LINE	160 USED FOR LINE(S)	252		
LINE	161 USED FOR LINE(S)	251		
LINE	187 USED FOR LINE(S)	257		

LINE	192	USED FOR LINE(S)	220	256	264
LINE	193	USED FOR LINE(S)	225		
LINE	194	USED FOR LINE(S)	226		
LINE	200	USED FOR LINE(S)	244		
LINE	203	USED FOR LINE(S)	243		
LINE	205	USED FOR LINE(S)	233	259	272
LINE	207	USED FOR LINE(S)	265		
LINE	228	USED FOR LINE(S)	271		
LINE	245	USED FOR LINE(S)	269		
LINE	247	USED FOR LINE(S)	268	275	307
LINE	248	USED FOR LINE(S)	283		
LINE	249	USED FOR LINE(S)	282		
LINE	253	USED FOR LINE(S)	290		
LINE	254	USED FOR LINE(S)	262	289	299
LINE	255	USED FOR LINE(S)	263		
LINE	258	USED FOR LINE(S)	273		
LINE	260	USED FOR LINE(S)	267	292	309
LINE	261	USED FOR LINE(S)	300		
LINE	266	USED FOR LINE(S)	308		
LINE	274	USED FOR LINE(S)	306		
LINE	276	USED FOR LINE(S)	305	330	
LINE	277	USED FOR LINE(S)	336		
LINE	278	USED FOR LINE(S)	335		
LINE	285	USED FOR LINE(S)	320		
LINE	286	USED FOR LINE(S)	319		
LINE	287	USED FOR LINE(S)	297	315	
LINE	288	USED FOR LINE(S)	298		
LINE	291	USED FOR LINE(S)	310		
LINE	293	USED FOR LINE(S)	302		
LINE	295	USED FOR LINE(S)	313		
LINE	296	USED FOR LINE(S)	314		
LINE	303	USED FOR LINE(S)	325		
LINE	304	USED FOR LINE(S)	331		
LINE	312	USED FOR LINE(S)	339		
LINE	317	USED FOR LINE(S)	341		
LINE	318	USED FOR LINE(S)	340		
LINE	322	USED FOR LINE(S)	346		
LINE	323	USED FOR LINE(S)	345		
LINE	326	USED FOR LINE(S)	377		
LINE	327	USED FOR LINE(S)	383		
LINE	328	USED FOR LINE(S)	382		
LINE	332	USED FOR LINE(S)	388		
LINE	333	USED FOR LINE(S)	387		
LINE	338	USED FOR LINE(S)	352		
LINE	343	USED FOR LINE(S)	354		
LINE	344	USED FOR LINE(S)	353		
LINE	348	USED FOR LINE(S)	359		
LINE	349	USED FOR LINE(S)	358		
LINE	351	USED FOR LINE(S)	365		
LINE	356	USED FOR LINE(S)	367		
LINE	357	USED FOR LINE(S)	366		
LINE	361	USED FOR LINE(S)	372		
LINE	362	USED FOR LINE(S)	371		
LINE	378	USED FOR LINE(S)	390		
LINE	379	USED FOR LINE(S)	396		
LINE	380	USED FOR LINE(S)	395		
LINE	384	USED FOR LINE(S)	401		
LINE	385	USED FOR LINE(S)	400		
LINE	391	USED FOR LINE(S)	403		
LINE	392	USED FOR LINE(S)	409		
LINE	393	USED FOR LINE(S)	408		
LINE	397	USED FOR LINE(S)	414		
LINE	398	USED FOR LINE(S)	413		
LINE	404	USED FOR LINE(S)	416		
LINE	405	USED FOR LINE(S)	422		
LINE	406	USED FOR LINE(S)	421		
LINE	410	USED FOR LINE(S)	427		
LINE	411	USED FOR LINE(S)	426		
AREA	56	USED FOR AREA(S)	161		
AREA	84	USED FOR AREA(S)	123		

AREA 95 USED FOR AREA(S) 160
 AREA 112 USED FOR AREA(S) 168
 AREA 142 USED FOR AREA(S) 172
 AREA 148 USED FOR AREA(S) 156
 AREA 154 USED FOR AREA(S) 163
 AREA 155 USED FOR AREA(S) 177
 AREA 159 USED FOR AREA(S) 181
 AREA 165 USED FOR AREA(S) 180
 AREA 166 USED FOR AREA(S) 188
 AREA 170 USED FOR AREA(S) 193
 AREA 171 USED FOR AREA(S) 176
 AREA 174 USED FOR AREA(S) 182
 AREA 175 USED FOR AREA(S) 199
 AREA 179 USED FOR AREA(S) 204
 AREA 184 USED FOR AREA(S) 203
 AREA 185 USED FOR AREA(S) 223
 AREA 191 USED FOR AREA(S) 212
 AREA 192 USED FOR AREA(S) 198
 AREA 195 USED FOR AREA(S) 205
 AREA 197 USED FOR AREA(S) 208
 AREA 202 USED FOR AREA(S) 219
 AREA 210 USED FOR AREA(S) 226
 AREA 214 USED FOR AREA(S) 230
 AREA 217 USED FOR AREA(S) 255
 AREA 221 USED FOR AREA(S) 259
 AREA 228 USED FOR AREA(S) 235
 AREA 232 USED FOR AREA(S) 239
 AREA 237 USED FOR AREA(S) 244
 AREA 241 USED FOR AREA(S) 248
 AREA 253 USED FOR AREA(S) 264
 AREA 257 USED FOR AREA(S) 268
 AREA 262 USED FOR AREA(S) 273
 AREA 266 USED FOR AREA(S) 277
 AREA 271 USED FOR AREA(S) 282
 AREA 275 USED FOR AREA(S) 286

Extrude 2-D rock into back half 3-D
 Invert
 (V's 65,66)

FOR ELEMENT TYPE(S) ALLOWING MULTIPLE SHAPES:
 PRODUCE ALL QUADRILATERAL OR BRICK ELEMENTS.

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 11

DRAG AREAS
 27, 28,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 7396
 MAXIMUM ELEMENT NUMBER = 5954
 Rock around drift
 (V's 67,68,69,70,71,72,73,74)

MATERIAL NUMBER SET TO 4

ELEMENT TYPE SET TO 2

DRAG AREAS
 29, 30,
 ALONG LINES
 59,

MAXIMUM NODE NUMBER = 7648
 MAXIMUM ELEMENT NUMBER = 6114

ELEMENT TYPE SET TO 1

DRAG AREAS
31,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
32,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 7780
MAXIMUM ELEMENT NUMBER = 6194

GENERATE NODES AND ELEMENTS
IN VOLUMES 69 TO 69 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 7912
MAXIMUM ELEMENT NUMBER = 6274

DRAG AREAS
33, 34,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8248
MAXIMUM ELEMENT NUMBER = 6514

ELEMENT TYPE SET TO 1

DRAG AREAS
35,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
36,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 8424
MAXIMUM ELEMENT NUMBER = 6634

GENERATE NODES AND ELEMENTS
IN VOLUMES 73 TO 73 IN STEPS OF 1

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 8600
MAXIMUM ELEMENT NUMBER = 6754
Mid-drift rock
(V's 75,76,77,78)

DRAG AREAS
37, 38,
ALONG LINES
59,

*** WARNING *** CP= 54.950 TIME= 00:48:32
Meshing of volume 75 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
6843 6844 6845 6846 6847 6848 6849 6850

*** WARNING *** CP= 55.800 TIME= 00:48:33

Meshing of volume 76 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 76 WITH EXCESSIVE DISTORTION ***
7323 7324 7325 7326 7327 7328 7329 7330

MAXIMUM NODE NUMBER = 9356
MAXIMUM ELEMENT NUMBER = 7394

ELEMENT TYPE SET TO 1

DRAG AREAS
39,
ALONG LINES
59,

ELEMENT TYPE SET TO 2

DRAG AREAS
40,
ALONG LINES
59,

*** WARNING *** CP= 56.840 TIME= 00:48:35
Meshing of volume 78 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 78 WITH EXCESSIVE DISTORTION ***
7423 7424 7425 7426 7463 7464 7465 7466

MAXIMUM NODE NUMBER = 9752
MAXIMUM ELEMENT NUMBER = 7714
Concatenate to mesh volume 77
(L's 443,444 used and freed up)
(A's 321 used and freed up)

CONCATENATE AREAS
AREAS = 311 310

COMPOSITE AREA NO.= 321
LINE LIST = 9 429 428 426 422 35

CONCATENATE LINES
LINES = 9 35

COMPOSITE LINE NO.= 443 KP1= 14 KP2= 16

CONCATENATE LINES
LINES = 428 426

COMPOSITE LINE NO.= 444 KP1= 184 KP2= 179

GENERATE NODES AND ELEMENTS
IN VOLUMES 77 TO 77 IN STEPS OF 1

*** WARNING *** CP= 57.020 TIME= 00:48:35
Meshing of area 311 produced 3 poorly shaped faces.

*** NOTE *** CP= 57.020 TIME= 00:48:35
Worst aspect ratio is 27.5464094 : 1.

*** WARNING *** CP= 58.090 TIME= 00:48:37
Meshing of volume 77 produced 8 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 77 WITH EXCESSIVE DISTORTION ***
7963 7964 7965 7966 7967 7968 7969 7970

NUMBER OF VOLUMES MESHED = 1
MAXIMUM NODE NUMBER = 10148

MAXIMUM ELEMENT NUMBER = 8034

DELETE SELECTED LINES FROM 443 TO 443 BY 1

DELETED 1 LINES

DELETE SELECTED LINES FROM 444 TO 444 BY 1

DELETED 1 LINES

DELETE SELECTED AREAS FROM 321 TO 321 BY 1

DELETED 1 AREAS
Extrude rest of TSw2
(V's 79,80,81,82)

DRAG AREAS
7, 8, 9, 10,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10540

MAXIMUM ELEMENT NUMBER = 8322

Extrude TSw1
(V's 83,84)

MATERIAL NUMBER SET TO 3

DRAG AREAS
5, 6,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10820

MAXIMUM ELEMENT NUMBER = 8538

Extrude PTh
(V's 85,86)

MATERIAL NUMBER SET TO 2

DRAG AREAS
3, 4,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 10932

MAXIMUM ELEMENT NUMBER = 8610

Extrude TCw
(V's 87,88)

MATERIAL NUMBER SET TO 1

DRAG AREAS
1, 2,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11044

MAXIMUM ELEMENT NUMBER = 8682

Extrude TSw3
(V's 89,90)

MATERIAL NUMBER SET TO 5

DRAG AREAS
11, 12,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11156

MAXIMUM ELEMENT NUMBER = 8754
Extrude CHn1v
(V's 91,92)

MATERIAL NUMBER SET TO 6

DRAG AREAS
13, 14,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11240
MAXIMUM ELEMENT NUMBER = 8802
Extrude CHn1z
(V's 93,94)

MATERIAL NUMBER SET TO 7

DRAG AREAS
15, 16,
ALONG LINES
59,

MAXIMUM NODE NUMBER = 11464
MAXIMUM ELEMENT NUMBER = 8970
Extrude CHn2
(V's 95,96)

MATERIAL NUMBER SET TO 8

DRAG AREAS
17, 18,
ALONG LINES
59,

*** WARNING *** CP= 62.330 TIME= 00:48:44
Meshing of volume 95 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 95 WITH EXCESSIVE ASPECT RATIO ***

9007	9011	9012	9015	9016	9017	9055	9059
9060	9063	9064	9065	9103	9107	9108	9111
9112	9113						

*** WARNING *** CP= 62.750 TIME= 00:48:45
Meshing of volume 96 produced 18 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 96 WITH EXCESSIVE ASPECT RATIO ***

9151	9155	9156	9159	9160	9161	9199	9203
9204	9207	9208	9209	9247	9251	9252	9255
9256	9257						

MAXIMUM NODE NUMBER = 11828
MAXIMUM ELEMENT NUMBER = 9258

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 11046 USED FOR NODES 11157
NODE 11158 USED FOR NODES 11241
NODE 11242 USED FOR NODES 11465
NODE 9459 USED FOR NODES 10373
NODE 11067 USED FOR NODES 11169
NODE 11068 USED FOR NODES 11170
NODE 11069 USED FOR NODES 11171
NODE 10581 USED FOR NODES 10843
NODE 11175 USED FOR NODES 11273
NODE 11176 USED FOR NODES 11274
NODE 11177 USED FOR NODES 11275

NODE 10582 USED FOR NODES 10844
NODE 10583 USED FOR NODES 10845
NODE 11279 USED FOR NODES 11517
NODE 11280 USED FOR NODES 11518
NODE 11281 USED FOR NODES 11519
NODE 10177 USED FOR NODES 10587
NODE 10178 USED FOR NODES 10588
NODE 10179 USED FOR NODES 10589
NODE 9790 USED FOR NODES 10183
NODE 9791 USED FOR NODES 10184
NODE 9792 USED FOR NODES 10185
NODE 10149 USED FOR NODES 10542
NODE 9789 USED FOR NODES 10150
NODE 9460 USED FOR NODES 10374
NODE 9461 USED FOR NODES 10375
NODE 9358 USED FOR NODES 10345
NODE 10346 USED FOR NODES 11045
NODE 9357 USED FOR NODES 9753
NODE 9456 USED FOR NODES 9754
NODE 9457 USED FOR NODES 9755
NODE 9458 USED FOR NODES 9756
NODE 10379 USED FOR NODES 11061
NODE 10380 USED FOR NODES 11062
NODE 10381 USED FOR NODES 11063
NODE 10821 USED FOR NODES 10934
NODE 10541 USED FOR NODES 10822
NODE 10837 USED FOR NODES 10955
NODE 10838 USED FOR NODES 10956
NODE 10839 USED FOR NODES 10957
NODE 9562 USED FOR NODES 9787
NODE 9563 USED FOR NODES 9788
NODE 9392 USED FOR NODES 9764
NODE 9561 USED FOR NODES 9786
NODE 10165 USED FOR NODES 10552
NODE 10563 USED FOR NODES 10826
NODE 11250 USED FOR NODES 11493
NODE 9366 USED FOR NODES 10361
NODE 11161 USED FOR NODES 11259
NODE 11187 USED FOR NODES 11285
NODE 11188 USED FOR NODES 11286
NODE 10593 USED FOR NODES 10855
NODE 11189 USED FOR NODES 11287
NODE 10594 USED FOR NODES 10856
NODE 10595 USED FOR NODES 10857
NODE 11291 USED FOR NODES 11529
NODE 11292 USED FOR NODES 11530
NODE 11293 USED FOR NODES 11531
NODE 10189 USED FOR NODES 10599
NODE 10190 USED FOR NODES 10600
NODE 10191 USED FOR NODES 10601
NODE 11050 USED FOR NODES 11165
NODE 10391 USED FOR NODES 11073
NODE 10392 USED FOR NODES 11074
NODE 10393 USED FOR NODES 11075
NODE 9471 USED FOR NODES 10385
NODE 10353 USED FOR NODES 11055
NODE 11079 USED FOR NODES 11181
NODE 9472 USED FOR NODES 10386
NODE 9821 USED FOR NODES 10157
NODE 9823 USED FOR NODES 10195
NODE 9824 USED FOR NODES 10196
NODE 9825 USED FOR NODES 10197
NODE 9473 USED FOR NODES 10387
NODE 10831 USED FOR NODES 10938
NODE 11080 USED FOR NODES 11182
NODE 11081 USED FOR NODES 11183
NODE 10849 USED FOR NODES 10967
NODE 10850 USED FOR NODES 10968
NODE 10851 USED FOR NODES 10969
NODE 9560 USED FOR NODES 9785

NODE 9391	USED FOR NODES	9763	
NODE 9558	USED FOR NODES	9783	
NODE 9559	USED FOR NODES	9784	
NODE 9557	USED FOR NODES	9782	
NODE 9556	USED FOR NODES	9781	
NODE 9555	USED FOR NODES	9780	
NODE 9390	USED FOR NODES	9762	
NODE 9554	USED FOR NODES	9779	
NODE 9389	USED FOR NODES	9761	
NODE 9552	USED FOR NODES	9777	
NODE 9553	USED FOR NODES	9778	
NODE 9828	USED FOR NODES	10200	
NODE 10166	USED FOR NODES	10553	
NODE 10564	USED FOR NODES	10827	
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NODE 11251	USED FOR NODES	11494	
NODE 11162	USED FOR NODES	11260	
NODE 11190	USED FOR NODES	11288	
NODE 11191	USED FOR NODES	11289	
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NODE 11295	USED FOR NODES	11533	
NODE 11296	USED FOR NODES	11534	
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NODE 10194	USED FOR NODES	10604	
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NODE 9827	USED FOR NODES	10199	
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NODE 11083	USED FOR NODES	11185	
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NODE 9388	USED FOR NODES	9760	
NODE 9551	USED FOR NODES	9776	
NODE 9548	USED FOR NODES	9773	
NODE 9547	USED FOR NODES	9772	
NODE 9546	USED FOR NODES	9771	
NODE 9387	USED FOR NODES	9759	
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NODE 9544	USED FOR NODES	9769	
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NODE 8303	USED FOR NODES	8427	9469 9766
NODE 8304	USED FOR NODES	8428	9470 9767
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NODE 8455	USED FOR NODES	9895	
NODE 8456	USED FOR NODES	9896	
NODE 8445	USED FOR NODES	9869	
NODE 8333	USED FOR NODES	9496	
NODE 8332	USED FOR NODES	9495	
NODE 8334	USED FOR NODES	9497	

NODE 8251	USED FOR NODES	9377		
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NODE 8458	USED FOR NODES	9892		
NODE 8459	USED FOR NODES	9893		
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NODE 8252	USED FOR NODES	9378		
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NODE	11072	USED FOR NODES	11174
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NODE	10352	USED FOR NODES	11052
NODE	10382	USED FOR NODES	11064
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NODE	9087	USED FOR NODES	9818 10186
NODE	9089	USED FOR NODES	9820 10188
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NODE	8704	USED FOR NODES	9463 10377
NODE	8703	USED FOR NODES	9462 10376
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NODE	9014	USED FOR NODES	9833

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NODE 9158	USED FOR NODES	9851		
NODE 9011	USED FOR NODES	9836		
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NODE 9010	USED FOR NODES	9837		
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NODE 9152	USED FOR NODES	9857		
NODE 9009	USED FOR NODES	9838		
NODE 9151	USED FOR NODES	9856		
NODE 9150	USED FOR NODES	9855		
NODE 9008	USED FOR NODES	9839		
NODE 9149	USED FOR NODES	9860		
NODE 9148	USED FOR NODES	9859		
NODE 9147	USED FOR NODES	9858		
NODE 8133	USED FOR NODES	8443	9094	9831
NODE 7963	USED FOR NODES	8299	8709	9465
NODE 7964	USED FOR NODES	8300	8710	9466
NODE 8132	USED FOR NODES	8442	9093	9830
NODE 8089	USED FOR NODES	8441	9007	9829
NODE 8134	USED FOR NODES	8444	9095	9832
NODE 7965	USED FOR NODES	8301	8711	9467
NODE 7914	USED FOR NODES	8250	8601	9368
NODE 8194	USED FOR NODES	8489		
NODE 8101	USED FOR NODES	8485		
NODE 8193	USED FOR NODES	8488		
NODE 8192	USED FOR NODES	8487		
NODE 8100	USED FOR NODES	8486		
NODE 8189	USED FOR NODES	8490		
NODE 8190	USED FOR NODES	8491		
NODE 8191	USED FOR NODES	8492		
NODE 7562	USED FOR NODES	7794	8129	8482
NODE 7439	USED FOR NODES	7691	7957	8293
NODE 7564	USED FOR NODES	7796	8131	8484
NODE 7441	USED FOR NODES	7693	7959	8295
NODE 7563	USED FOR NODES	7795	8130	8483
NODE 7398	USED FOR NODES	7650	7913	8260
NODE 7440	USED FOR NODES	7692	7958	8294
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NODE 7621	USED FOR NODES	7840		
NODE 7620	USED FOR NODES	7839		
NODE 7540	USED FOR NODES	7837		
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NODE 7334	USED FOR NODES	7432	7684	
NODE 7561	USED FOR NODES	7836		
NODE 7322	USED FOR NODES	7397	7660	
NODE 7332	USED FOR NODES	7430	7682	
NODE 7560	USED FOR NODES	7835		
NODE 7539	USED FOR NODES	7833		
NODE 7559	USED FOR NODES	7834		
NODE 7333	USED FOR NODES	7431	7683	
NODE 8606	USED FOR NODES	9372		
NODE 8783	USED FOR NODES	9539		
NODE 8782	USED FOR NODES	9538		
NODE 8603	USED FOR NODES	9369		
NODE 8609	USED FOR NODES	9375		
NODE 7915	USED FOR NODES	8261		
NODE 8786	USED FOR NODES	9542		

NODE	8779	USED FOR NODES	9535
NODE	7496	USED FOR NODES	7748
NODE	8785	USED FOR NODES	9541
NODE	8605	USED FOR NODES	9371
NODE	8607	USED FOR NODES	9373
NODE	8608	USED FOR NODES	9374
NODE	8781	USED FOR NODES	9537
NODE	8604	USED FOR NODES	9370
NODE	8769	USED FOR NODES	9525
NODE	8766	USED FOR NODES	9522
NODE	8767	USED FOR NODES	9523
NODE	8768	USED FOR NODES	9524
NODE	8023	USED FOR NODES	8359
NODE	8024	USED FOR NODES	8360
NODE	8780	USED FOR NODES	9536
NODE	8772	USED FOR NODES	9528
NODE	8784	USED FOR NODES	9540
NODE	8025	USED FOR NODES	8361
NODE	8026	USED FOR NODES	8362
NODE	8028	USED FOR NODES	8364
NODE	8770	USED FOR NODES	9526
NODE	8778	USED FOR NODES	9534
NODE	8027	USED FOR NODES	8363
NODE	7399	USED FOR NODES	7661
NODE	8773	USED FOR NODES	9529
NODE	8771	USED FOR NODES	9527
NODE	8774	USED FOR NODES	9530
NODE	8775	USED FOR NODES	9531
NODE	8777	USED FOR NODES	9533
NODE	7497	USED FOR NODES	7749
NODE	7916	USED FOR NODES	8262
NODE	7498	USED FOR NODES	7750
NODE	8776	USED FOR NODES	9532
NODE	7366	USED FOR NODES	7418
NODE	7376	USED FOR NODES	7445
NODE	7377	USED FOR NODES	7446
NODE	7378	USED FOR NODES	7447
NODE	7616	USED FOR NODES	8159
NODE	7617	USED FOR NODES	8160
NODE	7538	USED FOR NODES	8110
NODE	7618	USED FOR NODES	8161
NODE	7469	USED FOR NODES	7969
NODE	7470	USED FOR NODES	7970
NODE	7471	USED FOR NODES	7971
NODE	7401	USED FOR NODES	7930
NODE	8188	USED FOR NODES	9146
NODE	8186	USED FOR NODES	9144
NODE	8098	USED FOR NODES	9023
NODE	8187	USED FOR NODES	9145
NODE	7996	USED FOR NODES	8739
NODE	7998	USED FOR NODES	8741
NODE	7997	USED FOR NODES	8740
NODE	7918	USED FOR NODES	8628
NODE	7379	USED FOR NODES	7448
NODE	7380	USED FOR NODES	7449
NODE	7381	USED FOR NODES	7450
NODE	7367	USED FOR NODES	7419
NODE	7537	USED FOR NODES	8109
NODE	7613	USED FOR NODES	8156
NODE	7614	USED FOR NODES	8157
NODE	7615	USED FOR NODES	8158
NODE	7474	USED FOR NODES	7974
NODE	7472	USED FOR NODES	7972
NODE	7402	USED FOR NODES	7931
NODE	7473	USED FOR NODES	7973
NODE	7382	USED FOR NODES	7451
NODE	7383	USED FOR NODES	7452
NODE	7384	USED FOR NODES	7453
NODE	7368	USED FOR NODES	7420
NODE	7536	USED FOR NODES	8108

NODE	7610	USED FOR NODES	8153
NODE	7611	USED FOR NODES	8154
NODE	7612	USED FOR NODES	8155
NODE	7476	USED FOR NODES	7976
NODE	7403	USED FOR NODES	7932
NODE	7477	USED FOR NODES	7977
NODE	7475	USED FOR NODES	7975
NODE	8183	USED FOR NODES	9141
NODE	8184	USED FOR NODES	9142
NODE	8185	USED FOR NODES	9143
NODE	8097	USED FOR NODES	9022
NODE	7999	USED FOR NODES	8742
NODE	8001	USED FOR NODES	8744
NODE	8000	USED FOR NODES	8743
NODE	7919	USED FOR NODES	8629
NODE	7375	USED FOR NODES	7435
NODE	7365	USED FOR NODES	7412
NODE	7374	USED FOR NODES	7434
NODE	7373	USED FOR NODES	7433
NODE	7608	USED FOR NODES	8151
NODE	7609	USED FOR NODES	8152
NODE	7535	USED FOR NODES	8107
NODE	7607	USED FOR NODES	8150
NODE	7478	USED FOR NODES	7978
NODE	7479	USED FOR NODES	7979
NODE	7480	USED FOR NODES	7980
NODE	7404	USED FOR NODES	7933
NODE	7604	USED FOR NODES	8147
NODE	7534	USED FOR NODES	8106
NODE	7605	USED FOR NODES	8148
NODE	7606	USED FOR NODES	8149
NODE	7483	USED FOR NODES	7983
NODE	7482	USED FOR NODES	7982
NODE	7405	USED FOR NODES	7934
NODE	7481	USED FOR NODES	7981
NODE	8180	USED FOR NODES	9138
NODE	8096	USED FOR NODES	9021
NODE	8182	USED FOR NODES	9140
NODE	8181	USED FOR NODES	9139
NODE	7920	USED FOR NODES	8630
NODE	8003	USED FOR NODES	8746
NODE	8004	USED FOR NODES	8747
NODE	8002	USED FOR NODES	8745
NODE	7533	USED FOR NODES	8105
NODE	7602	USED FOR NODES	8145
NODE	7601	USED FOR NODES	8144
NODE	7603	USED FOR NODES	8146
NODE	7485	USED FOR NODES	7985
NODE	7484	USED FOR NODES	7984
NODE	7486	USED FOR NODES	7986
NODE	7406	USED FOR NODES	7935
NODE	7532	USED FOR NODES	8104
NODE	7599	USED FOR NODES	8142
NODE	7600	USED FOR NODES	8143
NODE	7598	USED FOR NODES	8141
NODE	7488	USED FOR NODES	7988
NODE	7407	USED FOR NODES	7936
NODE	7489	USED FOR NODES	7989
NODE	7487	USED FOR NODES	7987
NODE	8177	USED FOR NODES	9135
NODE	8095	USED FOR NODES	9020
NODE	8178	USED FOR NODES	9136
NODE	8179	USED FOR NODES	9137
NODE	8006	USED FOR NODES	8749
NODE	8007	USED FOR NODES	8750
NODE	8005	USED FOR NODES	8748
NODE	7921	USED FOR NODES	8631
NODE	7595	USED FOR NODES	8138
NODE	7596	USED FOR NODES	8139
NODE	7597	USED FOR NODES	8140

NODE	7531	USED	FOR	NODES	8103
NODE	7408	USED	FOR	NODES	7937
NODE	7491	USED	FOR	NODES	7991
NODE	7492	USED	FOR	NODES	7992
NODE	7490	USED	FOR	NODES	7990
NODE	7593	USED	FOR	NODES	8136
NODE	7594	USED	FOR	NODES	8137
NODE	7592	USED	FOR	NODES	8135
NODE	7530	USED	FOR	NODES	8102
NODE	7493	USED	FOR	NODES	7993
NODE	7494	USED	FOR	NODES	7994
NODE	7495	USED	FOR	NODES	7995
NODE	7409	USED	FOR	NODES	7938
NODE	7400	USED	FOR	NODES	7927
NODE	7443	USED	FOR	NODES	7961
NODE	7444	USED	FOR	NODES	7962
NODE	7442	USED	FOR	NODES	7960
NODE	8175	USED	FOR	NODES	9133
NODE	8176	USED	FOR	NODES	9134
NODE	8174	USED	FOR	NODES	9132
NODE	8094	USED	FOR	NODES	9019
NODE	8008	USED	FOR	NODES	8751
NODE	8010	USED	FOR	NODES	8753
NODE	7922	USED	FOR	NODES	8632
NODE	8009	USED	FOR	NODES	8752
NODE	8093	USED	FOR	NODES	9018
NODE	8173	USED	FOR	NODES	9131
NODE	8172	USED	FOR	NODES	9130
NODE	8171	USED	FOR	NODES	9129
NODE	8012	USED	FOR	NODES	8755
NODE	8013	USED	FOR	NODES	8756
NODE	7923	USED	FOR	NODES	8633
NODE	8011	USED	FOR	NODES	8754
NODE	8168	USED	FOR	NODES	9126
NODE	8169	USED	FOR	NODES	9127
NODE	8170	USED	FOR	NODES	9128
NODE	8092	USED	FOR	NODES	9017
NODE	8014	USED	FOR	NODES	8757
NODE	8015	USED	FOR	NODES	8758
NODE	8016	USED	FOR	NODES	8759
NODE	7924	USED	FOR	NODES	8634
NODE	8165	USED	FOR	NODES	9123
NODE	8166	USED	FOR	NODES	9124
NODE	8167	USED	FOR	NODES	9125
NODE	8091	USED	FOR	NODES	9016
NODE	8018	USED	FOR	NODES	8761
NODE	8019	USED	FOR	NODES	8762
NODE	8017	USED	FOR	NODES	8760
NODE	7925	USED	FOR	NODES	8635
NODE	8162	USED	FOR	NODES	9120
NODE	8164	USED	FOR	NODES	9122
NODE	8163	USED	FOR	NODES	9121
NODE	8090	USED	FOR	NODES	9015
NODE	7926	USED	FOR	NODES	8636
NODE	8021	USED	FOR	NODES	8764
NODE	8022	USED	FOR	NODES	8765
NODE	8020	USED	FOR	NODES	8763
NODE	7917	USED	FOR	NODES	8620
NODE	7966	USED	FOR	NODES	8712
NODE	7967	USED	FOR	NODES	8713
NODE	7968	USED	FOR	NODES	8714
NODE	11206	USED	FOR	NODES	11379
NODE	11110	USED	FOR	NODES	11210
NODE	11133	USED	FOR	NODES	11220
NODE	11134	USED	FOR	NODES	11221
NODE	11135	USED	FOR	NODES	11222
NODE	11226	USED	FOR	NODES	11399
NODE	11227	USED	FOR	NODES	11400
NODE	11228	USED	FOR	NODES	11401
NODE	10490	USED	FOR	NODES	11127

NODE 10491	USED FOR NODES	11128
NODE 10492	USED FOR NODES	11129
NODE 8715	USED FOR NODES	10484
NODE 8716	USED FOR NODES	10485
NODE 8717	USED FOR NODES	10486
NODE 9005	USED FOR NODES	10262
NODE 10288	USED FOR NODES	10743
NODE 10289	USED FOR NODES	10744
NODE 10290	USED FOR NODES	10745
NODE 10270	USED FOR NODES	10702
NODE 10458	USED FOR NODES	11115
NODE 11370	USED FOR NODES	11688
NODE 11405	USED FOR NODES	11718
NODE 11406	USED FOR NODES	11719
NODE 11407	USED FOR NODES	11720
NODE 10713	USED FOR NODES	10886
NODE 10737	USED FOR NODES	10909
NODE 10738	USED FOR NODES	10910
NODE 10739	USED FOR NODES	10911
NODE 8611	USED FOR NODES	10466
NODE 9096	USED FOR NODES	10294
NODE 9097	USED FOR NODES	10295
NODE 9098	USED FOR NODES	10296
NODE 10891	USED FOR NODES	10998
NODE 10903	USED FOR NODES	11021
NODE 10904	USED FOR NODES	11022
NODE 10905	USED FOR NODES	11023
NODE 9101	USED FOR NODES	10299
NODE 9006	USED FOR NODES	10263
NODE 8719	USED FOR NODES	10488
NODE 11207	USED FOR NODES	11380
NODE 11111	USED FOR NODES	11211
NODE 11136	USED FOR NODES	11223
NODE 11137	USED FOR NODES	11224
NODE 11138	USED FOR NODES	11225
NODE 11229	USED FOR NODES	11402
NODE 11230	USED FOR NODES	11403
NODE 11231	USED FOR NODES	11404
NODE 8720	USED FOR NODES	10489
NODE 8718	USED FOR NODES	10487
NODE 10271	USED FOR NODES	10703
NODE 10493	USED FOR NODES	11130
NODE 10494	USED FOR NODES	11131
NODE 10495	USED FOR NODES	11132
NODE 10459	USED FOR NODES	11116
NODE 10291	USED FOR NODES	10746
NODE 10292	USED FOR NODES	10747
NODE 10293	USED FOR NODES	10748
NODE 11371	USED FOR NODES	11689
NODE 11408	USED FOR NODES	11721
NODE 11409	USED FOR NODES	11722
NODE 11410	USED FOR NODES	11723
NODE 10714	USED FOR NODES	10887
NODE 10740	USED FOR NODES	10912
NODE 10741	USED FOR NODES	10913
NODE 10742	USED FOR NODES	10914
NODE 8612	USED FOR NODES	10467
NODE 9099	USED FOR NODES	10297
NODE 9100	USED FOR NODES	10298
NODE 10892	USED FOR NODES	10999
NODE 10906	USED FOR NODES	11024
NODE 10907	USED FOR NODES	11025
NODE 10908	USED FOR NODES	11026
NODE 8706	USED FOR NODES	10478
NODE 11205	USED FOR NODES	11372
NODE 11109	USED FOR NODES	11208
NODE 11124	USED FOR NODES	11214
NODE 11125	USED FOR NODES	11215
NODE 11126	USED FOR NODES	11216
NODE 11217	USED FOR NODES	11393

NODE 11218 USED FOR NODES 11394
 NODE 11219 USED FOR NODES 11395
 NODE 8707 USED FOR NODES 10479
 NODE 8708 USED FOR NODES 10480
 NODE 10282 USED FOR NODES 10734
 NODE 10283 USED FOR NODES 10735
 NODE 10284 USED FOR NODES 10736
 NODE 8997 USED FOR NODES 10261
 NODE 10264 USED FOR NODES 10701
 NODE 9090 USED FOR NODES 10285
 NODE 9091 USED FOR NODES 10286
 NODE 9092 USED FOR NODES 10287
 NODE 10457 USED FOR NODES 11112
 NODE 8610 USED FOR NODES 10460
 NODE 11369 USED FOR NODES 11676
 NODE 11396 USED FOR NODES 11712
 NODE 11397 USED FOR NODES 11713
 NODE 11398 USED FOR NODES 11714
 NODE 10704 USED FOR NODES 10885
 NODE 10731 USED FOR NODES 10900
 NODE 10732 USED FOR NODES 10901
 NODE 10733 USED FOR NODES 10902
 NODE 10481 USED FOR NODES 11121
 NODE 10482 USED FOR NODES 11122
 NODE 10483 USED FOR NODES 11123
 NODE 10888 USED FOR NODES 10997
 NODE 10897 USED FOR NODES 11012
 NODE 10898 USED FOR NODES 11013
 NODE 10899 USED FOR NODES 11014

*** WARNING *** CP= 93.160 TIME= 00:49:37
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	78	USED FOR KEYPOINT(S)	132		
KEYPOINT	89	USED FOR KEYPOINT(S)	106	131	
KEYPOINT	104	USED FOR KEYPOINT(S)	117		
KEYPOINT	111	USED FOR KEYPOINT(S)	130	137	157
KEYPOINT	114	USED FOR KEYPOINT(S)	144		
KEYPOINT	119	USED FOR KEYPOINT(S)	127	146	152
KEYPOINT	122	USED FOR KEYPOINT(S)	128		
KEYPOINT	124	USED FOR KEYPOINT(S)	133		
KEYPOINT	125	USED FOR KEYPOINT(S)	129	148	160
KEYPOINT	140	USED FOR KEYPOINT(S)	155	162	193
KEYPOINT	141	USED FOR KEYPOINT(S)	170		
KEYPOINT	145	USED FOR KEYPOINT(S)	150	176	186
KEYPOINT	149	USED FOR KEYPOINT(S)	153	177	196
KEYPOINT	164	USED FOR KEYPOINT(S)	192	210	
KEYPOINT	165	USED FOR KEYPOINT(S)	212		
KEYPOINT	171	USED FOR KEYPOINT(S)	205		
KEYPOINT	173	USED FOR KEYPOINT(S)	184	202	
KEYPOINT	179	USED FOR KEYPOINT(S)	187		
KEYPOINT	181	USED FOR KEYPOINT(S)	199		
KEYPOINT	190	USED FOR KEYPOINT(S)	207		
KEYPOINT	198	USED FOR KEYPOINT(S)	214		
KEYPOINT	204	USED FOR KEYPOINT(S)	215		
KEYPOINT	206	USED FOR KEYPOINT(S)	217		
KEYPOINT	208	USED FOR KEYPOINT(S)	231		
KEYPOINT	209	USED FOR KEYPOINT(S)	234		
KEYPOINT	211	USED FOR KEYPOINT(S)	236		
KEYPOINT	213	USED FOR KEYPOINT(S)	220		
KEYPOINT	216	USED FOR KEYPOINT(S)	221		
KEYPOINT	218	USED FOR KEYPOINT(S)	223		
KEYPOINT	219	USED FOR KEYPOINT(S)	226		
KEYPOINT	222	USED FOR KEYPOINT(S)	227		
KEYPOINT	224	USED FOR KEYPOINT(S)	229		
KEYPOINT	232	USED FOR KEYPOINT(S)	237		
KEYPOINT	233	USED FOR KEYPOINT(S)	240		

KEYPOINT	235	USED FOR KEYPOINT(S)	242	
KEYPOINT	238	USED FOR KEYPOINT(S)	243	
KEYPOINT	239	USED FOR KEYPOINT(S)	246	
KEYPOINT	241	USED FOR KEYPOINT(S)	248	
KEYPOINT	244	USED FOR KEYPOINT(S)	249	
KEYPOINT	245	USED FOR KEYPOINT(S)	252	
KEYPOINT	247	USED FOR KEYPOINT(S)	254	
LINE	154	USED FOR LINE(S)	297	
LINE	172	USED FOR LINE(S)	298	
LINE	174	USED FOR LINE(S)	240	292
LINE	233	USED FOR LINE(S)	257	
LINE	236	USED FOR LINE(S)	256	
LINE	239	USED FOR LINE(S)	290	
LINE	241	USED FOR LINE(S)	289	306 359
LINE	243	USED FOR LINE(S)	314	
LINE	244	USED FOR LINE(S)	313	
LINE	259	USED FOR LINE(S)	330	
LINE	262	USED FOR LINE(S)	271	325 345
LINE	263	USED FOR LINE(S)	272	
LINE	264	USED FOR LINE(S)	273	
LINE	267	USED FOR LINE(S)	302	
LINE	268	USED FOR LINE(S)	300	
LINE	269	USED FOR LINE(S)	283	335 366
LINE	270	USED FOR LINE(S)	346	
LINE	282	USED FOR LINE(S)	365	
LINE	305	USED FOR LINE(S)	358	
LINE	307	USED FOR LINE(S)	354	372 439
LINE	308	USED FOR LINE(S)	396	
LINE	309	USED FOR LINE(S)	395	
LINE	315	USED FOR LINE(S)	414	
LINE	319	USED FOR LINE(S)	340	413 431
LINE	320	USED FOR LINE(S)	341	
LINE	331	USED FOR LINE(S)	367	
LINE	336	USED FOR LINE(S)	353	421 441
LINE	339	USED FOR LINE(S)	432	
LINE	352	USED FOR LINE(S)	440	
LINE	371	USED FOR LINE(S)	438	
LINE	377	USED FOR LINE(S)	437	462
LINE	382	USED FOR LINE(S)	468	
LINE	383	USED FOR LINE(S)	467	
LINE	401	USED FOR LINE(S)	452	
LINE	403	USED FOR LINE(S)	451	
LINE	408	USED FOR LINE(S)	429	447
LINE	409	USED FOR LINE(S)	430	
LINE	416	USED FOR LINE(S)	442	
LINE	422	USED FOR LINE(S)	434	
LINE	427	USED FOR LINE(S)	445	
LINE	428	USED FOR LINE(S)	446	
LINE	435	USED FOR LINE(S)	457	
LINE	436	USED FOR LINE(S)	463	
LINE	444	USED FOR LINE(S)	471	
LINE	449	USED FOR LINE(S)	473	
LINE	450	USED FOR LINE(S)	472	
LINE	454	USED FOR LINE(S)	478	
LINE	455	USED FOR LINE(S)	477	
LINE	458	USED FOR LINE(S)	509	
LINE	459	USED FOR LINE(S)	515	
LINE	460	USED FOR LINE(S)	514	
LINE	464	USED FOR LINE(S)	520	
LINE	465	USED FOR LINE(S)	519	
LINE	470	USED FOR LINE(S)	484	
LINE	475	USED FOR LINE(S)	486	
LINE	476	USED FOR LINE(S)	485	
LINE	480	USED FOR LINE(S)	491	
LINE	481	USED FOR LINE(S)	490	
LINE	483	USED FOR LINE(S)	497	
LINE	488	USED FOR LINE(S)	499	
LINE	489	USED FOR LINE(S)	498	
LINE	493	USED FOR LINE(S)	504	
LINE	494	USED FOR LINE(S)	503	

LINE 510 USED FOR LINE(S) 522
 LINE 511 USED FOR LINE(S) 528
 LINE 512 USED FOR LINE(S) 527
 LINE 516 USED FOR LINE(S) 533
 LINE 517 USED FOR LINE(S) 532
 LINE 523 USED FOR LINE(S) 535
 LINE 524 USED FOR LINE(S) 541
 LINE 525 USED FOR LINE(S) 540
 LINE 529 USED FOR LINE(S) 546
 LINE 530 USED FOR LINE(S) 545
 LINE 536 USED FOR LINE(S) 548
 LINE 537 USED FOR LINE(S) 554
 LINE 538 USED FOR LINE(S) 553
 LINE 542 USED FOR LINE(S) 559
 LINE 543 USED FOR LINE(S) 558
 AREA 123 USED FOR AREA(S) 230
 AREA 163 USED FOR AREA(S) 182
 AREA 176 USED FOR AREA(S) 226
 AREA 177 USED FOR AREA(S) 264
 AREA 193 USED FOR AREA(S) 282
 AREA 198 USED FOR AREA(S) 208
 AREA 204 USED FOR AREA(S) 239
 AREA 205 USED FOR AREA(S) 291
 AREA 223 USED FOR AREA(S) 295
 AREA 248 USED FOR AREA(S) 294
 AREA 255 USED FOR AREA(S) 302
 AREA 273 USED FOR AREA(S) 307
 AREA 277 USED FOR AREA(S) 290
 AREA 288 USED FOR AREA(S) 296
 AREA 289 USED FOR AREA(S) 313
 AREA 293 USED FOR AREA(S) 318
 AREA 298 USED FOR AREA(S) 317
 AREA 299 USED FOR AREA(S) 337
 AREA 305 USED FOR AREA(S) 326
 AREA 306 USED FOR AREA(S) 312
 AREA 309 USED FOR AREA(S) 319
 AREA 311 USED FOR AREA(S) 322
 AREA 316 USED FOR AREA(S) 333
 AREA 324 USED FOR AREA(S) 340
 AREA 328 USED FOR AREA(S) 344
 AREA 331 USED FOR AREA(S) 369
 AREA 335 USED FOR AREA(S) 373
 AREA 342 USED FOR AREA(S) 349
 AREA 346 USED FOR AREA(S) 353
 AREA 351 USED FOR AREA(S) 358
 AREA 355 USED FOR AREA(S) 362
 AREA 367 USED FOR AREA(S) 378
 AREA 371 USED FOR AREA(S) 382
 AREA 376 USED FOR AREA(S) 387
 AREA 380 USED FOR AREA(S) 391
 AREA 385 USED FOR AREA(S) 396
 AREA 389 USED FOR AREA(S) 400

Clear 2-D mesh

SELECT FOR ITEM=TYPE COMPONENT=
 IN RANGE 1 TO 1 STEP 1

40 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

CLEAR NODES AND ELEMENTS FROM ALL SELECTED AREAS

*** NOTE *** CP= 96.670 TIME= 00:49:43
 Nodes cannot be cleared from area 1 because volume 55 is meshed. Only
 elements are deleted.

*** NOTE *** CP= 96.670 TIME= 00:49:43
 Nodes cannot be cleared from area 2 because volume 56 is meshed. Only
 elements are deleted.

*** NOTE *** CP= 96.680 TIME= 00:49:43
Nodes cannot be cleared from area 3 because volume 53 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.680 TIME= 00:49:43
Nodes cannot be cleared from area 4 because volume 54 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.680 TIME= 00:49:43
Nodes cannot be cleared from area 5 because volume 51 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.690 TIME= 00:49:43
Nodes cannot be cleared from area 6 because volume 52 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.710 TIME= 00:49:43
Nodes cannot be cleared from area 7 because volume 47 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.710 TIME= 00:49:43
Nodes cannot be cleared from area 8 because volume 48 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.720 TIME= 00:49:43
Nodes cannot be cleared from area 9 because volume 49 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.730 TIME= 00:49:43
Nodes cannot be cleared from area 10 because volume 50 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.740 TIME= 00:49:43
Nodes cannot be cleared from area 11 because volume 57 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.750 TIME= 00:49:43
Nodes cannot be cleared from area 12 because volume 58 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.750 TIME= 00:49:43
Nodes cannot be cleared from area 13 because volume 59 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.760 TIME= 00:49:43
Nodes cannot be cleared from area 14 because volume 60 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.760 TIME= 00:49:43
Nodes cannot be cleared from area 15 because volume 61 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.770 TIME= 00:49:43
Nodes cannot be cleared from area 16 because volume 62 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.780 TIME= 00:49:43
Nodes cannot be cleared from area 17 because volume 63 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.800 TIME= 00:49:43
Nodes cannot be cleared from area 18 because volume 64 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.810 TIME= 00:49:43
Nodes cannot be cleared from area 19 because volume 1 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.820 TIME= 00:49:43
Nodes cannot be cleared from area 20 because volume 2 is meshed. Only

elements are deleted.

*** NOTE *** CP= 96.840 TIME= 00:49:43
Nodes cannot be cleared from area 21 because volume 3 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.850 TIME= 00:49:43
Nodes cannot be cleared from area 22 because volume 4 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.870 TIME= 00:49:43
Nodes cannot be cleared from area 23 because volume 5 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.870 TIME= 00:49:43
Nodes cannot be cleared from area 24 because volume 6 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.880 TIME= 00:49:43
Nodes cannot be cleared from area 25 because volume 7 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.880 TIME= 00:49:43
Nodes cannot be cleared from area 26 because volume 8 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.880 TIME= 00:49:43
Nodes cannot be cleared from area 27 because volume 33 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.890 TIME= 00:49:43
Nodes cannot be cleared from area 28 because volume 34 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.890 TIME= 00:49:43
Nodes cannot be cleared from area 29 because volume 35 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.900 TIME= 00:49:43
Nodes cannot be cleared from area 30 because volume 36 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.920 TIME= 00:49:43
Nodes cannot be cleared from area 31 because volume 37 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.930 TIME= 00:49:43
Nodes cannot be cleared from area 32 because volume 38 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.940 TIME= 00:49:43
Nodes cannot be cleared from area 33 because volume 39 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.960 TIME= 00:49:43
Nodes cannot be cleared from area 34 because volume 40 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.980 TIME= 00:49:43
Nodes cannot be cleared from area 35 because volume 41 is meshed. Only
elements are deleted.

*** NOTE *** CP= 96.990 TIME= 00:49:43
Nodes cannot be cleared from area 36 because volume 42 is meshed. Only
elements are deleted.

*** NOTE *** CP= 97.000 TIME= 00:49:43
Nodes cannot be cleared from area 37 because volume 43 is meshed. Only
elements are deleted.

*** NOTE *** CP= 97.030 TIME= 00:49:43
Nodes cannot be cleared from area 38 because volume 44 is meshed. Only
elements are deleted.

*** NOTE *** CP= 97.070 TIME= 00:49:44
Nodes cannot be cleared from area 39 because volume 45 is meshed. Only
elements are deleted.

*** NOTE *** CP= 97.100 TIME= 00:49:44
Nodes cannot be cleared from area 40 because volume 46 is meshed. Only
elements are deleted.

CLEARED 40 AREAS, 0 LINES, 0 KEYPOINTS

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

Define edge elements for radiation
Waste package sides

MATERIAL NUMBER SET TO 13

ELEMENT TYPE SET TO 16

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 54 TO 54 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 60 TO 60 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 63 TO 63 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 66 TO 66 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 110 TO 110 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 116 TO 116 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 119 TO 119 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 122 TO 122 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 82 TO 82 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

```
ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    88 TO      88 STEP      1

    10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    91 TO      91 STEP      1

    11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE    94 TO      94 STEP      1

    12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   138 TO     138 STEP      1

    13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   144 TO     144 STEP      1

    14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   147 TO     147 STEP      1

    15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   150 TO     150 STEP      1

    16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT      ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
            KEYPOINTS) RELATED TO SELECTED AREA SET.

    312 NODES (OF 10228 DEFINED) SELECTED FROM
    16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 288
Waste package end

SELECT      FOR ITEM=AREA COMPONENT=
IN RANGE   100 TO     100 STEP      1

    1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   103 TO     103 STEP      1

    2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   106 TO     106 STEP      1

    3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   108 TO     108 STEP      1

    4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE   113 TO     113 STEP      1
```

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 117 TO 117 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 121 TO 121 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 124 TO 124 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 128 TO 128 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 131 TO 131 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 134 TO 134 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 136 TO 136 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 141 TO 141 STEP 1

13 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 145 TO 145 STEP 1

14 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 149 TO 149 STEP 1

15 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 152 TO 152 STEP 1

16 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

290 NODES (OF 10228 DEFINED) SELECTED FROM
16 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 13 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 264
Drift Floor

MATERIAL NUMBER SET TO 11

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

81 NODES (OF 10228 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 11 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 64
Drift Wall

MATERIAL NUMBER SET TO 4

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

297 NODES (OF 10228 DEFINED) SELECTED FROM
8 SELECTED AREAS BY NSLA COMMAND.

GENERATE ELEMENTS ON SURFACE DEFINED BY SELECTED NODES
TYPE= 16 REAL= 1 MATERIAL= 4 ESYS= 0

NUMBER OF ELEMENTS GENERATED= 256

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11828 STEP 1

10228 NODES (OF 10228 DEFINED) SELECTED BY NSEL COMMAND.

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

*** NOTE *** CP= 133.450 TIME= 00:50:45
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

***** ROUTINE COMPLETED ***** CP = 133.990

Generate super-element

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:50:46 JAN 25, 1995 CP= 133.990
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RADIATION MATRIX UTILITY (AUX12) *****

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

872 ELEMENTS (OF 9160 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

914 NODES (OF 10228 DEFINED) SELECTED FROM
872 SELECTED ELEMENTS BY NSLE COMMAND.

STEFAN-BOLTZMANN CONSTANT= .56700E-07

THREE DIMENSIONAL GEOMETRY

HIDDEN SURFACE (SLOW) METHOD
NUMBER OF ZONES= 100

WRITE RADIATION MATRIX TO FILE= c12h5a.sub

*** WARNING *** CP= 134.440 TIME= 00:50:47
No space node defined. An enclosed system need not have a space node.
For an open system a space node is required to account for radiation losses.

NUMBER OF ELEMENTS= 872 NUMBER OF NODES= 914
DEFINE 100 RADIAL ZONES, 20200 RAYS
DEFINE THE 20200 RAY POINTS
SORT THE 20200 RAY POINTS

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10130 STEP 1

9160 ELEMENTS (OF 9160 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11828 STEP 1

10228 NODES (OF 10228 DEFINED) SELECTED BY NSEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1680.600

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:40:46 JAN 25, 1995 CP= 1680.620
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS ANALYSIS DEFINITION (PREP7) *****

ELEMENT TYPE SET TO 18

SUPERELEMENT 10131 c12h5a NODE TOLERANCE = .10000E-03

STORE DOFS OF SUPERELEMENT 10131

CURRENT NODAL DOF SET IS TEMP
THREE-DIMENSIONAL MODEL

STORE NODES OF SUPERELEMENT 10131
Delete radiation edge elements

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 16 TO 16 STEP 1

872 ELEMENTS (OF 9161 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10131 STEP 1

8289 ELEMENTS (OF 8289 DEFINED) SELECTED BY ESEL COMMAND.

***** ROUTINE COMPLETED ***** CP = 1681.500

Set solution parameters and apply B.C.'s
Repository surface = 18.70 C
1300 m depth = 53.05 C
Solve steady-state for initial drift wall conditions

Hot waste package radiates heat to the
steady-state drift temperature of 24.643 C

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

USE THE DEFAULT NEWTON-RAPHSON OPTION FOR ALL DOFS
AND USE THE DEFAULT ADAPTIVE DESCENT OPTION

*** NOTE *** CP= 1681.500 TIME= 01:40:53
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

TEMPERATURE OFFSET FROM ABSOLUTE ZERO= 273.150
Top and bottom rock boundary conditions

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 308.77 AND 308.77
KABS= 0. TOLERANCE= 1.54386

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

63 NODES (OF 10228 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 11828 BY 1
REAL= 18.7000000 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -991.23 AND -991.23
KABS= 0. TOLERANCE= 4.95614

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

63 NODES (OF 10228 DEFINED) SELECTED FROM
4 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 11828 BY 1
REAL= 53.0500000 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11828 STEP 1

10228 NODES (OF 10228 DEFINED) SELECTED BY NSEL COMMAND.
Solve for ambient drift wall temperature

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .10000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 1684.190 TIME= 01:41:04
All shape tests were bypassed for elements associated with the solid model, because most of them were already done at AMESH or VMESH. Use CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:41:04 JAN 25, 1995 CP= 1684.190
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPE.TRANSIENT
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO.273.15
NEWTON-RAPHSON OPTION.PROGRAM CHOSEN

*** NOTE *** CP= 1686.210 TIME= 01:41:06
This load step will be a static (steady-state) step.

*** NOTE *** CP= 1686.230 TIME= 01:41:07
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER.1
TIME AT END OF THE LOAD STEP.100000E-05
AUTOMATIC TIME STEPPING.ON
INITIAL NUMBER OF SUBSTEPS.0
MAXIMUM NUMBER OF SUBSTEPS.0
MINIMUM NUMBER OF SUBSTEPS.1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS.25
STEP CHANGE BOUNDARY CONDITIONS.NO
TRANSIENT (INERTIA) EFFECTS.OFF
TERMINATE ANALYSIS IF NOT CONVERGED.YES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLS.NO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = .11721E+07

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.57130E-09	IXX = .2774E+12	IXX = .1614E+12
YC = -314.68	IYY = .7174E+09	IYY = .7174E+09
ZC = .93890E-16	IZZ = .2781E+12	IZZ = .1621E+12
	IXY = -.4987	IXY = -.2880
	IYZ = .1114E-06	IYZ = .7678E-07
	IZX = -.4875E-08	IZX = -.4875E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
2 .117210E+07

Range of element maximum matrix coefficients in global coordinates
Maximum= 679.370222 at element 9015.
Minimum= 3.707673773E-08 at element 10131.

*** WARNING *** CP= 1735.330 TIME= 01:42:45
Coefficient ratio exceeds 1.0e8 - Check results.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8288	SOLID70	35.370	.004
18	1	MATRIX50	1.040	1.040

Time at end of element matrix formulation CP= 1735.34.
HT FLOW CONVERGENCE VALUE= 301.5 CRITERION= .3015

Estimated number of active DOF= 10102.
Maximum wavefront= 1183.

Time at end of matrix triangularization CP= 2160.66.
Equation solver maximum pivot= 2387.94844 at node 1036 TEMP.
Equation solver minimum pivot= 0.876839426 at node 1214 TEMP.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 53.05
HT FLOW CONVERGENCE VALUE= .1025 CRITERION= .6199E-02
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3888E-02
HT FLOW CONVERGENCE VALUE= .4690E-05 CRITERION= .6199E-02 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8288	SOLID70	23.710	.003
18	1	MATRIX50	1.400	1.400

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	8288	SOLID70	1.890	.000
18	1	MATRIX50	.000	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
*** TIME = .100000E-05 TIME INC = .100000E-05

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 10102
R.M.S. WAVEFRONT SIZE = 467.8

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
13.281 MB WRITTEN ON ELEMENT MATRIX FILE: c12h5a.emat
7.469 MB WRITTEN ON ELEMENT SAVED DATA FILE: c12h5a.esav
29.844 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: c12h5a.tri
.016 MB WRITTEN ON SUBSTRUCTURE DOF SOLUTION FILE: c12h5a.dsub
6.500 MB WRITTEN ON RESULTS FILE: c12h5a.rth

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 2716.290

Store drift side temperature

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:15:56 JAN 25, 1995 CP= 2716.350
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

USE FIRST SUBSTEP ON RESULT FILE FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 2
TIME/FREQUENCY= .10000E-05

PARAMETER DFAMBT = 26.14130

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 2727.550

Apply initial conditions wall temperature
as a temporary boundary condition to WP

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
RESTART PREVIOUSLY RUN ANALYSIS TO ADD ADDITIONAL LOAD STEPS

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1
1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1
2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1
3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1
4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1
5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1
6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1
7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1
8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

360 NODES (OF 10228 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES 1 TO 11828 BY 1
REAL= 26.1413043 IMAG= .000000000E+00

ALL SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=

IN RANGE 1 TO 11828 STEP 1

10228 NODES (OF 10228 DEFINED) SELECTED BY NSEL COMMAND.
Apply initial heat load

SELECT FOR ITEM=MAT COMPONENT=

IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=

IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=

IN RANGE 1 TO 10131 STEP 1

8289 ELEMENTS (OF 8289 DEFINED) SELECTED BY ESEL COMMAND.
Solve for WP initial conditions

DO NOT INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= .20000E-05

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

STEP BOUNDARY CONDITION KEY= 0

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:16:20 JAN 25, 1995 CP= 2728.330
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.TEMP
ANALYSIS TYPE.TRANSIENT
RESTART.ON
SOLUTION METHOD.FULL
OFFSET TEMPERATURE FROM ABSOLUTE ZERO. . . . 273.15
NEWTON-RAPHSON OPTION.PROGRAM CHOSEN

*** WARNING *** CP= 2730.260 TIME= 02:16:23
This load step will be a static (steady-state) step.

*** NOTE *** CP= 2730.940 TIME= 02:16:25
The step data was checked and warning messages were found.
Please review output or errors file (c12h5a.err) for these warning
messages.

*** NOTE *** CP= 2730.940 TIME= 02:16:25
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:16:26 JAN 25, 1995 CP= 2731.340
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER.2
TIME AT END OF THE LOAD STEP.200000E-05
AUTOMATIC TIME STEPPING.ON
INITIAL NUMBER OF SUBSTEPS.0
MAXIMUM NUMBER OF SUBSTEPS.0
MINIMUM NUMBER OF SUBSTEPS.1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS.NO
TRANSIENT (INERTIA) EFFECTS.OFF
TERMINATE ANALYSIS IF NOT CONVERGED.YES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLS.NO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 167.5 CRITERION= .1676
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 93.65
HT FLOW CONVERGENCE VALUE= 58.66 CRITERION= .1676
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -5.091
HT FLOW CONVERGENCE VALUE= 2.226 CRITERION= .1676
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1126
HT FLOW CONVERGENCE VALUE= .2307E-01 CRITERION= .1676 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
*** TIME = .200000E-05 TIME INC = .100000E-05
Release drift wall temperatures

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 64 TO 64 STEP 1

1 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 86 TO 86 STEP 1

2 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 120 TO 120 STEP 1

3 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 151 TO 151 STEP 1

4 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 157 TO 157 STEP 1

5 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 162 TO 162 STEP 1

6 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 160 TO 160 STEP 1

7 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 168 TO 168 STEP 1

8 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 181 TO 181 STEP 1

9 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 199 TO 199 STEP 1

10 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 212 TO 212 STEP 1

11 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 235 TO 235 STEP 1

12 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

SELECT ALL NODES (INTERIOR TO AREA, INTERIOR TO LINES, AND AT
KEYPOINTS) RELATED TO SELECTED AREA SET.

360 NODES (OF 10228 DEFINED) SELECTED FROM
12 SELECTED AREAS BY NSLA COMMAND.

DELETE SPECIFIED CONSTRAINT TEMP FOR SELECTED NODES
RANGE 1 TO 11828 BY 1

NUMBER OF SPECIFIED CONSTRAINTS DELETED= 360

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 401 STEP 1

364 AREAS (OF 364 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 11828 STEP 1

10228 NODES (OF 10228 DEFINED) SELECTED BY NSEL COMMAND.

Set time integration parameters

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP
Time substep ranges from 10 sec to loadstep

USE 10 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:

USE 80 SUBSTEPS AS A MAXIMUM

USE 4 SUBSTEPS AS A MINIMUM

USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

Begin Transient

Apply loads and solve for 0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

TIME= 31.558

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
771.198089 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10131 STEP 1

8289 ELEMENTS (OF 8289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 3102.790 TIME= 02:31:33
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 02:31:33 JAN 25, 1995 CP= 3102.790
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 3
TIME AT END OF THE LOAD STEP. . . . . 31.558
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 10
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 80
  MINIMUM NUMBER OF SUBSTEPS . . . . . 4
  START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
  THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS
  THETA. . . . . .50000
  OSCILLATION LIMIT CRITERION. . . . . .50000
  TOLERANCE. . . . . .20000
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . .ALL DATA WRITTEN
                                FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 330.4 CRITERION= .1676
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6025E-04
HT FLOW CONVERGENCE VALUE= .3778E-04 CRITERION= .3704 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 7
*** TIME = .394472 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9963E-05 OSCILLATION LIMIT = .3930E-05
*** AUTO STEP TIME: NEXT TIME INC = .39447 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3705
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1205E-03
HT FLOW CONVERGENCE VALUE= .7556E-04 CRITERION= .3704 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 8
*** TIME = .788942 TIME INC = .394470
*** RESPONSE EIGENVALUE = .9963E-05 OSCILLATION LIMIT = .3930E-05
*** AUTO TIME STEP: NEXT TIME INC = 1.1834 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3705
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3615E-03
HT FLOW CONVERGENCE VALUE= .2267E-03 CRITERION= .3704 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 9
*** TIME = 1.97235 TIME INC = 1.18341
*** RESPONSE EIGENVALUE = .9962E-05 OSCILLATION LIMIT = .1179E-04
*** AUTO TIME STEP: NEXT TIME INC = 3.5502 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3705
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1084E-02
HT FLOW CONVERGENCE VALUE= .6800E-03 CRITERION= .3704 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 10
*** TIME = 5.52258 TIME INC = 3.55023
*** RESPONSE EIGENVALUE = .9958E-05 OSCILLATION LIMIT = .3535E-04
*** AUTO TIME STEP: NEXT TIME INC = 7.8894 INCREASED (FACTOR = 2.2222)

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HT FLOW CONVERGENCE VALUE= 660.7 CRITERION= .3705
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2409E-02
HT FLOW CONVERGENCE VALUE= .1511E-02 CRITERION= .3704 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 11
*** TIME = 13.4120 TIME INC = 7.88940
*** RESPONSE EIGENVALUE = .9951E-05 OSCILLATION LIMIT = .7850E-04
*** AUTO STEP TIME: NEXT TIME INC = 7.8894 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 660.6 CRITERION= .3704
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2409E-02

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HT FLOW CONVERGENCE VALUE= .1510E-02 CRITERION= .3704 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 12
 *** TIME = 21.3014 TIME INC = 7.88940
 *** RESPONSE EIGENVALUE = .9940E-05 OSCILLATION LIMIT = .7842E-04
 *** AUTO TIME STEP: NEXT TIME INC = 5.1281 DECREASED (FACTOR = .6500)

HT FLOW CONVERGENCE VALUE= 660.6 CRITERION= .3704
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1566E-02
 HT FLOW CONVERGENCE VALUE= .9815E-03 CRITERION= .3703 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 13
 *** TIME = 26.4295 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9933E-05 OSCILLATION LIMIT = .5094E-04
 *** AUTO STEP TIME: NEXT TIME INC = 5.1281 UNCHANGED

HT FLOW CONVERGENCE VALUE= 660.5 CRITERION= .3704
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1565E-02
 HT FLOW CONVERGENCE VALUE= .9814E-03 CRITERION= .3703 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 14
 *** TIME = 31.5576 TIME INC = 5.12811
 *** RESPONSE EIGENVALUE = .9927E-05 OSCILLATION LIMIT = .5091E-04

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 03:30:16 JAN 25, 1995 CP= 4568.360
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 660.5 CRITERION= .3703
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 8.349
 HT FLOW CONVERGENCE VALUE= 5.150 CRITERION= .2772
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1346
 HT FLOW CONVERGENCE VALUE= .1198 CRITERION= .2770 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 16
 *** TIME = 39478.6 TIME INC = 39447.0
 *** RESPONSE EIGENVALUE = .8052E-05 OSCILLATION LIMIT = .3176
 *** AUTO STEP TIME: NEXT TIME INC = 39447. UNCHANGED

HT FLOW CONVERGENCE VALUE= 452.4 CRITERION= .2861
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.567
 HT FLOW CONVERGENCE VALUE= 3.062 CRITERION= .2470
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6465E-01
 HT FLOW CONVERGENCE VALUE= .6751E-01 CRITERION= .2477 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 18
 *** TIME = 78925.6 TIME INC = 39447.0
 *** RESPONSE EIGENVALUE = .4835E-05 OSCILLATION LIMIT = .1907
 *** AUTO TIME STEP: NEXT TIME INC = .10341E+06 INCREASED (FACTOR = 2.6214)

HT FLOW CONVERGENCE VALUE= 385.8 CRITERION= .2631
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 5.018
 HT FLOW CONVERGENCE VALUE= 5.549 CRITERION= .2264
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1593
 HT FLOW CONVERGENCE VALUE= .1878 CRITERION= .2275 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 20
 *** TIME = 182333. TIME INC = 103408.
 *** RESPONSE EIGENVALUE = .2520E-05 OSCILLATION LIMIT = .2606
 *** AUTO TIME STEP: NEXT TIME INC = .19839E+06 INCREASED (FACTOR = 1.9186)

HT FLOW CONVERGENCE VALUE= 334.3 CRITERION= .2456

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.920
HT FLOW CONVERGENCE VALUE= 7.261 CRITERION= .2172
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2158
HT FLOW CONVERGENCE VALUE= .2868 CRITERION= .2184
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8123E-02
HT FLOW CONVERGENCE VALUE= .8334E-02 CRITERION= .2183 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 23
*** TIME = 380727. TIME INC = 198393.
*** RESPONSE EIGENVALUE = .1096E-05 OSCILLATION LIMIT = .2174
*** AUTO STEP TIME: NEXT TIME INC = .19839E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 304.0 CRITERION= .2339
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 3.635
HT FLOW CONVERGENCE VALUE= 5.182 CRITERION= .2143
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1473
HT FLOW CONVERGENCE VALUE= .2003 CRITERION= .2150 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 25
*** TIME = 579120. TIME INC = 198393.
*** RESPONSE EIGENVALUE = .6597E-06 OSCILLATION LIMIT = .1309
*** AUTO TIME STEP: NEXT TIME INC = .59518E+06 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 287.4 CRITERION= .2263
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 6.756
HT FLOW CONVERGENCE VALUE= 11.31 CRITERION= .2086
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4348
HT FLOW CONVERGENCE VALUE= .6039 CRITERION= .2094
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2593E-01
HT FLOW CONVERGENCE VALUE= .3406E-01 CRITERION= .2093 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 28
*** TIME = .117430E+07 TIME INC = 595180.
*** RESPONSE EIGENVALUE = .4191E-06 OSCILLATION LIMIT = .2494
*** AUTO STEP TIME: NEXT TIME INC = .59518E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 262.1 CRITERION= .2159
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.045
HT FLOW CONVERGENCE VALUE= 7.217 CRITERION= .2067
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2876
HT FLOW CONVERGENCE VALUE= .3959 CRITERION= .2070
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1595E-01
HT FLOW CONVERGENCE VALUE= .2090E-01 CRITERION= .2070 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 31
*** TIME = .176948E+07 TIME INC = 595180.
*** RESPONSE EIGENVALUE = .2580E-06 OSCILLATION LIMIT = .1535
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3255)

HT FLOW CONVERGENCE VALUE= 250.8 CRITERION= .2113
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 4.031
HT FLOW CONVERGENCE VALUE= 7.287 CRITERION= .2066
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3017
HT FLOW CONVERGENCE VALUE= .4143 CRITERION= .2068
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1837E-01
HT FLOW CONVERGENCE VALUE= .2502E-01 CRITERION= .2067 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 34
*** TIME = .255842E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .1774E-06 OSCILLATION LIMIT = .1400
*** AUTO TIME STEP: NEXT TIME INC = .59737E+06 DECREASED (FACTOR = .7572)

HT FLOW CONVERGENCE VALUE= 249.6 CRITERION= .2107
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.439
HT FLOW CONVERGENCE VALUE= 4.372 CRITERION= .2075
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1695
HT FLOW CONVERGENCE VALUE= .2318 CRITERION= .2077
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9052E-02
HT FLOW CONVERGENCE VALUE= .1196E-01 CRITERION= .2077 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 37
 *** TIME = .315579E+07 TIME INC = 597370.
 *** RESPONSE EIGENVALUE = .1305E-06 OSCILLATION LIMIT = .7796E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 05:49:02 JAN 25, 1995 CP= 7902.090
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 250.6 CRITERION= .2103
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.102
 HT FLOW CONVERGENCE VALUE= 3.770 CRITERION= .2077
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1440
 HT FLOW CONVERGENCE VALUE= .1962 CRITERION= .2078 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 39
 *** TIME = .375316E+07 TIME INC = 597370.
 *** RESPONSE EIGENVALUE = .1077E-06 OSCILLATION LIMIT = .6432E-01
 *** AUTO STEP TIME: NEXT TIME INC = .59737E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 251.9 CRITERION= .2108
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.865
 HT FLOW CONVERGENCE VALUE= 3.312 CRITERION= .2085
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1258
 HT FLOW CONVERGENCE VALUE= .1709 CRITERION= .2086 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 2 COMPLETED. CUM ITER = 41
 *** TIME = .435053E+07 TIME INC = 597370.
 *** RESPONSE EIGENVALUE = .9234E-07 OSCILLATION LIMIT = .5516E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.3207)

HT FLOW CONVERGENCE VALUE= 253.0 CRITERION= .2105
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.175
 HT FLOW CONVERGENCE VALUE= 3.867 CRITERION= .2086
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1534
 HT FLOW CONVERGENCE VALUE= .2075 CRITERION= .2087 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 3 COMPLETED. CUM ITER = 43
 *** TIME = .513947E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .7985E-07 OSCILLATION LIMIT = .6299E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 254.3 CRITERION= .2111
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.931
 HT FLOW CONVERGENCE VALUE= 3.411 CRITERION= .2094
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1344
 HT FLOW CONVERGENCE VALUE= .1811 CRITERION= .2095 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 45
 *** TIME = .592841E+07 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .6939E-07 OSCILLATION LIMIT = .5474E-01
 *** AUTO TIME STEP: NEXT TIME INC = .38314E+06 DECREASED (FACTOR = .4856)

HT FLOW CONVERGENCE VALUE= 255.4 CRITERION= .2109
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8650
 HT FLOW CONVERGENCE VALUE= 1.514 CRITERION= .2092
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5025E-01
 HT FLOW CONVERGENCE VALUE= .6717E-01 CRITERION= .2092 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 47
 *** TIME = .631155E+07 TIME INC = 383139.
 *** RESPONSE EIGENVALUE = .6340E-07 OSCILLATION LIMIT = .2429E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 06:51:59 JAN 25, 1995 CP= 9452.510
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 255.8 CRITERION= .2113
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8256
HT FLOW CONVERGENCE VALUE= 1.440 CRITERION= .2097
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4785E-01
HT FLOW CONVERGENCE VALUE= .6389E-01 CRITERION= .2097 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 49
*** TIME = .669469E+07 TIME INC = 383139.
*** RESPONSE EIGENVALUE = .6003E-07 OSCILLATION LIMIT = .2300E-01
*** AUTO STEP TIME: NEXT TIME INC = .38314E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 256.2 CRITERION= .2110
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7911
HT FLOW CONVERGENCE VALUE= 1.380 CRITERION= .2094
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4548E-01
HT FLOW CONVERGENCE VALUE= .6056E-01 CRITERION= .2095 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 51
*** TIME = .707783E+07 TIME INC = 383139.
*** RESPONSE EIGENVALUE = .5707E-07 OSCILLATION LIMIT = .2186E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 2.0591)

HT FLOW CONVERGENCE VALUE= 256.6 CRITERION= .2114
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.533
HT FLOW CONVERGENCE VALUE= 2.682 CRITERION= .2100
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1033
HT FLOW CONVERGENCE VALUE= .1377 CRITERION= .2101 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 53
*** TIME = .786677E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .5297E-07 OSCILLATION LIMIT = .4179E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.3 CRITERION= .2111
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.420
HT FLOW CONVERGENCE VALUE= 2.488 CRITERION= .2098
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9429E-01
HT FLOW CONVERGENCE VALUE= .1251 CRITERION= .2098 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 55
*** TIME = .865571E+07 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .4842E-07 OSCILLATION LIMIT = .3820E-01
*** AUTO TIME STEP: NEXT TIME INC = .40580E+06 DECREASED (FACTOR = .5144)

HT FLOW CONVERGENCE VALUE= 257.8 CRITERION= .2115
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6900
HT FLOW CONVERGENCE VALUE= 1.206 CRITERION= .2102
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3925E-01
HT FLOW CONVERGENCE VALUE= .5159E-01 CRITERION= .2103 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 57
*** TIME = .906151E+07 TIME INC = 405801.
*** RESPONSE EIGENVALUE = .4557E-07 OSCILLATION LIMIT = .1849E-01
*** AUTO STEP TIME: NEXT TIME INC = .40580E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.0 CRITERION= .2112
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6659
HT FLOW CONVERGENCE VALUE= 1.172 CRITERION= .2099
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3763E-01
HT FLOW CONVERGENCE VALUE= .4928E-01 CRITERION= .2099 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 6 COMPLETED. CUM ITER = 59

*** TIME = .946731E+07 TIME INC = 405801.
 *** RESPONSE EIGENVALUE = .4377E-07 OSCILLATION LIMIT = .1776E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 08:08:52 JAN 25, 1995 CP= 11320.010
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 258.2 CRITERION= .2115
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6445
 HT FLOW CONVERGENCE VALUE= 1.135 CRITERION= .2103
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3633E-01
 HT FLOW CONVERGENCE VALUE= .4747E-01 CRITERION= .2103 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 1 COMPLETED. CUM ITER = 61
 *** TIME = .987311E+07 TIME INC = 405801.
 *** RESPONSE EIGENVALUE = .4210E-07 OSCILLATION LIMIT = .1708E-01
 *** AUTO STEP TIME: NEXT TIME INC = .40580E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.3 CRITERION= .2112
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6241
 HT FLOW CONVERGENCE VALUE= 1.103 CRITERION= .2099
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3493E-01
 HT FLOW CONVERGENCE VALUE= .4554E-01 CRITERION= .2100 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 2 COMPLETED. CUM ITER = 63
 *** TIME = .102789E+08 TIME INC = 405801.
 *** RESPONSE EIGENVALUE = .4058E-07 OSCILLATION LIMIT = .1647E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.9442)

HT FLOW CONVERGENCE VALUE= 258.5 CRITERION= .2115
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.160
 HT FLOW CONVERGENCE VALUE= 2.060 CRITERION= .2104
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7488E-01
 HT FLOW CONVERGENCE VALUE= .9782E-01 CRITERION= .2104 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 3 COMPLETED. CUM ITER = 65
 *** TIME = .110679E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3839E-07 OSCILLATION LIMIT = .3028E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.7 CRITERION= .2111
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.096
 HT FLOW CONVERGENCE VALUE= 1.950 CRITERION= .2100
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6997E-01
 HT FLOW CONVERGENCE VALUE= .9113E-01 CRITERION= .2100 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 4 COMPLETED. CUM ITER = 67
 *** TIME = .118568E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .3599E-07 OSCILLATION LIMIT = .2839E-01
 *** AUTO TIME STEP: NEXT TIME INC = .76628E+06 DECREASED (FACTOR = .9713)

HT FLOW CONVERGENCE VALUE= 258.8 CRITERION= .2114
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.009
 HT FLOW CONVERGENCE VALUE= 1.789 CRITERION= .2104
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6361E-01
 HT FLOW CONVERGENCE VALUE= .8258E-01 CRITERION= .2104 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 7 SUBSTEP 5 COMPLETED. CUM ITER = 69
 *** TIME = .126231E+08 TIME INC = 766279.
 *** RESPONSE EIGENVALUE = .3389E-07 OSCILLATION LIMIT = .2597E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 08:50:15 JAN 25, 1995 CP= 12821.410
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 258.8 CRITERION= .2110
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9596
HT FLOW CONVERGENCE VALUE= 1.704 CRITERION= .2100
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5995E-01
HT FLOW CONVERGENCE VALUE= .7757E-01 CRITERION= .2100 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 1 COMPLETED. CUM ITER = 71
*** TIME = .133894E+08 TIME INC = 766279.
*** RESPONSE EIGENVALUE = .3207E-07 OSCILLATION LIMIT = .2457E-01
*** AUTO STEP TIME: NEXT TIME INC = .76628E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.8 CRITERION= .2112
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9149
HT FLOW CONVERGENCE VALUE= 1.619 CRITERION= .2103
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5684E-01
HT FLOW CONVERGENCE VALUE= .7337E-01 CRITERION= .2103 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 2 COMPLETED. CUM ITER = 73
*** TIME = .141556E+08 TIME INC = 766279.
*** RESPONSE EIGENVALUE = .3042E-07 OSCILLATION LIMIT = .2331E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0296)

HT FLOW CONVERGENCE VALUE= 258.8 CRITERION= .2108
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8994
HT FLOW CONVERGENCE VALUE= 1.590 CRITERION= .2098
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5569E-01
HT FLOW CONVERGENCE VALUE= .7170E-01 CRITERION= .2098 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 3 COMPLETED. CUM ITER = 75
*** TIME = .149446E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2892E-07 OSCILLATION LIMIT = .2281E-01
*** AUTO TIME STEP: NEXT TIME INC = .41713E+06 DECREASED (FACTOR = .5287)

HT FLOW CONVERGENCE VALUE= 258.7 CRITERION= .2111
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4592
HT FLOW CONVERGENCE VALUE= .8051 CRITERION= .2101
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2470E-01
HT FLOW CONVERGENCE VALUE= .3156E-01 CRITERION= .2102 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 4 COMPLETED. CUM ITER = 77
*** TIME = .153617E+08 TIME INC = 417131.
*** RESPONSE EIGENVALUE = .2801E-07 OSCILLATION LIMIT = .1168E-01
*** AUTO STEP TIME: NEXT TIME INC = .41713E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.6 CRITERION= .2106
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4485
HT FLOW CONVERGENCE VALUE= .7872 CRITERION= .2097
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2399E-01
HT FLOW CONVERGENCE VALUE= .3061E-01 CRITERION= .2098 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 8 SUBSTEP 5 COMPLETED. CUM ITER = 79
*** TIME = .157788E+08 TIME INC = 417131.
*** RESPONSE EIGENVALUE = .2733E-07 OSCILLATION LIMIT = .1140E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 09:16:40 JAN 25, 1995 CP= 14293.780
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 258.6 CRITERION= .2109
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4389
 HT FLOW CONVERGENCE VALUE= .7681 CRITERION= .2100
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2347E-01
 HT FLOW CONVERGENCE VALUE= .2991E-01 CRITERION= .2101 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 1 COMPLETED. CUM ITER = 81
 *** TIME = .161960E+08 TIME INC = 417131.
 *** RESPONSE EIGENVALUE = .2665E-07 OSCILLATION LIMIT = .1112E-01
 *** AUTO STEP TIME: NEXT TIME INC = .41713E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.5 CRITERION= .2105
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4294
 HT FLOW CONVERGENCE VALUE= .7523 CRITERION= .2096
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2282E-01
 HT FLOW CONVERGENCE VALUE= .2905E-01 CRITERION= .2097 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 2 COMPLETED. CUM ITER = 83
 *** TIME = .166131E+08 TIME INC = 417131.
 *** RESPONSE EIGENVALUE = .2604E-07 OSCILLATION LIMIT = .1086E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.8913)

HT FLOW CONVERGENCE VALUE= 258.4 CRITERION= .2108
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7879
 HT FLOW CONVERGENCE VALUE= 1.383 CRITERION= .2099
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4790E-01
 HT FLOW CONVERGENCE VALUE= .6122E-01 CRITERION= .2099 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 3 COMPLETED. CUM ITER = 85
 *** TIME = .174020E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2501E-07 OSCILLATION LIMIT = .1973E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 258.3 CRITERION= .2103
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7578
 HT FLOW CONVERGENCE VALUE= 1.329 CRITERION= .2094
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4569E-01
 HT FLOW CONVERGENCE VALUE= .5826E-01 CRITERION= .2094 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 4 COMPLETED. CUM ITER = 87
 *** TIME = .181910E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .2399E-07 OSCILLATION LIMIT = .1892E-01
 *** AUTO TIME STEP: NEXT TIME INC = .74362E+06 DECREASED (FACTOR = .9426)

HT FLOW CONVERGENCE VALUE= 258.1 CRITERION= .2105
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6883
 HT FLOW CONVERGENCE VALUE= 1.202 CRITERION= .2097
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4087E-01
 HT FLOW CONVERGENCE VALUE= .5199E-01 CRITERION= .2097 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 9 SUBSTEP 5 COMPLETED. CUM ITER = 89
 *** TIME = .189346E+08 TIME INC = 743618.
 *** RESPONSE EIGENVALUE = .2306E-07 OSCILLATION LIMIT = .1715E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 09:43:40 JAN 25, 1995 CP= 15766.770
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 257.9 CRITERION= .2100
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6651
 HT FLOW CONVERGENCE VALUE= 1.161 CRITERION= .2092
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3920E-01
 HT FLOW CONVERGENCE VALUE= .4976E-01 CRITERION= .2092 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 1 COMPLETED. CUM ITER = 91
*** TIME = .196782E+08 TIME INC = 743618.
*** RESPONSE EIGENVALUE = .2224E-07 OSCILLATION LIMIT = .1654E-01
*** AUTO STEP TIME: NEXT TIME INC = .74362E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.7 CRITERION= .2102
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6436
HT FLOW CONVERGENCE VALUE= 1.119 CRITERION= .2095
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3780E-01
HT FLOW CONVERGENCE VALUE= .4789E-01 CRITERION= .2095 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 2 COMPLETED. CUM ITER = 93
*** TIME = .204218E+08 TIME INC = 743618.
*** RESPONSE EIGENVALUE = .2146E-07 OSCILLATION LIMIT = .1596E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.0609)

HT FLOW CONVERGENCE VALUE= 257.5 CRITERION= .2097
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6607
HT FLOW CONVERGENCE VALUE= 1.149 CRITERION= .2090
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3894E-01
HT FLOW CONVERGENCE VALUE= .4925E-01 CRITERION= .2090 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 3 COMPLETED. CUM ITER = 95
*** TIME = .212108E+08 TIME INC = 788940.
*** RESPONSE EIGENVALUE = .2072E-07 OSCILLATION LIMIT = .1635E-01
*** AUTO TIME STEP: NEXT TIME INC = .43979E+06 DECREASED (FACTOR = .5574)

HT FLOW CONVERGENCE VALUE= 257.3 CRITERION= .2100
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3592
HT FLOW CONVERGENCE VALUE= .6188 CRITERION= .2093
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1867E-01
HT FLOW CONVERGENCE VALUE= .2346E-01 CRITERION= .2093 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 4 COMPLETED. CUM ITER = 97
*** TIME = .216506E+08 TIME INC = 439792.
*** RESPONSE EIGENVALUE = .2031E-07 OSCILLATION LIMIT = .8934E-02
*** AUTO STEP TIME: NEXT TIME INC = .43979E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 257.2 CRITERION= .2095
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3526
HT FLOW CONVERGENCE VALUE= .6083 CRITERION= .2088
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1823E-01
HT FLOW CONVERGENCE VALUE= .2288E-01 CRITERION= .2088 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 10 SUBSTEP 5 COMPLETED. CUM ITER = 99
*** TIME = .220904E+08 TIME INC = 439792.
*** RESPONSE EIGENVALUE = .1995E-07 OSCILLATION LIMIT = .8772E-02

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 10:10:46 JAN 25, 1995 CP= 17238.830
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 257.0 CRITERION= .2098
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3465
HT FLOW CONVERGENCE VALUE= .5965 CRITERION= .2091
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1793E-01
HT FLOW CONVERGENCE VALUE= .2248E-01 CRITERION= .2091 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 11 SUBSTEP 1 COMPLETED. CUM ITER = 101
*** TIME = .225301E+08 TIME INC = 439792.
*** RESPONSE EIGENVALUE = .1956E-07 OSCILLATION LIMIT = .8601E-02
*** AUTO STEP TIME: NEXT TIME INC = .43979E+06 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 256.9 CRITERION= .2094
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3406
 HT FLOW CONVERGENCE VALUE= .5877 CRITERION= .2087
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1753E-01
 HT FLOW CONVERGENCE VALUE= .2196E-01 CRITERION= .2087 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 2 COMPLETED. CUM ITER = 103
 *** TIME = .229699E+08 TIME INC = 439792.
 *** RESPONSE EIGENVALUE = .1921E-07 OSCILLATION LIMIT = .8449E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.7939)

HT FLOW CONVERGENCE VALUE= 256.8 CRITERION= .2096
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5967
 HT FLOW CONVERGENCE VALUE= 1.031 CRITERION= .2089
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3467E-01
 HT FLOW CONVERGENCE VALUE= .4359E-01 CRITERION= .2089 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 3 COMPLETED. CUM ITER = 105
 *** TIME = .237589E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1857E-07 OSCILLATION LIMIT = .1465E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 256.5 CRITERION= .2091
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5797
 HT FLOW CONVERGENCE VALUE= 1.001 CRITERION= .2085
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3343E-01
 HT FLOW CONVERGENCE VALUE= .4194E-01 CRITERION= .2085 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 4 COMPLETED. CUM ITER = 107
 *** TIME = .245478E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1801E-07 OSCILLATION LIMIT = .1421E-01
 *** AUTO TIME STEP: NEXT TIME INC = .69830E+06 DECREASED (FACTOR = .8851)

HT FLOW CONVERGENCE VALUE= 256.3 CRITERION= .2093
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4994
 HT FLOW CONVERGENCE VALUE= .8583 CRITERION= .2087
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2806E-01
 HT FLOW CONVERGENCE VALUE= .3513E-01 CRITERION= .2087 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 11 SUBSTEP 5 COMPLETED. CUM ITER = 109
 *** TIME = .252461E+08 TIME INC = 698296.
 *** RESPONSE EIGENVALUE = .1751E-07 OSCILLATION LIMIT = .1223E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 10:37:23 JAN 25, 1995 CP= 18707.930
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 256.1 CRITERION= .2089
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4869
 HT FLOW CONVERGENCE VALUE= .8362 CRITERION= .2082
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2720E-01
 HT FLOW CONVERGENCE VALUE= .3398E-01 CRITERION= .2082 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 12 SUBSTEP 1 COMPLETED. CUM ITER = 111
 *** TIME = .259444E+08 TIME INC = 698296.
 *** RESPONSE EIGENVALUE = .1708E-07 OSCILLATION LIMIT = .1193E-01
 *** AUTO STEP TIME: NEXT TIME INC = .69830E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 255.9 CRITERION= .2091
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4751
 HT FLOW CONVERGENCE VALUE= .8124 CRITERION= .2085
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2648E-01
 HT FLOW CONVERGENCE VALUE= .3305E-01 CRITERION= .2085 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 12 SUBSTEP 2 COMPLETED. CUM ITER = 113
 *** TIME = .266427E+08 TIME INC = 698296.
 *** RESPONSE EIGENVALUE = .1664E-07 OSCILLATION LIMIT = .1162E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.1298)

HT FLOW CONVERGENCE VALUE= 255.7 CRITERION= .2086
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5230
 HT FLOW CONVERGENCE VALUE= .8951 CRITERION= .2080
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2963E-01
 HT FLOW CONVERGENCE VALUE= .3694E-01 CRITERION= .2080 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 12 SUBSTEP 3 COMPLETED. CUM ITER = 115
 *** TIME = .274316E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1620E-07 OSCILLATION LIMIT = .1278E-01
 *** AUTO TIME STEP: NEXT TIME INC = .48511E+06 DECREASED (FACTOR = .6149)

HT FLOW CONVERGENCE VALUE= 255.4 CRITERION= .2088
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3149
 HT FLOW CONVERGENCE VALUE= .5347 CRITERION= .2082
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1614E-01
 HT FLOW CONVERGENCE VALUE= .2001E-01 CRITERION= .2082 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 12 SUBSTEP 4 COMPLETED. CUM ITER = 117
 *** TIME = .279168E+08 TIME INC = 485114.
 *** RESPONSE EIGENVALUE = .1596E-07 OSCILLATION LIMIT = .7743E-02
 *** AUTO STEP TIME: NEXT TIME INC = .48511E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 255.3 CRITERION= .2084
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3097
 HT FLOW CONVERGENCE VALUE= .5266 CRITERION= .2078
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1579E-01
 HT FLOW CONVERGENCE VALUE= .1955E-01 CRITERION= .2078 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 12 SUBSTEP 5 COMPLETED. CUM ITER = 119
 *** TIME = .284019E+08 TIME INC = 485114.
 *** RESPONSE EIGENVALUE = .1572E-07 OSCILLATION LIMIT = .7625E-02
 Apply loads and solve for 1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08
 TIME= .31558E+08

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 755.827987 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 10131 STEP 1

8289 ELEMENTS (OF 8289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 20179.250 TIME= 11:04:04
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 11:04:04 JAN 25, 1995 CP= 20179.250
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 13
 TIME AT END OF THE LOAD STEP.31558E+08
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80
 MINIMUM NUMBER OF SUBSTEPS 4
 START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TRANSIENT (INERTIA) EFFECTS
 THERMAL DOFS ON
 TRANSIENT INTEGRATION PARAMETERS
 THETA.50000
 OSCILLATION LIMIT CRITERION.50000
 TOLERANCE.20000
 TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
 CONVERGENCE CONTROLS.USE DEFAULTS
 PRINT OUTPUT CONTROLSNO PRINTOUT
 DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
 FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 255.1 CRITERION= .2086
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3049
 HT FLOW CONVERGENCE VALUE= .5173 CRITERION= .2081
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1556E-01
 HT FLOW CONVERGENCE VALUE= .1926E-01 CRITERION= .2081 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 13 SUBSTEP 1 COMPLETED. CUM ITER = 121
 *** TIME = .288870E+08 TIME INC = 485114.
 *** RESPONSE EIGENVALUE = .1544E-07 OSCILLATION LIMIT = .7492E-02
 *** AUTO STEP TIME: NEXT TIME INC = .48511E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 255.0 CRITERION= .2082
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3003
 HT FLOW CONVERGENCE VALUE= .5107 CRITERION= .2077
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1524E-01
 HT FLOW CONVERGENCE VALUE= .1884E-01 CRITERION= .2077 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 13 SUBSTEP 2 COMPLETED. CUM ITER = 123
 *** TIME = .293721E+08 TIME INC = 485114.
 *** RESPONSE EIGENVALUE = .1521E-07 OSCILLATION LIMIT = .7379E-02
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+06 INCREASED (FACTOR = 1.6263)

HT FLOW CONVERGENCE VALUE= 254.8 CRITERION= .2084
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4788
 HT FLOW CONVERGENCE VALUE= .8148 CRITERION= .2079
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2680E-01
 HT FLOW CONVERGENCE VALUE= .3323E-01 CRITERION= .2079 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 13 SUBSTEP 3 COMPLETED. CUM ITER = 125
 *** TIME = .301610E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1477E-07 OSCILLATION LIMIT = .1165E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 254.6 CRITERION= .2079
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4676
 HT FLOW CONVERGENCE VALUE= .7954 CRITERION= .2074
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2599E-01

HT FLOW CONVERGENCE VALUE= .3217E-01 CRITERION= .2074 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 4 COMPLETED. CUM ITER = 127
 *** TIME = .309500E+08 TIME INC = 788940.
 *** RESPONSE EIGENVALUE = .1441E-07 OSCILLATION LIMIT = .1137E-01
 *** AUTO TIME STEP: NEXT TIME INC = .60765E+06 DECREASED (FACTOR = .7702)

HT FLOW CONVERGENCE VALUE= 254.4 CRITERION= .2082
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3527
 HT FLOW CONVERGENCE VALUE= .5964 CRITERION= .2076
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1862E-01
 HT FLOW CONVERGENCE VALUE= .2298E-01 CRITERION= .2076 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 13 SUBSTEP 5 COMPLETED. CUM ITER = 129
 *** TIME = .315576E+08 TIME INC = 607652.
 *** RESPONSE EIGENVALUE = .1415E-07 OSCILLATION LIMIT = .8601E-02

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 11:31:35 JAN 25, 1995 CP= 21651.000
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 254.2 CRITERION= .2077
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3463
 HT FLOW CONVERGENCE VALUE= .5861 CRITERION= .2072
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1819E-01
 HT FLOW CONVERGENCE VALUE= .2241E-01 CRITERION= .2072 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 1 COMPLETED. CUM ITER = 131
 *** TIME = .321653E+08 TIME INC = 607652.
 *** RESPONSE EIGENVALUE = .1391E-07 OSCILLATION LIMIT = .8453E-02
 *** AUTO STEP TIME: NEXT TIME INC = .60765E+06 UNCHANGED

HT FLOW CONVERGENCE VALUE= 254.0 CRITERION= .2079
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3403
 HT FLOW CONVERGENCE VALUE= .5739 CRITERION= .2074
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1787E-01
 HT FLOW CONVERGENCE VALUE= .2200E-01 CRITERION= .2074 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 2 COMPLETED. CUM ITER = 133
 *** TIME = .327729E+08 TIME INC = 607652.
 *** RESPONSE EIGENVALUE = .1365E-07 OSCILLATION LIMIT = .8296E-02
 *** AUTO TIME STEP: NEXT TIME INC = .18230E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 253.8 CRITERION= .2074
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9864
 HT FLOW CONVERGENCE VALUE= 1.674 CRITERION= .2069
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6159E-01
 HT FLOW CONVERGENCE VALUE= .7544E-01 CRITERION= .2068 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 14 SUBSTEP 3 COMPLETED. CUM ITER = 135
 *** TIME = .345959E+08 TIME INC = .182296E+07
 *** RESPONSE EIGENVALUE = .1308E-07 OSCILLATION LIMIT = .2384E-01
 *** AUTO TIME STEP: NEXT TIME INC = .54689E+07 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 253.3 CRITERION= .2071
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.701
 HT FLOW CONVERGENCE VALUE= 4.440 CRITERION= .2065
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2739
 HT FLOW CONVERGENCE VALUE= .3152 CRITERION= .2063
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1035E-01
 HT FLOW CONVERGENCE VALUE= .1271E-01 CRITERION= .2063 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

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*** LOAD STEP 14 SUBSTEP 4 COMPLETED. CUM ITER = 138
*** TIME = .400648E+08 TIME INC = .546887E+07
*** RESPONSE EIGENVALUE = .1182E-07 OSCILLATION LIMIT = .6464E-01
*** AUTO STEP TIME: NEXT TIME INC = .54689E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 251.7 CRITERION= .2058
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.308
HT FLOW CONVERGENCE VALUE= 3.652 CRITERION= .2052
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2417
HT FLOW CONVERGENCE VALUE= .2801 CRITERION= .2050
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9173E-02
HT FLOW CONVERGENCE VALUE= .1232E-01 CRITERION= .2050 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 5 COMPLETED. CUM ITER = 141
*** TIME = .455336E+08 TIME INC = .546887E+07
*** RESPONSE EIGENVALUE = .1030E-07 OSCILLATION LIMIT = .5633E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.4426)

HT FLOW CONVERGENCE VALUE= 249.9 CRITERION= .2050
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.850
HT FLOW CONVERGENCE VALUE= 4.438 CRITERION= .2042
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3300
HT FLOW CONVERGENCE VALUE= .4859 CRITERION= .2039
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1434E-01
HT FLOW CONVERGENCE VALUE= .1458E-01 CRITERION= .2039 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 14 SUBSTEP 6 COMPLETED. CUM ITER = 144
*** TIME = .534230E+08 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .8820E-08 OSCILLATION LIMIT = .6959E-01
*** AUTO TIME STEP: NEXT TIME INC = .48461E+07 DECREASED (FACTOR = .6143)

HT FLOW CONVERGENCE VALUE= 247.2 CRITERION= .2034
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.500
HT FLOW CONVERGENCE VALUE= 2.935 CRITERION= .2028
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1400
HT FLOW CONVERGENCE VALUE= .1987 CRITERION= .2027 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 7 COMPLETED. CUM ITER = 146
*** TIME = .582691E+08 TIME INC = .484610E+07
*** RESPONSE EIGENVALUE = .7798E-08 OSCILLATION LIMIT = .3779E-01
*** AUTO STEP TIME: NEXT TIME INC = .48461E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 245.6 CRITERION= .2028
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.371
HT FLOW CONVERGENCE VALUE= 2.531 CRITERION= .2023
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1092
HT FLOW CONVERGENCE VALUE= .1571 CRITERION= .2022 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 14 SUBSTEP 8 COMPLETED. CUM ITER = 148
*** TIME = .631152E+08 TIME INC = .484610E+07
*** RESPONSE EIGENVALUE = .7117E-08 OSCILLATION LIMIT = .3449E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 12:19:12 JAN 25, 1995 CP= 24308.850
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 244.0 CRITERION= .2017
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.264
HT FLOW CONVERGENCE VALUE= 2.973 CRITERION= .2012
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1163
HT FLOW CONVERGENCE VALUE= .1862 CRITERION= .2010 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 15 SUBSTEP 1 COMPLETED. CUM ITER = 150
*** TIME = .679613E+08 TIME INC = .484610E+07

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*** RESPONSE EIGENVALUE = .6589E-08 OSCILLATION LIMIT = .3193E-01
 *** AUTO STEP TIME: NEXT TIME INC = .48461E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 242.6 CRITERION= .2012
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.165
 HT FLOW CONVERGENCE VALUE= 2.530 CRITERION= .2007
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1037
 HT FLOW CONVERGENCE VALUE= .1489 CRITERION= .2006 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 2 COMPLETED. CUM ITER = 152
 *** TIME = .728074E+08 TIME INC = .484610E+07
 *** RESPONSE EIGENVALUE = .6152E-08 OSCILLATION LIMIT = .2981E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.6280)

HT FLOW CONVERGENCE VALUE= 241.2 CRITERION= .1998
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.722
 HT FLOW CONVERGENCE VALUE= 3.510 CRITERION= .1993
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1522
 HT FLOW CONVERGENCE VALUE= .2278 CRITERION= .1991
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3843E-02
 HT FLOW CONVERGENCE VALUE= .5171E-02 CRITERION= .1991 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 15 SUBSTEP 3 COMPLETED. CUM ITER = 155
 *** TIME = .806968E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .5600E-08 OSCILLATION LIMIT = .4418E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 239.1 CRITERION= .1990
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.545
 HT FLOW CONVERGENCE VALUE= 2.785 CRITERION= .1984
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1216
 HT FLOW CONVERGENCE VALUE= .1573 CRITERION= .1983 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 4 COMPLETED. CUM ITER = 157
 *** TIME = .885862E+08 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .5049E-08 OSCILLATION LIMIT = .3984E-01
 *** AUTO STEP TIME: NEXT TIME INC = .60866E+07 DECREASED (FACTOR = .7715)

HT FLOW CONVERGENCE VALUE= 237.2 CRITERION= .1976
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.099
 HT FLOW CONVERGENCE VALUE= 2.176 CRITERION= .1972
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8193E-01
 HT FLOW CONVERGENCE VALUE= .1135 CRITERION= .1971 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 15 SUBSTEP 5 COMPLETED. CUM ITER = 159
 *** TIME = .946728E+08 TIME INC = .608659E+07
 *** RESPONSE EIGENVALUE = .4676E-08 OSCILLATION LIMIT = .2846E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 12:47:22 JAN 25, 1995 CP= 25886.530
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 235.8 CRITERION= .1971
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.028
 HT FLOW CONVERGENCE VALUE= 2.102 CRITERION= .1967
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7219E-01
 HT FLOW CONVERGENCE VALUE= .1070 CRITERION= .1966 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 16 SUBSTEP 1 COMPLETED. CUM ITER = 161
 *** TIME = .100759E+09 TIME INC = .608659E+07
 *** RESPONSE EIGENVALUE = .4373E-08 OSCILLATION LIMIT = .2662E-01
 *** AUTO STEP TIME: NEXT TIME INC = .60866E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 234.6 CRITERION= .1959

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9548
 HT FLOW CONVERGENCE VALUE= 1.976 CRITERION= .1956
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6563E-01
 HT FLOW CONVERGENCE VALUE= .8757E-01 CRITERION= .1955 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 2 COMPLETED. CUM ITER = 163
 *** TIME = .106846E+09 TIME INC = .608659E+07
 *** RESPONSE EIGENVALUE = .4131E-08 OSCILLATION LIMIT = .2514E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2962)

HT FLOW CONVERGENCE VALUE= 233.4 CRITERION= .1954
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.155
 HT FLOW CONVERGENCE VALUE= 2.219 CRITERION= .1950
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8435E-01
 HT FLOW CONVERGENCE VALUE= .1290 CRITERION= .1948 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 3 COMPLETED. CUM ITER = 165
 *** TIME = .114735E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .3867E-08 OSCILLATION LIMIT = .3051E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 232.0 CRITERION= .1940
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.073
 HT FLOW CONVERGENCE VALUE= 2.379 CRITERION= .1937
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7805E-01
 HT FLOW CONVERGENCE VALUE= .1365 CRITERION= .1936 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 4 COMPLETED. CUM ITER = 167
 *** TIME = .122625E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .3631E-08 OSCILLATION LIMIT = .2865E-01
 *** AUTO TIME STEP: NEXT TIME INC = .36056E+07 DECREASED (FACTOR = .4570)

HT FLOW CONVERGENCE VALUE= 230.7 CRITERION= .1937
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4627
 HT FLOW CONVERGENCE VALUE= 1.099 CRITERION= .1935
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2563E-01
 HT FLOW CONVERGENCE VALUE= .3926E-01 CRITERION= .1935 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 16 SUBSTEP 5 COMPLETED. CUM ITER = 169
 *** TIME = .126230E+09 TIME INC = .360561E+07
 *** RESPONSE EIGENVALUE = .3508E-08 OSCILLATION LIMIT = .1265E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:15:26 JAN 25, 1995 CP= 27360.100
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 230.2 CRITERION= .1930
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4473
 HT FLOW CONVERGENCE VALUE= .8477 CRITERION= .1928
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2343E-01
 HT FLOW CONVERGENCE VALUE= .2949E-01 CRITERION= .1927 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 1 COMPLETED. CUM ITER = 171
 *** TIME = .129836E+09 TIME INC = .360561E+07
 *** RESPONSE EIGENVALUE = .3399E-08 OSCILLATION LIMIT = .1226E-01
 *** AUTO STEP TIME: NEXT TIME INC = .36056E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 229.6 CRITERION= .1929
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4338
 HT FLOW CONVERGENCE VALUE= .6980 CRITERION= .1927
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2210E-01
 HT FLOW CONVERGENCE VALUE= .2561E-01 CRITERION= .1927 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 2 COMPLETED. CUM ITER = 173

*** TIME = .133442E+09 TIME INC = .360561E+07
 *** RESPONSE EIGENVALUE = .3277E-08 OSCILLATION LIMIT = .1182E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.1881)

HT FLOW CONVERGENCE VALUE= 229.1 CRITERION= .1919
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9096
 HT FLOW CONVERGENCE VALUE= 1.401 CRITERION= .1916
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4885E-01
 HT FLOW CONVERGENCE VALUE= .5647E-01 CRITERION= .1915 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 3 COMPLETED. CUM ITER = 175
 *** TIME = .141331E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .3107E-08 OSCILLATION LIMIT = .2451E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 228.0 CRITERION= .1914
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8635
 HT FLOW CONVERGENCE VALUE= 1.362 CRITERION= .1911
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4094E-01
 HT FLOW CONVERGENCE VALUE= .4739E-01 CRITERION= .1910 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 4 COMPLETED. CUM ITER = 177
 *** TIME = .149220E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2910E-08 OSCILLATION LIMIT = .2296E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42838E+07 DECREASED (FACTOR = .5430)

HT FLOW CONVERGENCE VALUE= 227.1 CRITERION= .1905
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4509
 HT FLOW CONVERGENCE VALUE= .8759 CRITERION= .1903
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2167E-01
 HT FLOW CONVERGENCE VALUE= .3068E-01 CRITERION= .1903 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 5 COMPLETED. CUM ITER = 179
 *** TIME = .153504E+09 TIME INC = .428379E+07
 *** RESPONSE EIGENVALUE = .2810E-08 OSCILLATION LIMIT = .1204E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42838E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 226.6 CRITERION= .1904
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4376
 HT FLOW CONVERGENCE VALUE= .9601 CRITERION= .1902
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2069E-01
 HT FLOW CONVERGENCE VALUE= .3398E-01 CRITERION= .1902 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 17 SUBSTEP 6 COMPLETED. CUM ITER = 181
 *** TIME = .157788E+09 TIME INC = .428379E+07
 *** RESPONSE EIGENVALUE = .2736E-08 OSCILLATION LIMIT = .1172E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 13:48:11 JAN 25, 1995 CP= 29127.270
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 226.1 CRITERION= .1896
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4230
 HT FLOW CONVERGENCE VALUE= 1.029 CRITERION= .1895
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2041E-01
 HT FLOW CONVERGENCE VALUE= .3598E-01 CRITERION= .1894 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 18 SUBSTEP 1 COMPLETED. CUM ITER = 183
 *** TIME = .162072E+09 TIME INC = .428379E+07
 *** RESPONSE EIGENVALUE = .2667E-08 OSCILLATION LIMIT = .1143E-01
 *** AUTO STEP TIME: NEXT TIME INC = .42838E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 225.7 CRITERION= .1896
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4090

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HT FLOW CONVERGENCE VALUE= .9477 CRITERION= .1894
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1944E-01
HT FLOW CONVERGENCE VALUE= .3036E-01 CRITERION= .1894 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 2 COMPLETED. CUM ITER = 185
*** TIME = .166356E+09 TIME INC = .428379E+07
*** RESPONSE EIGENVALUE = .2596E-08 OSCILLATION LIMIT = .1112E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.8417)

HT FLOW CONVERGENCE VALUE= 225.2 CRITERION= .1886
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7240
HT FLOW CONVERGENCE VALUE= 1.242 CRITERION= .1884
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3686E-01
HT FLOW CONVERGENCE VALUE= .4500E-01 CRITERION= .1883 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 3 COMPLETED. CUM ITER = 187
*** TIME = .174245E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2496E-08 OSCILLATION LIMIT = .1969E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 224.5 CRITERION= .1882
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6878
HT FLOW CONVERGENCE VALUE= 1.034 CRITERION= .1880
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3121E-01
HT FLOW CONVERGENCE VALUE= .3381E-01 CRITERION= .1879 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 4 COMPLETED. CUM ITER = 189
*** TIME = .182134E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2370E-08 OSCILLATION LIMIT = .1870E-01
*** AUTO TIME STEP: NEXT TIME INC = .72112E+07 DECREASED (FACTOR = .9140)

HT FLOW CONVERGENCE VALUE= 223.8 CRITERION= .1872
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6032
HT FLOW CONVERGENCE VALUE= 1.038 CRITERION= .1870
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2726E-01
HT FLOW CONVERGENCE VALUE= .3481E-01 CRITERION= .1870 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 18 SUBSTEP 5 COMPLETED. CUM ITER = 191
*** TIME = .189346E+09 TIME INC = .721123E+07
*** RESPONSE EIGENVALUE = .2268E-08 OSCILLATION LIMIT = .1635E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 14:22:09 JAN 25, 1995 CP= 30622.180
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 223.1 CRITERION= .1869
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5783
HT FLOW CONVERGENCE VALUE= 1.229 CRITERION= .1867
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2733E-01
HT FLOW CONVERGENCE VALUE= .4291E-01 CRITERION= .1867 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 1 COMPLETED. CUM ITER = 193
*** TIME = .196557E+09 TIME INC = .721123E+07
*** RESPONSE EIGENVALUE = .2158E-08 OSCILLATION LIMIT = .1556E-01
*** AUTO STEP TIME: NEXT TIME INC = .72112E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 222.6 CRITERION= .1860
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5531
HT FLOW CONVERGENCE VALUE= 1.106 CRITERION= .1858
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2580E-01
HT FLOW CONVERGENCE VALUE= .3495E-01 CRITERION= .1857 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 2 COMPLETED. CUM ITER = 195
*** TIME = .203768E+09 TIME INC = .721123E+07

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*** RESPONSE EIGENVALUE = .2090E-08  OSCILLATION LIMIT = .1507E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07  INCREASED (FACTOR = 1.0940)

  HT FLOW CONVERGENCE VALUE= 222.0  CRITERION= .1856
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5802
  HT FLOW CONVERGENCE VALUE= .8737  CRITERION= .1855
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2602E-01
  HT FLOW CONVERGENCE VALUE= .3001E-01  CRITERION= .1854  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 3 COMPLETED. CUM ITER = 197
*** TIME = .211657E+09  TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2011E-08  OSCILLATION LIMIT = .1587E-01
*** AUTO TIME STEP: NEXT TIME INC = .46229E+07  DECREASED (FACTOR = .5860)

  HT FLOW CONVERGENCE VALUE= 221.4  CRITERION= .1849
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3284
  HT FLOW CONVERGENCE VALUE= .4599  CRITERION= .1847
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1310E-01
  HT FLOW CONVERGENCE VALUE= .1467E-01  CRITERION= .1847  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 4 COMPLETED. CUM ITER = 199
*** TIME = .216280E+09  TIME INC = .462287E+07
*** RESPONSE EIGENVALUE = .1968E-08  OSCILLATION LIMIT = .9098E-02
*** AUTO STEP TIME: NEXT TIME INC = .46229E+07  UNCHANGED

  HT FLOW CONVERGENCE VALUE= 221.1  CRITERION= .1848
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3205
  HT FLOW CONVERGENCE VALUE= .4319  CRITERION= .1847
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1247E-01
  HT FLOW CONVERGENCE VALUE= .1369E-01  CRITERION= .1847  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 19 SUBSTEP 5 COMPLETED. CUM ITER = 201
*** TIME = .220903E+09  TIME INC = .462287E+07
*** RESPONSE EIGENVALUE = .1911E-08  OSCILLATION LIMIT = .8835E-02

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 14:49:20 JAN 25, 1995 CP= 32095.120
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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  HT FLOW CONVERGENCE VALUE= 220.7  CRITERION= .1841
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3137
  HT FLOW CONVERGENCE VALUE= .4165  CRITERION= .1840
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1190E-01
  HT FLOW CONVERGENCE VALUE= .1266E-01  CRITERION= .1840  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 1 COMPLETED. CUM ITER = 203
*** TIME = .225526E+09  TIME INC = .462287E+07
*** RESPONSE EIGENVALUE = .1804E-08  OSCILLATION LIMIT = .8340E-02
*** AUTO STEP TIME: NEXT TIME INC = .46229E+07  UNCHANGED

  HT FLOW CONVERGENCE VALUE= 220.4  CRITERION= .1842
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3072
  HT FLOW CONVERGENCE VALUE= .3933  CRITERION= .1841
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1184E-01
  HT FLOW CONVERGENCE VALUE= .1223E-01  CRITERION= .1840  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 2 COMPLETED. CUM ITER = 205
*** TIME = .230149E+09  TIME INC = .462287E+07
*** RESPONSE EIGENVALUE = .1728E-08  OSCILLATION LIMIT = .7990E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07  INCREASED (FACTOR = 1.7066)

  HT FLOW CONVERGENCE VALUE= 220.1  CRITERION= .1833
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5103
  HT FLOW CONVERGENCE VALUE= .6356  CRITERION= .1832

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2032E-01
HT FLOW CONVERGENCE VALUE= .2092E-01 CRITERION= .1832 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 3 COMPLETED. CUM ITER = 207
*** TIME = .238038E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1664E-08 OSCILLATION LIMIT = .1313E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 219.6 CRITERION= .1832
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4936
HT FLOW CONVERGENCE VALUE= .7356 CRITERION= .1830
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2147E-01
HT FLOW CONVERGENCE VALUE= .2666E-01 CRITERION= .1830 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 4 COMPLETED. CUM ITER = 209
*** TIME = .245928E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1587E-08 OSCILLATION LIMIT = .1252E-01
*** AUTO TIME STEP: NEXT TIME INC = .65331E+07 DECREASED (FACTOR = .8281)

HT FLOW CONVERGENCE VALUE= 219.1 CRITERION= .1823
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3956
HT FLOW CONVERGENCE VALUE= .7441 CRITERION= .1822
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1731E-01
HT FLOW CONVERGENCE VALUE= .2547E-01 CRITERION= .1822 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 20 SUBSTEP 5 COMPLETED. CUM ITER = 211
*** TIME = .252461E+09 TIME INC = .653305E+07
*** RESPONSE EIGENVALUE = .1553E-08 OSCILLATION LIMIT = .1015E-01

***** ANSYS SOLVE COMMAND *****
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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 15:15:58 JAN 25, 1995 CP= 33566.930
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 218.7 CRITERION= .1819
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3833
HT FLOW CONVERGENCE VALUE= .6430 CRITERION= .1818
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1620E-01
HT FLOW CONVERGENCE VALUE= .2216E-01 CRITERION= .1818 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 21 SUBSTEP 1 COMPLETED. CUM ITER = 213
*** TIME = .258994E+09 TIME INC = .653305E+07
*** RESPONSE EIGENVALUE = .1944E-08 OSCILLATION LIMIT = .1270E-01
*** AUTO STEP TIME: NEXT TIME INC = .65331E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 218.3 CRITERION= .1808
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3716
HT FLOW CONVERGENCE VALUE= .4744 CRITERION= .1807
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1329E-01
HT FLOW CONVERGENCE VALUE= .1594E-01 CRITERION= .1807 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 21 SUBSTEP 2 COMPLETED. CUM ITER = 215
*** TIME = .265527E+09 TIME INC = .653305E+07
*** RESPONSE EIGENVALUE = .2129E-08 OSCILLATION LIMIT = .1391E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 1.2076)

HT FLOW CONVERGENCE VALUE= 217.9 CRITERION= .1803
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4341
HT FLOW CONVERGENCE VALUE= .3783 CRITERION= .1801
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1452E-01
HT FLOW CONVERGENCE VALUE= .1615E-01 CRITERION= .1801 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 21 SUBSTEP 3 COMPLETED. CUM ITER = 217
*** TIME = .273416E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .2078E-08 OSCILLATION LIMIT = .1639E-01

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*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

HT FLOW CONVERGENCE VALUE= 217.3 CRITERION= .1790
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4188
 HT FLOW CONVERGENCE VALUE= .2849 CRITERION= .1789
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1250E-01
 HT FLOW CONVERGENCE VALUE= .1373E-01 CRITERION= .1788 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 21 SUBSTEP 4 COMPLETED. CUM ITER = 219
 *** TIME = .281306E+09 TIME INC = .788940E+07
 *** RESPONSE EIGENVALUE = .2173E-08 OSCILLATION LIMIT = .1715E-01
 *** AUTO TIME STEP: NEXT TIME INC = .27127E+07 DECREASED (FACTOR = .3438)

HT FLOW CONVERGENCE VALUE= 216.7 CRITERION= .1789
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1407
 HT FLOW CONVERGENCE VALUE= .8605E-01 CRITERION= .1789 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 21 SUBSTEP 5 COMPLETED. CUM ITER = 220
 *** TIME = .284018E+09 TIME INC = .271270E+07
 *** RESPONSE EIGENVALUE = .2129E-08 OSCILLATION LIMIT = .5776E-02
 Apply loads and solve for 10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09
 TIME= .31558E+09

SELECT FOR ITEM=MAT COMPONENT=
 IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
 8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
 640.948474 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 10131 STEP 1

8289 ELEMENTS (OF 8289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 34930.710 TIME= 15:40:28
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 15:40:28 JAN 25, 1995 CP= 34930.710
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 22
 TIME AT END OF THE LOAD STEP.31558E+09
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 10
 MAXIMUM NUMBER OF SUBSTEPS 80

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MINIMUM NUMBER OF SUBSTEPS . . . . . 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS . . . . . ON
TRANSIENT INTEGRATION PARAMETERS
THETA. . . . . .50000
OSCILLATION LIMIT CRITERION. . . . . .50000
TOLERANCE. . . . . .20000
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . . .USE DEFAULTS
PRINT OUTPUT CONTROLS . . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS. . . . . .ALL DATA WRITTEN
FOR THE LAST SUBSTEP

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HT FLOW CONVERGENCE VALUE= 216.6 CRITERION= .1783
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1390
HT FLOW CONVERGENCE VALUE= .8955E-01 CRITERION= .1783 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 1 COMPLETED. CUM ITER = 221
*** TIME = .286731E+09 TIME INC = .271270E+07
*** RESPONSE EIGENVALUE = .1953E-08 OSCILLATION LIMIT = .5299E-02
*** AUTO STEP TIME: NEXT TIME INC = .27127E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 216.4 CRITERION= .1784
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1374
HT FLOW CONVERGENCE VALUE= .9797E-01 CRITERION= .1784 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 22 SUBSTEP 2 COMPLETED. CUM ITER = 222
*** TIME = .289444E+09 TIME INC = .271270E+07
*** RESPONSE EIGENVALUE = .1768E-08 OSCILLATION LIMIT = .4796E-02
*** AUTO TIME STEP: NEXT TIME INC = .78894E+07 INCREASED (FACTOR = 2.9083)

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HT FLOW CONVERGENCE VALUE= 216.2 CRITERION= .1775
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3907
HT FLOW CONVERGENCE VALUE= .3133 CRITERION= .1773
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1131E-01
HT FLOW CONVERGENCE VALUE= .1264E-01 CRITERION= .1773 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 22 SUBSTEP 3 COMPLETED. CUM ITER = 224
*** TIME = .297333E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1742E-08 OSCILLATION LIMIT = .1375E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 215.6 CRITERION= .1771
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3776
HT FLOW CONVERGENCE VALUE= .3702 CRITERION= .1769
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1095E-01
HT FLOW CONVERGENCE VALUE= .1322E-01 CRITERION= .1769 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 22 SUBSTEP 4 COMPLETED. CUM ITER = 226
*** TIME = .305223E+09 TIME INC = .788940E+07
*** RESPONSE EIGENVALUE = .1676E-08 OSCILLATION LIMIT = .1322E-01
*** AUTO TIME STEP: NEXT TIME INC = .51767E+07 DECREASED (FACTOR = .6562)

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HT FLOW CONVERGENCE VALUE= 215.0 CRITERION= .1762
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2410
HT FLOW CONVERGENCE VALUE= .2309 CRITERION= .1761
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6162E-02
HT FLOW CONVERGENCE VALUE= .7093E-02 CRITERION= .1761 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 22 SUBSTEP 5 COMPLETED. CUM ITER = 228
*** TIME = .310399E+09 TIME INC = .517670E+07
*** RESPONSE EIGENVALUE = .1712E-08 OSCILLATION LIMIT = .8860E-02
*** AUTO STEP TIME: NEXT TIME INC = .51767E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 214.6 CRITERION= .1761
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2359

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HT FLOW CONVERGENCE VALUE= .2159      CRITERION= .1760
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5915E-02
HT FLOW CONVERGENCE VALUE= .6716E-02 CRITERION= .1759    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 22 SUBSTEP 6 COMPLETED. CUM ITER = 230
*** TIME = .315576E+09 TIME INC = .517670E+07
*** RESPONSE EIGENVALUE = .1665E-08 OSCILLATION LIMIT = .8617E-02

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*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:08:09 JAN 25, 1995 CP= 36487.150
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 214.3      CRITERION= .1753
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2310
HT FLOW CONVERGENCE VALUE= .2031      CRITERION= .1752
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5534E-02
HT FLOW CONVERGENCE VALUE= .5994E-02 CRITERION= .1752    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 1 COMPLETED. CUM ITER = 232
*** TIME = .320753E+09 TIME INC = .517670E+07
*** RESPONSE EIGENVALUE = .1516E-08 OSCILLATION LIMIT = .7848E-02
*** AUTO STEP TIME: NEXT TIME INC = .51767E+07 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 213.9      CRITERION= .1753
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2267
HT FLOW CONVERGENCE VALUE= .1861      CRITERION= .1752
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5582E-02
HT FLOW CONVERGENCE VALUE= .5836E-02 CRITERION= .1751    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 2 COMPLETED. CUM ITER = 234
*** TIME = .325929E+09 TIME INC = .517670E+07
*** RESPONSE EIGENVALUE = .1418E-08 OSCILLATION LIMIT = .7339E-02
*** AUTO TIME STEP: NEXT TIME INC = .15530E+08 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 213.5      CRITERION= .1740
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6579
HT FLOW CONVERGENCE VALUE= .4389      CRITERION= .1737
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1936E-01
HT FLOW CONVERGENCE VALUE= .2105E-01 CRITERION= .1736    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 3 COMPLETED. CUM ITER = 236
*** TIME = .341460E+09 TIME INC = .155301E+08
*** RESPONSE EIGENVALUE = .1380E-08 OSCILLATION LIMIT = .2143E-01
*** AUTO TIME STEP: NEXT TIME INC = .46590E+08 INCREASED (FACTOR = 3.0000)

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HT FLOW CONVERGENCE VALUE= 212.4      CRITERION= .1714
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 1.804
HT FLOW CONVERGENCE VALUE= .8376      CRITERION= .1705
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6165E-01
HT FLOW CONVERGENCE VALUE= .6831E-01 CRITERION= .1704    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 4 COMPLETED. CUM ITER = 238
*** TIME = .388050E+09 TIME INC = .465903E+08
*** RESPONSE EIGENVALUE = .1280E-08 OSCILLATION LIMIT = .5964E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.6934)

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HT FLOW CONVERGENCE VALUE= 209.1      CRITERION= .1658
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 2.625
HT FLOW CONVERGENCE VALUE= .9276      CRITERION= .1643
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1112
HT FLOW CONVERGENCE VALUE= .1364      CRITERION= .1640    <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP 23 SUBSTEP 5 COMPLETED. CUM ITER = 240
*** TIME = .466944E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1249E-08 OSCILLATION LIMIT = .9855E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 203.3 CRITERION= .1602
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.458
HT FLOW CONVERGENCE VALUE= .6284 CRITERION= .1585
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6722E-01
HT FLOW CONVERGENCE VALUE= .7951E-01 CRITERION= .1583 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 6 COMPLETED. CUM ITER = 242
*** TIME = .545838E+09 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1341E-08 OSCILLATION LIMIT = .1058
*** AUTO STEP TIME: NEXT TIME INC = .42657E+08 DECREASED (FACTOR = .5407)

HT FLOW CONVERGENCE VALUE= 197.3 CRITERION= .1556
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.542
HT FLOW CONVERGENCE VALUE= .5359 CRITERION= .1547
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2616E-01
HT FLOW CONVERGENCE VALUE= .2690E-01 CRITERION= .1546 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 7 COMPLETED. CUM ITER = 244
*** TIME = .588495E+09 TIME INC = .426571E+08
*** RESPONSE EIGENVALUE = .1463E-08 OSCILLATION LIMIT = .6241E-01
*** AUTO STEP TIME: NEXT TIME INC = .42657E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 193.8 CRITERION= .1526
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.652
HT FLOW CONVERGENCE VALUE= .6536 CRITERION= .1517
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2557E-01
HT FLOW CONVERGENCE VALUE= .2344E-01 CRITERION= .1516 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 23 SUBSTEP 8 COMPLETED. CUM ITER = 246
*** TIME = .631152E+09 TIME INC = .426571E+08
*** RESPONSE EIGENVALUE = .1554E-08 OSCILLATION LIMIT = .6628E-01

***** ANSYS SOLVE COMMAND *****
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 16:52:43 JAN 25, 1995 CP= 38844.530
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 190.4 CRITERION= .1495
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.320
HT FLOW CONVERGENCE VALUE= .5611 CRITERION= .1485
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1939E-01
HT FLOW CONVERGENCE VALUE= .1652E-01 CRITERION= .1484 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 1 COMPLETED. CUM ITER = 248
*** TIME = .673809E+09 TIME INC = .426571E+08
*** RESPONSE EIGENVALUE = .1309E-08 OSCILLATION LIMIT = .5586E-01
*** AUTO STEP TIME: NEXT TIME INC = .42657E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 186.9 CRITERION= .1470
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.296
HT FLOW CONVERGENCE VALUE= .5412 CRITERION= .1460
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1873E-01
HT FLOW CONVERGENCE VALUE= .1579E-01 CRITERION= .1460 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 24 SUBSTEP 2 COMPLETED. CUM ITER = 250
*** TIME = .716466E+09 TIME INC = .426571E+08
*** RESPONSE EIGENVALUE = .1259E-08 OSCILLATION LIMIT = .5368E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.8495)

HT FLOW CONVERGENCE VALUE= 183.5 CRITERION= .1425

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EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.536
 HT FLOW CONVERGENCE VALUE= 1.070 CRITERION= .1407
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4036E-01
 HT FLOW CONVERGENCE VALUE= .3248E-01 CRITERION= .1405 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 3 COMPLETED. CUM ITER = 252
 *** TIME = .795360E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1329E-08 OSCILLATION LIMIT = .1049
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 177.4 CRITERION= .1377
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.657
 HT FLOW CONVERGENCE VALUE= 1.171 CRITERION= .1359
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3632E-01
 HT FLOW CONVERGENCE VALUE= .2667E-01 CRITERION= .1358 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 4 COMPLETED. CUM ITER = 254
 *** TIME = .874254E+09 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1413E-08 OSCILLATION LIMIT = .1115
 *** AUTO TIME STEP: NEXT TIME INC = .72474E+08 DECREASED (FACTOR = .9186)

HT FLOW CONVERGENCE VALUE= 171.5 CRITERION= .1326
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.594
 HT FLOW CONVERGENCE VALUE= 1.180 CRITERION= .1310
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2965E-01
 HT FLOW CONVERGENCE VALUE= .2110E-01 CRITERION= .1309 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 24 SUBSTEP 5 COMPLETED. CUM ITER = 256
 *** TIME = .946728E+09 TIME INC = .724739E+08
 *** RESPONSE EIGENVALUE = .1550E-08 OSCILLATION LIMIT = .1124

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:22:19 JAN 25, 1995 CP= 40338.100
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 166.2 CRITERION= .1287
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.374
 HT FLOW CONVERGENCE VALUE= 1.121 CRITERION= .1272
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2752E-01
 HT FLOW CONVERGENCE VALUE= .1911E-01 CRITERION= .1271 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 1 COMPLETED. CUM ITER = 258
 *** TIME = .101920E+10 TIME INC = .724739E+08
 *** RESPONSE EIGENVALUE = .1471E-08 OSCILLATION LIMIT = .1066
 *** AUTO STEP TIME: NEXT TIME INC = .72474E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 161.0 CRITERION= .1242
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.426
 HT FLOW CONVERGENCE VALUE= 1.120 CRITERION= .1227
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2616E-01
 HT FLOW CONVERGENCE VALUE= .1797E-01 CRITERION= .1227 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 2 COMPLETED. CUM ITER = 260
 *** TIME = .109168E+10 TIME INC = .724739E+08
 *** RESPONSE EIGENVALUE = .1537E-08 OSCILLATION LIMIT = .1114
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.0886)

HT FLOW CONVERGENCE VALUE= 156.0 CRITERION= .1202
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.708
 HT FLOW CONVERGENCE VALUE= 1.204 CRITERION= .1186
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2441E-01
 HT FLOW CONVERGENCE VALUE= .1922E-01 CRITERION= .1186 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 3 COMPLETED. CUM ITER = 262

*** TIME = .117057E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1636E-08 OSCILLATION LIMIT = .1291
 *** AUTO TIME STEP: NEXT TIME INC = .45867E+08 DECREASED (FACTOR = .5814)

HT FLOW CONVERGENCE VALUE= 150.8 CRITERION= .1166
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.626
 HT FLOW CONVERGENCE VALUE= .7243 CRITERION= .1158
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1563E-01
 HT FLOW CONVERGENCE VALUE= .1137E-01 CRITERION= .1157 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 4 COMPLETED. CUM ITER = 264
 *** TIME = .121644E+10 TIME INC = .458671E+08
 *** RESPONSE EIGENVALUE = .1754E-08 OSCILLATION LIMIT = .8045E-01
 *** AUTO STEP TIME: NEXT TIME INC = .45867E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 147.8 CRITERION= .1144
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.642
 HT FLOW CONVERGENCE VALUE= .7352 CRITERION= .1136
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1692E-01
 HT FLOW CONVERGENCE VALUE= .1178E-01 CRITERION= .1135 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 25 SUBSTEP 5 COMPLETED. CUM ITER = 266
 *** TIME = .126230E+10 TIME INC = .458671E+08
 *** RESPONSE EIGENVALUE = .1820E-08 OSCILLATION LIMIT = .8346E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 17:50:24 JAN 25, 1995 CP= 41829.180
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 144.9 CRITERION= .1120
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.349
 HT FLOW CONVERGENCE VALUE= .6590 CRITERION= .1111
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1620E-01
 HT FLOW CONVERGENCE VALUE= .1044E-01 CRITERION= .1111 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 1 COMPLETED. CUM ITER = 268
 *** TIME = .130817E+10 TIME INC = .458671E+08
 *** RESPONSE EIGENVALUE = .1548E-08 OSCILLATION LIMIT = .7099E-01
 *** AUTO STEP TIME: NEXT TIME INC = .45867E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 142.1 CRITERION= .1102
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.274
 HT FLOW CONVERGENCE VALUE= .6034 CRITERION= .1094
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1250E-01
 HT FLOW CONVERGENCE VALUE= .8860E-02 CRITERION= .1094 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 2 COMPLETED. CUM ITER = 270
 *** TIME = .135404E+10 TIME INC = .458671E+08
 *** RESPONSE EIGENVALUE = .1442E-08 OSCILLATION LIMIT = .6612E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.7201)

HT FLOW CONVERGENCE VALUE= 139.3 CRITERION= .1070
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.216
 HT FLOW CONVERGENCE VALUE= 1.010 CRITERION= .1056
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2830E-01
 HT FLOW CONVERGENCE VALUE= .1652E-01 CRITERION= .1056 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 3 COMPLETED. CUM ITER = 272
 *** TIME = .143293E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1494E-08 OSCILLATION LIMIT = .1179
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 134.8 CRITERION= .1039
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.203

HT FLOW CONVERGENCE VALUE= .9772 CRITERION= .1026
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2652E-01
 HT FLOW CONVERGENCE VALUE= .1490E-01 CRITERION= .1025 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 4 COMPLETED. CUM ITER = 274
 *** TIME = .151183E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1527E-08 OSCILLATION LIMIT = .1205
 *** AUTO TIME STEP: NEXT TIME INC = .66054E+08 DECREASED (FACTOR = .8372)

HT FLOW CONVERGENCE VALUE= 130.5 CRITERION= .1005
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.892
 HT FLOW CONVERGENCE VALUE= .8273 CRITERION= .9945E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2078E-01
 HT FLOW CONVERGENCE VALUE= .1193E-01 CRITERION= .9941E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 26 SUBSTEP 5 COMPLETED. CUM ITER = 276
 *** TIME = .157788E+10 TIME INC = .660537E+08
 *** RESPONSE EIGENVALUE = .1628E-08 OSCILLATION LIMIT = .1075

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:18:01 JAN 25, 1995 CP= 43320.980
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 127.1 CRITERION= .9842E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.560
 HT FLOW CONVERGENCE VALUE= .7279 CRITERION= .9742E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1959E-01
 HT FLOW CONVERGENCE VALUE= .1101E-01 CRITERION= .9739E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 1 COMPLETED. CUM ITER = 278
 *** TIME = .164393E+10 TIME INC = .660537E+08
 *** RESPONSE EIGENVALUE = .1388E-08 OSCILLATION LIMIT = .9165E-01
 *** AUTO STEP TIME: NEXT TIME INC = .66054E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 123.8 CRITERION= .9576E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.518
 HT FLOW CONVERGENCE VALUE= .6673 CRITERION= .9481E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1804E-01
 HT FLOW CONVERGENCE VALUE= .9795E-02 CRITERION= .9478E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 2 COMPLETED. CUM ITER = 280
 *** TIME = .170999E+10 TIME INC = .660537E+08
 *** RESPONSE EIGENVALUE = .1340E-08 OSCILLATION LIMIT = .8848E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.1944)

HT FLOW CONVERGENCE VALUE= 120.7 CRITERION= .9354E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.788
 HT FLOW CONVERGENCE VALUE= .7600 CRITERION= .9247E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2233E-01
 HT FLOW CONVERGENCE VALUE= .1165E-01 CRITERION= .9244E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 3 COMPLETED. CUM ITER = 282
 *** TIME = .178888E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1347E-08 OSCILLATION LIMIT = .1062
 *** AUTO TIME STEP: NEXT TIME INC = .52287E+08 DECREASED (FACTOR = .6628)

HT FLOW CONVERGENCE VALUE= 117.2 CRITERION= .9107E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.199
 HT FLOW CONVERGENCE VALUE= .5056 CRITERION= .9041E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1340E-01
 HT FLOW CONVERGENCE VALUE= .7195E-02 CRITERION= .9038E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 4 COMPLETED. CUM ITER = 284
 *** TIME = .184117E+10 TIME INC = .522873E+08

*** RESPONSE EIGENVALUE = .1394E-08 OSCILLATION LIMIT = .7290E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52287E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 115.0 CRITERION= .8967E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.195
 HT FLOW CONVERGENCE VALUE= .5010 CRITERION= .8903E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1320E-01
 HT FLOW CONVERGENCE VALUE= .6850E-02 CRITERION= .8901E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 27 SUBSTEP 5 COMPLETED. CUM ITER = 286
 *** TIME = .189346E+10 TIME INC = .522873E+08
 *** RESPONSE EIGENVALUE = .1423E-08 OSCILLATION LIMIT = .7442E-01

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 18:45:49 JAN 25, 1995 CP= 44816.630
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 112.9 CRITERION= .8785E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.041
 HT FLOW CONVERGENCE VALUE= .4493 CRITERION= .8723E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9984E-02
 HT FLOW CONVERGENCE VALUE= .5769E-02 CRITERION= .8721E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 1 COMPLETED. CUM ITER = 288
 *** TIME = .194574E+10 TIME INC = .522873E+08
 *** RESPONSE EIGENVALUE = .1268E-08 OSCILLATION LIMIT = .6632E-01
 *** AUTO STEP TIME: NEXT TIME INC = .52287E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 110.8 CRITERION= .8670E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9838
 HT FLOW CONVERGENCE VALUE= .4114 CRITERION= .8611E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1023E-01
 HT FLOW CONVERGENCE VALUE= .5361E-02 CRITERION= .8609E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 2 COMPLETED. CUM ITER = 290
 *** TIME = .199803E+10 TIME INC = .522873E+08
 *** RESPONSE EIGENVALUE = .1181E-08 OSCILLATION LIMIT = .6177E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5089)

HT FLOW CONVERGENCE VALUE= 108.9 CRITERION= .8452E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.487
 HT FLOW CONVERGENCE VALUE= .5969 CRITERION= .8366E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2104E-01
 HT FLOW CONVERGENCE VALUE= .1008E-01 CRITERION= .8363E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 3 COMPLETED. CUM ITER = 292
 *** TIME = .207692E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1204E-08 OSCILLATION LIMIT = .9501E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 106.1 CRITERION= .8271E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.470
 HT FLOW CONVERGENCE VALUE= .5771 CRITERION= .8191E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2004E-01
 HT FLOW CONVERGENCE VALUE= .9208E-02 CRITERION= .8188E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 28 SUBSTEP 4 COMPLETED. CUM ITER = 294
 *** TIME = .215582E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1218E-08 OSCILLATION LIMIT = .9610E-01
 *** AUTO TIME STEP: NEXT TIME INC = .53213E+08 DECREASED (FACTOR = .6745)

HT FLOW CONVERGENCE VALUE= 103.4 CRITERION= .8071E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.012
 HT FLOW CONVERGENCE VALUE= .3932 CRITERION= .8019E-01

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1155E-01
HT FLOW CONVERGENCE VALUE= .5421E-02 CRITERION= .8018E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 28 SUBSTEP 5 COMPLETED. CUM ITER = 296
*** TIME = .220903E+10 TIME INC = .532134E+08
*** RESPONSE EIGENVALUE = .1276E-08 OSCILLATION LIMIT = .6789E-01

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***** ANSYS SOLVE COMMAND *****

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 19:19:31 JAN 25, 1995 CP= 46321.460
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

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12 PWR MPC, 5 m Tunnel

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HT FLOW CONVERGENCE VALUE= 101.7 CRITERION= .7972E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9491
HT FLOW CONVERGENCE VALUE= .3771 CRITERION= .7922E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1196E-01
HT FLOW CONVERGENCE VALUE= .5519E-02 CRITERION= .7921E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 1 COMPLETED. CUM ITER = 298
*** TIME = .226225E+10 TIME INC = .532134E+08
*** RESPONSE EIGENVALUE = .1221E-08 OSCILLATION LIMIT = .6496E-01
*** AUTO STEP TIME: NEXT TIME INC = .53213E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 100.1 CRITERION= .7810E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9570
HT FLOW CONVERGENCE VALUE= .3668 CRITERION= .7762E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1139E-01
HT FLOW CONVERGENCE VALUE= .5028E-02 CRITERION= .7760E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 2 COMPLETED. CUM ITER = 300
*** TIME = .231546E+10 TIME INC = .532134E+08
*** RESPONSE EIGENVALUE = .1245E-08 OSCILLATION LIMIT = .6625E-01
*** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.4826)

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HT FLOW CONVERGENCE VALUE= 98.45 CRITERION= .7677E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.403
HT FLOW CONVERGENCE VALUE= .5213 CRITERION= .7607E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1766E-01
HT FLOW CONVERGENCE VALUE= .7308E-02 CRITERION= .7605E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 3 COMPLETED. CUM ITER = 302
*** TIME = .239435E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1256E-08 OSCILLATION LIMIT = .9911E-01
*** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

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HT FLOW CONVERGENCE VALUE= 96.18 CRITERION= .7458E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.424
HT FLOW CONVERGENCE VALUE= .5213 CRITERION= .7391E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2234E-01
HT FLOW CONVERGENCE VALUE= .9795E-02 CRITERION= .7389E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 4 COMPLETED. CUM ITER = 304
*** TIME = .247325E+10 TIME INC = .788940E+08
*** RESPONSE EIGENVALUE = .1326E-08 OSCILLATION LIMIT = .1046
*** AUTO TIME STEP: NEXT TIME INC = .51361E+08 DECREASED (FACTOR = .6510)

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HT FLOW CONVERGENCE VALUE= 93.97 CRITERION= .7346E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9292
HT FLOW CONVERGENCE VALUE= .3461 CRITERION= .7304E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1356E-01
HT FLOW CONVERGENCE VALUE= .5843E-02 CRITERION= .7303E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 29 SUBSTEP 5 COMPLETED. CUM ITER = 306
*** TIME = .252461E+10 TIME INC = .513611E+08
*** RESPONSE EIGENVALUE = .1374E-08 OSCILLATION LIMIT = .7059E-01

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***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 19:45:49 JAN 25, 1995 CP= 47798.500
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 92.59 CRITERION= .7216E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7659
 HT FLOW CONVERGENCE VALUE= .2989 CRITERION= .7175E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1020E-01
 HT FLOW CONVERGENCE VALUE= .4149E-02 CRITERION= .7174E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 1 COMPLETED. CUM ITER = 308
 *** TIME = .257597E+10 TIME INC = .513611E+08
 *** RESPONSE EIGENVALUE = .1150E-08 OSCILLATION LIMIT = .5907E-01
 *** AUTO STEP TIME: NEXT TIME INC = .51361E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 91.23 CRITERION= .7152E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6995
 HT FLOW CONVERGENCE VALUE= .2614 CRITERION= .7113E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8795E-02
 HT FLOW CONVERGENCE VALUE= .3497E-02 CRITERION= .7112E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 2 COMPLETED. CUM ITER = 310
 *** TIME = .262733E+10 TIME INC = .513611E+08
 *** RESPONSE EIGENVALUE = .1009E-08 OSCILLATION LIMIT = .5181E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.5361)

HT FLOW CONVERGENCE VALUE= 89.93 CRITERION= .6997E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.072
 HT FLOW CONVERGENCE VALUE= .3793 CRITERION= .6938E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1565E-01
 HT FLOW CONVERGENCE VALUE= .6047E-02 CRITERION= .6937E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 3 COMPLETED. CUM ITER = 312
 *** TIME = .270622E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .1006E-08 OSCILLATION LIMIT = .7938E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 88.00 CRITERION= .6886E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.041
 HT FLOW CONVERGENCE VALUE= .3608 CRITERION= .6831E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1509E-01
 HT FLOW CONVERGENCE VALUE= .5721E-02 CRITERION= .6830E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 4 COMPLETED. CUM ITER = 314
 *** TIME = .278512E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .9866E-09 OSCILLATION LIMIT = .7784E-01
 *** AUTO TIME STEP: NEXT TIME INC = .55066E+08 DECREASED (FACTOR = .6980)

HT FLOW CONVERGENCE VALUE= 86.21 CRITERION= .6740E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7403
 HT FLOW CONVERGENCE VALUE= .2529 CRITERION= .6703E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9818E-02
 HT FLOW CONVERGENCE VALUE= .3686E-02 CRITERION= .6702E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 30 SUBSTEP 5 COMPLETED. CUM ITER = 316
 *** TIME = .284018E+10 TIME INC = .550658E+08
 *** RESPONSE EIGENVALUE = .1026E-08 OSCILLATION LIMIT = .5650E-01
 Apply loads and solve for 100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

TIME= .31558E+10

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 10 TO 10 STEP 1

8 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

1080 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
8 SELECTED VOLUMES BY ESLV COMMAND.

SPECIFIED BODY FORCE HGEN FOR ALL SELECTED ELEMENTS AT STARTING LOCATION 1
221.360946 .000000000E+00 .000000000E+00 .000000000E+00

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 96 STEP 1

96 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 10131 STEP 1

8289 ELEMENTS (OF 8289 DEFINED) SELECTED BY ESEL COMMAND.

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 49270.270 TIME= 20:12:19
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 20:12:19 JAN 25, 1995 CP= 49270.270
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

LOAD STEP OPTIONS

LOAD STEP NUMBER. 31
TIME AT END OF THE LOAD STEP.31558E+10
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 10
MAXIMUM NUMBER OF SUBSTEPS 80
MINIMUM NUMBER OF SUBSTEPS 4
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS NO
TRANSIENT (INERTIA) EFFECTS
THERMAL DOFS ON
TRANSIENT INTEGRATION PARAMETERS
THETA.50000
OSCILLATION LIMIT CRITERION.50000
TOLERANCE.20000
TERMINATE ANALYSIS IF NOT CONVERGEDYES (EXIT)
CONVERGENCE CONTROLS.USE DEFAULTS
PRINT OUTPUT CONTROLSNO PRINTOUT
DATABASE OUTPUT CONTROLS.ALL DATA WRITTEN
FOR THE LAST SUBSTEP

HT FLOW CONVERGENCE VALUE= 85.00 CRITERION= .6686E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6404
HT FLOW CONVERGENCE VALUE= .2270 CRITERION= .6651E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8458E-02
HT FLOW CONVERGENCE VALUE= .3157E-02 CRITERION= .6650E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 31 SUBSTEP 1 COMPLETED. CUM ITER = 318
*** TIME = .289525E+10 TIME INC = .550658E+08
*** RESPONSE EIGENVALUE = .8965E-09 OSCILLATION LIMIT = .4937E-01

*** AUTO STEP TIME: NEXT TIME INC = .55066E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 83.84 CRITERION= .6569E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6311
 HT FLOW CONVERGENCE VALUE= .2138 CRITERION= .6535E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8762E-02
 HT FLOW CONVERGENCE VALUE= .3320E-02 CRITERION= .6534E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 31 SUBSTEP 2 COMPLETED. CUM ITER = 320
 *** TIME = .295032E+10 TIME INC = .550658E+08
 *** RESPONSE EIGENVALUE = .8715E-09 OSCILLATION LIMIT = .4799E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 INCREASED (FACTOR = 1.4327)

HT FLOW CONVERGENCE VALUE= 82.72 CRITERION= .6497E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8812
 HT FLOW CONVERGENCE VALUE= .2935 CRITERION= .6450E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1263E-01
 HT FLOW CONVERGENCE VALUE= .4650E-02 CRITERION= .6449E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 31 SUBSTEP 3 COMPLETED. CUM ITER = 322
 *** TIME = .302921E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8556E-09 OSCILLATION LIMIT = .6750E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 81.20 CRITERION= .6348E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8903
 HT FLOW CONVERGENCE VALUE= .2888 CRITERION= .6303E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1246E-01
 HT FLOW CONVERGENCE VALUE= .4499E-02 CRITERION= .6302E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 31 SUBSTEP 4 COMPLETED. CUM ITER = 324
 *** TIME = .310810E+10 TIME INC = .788940E+08
 *** RESPONSE EIGENVALUE = .8780E-09 OSCILLATION LIMIT = .6927E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47656E+08 DECREASED (FACTOR = .6041)

HT FLOW CONVERGENCE VALUE= 79.73 CRITERION= .6292E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5287
 HT FLOW CONVERGENCE VALUE= .1772 CRITERION= .6267E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6509E-02
 HT FLOW CONVERGENCE VALUE= .2277E-02 CRITERION= .6266E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 31 SUBSTEP 5 COMPLETED. CUM ITER = 326
 *** TIME = .315576E+10 TIME INC = .476564E+08
 *** RESPONSE EIGENVALUE = .8776E-09 OSCILLATION LIMIT = .4182E-01

*ENDDO INDEX= TM

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 20:38:52 JAN 25, 1995 CP= 50745.200
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 78.88 CRITERION= .6211E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3540
 HT FLOW CONVERGENCE VALUE= .1299 CRITERION= .6186E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3551E-02
 HT FLOW CONVERGENCE VALUE= .1346E-02 CRITERION= .6186E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 32 SUBSTEP 1 COMPLETED. CUM ITER = 328
 *** TIME = .320342E+10 TIME INC = .476564E+08
 *** RESPONSE EIGENVALUE = .6183E-09 OSCILLATION LIMIT = .2946E-01
 *** AUTO STEP TIME: NEXT TIME INC = .47656E+08 UNCHANGED

HT FLOW CONVERGENCE VALUE= 78.05 CRITERION= .6196E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2863

HT FLOW CONVERGENCE VALUE= .1004 CRITERION= .6172E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3101E-02
 HT FLOW CONVERGENCE VALUE= .1082E-02 CRITERION= .6171E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 2 COMPLETED. CUM ITER = 330
 *** TIME = .325107E+10 TIME INC = .476564E+08
 *** RESPONSE EIGENVALUE = .4861E-09 OSCILLATION LIMIT = .2316E-01
 *** AUTO TIME STEP: NEXT TIME INC = .14297E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 77.26 CRITERION= .6074E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8340
 HT FLOW CONVERGENCE VALUE= .2608 CRITERION= .6007E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1018E-01
 HT FLOW CONVERGENCE VALUE= .3486E-02 CRITERION= .6006E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 3 COMPLETED. CUM ITER = 332
 *** TIME = .339404E+10 TIME INC = .142969E+09
 *** RESPONSE EIGENVALUE = .4441E-09 OSCILLATION LIMIT = .6349E-01
 *** AUTO TIME STEP: NEXT TIME INC = .42891E+09 INCREASED (FACTOR = 3.0000)

HT FLOW CONVERGENCE VALUE= 75.09 CRITERION= .5844E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.276
 HT FLOW CONVERGENCE VALUE= .6186 CRITERION= .5683E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3792E-01
 HT FLOW CONVERGENCE VALUE= .1394E-01 CRITERION= .5678E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 4 COMPLETED. CUM ITER = 334
 *** TIME = .382295E+10 TIME INC = .428908E+09
 *** RESPONSE EIGENVALUE = .3961E-09 OSCILLATION LIMIT = .1699
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.8394)

HT FLOW CONVERGENCE VALUE= 69.95 CRITERION= .5291E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.232
 HT FLOW CONVERGENCE VALUE= .9490 CRITERION= .5060E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6410E-01
 HT FLOW CONVERGENCE VALUE= .2120E-01 CRITERION= .5053E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 5 COMPLETED. CUM ITER = 336
 *** TIME = .461189E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .4186E-09 OSCILLATION LIMIT = .3303
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 62.40 CRITERION= .4732E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -4.552
 HT FLOW CONVERGENCE VALUE= .9414 CRITERION= .4540E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5865E-01
 HT FLOW CONVERGENCE VALUE= .1663E-01 CRITERION= .4536E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 6 COMPLETED. CUM ITER = 338
 *** TIME = .540083E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .5167E-09 OSCILLATION LIMIT = .4077
 *** AUTO TIME STEP: NEXT TIME INC = .45534E+09 DECREASED (FACTOR = .5772)

HT FLOW CONVERGENCE VALUE= 56.09 CRITERION= .4300E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.820
 HT FLOW CONVERGENCE VALUE= .5724 CRITERION= .4202E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2841E-01
 HT FLOW CONVERGENCE VALUE= .6916E-02 CRITERION= .4199E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 32 SUBSTEP 7 COMPLETED. CUM ITER = 340
 *** TIME = .585618E+10 TIME INC = .455345E+09
 *** RESPONSE EIGENVALUE = .6316E-09 OSCILLATION LIMIT = .2876
 *** AUTO STEP TIME: NEXT TIME INC = .45534E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 52.80 CRITERION= .4029E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -2.940
 HT FLOW CONVERGENCE VALUE= .5582 CRITERION= .3938E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2669E-01
 HT FLOW CONVERGENCE VALUE= .5953E-02 CRITERION= .3937E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 32 SUBSTEP 8 COMPLETED. CUM ITER = 342
 *** TIME = .631152E+10 TIME INC = .455345E+09
 *** RESPONSE EIGENVALUE = .7276E-09 OSCILLATION LIMIT = .3313

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:20:34 JAN 25, 1995 CP= 53101.910
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 49.75 CRITERION= .3837E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.273
 HT FLOW CONVERGENCE VALUE= .2783 CRITERION= .3757E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9337E-02
 HT FLOW CONVERGENCE VALUE= .2222E-02 CRITERION= .3756E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 1 COMPLETED. CUM ITER = 344
 *** TIME = .676686E+10 TIME INC = .455345E+09
 *** RESPONSE EIGENVALUE = .3041E-09 OSCILLATION LIMIT = .1385
 *** AUTO STEP TIME: NEXT TIME INC = .45534E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 47.01 CRITERION= .3719E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9253
 HT FLOW CONVERGENCE VALUE= .1701 CRITERION= .3657E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8251E-02
 HT FLOW CONVERGENCE VALUE= .1744E-02 CRITERION= .3656E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 2 COMPLETED. CUM ITER = 346
 *** TIME = .722221E+10 TIME INC = .455345E+09
 *** RESPONSE EIGENVALUE = .2055E-09 OSCILLATION LIMIT = .9357E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.7326)

HT FLOW CONVERGENCE VALUE= 44.81 CRITERION= .3506E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.719
 HT FLOW CONVERGENCE VALUE= .2961 CRITERION= .3422E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1594E-01
 HT FLOW CONVERGENCE VALUE= .3208E-02 CRITERION= .3420E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 3 COMPLETED. CUM ITER = 348
 *** TIME = .801115E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .2204E-09 OSCILLATION LIMIT = .1739
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 41.50 CRITERION= .3333E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.645
 HT FLOW CONVERGENCE VALUE= .2625 CRITERION= .3269E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1481E-01
 HT FLOW CONVERGENCE VALUE= .2841E-02 CRITERION= .3268E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 4 COMPLETED. CUM ITER = 350
 *** TIME = .880009E+10 TIME INC = .788940E+09
 *** RESPONSE EIGENVALUE = .2157E-09 OSCILLATION LIMIT = .1701
 *** AUTO TIME STEP: NEXT TIME INC = .66719E+09 DECREASED (FACTOR = .8457)

HT FLOW CONVERGENCE VALUE= 38.69 CRITERION= .3137E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.496
 HT FLOW CONVERGENCE VALUE= .2335 CRITERION= .3097E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1189E-01
 HT FLOW CONVERGENCE VALUE= .2124E-02 CRITERION= .3096E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 33 SUBSTEP 5 COMPLETED. CUM ITER = 352
 *** TIME = .946728E+10 TIME INC = .667190E+09
 *** RESPONSE EIGENVALUE = .2496E-09 OSCILLATION LIMIT = .1666

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 21:47:16 JAN 25, 1995 CP= 54578.530
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 36.52 CRITERION= .3070E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8791
 HT FLOW CONVERGENCE VALUE= .1406 CRITERION= .3040E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6509E-02
 HT FLOW CONVERGENCE VALUE= .1122E-02 CRITERION= .3040E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 1 COMPLETED. CUM ITER = 354
 *** TIME = .101345E+11 TIME INC = .667190E+09
 *** RESPONSE EIGENVALUE = .1558E-09 OSCILLATION LIMIT = .1040
 *** AUTO STEP TIME: NEXT TIME INC = .66719E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 34.62 CRITERION= .2952E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8360
 HT FLOW CONVERGENCE VALUE= .1218 CRITERION= .2935E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6412E-02
 HT FLOW CONVERGENCE VALUE= .1080E-02 CRITERION= .2934E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 2 COMPLETED. CUM ITER = 356
 *** TIME = .108017E+11 TIME INC = .667190E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.1825)

HT FLOW CONVERGENCE VALUE= 32.91 CRITERION= .2898E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9755
 HT FLOW CONVERGENCE VALUE= .1377 CRITERION= .2888E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7397E-02
 HT FLOW CONVERGENCE VALUE= .1198E-02 CRITERION= .2887E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 3 COMPLETED. CUM ITER = 358
 *** TIME = .115906E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .51622E+09 DECREASED (FACTOR = .6543)

HT FLOW CONVERGENCE VALUE= 31.11 CRITERION= .2815E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6680
 HT FLOW CONVERGENCE VALUE= .9253E-01 CRITERION= .2814E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4456E-02
 HT FLOW CONVERGENCE VALUE= .6966E-03 CRITERION= .2814E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 4 COMPLETED. CUM ITER = 360
 *** TIME = .121068E+11 TIME INC = .516220E+09
 *** AUTO STEP TIME: NEXT TIME INC = .51622E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 30.00 CRITERION= .2801E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6531
 HT FLOW CONVERGENCE VALUE= .8970E-01 CRITERION= .2804E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4200E-02
 HT FLOW CONVERGENCE VALUE= .6379E-03 CRITERION= .2804E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 34 SUBSTEP 5 COMPLETED. CUM ITER = 362
 *** TIME = .126230E+11 TIME INC = .516220E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:13:47 JAN 25, 1995 CP= 56060.720
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 28.98 CRITERION= .2745E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5042

HT FLOW CONVERGENCE VALUE= .6959E-01 CRITERION= .2752E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3037E-02
 HT FLOW CONVERGENCE VALUE= .4547E-03 CRITERION= .2752E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 1 COMPLETED. CUM ITER = 364
 *** TIME = .131393E+11 TIME INC = .516220E+09
 *** AUTO STEP TIME: NEXT TIME INC = .51622E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 28.00 CRITERION= .2752E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4447
 HT FLOW CONVERGENCE VALUE= .5878E-01 CRITERION= .2761E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2784E-02
 HT FLOW CONVERGENCE VALUE= .4061E-03 CRITERION= .2761E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 2 COMPLETED. CUM ITER = 366
 *** TIME = .136555E+11 TIME INC = .516220E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.5283)

HT FLOW CONVERGENCE VALUE= 27.12 CRITERION= .2690E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7280
 HT FLOW CONVERGENCE VALUE= .9145E-01 CRITERION= .2710E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4762E-02
 HT FLOW CONVERGENCE VALUE= .6722E-03 CRITERION= .2710E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 3 COMPLETED. CUM ITER = 368
 *** TIME = .144444E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 25.83 CRITERION= .2695E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7051
 HT FLOW CONVERGENCE VALUE= .8669E-01 CRITERION= .2720E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4445E-02
 HT FLOW CONVERGENCE VALUE= .6058E-03 CRITERION= .2719E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 4 COMPLETED. CUM ITER = 370
 *** TIME = .152334E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .54544E+09 DECREASED (FACTOR = .6914)

HT FLOW CONVERGENCE VALUE= 24.67 CRITERION= .2664E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5231
 HT FLOW CONVERGENCE VALUE= .6334E-01 CRITERION= .2684E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2923E-02
 HT FLOW CONVERGENCE VALUE= .3894E-03 CRITERION= .2683E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 35 SUBSTEP 5 COMPLETED. CUM ITER = 372
 *** TIME = .157788E+11 TIME INC = .545440E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 22:40:14 JAN 25, 1995 CP= 57539.820
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 23.91 CRITERION= .2685E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4460
 HT FLOW CONVERGENCE VALUE= .5463E-01 CRITERION= .2706E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2394E-02
 HT FLOW CONVERGENCE VALUE= .3138E-03 CRITERION= .2705E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 36 SUBSTEP 1 COMPLETED. CUM ITER = 374
 *** TIME = .163242E+11 TIME INC = .545440E+09
 *** AUTO STEP TIME: NEXT TIME INC = .54544E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 23.21 CRITERION= .2656E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4701
 HT FLOW CONVERGENCE VALUE= .5503E-01 CRITERION= .2678E-01

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2483E-02
HT FLOW CONVERGENCE VALUE= .3173E-03 CRITERION= .2678E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 2 COMPLETED. CUM ITER = 376
*** TIME = .168697E+11 TIME INC = .545440E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.4464)

HT FLOW CONVERGENCE VALUE= 22.52 CRITERION= .2669E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6614
HT FLOW CONVERGENCE VALUE= .7594E-01 CRITERION= .2701E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3597E-02
HT FLOW CONVERGENCE VALUE= .4417E-03 CRITERION= .2701E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 3 COMPLETED. CUM ITER = 378
*** TIME = .176586E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 21.63 CRITERION= .2645E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7018
HT FLOW CONVERGENCE VALUE= .7730E-01 CRITERION= .2678E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3671E-02
HT FLOW CONVERGENCE VALUE= .4355E-03 CRITERION= .2678E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 4 COMPLETED. CUM ITER = 380
*** TIME = .184476E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .48700E+09 DECREASED (FACTOR = .6173)

HT FLOW CONVERGENCE VALUE= 20.77 CRITERION= .2682E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4228
HT FLOW CONVERGENCE VALUE= .4758E-01 CRITERION= .2703E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1908E-02
HT FLOW CONVERGENCE VALUE= .2298E-03 CRITERION= .2703E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 36 SUBSTEP 5 COMPLETED. CUM ITER = 382
*** TIME = .189346E+11 TIME INC = .486999E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 23:06:17 JAN 25, 1995 CP= 59019.990
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 20.29 CRITERION= .2666E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3592
HT FLOW CONVERGENCE VALUE= .4038E-01 CRITERION= .2687E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1521E-02
HT FLOW CONVERGENCE VALUE= .1861E-03 CRITERION= .2687E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 1 COMPLETED. CUM ITER = 384
*** TIME = .194216E+11 TIME INC = .486999E+09
*** AUTO STEP TIME: NEXT TIME INC = .48700E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 19.80 CRITERION= .2695E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3197
HT FLOW CONVERGENCE VALUE= .3568E-01 CRITERION= .2716E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1362E-02
HT FLOW CONVERGENCE VALUE= .1624E-03 CRITERION= .2716E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 37 SUBSTEP 2 COMPLETED. CUM ITER = 386
*** TIME = .199086E+11 TIME INC = .486999E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.6200)

HT FLOW CONVERGENCE VALUE= 19.38 CRITERION= .2673E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5568
HT FLOW CONVERGENCE VALUE= .5845E-01 CRITERION= .2706E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2561E-02

HT FLOW CONVERGENCE VALUE= .2832E-03 CRITERION= .2706E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 3 COMPLETED. CUM ITER = 388
 *** TIME = .206975E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 18.69 CRITERION= .2706E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5362
 HT FLOW CONVERGENCE VALUE= .5591E-01 CRITERION= .2739E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2354E-02
 HT FLOW CONVERGENCE VALUE= .2555E-03 CRITERION= .2738E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 4 COMPLETED. CUM ITER = 390
 *** TIME = .214864E+11 TIME INC = .788940E+09
 *** AUTO TIME STEP: NEXT TIME INC = .60388E+09 DECREASED (FACTOR = .7654)

HT FLOW CONVERGENCE VALUE= 18.08 CRITERION= .2703E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4392
 HT FLOW CONVERGENCE VALUE= .4434E-01 CRITERION= .2727E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1795E-02
 HT FLOW CONVERGENCE VALUE= .1937E-03 CRITERION= .2727E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 37 SUBSTEP 5 COMPLETED. CUM ITER = 392
 *** TIME = .220903E+11 TIME INC = .603881E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 23:33:01 JAN 25, 1995 CP= 60498.840
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 17.63 CRITERION= .2735E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3492
 HT FLOW CONVERGENCE VALUE= .3679E-01 CRITERION= .2759E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1308E-02
 HT FLOW CONVERGENCE VALUE= .1488E-03 CRITERION= .2759E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 1 COMPLETED. CUM ITER = 394
 *** TIME = .226942E+11 TIME INC = .603881E+09
 *** AUTO STEP TIME: NEXT TIME INC = .60388E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 17.22 CRITERION= .2728E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3628
 HT FLOW CONVERGENCE VALUE= .3591E-01 CRITERION= .2751E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1394E-02
 HT FLOW CONVERGENCE VALUE= .1481E-03 CRITERION= .2751E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 2 COMPLETED. CUM ITER = 396
 *** TIME = .232981E+11 TIME INC = .603881E+09
 *** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.3064)

HT FLOW CONVERGENCE VALUE= 16.82 CRITERION= .2755E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4531
 HT FLOW CONVERGENCE VALUE= .4492E-01 CRITERION= .2784E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1741E-02
 HT FLOW CONVERGENCE VALUE= .1803E-03 CRITERION= .2784E-01 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 38 SUBSTEP 3 COMPLETED. CUM ITER = 398
 *** TIME = .240870E+11 TIME INC = .788940E+09
 *** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 16.37 CRITERION= .2751E-01
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4789
 HT FLOW CONVERGENCE VALUE= .4511E-01 CRITERION= .2779E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1837E-02
 HT FLOW CONVERGENCE VALUE= .1818E-03 CRITERION= .2779E-01 <<< CONVERGED


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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 38 SUBSTEP 4 COMPLETED. CUM ITER = 400
*** TIME = .248760E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .37012E+09 DECREASED (FACTOR = .4691)
```

```
HT FLOW CONVERGENCE VALUE= 15.92 CRITERION= .2790E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2177
HT FLOW CONVERGENCE VALUE= .2086E-01 CRITERION= .2802E-01 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 38 SUBSTEP 5 COMPLETED. CUM ITER = 401
*** TIME = .252461E+11 TIME INC = .370117E+09
```

***** ANSYS SOLVE COMMAND *****

1

```
***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 23:57:35 JAN 25, 1995 CP= 61871.300
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX
```

12 PWR MPC, 5 m Tunnel

```
HT FLOW CONVERGENCE VALUE= 15.74 CRITERION= .2780E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2006
HT FLOW CONVERGENCE VALUE= .1925E-01 CRITERION= .2792E-01 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 1 COMPLETED. CUM ITER = 402
*** TIME = .256162E+11 TIME INC = .370117E+09
*** AUTO STEP TIME: NEXT TIME INC = .37012E+09 UNCHANGED
```

```
HT FLOW CONVERGENCE VALUE= 15.55 CRITERION= .2804E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1830
HT FLOW CONVERGENCE VALUE= .1731E-01 CRITERION= .2816E-01 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 2 COMPLETED. CUM ITER = 403
*** TIME = .259863E+11 TIME INC = .370117E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 2.1316)
```

```
HT FLOW CONVERGENCE VALUE= 15.38 CRITERION= .2789E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4045
HT FLOW CONVERGENCE VALUE= .3715E-01 CRITERION= .2813E-01
```

```
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1387E-02
HT FLOW CONVERGENCE VALUE= .1368E-03 CRITERION= .2813E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 3 COMPLETED. CUM ITER = 405
*** TIME = .267753E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED
```

```
HT FLOW CONVERGENCE VALUE= 15.01 CRITERION= .2819E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3844
HT FLOW CONVERGENCE VALUE= .3561E-01 CRITERION= .2842E-01
```

```
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1267E-02
HT FLOW CONVERGENCE VALUE= .1260E-03 CRITERION= .2842E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 39 SUBSTEP 4 COMPLETED. CUM ITER = 407
*** TIME = .275642E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .41882E+09 DECREASED (FACTOR = .5309)
```

```
HT FLOW CONVERGENCE VALUE= 14.69 CRITERION= .2820E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2220
HT FLOW CONVERGENCE VALUE= .1972E-01 CRITERION= .2832E-01 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 39 SUBSTEP 5 COMPLETED. CUM ITER = 408
*** TIME = .279830E+11 TIME INC = .418823E+09
*** AUTO STEP TIME: NEXT TIME INC = .41882E+09 UNCHANGED
```

```
HT FLOW CONVERGENCE VALUE= 14.52 CRITERION= .2842E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2092
HT FLOW CONVERGENCE VALUE= .1875E-01 CRITERION= .2853E-01 <<< CONVERGED
```

```
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
```

*** LOAD STEP 39 SUBSTEP 6 COMPLETED. CUM ITER = 409
*** TIME = .284018E+11 TIME INC = .418823E+09

***** ANSYS SOLVE COMMAND *****

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 00:21:19 JAN 26, 1995 CP= 63213.940
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

HT FLOW CONVERGENCE VALUE= 14.37 CRITERION= .2834E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1905
HT FLOW CONVERGENCE VALUE= .1720E-01 CRITERION= .2844E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 1 COMPLETED. CUM ITER = 410
*** TIME = .288207E+11 TIME INC = .418823E+09
*** AUTO STEP TIME: NEXT TIME INC = .41882E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 14.21 CRITERION= .2856E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1744
HT FLOW CONVERGENCE VALUE= .1542E-01 CRITERION= .2866E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 2 COMPLETED. CUM ITER = 411
*** TIME = .292395E+11 TIME INC = .418823E+09
*** AUTO TIME STEP: NEXT TIME INC = .78894E+09 INCREASED (FACTOR = 1.8837)

HT FLOW CONVERGENCE VALUE= 14.07 CRITERION= .2843E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3380
HT FLOW CONVERGENCE VALUE= .2940E-01 CRITERION= .2862E-01
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1017E-02
HT FLOW CONVERGENCE VALUE= .9832E-04 CRITERION= .2862E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 40 SUBSTEP 3 COMPLETED. CUM ITER = 413
*** TIME = .300284E+11 TIME INC = .788940E+09
*** AUTO STEP TIME: NEXT TIME INC = .78894E+09 UNCHANGED

HT FLOW CONVERGENCE VALUE= 13.80 CRITERION= .2869E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3183
HT FLOW CONVERGENCE VALUE= .2805E-01 CRITERION= .2886E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 4 COMPLETED. CUM ITER = 414
*** TIME = .308174E+11 TIME INC = .788940E+09
*** AUTO TIME STEP: NEXT TIME INC = .74023E+09 DECREASED (FACTOR = .9383)

HT FLOW CONVERGENCE VALUE= 13.57 CRITERION= .2865E-01
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3181
HT FLOW CONVERGENCE VALUE= .2671E-01 CRITERION= .2880E-01 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 40 SUBSTEP 5 COMPLETED. CUM ITER = 415
*** TIME = .315576E+11 TIME INC = .740234E+09

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 64259.120

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12h5a.db
FOR POSSIBLE RESUME FROM THIS POINT

Store temperatures at waste package mid-length surface
and drift wall end in array tables for use as boundary
conditions in later analyses

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

TRW ENVIRONMENT VERSION=HP 9000/7XX 00:40:11 JAN 26, 1995 CP= 64270.810
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****

PARAMETER JINC = 1.000000
0 to .9 years

*DO LOOP ON PARAMETER= TM FROM 31.558 TO .28402E+08 BY .31558E+07

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= 31.558

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

PARAMETER WPTOP(JINC) = 57.85885
PARAMETER WPSID(JINC) = 57.78214
PARAMETER WPBOT(JINC) = 57.67773
PARAMETER DFTOP(JINC) = 26.14243
PARAMETER DFSID(JINC) = 26.14247
PARAMETER DFEDG(JINC) = 26.14213
PARAMETER DFBOT(JINC) = 26.16471
PARAMETER WPTOP(JINC,0) = 31.55760
PARAMETER WPSID(JINC,0) = 31.55760
PARAMETER WPBOT(JINC,0) = 31.55760
PARAMETER DFTOP(JINC,0) = 31.55760
PARAMETER DFSID(JINC,0) = 31.55760
PARAMETER DFEDG(JINC,0) = 31.55760
PARAMETER DFBOT(JINC,0) = 31.55760
PARAMETER JINC = 2.000000

*ENDDO INDEX= TM
1 to 9 years

*DO LOOP ON PARAMETER= TM FROM .31558E+08 TO .28402E+09 BY .31558E+08

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+08

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 129
TIME/FREQUENCY= .31558E+08

PARAMETER WPTOP(JINC) = 110.4627
PARAMETER WPSID(JINC) = 111.1050
PARAMETER WPBOT(JINC) = 112.6023
PARAMETER DFTOP(JINC) = 86.92788

PARAMETER DFSID(JINC) = 87.26130
PARAMETER DFEDG(JINC) = 85.14607
PARAMETER DFBOT(JINC) = 77.57066
PARAMETER WPTOP(JINC,0) = .3155763E+08
PARAMETER WPSID(JINC,0) = .3155763E+08
PARAMETER WPBOT(JINC,0) = .3155763E+08
PARAMETER DFTOP(JINC,0) = .3155763E+08
PARAMETER DFSID(JINC,0) = .3155763E+08
PARAMETER DFEDG(JINC,0) = .3155763E+08
PARAMETER DFBOT(JINC,0) = .3155763E+08
PARAMETER JINC = 12.00000

*ENDDO INDEX= TM
10 to 90 years

*DO LOOP ON PARAMETER= TM FROM .31558E+09 TO .28402E+10 BY .31558E+09

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+09

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 230
TIME/FREQUENCY= .31558E+09

PARAMETER WPTOP(JINC) = 136.2000
PARAMETER WPSID(JINC) = 136.6958
PARAMETER WPBOT(JINC) = 137.9132
PARAMETER DFTOP(JINC) = 120.0872
PARAMETER DFSID(JINC) = 120.3079
PARAMETER DFEDG(JINC) = 118.6756
PARAMETER DFBOT(JINC) = 111.6522
PARAMETER WPTOP(JINC,0) = .3155760E+09
PARAMETER WPSID(JINC,0) = .3155760E+09
PARAMETER WPBOT(JINC,0) = .3155760E+09
PARAMETER DFTOP(JINC,0) = .3155760E+09
PARAMETER DFSID(JINC,0) = .3155760E+09
PARAMETER DFEDG(JINC,0) = .3155760E+09
PARAMETER DFBOT(JINC,0) = .3155760E+09
PARAMETER JINC = 21.00000

*ENDDO INDEX= TM
100 to 1000 years

*DO LOOP ON PARAMETER= TM FROM .31558E+10 TO .31558E+11 BY .31558E+10

USE NEAREST SUBSTEP ON RESULT FILE FOR LOAD CASE 0
USE DATA SET FOR TIME OR FREQUENCY= .31558E+10

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 326
TIME/FREQUENCY= .31558E+10

PARAMETER WPTOP(JINC) = 101.8644

PARAMETER WPSID(JINC) = 102.0645

PARAMETER WPBOT(JINC) = 102.5206

PARAMETER DFTOP(JINC) = 94.91283

PARAMETER DFSID(JINC) = 95.01931

PARAMETER DFEDG(JINC) = 94.41110

PARAMETER DFBOT(JINC) = 92.14782

PARAMETER WPTOP(JINC,0) = .3155760E+10

PARAMETER WPSID(JINC,0) = .3155760E+10

PARAMETER WPBOT(JINC,0) = .3155760E+10

PARAMETER DFTOP(JINC,0) = .3155760E+10

PARAMETER DFSID(JINC,0) = .3155760E+10

PARAMETER DFEDG(JINC,0) = .3155760E+10

PARAMETER DFBOT(JINC,0) = .3155760E+10

PARAMETER JINC = 30.00000

*ENDDO INDEX= TM

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 66150.850

*** NOTE *** CP= 66150.860 TIME= 01:12:53
Write parameters to file= c12h5a.parm.

*** NOTE *** CP= 66150.920 TIME= 01:12:54
Parameters written. Lines= 770.

*** WARNING *** CP= 66150.920 TIME= 01:12:54
Parameters with a "undefined" value of 7.888609052E-31 were
not written to file c12h5a.parm.

Create element mesh plots to illustrate model

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:12:54 JAN 26, 1995 CP= 66150.980
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

12 PWR MPC, 5 m Tunnel

***** ANSYS RESULTS INTERPRETATION (POST1) *****
View mesh for entire model

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

/SHOW SWITCH PLOTS TO FILE meshfar.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshfar.grph - RASTER MODE.
DISPLAY TITLE=

View model meshing for drift end view

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .00000E+00 .00000E+00 -1.0000

FOCUS POINT FOR WINDOW 1 -.44941E-08 .25326 .88818E-15

DISTANCE FOR WINDOW 1 100.0

VIEW CONE ANGLE FOR WINDOW 1 25.00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

TITLE=

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4144 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshdrif.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshdrif.grph - RASTER MODE.

DISPLAY TITLE=

View model meshing for side cut-away

CUMULATIVE ROTATION ANGLE FOR WINDOW 1 IS 90.00 ABOUT AXIS YS

NEW VIEW SETTINGS FOR WINDOW 1 SET TO:

VIEW POINT IS 1.0000 .00000E+00 -.61232E-16
ROTATION ABOUT ZS AXIS IS .00 DEGREES

DISTANCE FOR WINDOW 1 10.00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4144 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.

/SHOW SWITCH PLOTS TO FILE meshside.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshside.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP end view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 -.36934 .15899 -.91559

FOCUS POINT FOR WINDOW 1 2.7776 -.97308 7.5978

DISTANCE FOR WINDOW 1 18.27

ROTATION ANGLE FOR WINDOW 1 IS 5.11 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION -.36934 .15899 -.91559
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:
40.000 50.000 60.000 70.000
80.000 90.000 100.00 300.00
Select end view of WP

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

4144 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
48 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE near0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66177.610 TIME= 01:13:31
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 79
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66197.960 TIME= 01:13:54
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 129
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE near1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66218.420 TIME= 01:14:16
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 6 CUMULATIVE ITERATION= 181
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66238.920 TIME= 01:14:39
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 230
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE near10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66259.340 TIME= 01:15:01
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 276
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near50.100.grph - RASTER MODE.

DISPLAY TITLE=

*** WARNING *** CP= 66279.660 TIME= 01:15:23
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 326
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE near100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66300.040 TIME= 01:15:45
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 372
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66320.430 TIME= 01:16:08
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 415
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE near1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE near1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66340.680 TIME= 01:16:28
The selected element set contains mixed materials.
This could invalidate error estimation.
View mesh for closeup end of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshnear.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshnear.grph - RASTER MODE.
DISPLAY TITLE=

Create color temp. contour plots for WP corner view

Set view settings

GRAPHIC DISPLAY RESET
DEVICE VECTOR KEY SET TO 0

NUMBER KEY SET TO 1 -1=NONE 0=BOTH 1=COLOR 2=NUMBER
XYZ TRIAD DISPLAY SET TO OFF

MAT NUMBERING KEY = 1

SCREEN WINDOW FOR WINDOW 1 -1.0000 1.0000 -1.0000 1.0000

VIEW POINT FOR WINDOW 1 .64865 .48519E-01 -.75954

FOCUS POINT FOR WINDOW 1 -.21216E-01 .39180 2.3739

DISTANCE FOR WINDOW 1 11.43

ROTATION ANGLE FOR WINDOW 1 IS -.52 ABOUT AXIS ZS

VIEW CONE ANGLE FOR WINDOW 1 25.00

DIRECTIONAL LIGHT NUMBER 1 FOR WINDOW 1
DIRECTION .64865 .48519E-01 -.75954
INTENSITY 1.00, REFLECTANCE .00

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS -1 0=DEFAULT, 1=ALTERNATE, -1=NONE

WINDOW 1 HAS 8 CONTOURS:

40.000	50.000	60.000	70.000
80.000	90.000	100.00	300.00

Select corner view of WP

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN -100.00 AND .00000E+00
KABS= 0. TOLERANCE= .000000E+00

48 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND 100.00
KABS= 0. TOLERANCE= .000000E+00

24 VOLUMES (OF 96 DEFINED) SELECTED BY VSEL COMMAND.

SELECT ELEMENTS CREATED FROM SELECTED VOLUMES.

2072 ELEMENTS (OF 8289 DEFINED) SELECTED FROM
24 SELECTED VOLUMES BY ESLV COMMAND.
Select load steps and plot temperatures

USE LOAD STEP 3 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 8 CUMULATIVE ITERATION= 14
TIME/FREQUENCY= 31.558

TITLE=

/SHOW SWITCH PLOTS TO FILE corn0.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn0.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66361.610 TIME= 01:16:49
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 8 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 8 SUBSTEP= 5 CUMULATIVE ITERATION= 79
TIME/FREQUENCY= .15779E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn05.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn05.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66378.340 TIME= 01:17:06
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 13 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 13 SUBSTEP= 5 CUMULATIVE ITERATION= 129
TIME/FREQUENCY= .31558E+08

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66395.090 TIME= 01:17:23
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 17 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 17 SUBSTEP= 6 CUMULATIVE ITERATION= 181
TIME/FREQUENCY= .15779E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn5.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn5.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66411.820 TIME= 01:17:39
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 22 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 22 SUBSTEP= 6 CUMULATIVE ITERATION= 230
TIME/FREQUENCY= .31558E+09

TITLE=

/SHOW SWITCH PLOTS TO FILE corn10.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn10.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66428.560 TIME= 01:17:56
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 26 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 26 SUBSTEP= 5 CUMULATIVE ITERATION= 276
TIME/FREQUENCY= .15779E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn50.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn50.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66445.290 TIME= 01:18:13

The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 31 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 31 SUBSTEP= 5 CUMULATIVE ITERATION= 326
TIME/FREQUENCY= .31558E+10

TITLE=

/SHOW SWITCH PLOTS TO FILE corn100.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn100.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66462.010 TIME= 01:18:30
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 35 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 35 SUBSTEP= 5 CUMULATIVE ITERATION= 372
TIME/FREQUENCY= .15779E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn500.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn500.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66478.770 TIME= 01:18:47
The selected element set contains mixed materials.
This could invalidate error estimation.

USE LOAD STEP 40 SUBSTEP 0 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 40 SUBSTEP= 5 CUMULATIVE ITERATION= 415
TIME/FREQUENCY= .31558E+11

TITLE=

/SHOW SWITCH PLOTS TO FILE corn1k.100.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

DISPLAY NODAL SOLUTION, ITEM=TEMP COMP=

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE corn1k.100.grph - RASTER MODE.
DISPLAY TITLE=

*** WARNING *** CP= 66495.520 TIME= 01:19:04
The selected element set contains mixed materials.

This could invalidate error estimation.
View mesh for corner of model

ELEMENT OUTLINE STYLE FOR WINDOW 1 IS 0 0=DEFAULT, 1=ALTERNATE, -1=NONE

HIDDEN DISPLAY (PRECISE) IN WINDOW 1

SHADING FOR WINDOW 1, SET TO GOURAUD.

/SHOW SWITCH PLOTS TO FILE meshcorn.grph - RASTER MODE.
- GRAPHIC PLANES = 8.

PRODUCE ELEMENT PLOT IN DSYS = 0

CUMULATIVE DISPLAY NUMBER 1 WRITTEN TO FILE meshcorn.grph - RASTER MODE.
DISPLAY TITLE=

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 66500.470

Print time/temperature output at specific locations

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:09 JAN 26, 1995 CP= 66500.470
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** TIME-HISTORY POSTPROCESSOR (POST26) *****

ALL POST26 SPECIFICATIONS ARE RESET TO INITIAL DEFAULTS

* Waste Package Surface Temperatures *

wmidside = midlength side surface
wwpeside = end of WP side surface
wmidtop = midlength top surface
wwpetop = end of WP top surface
wmidbot = midlength bottom surface
wwpebot = end of WP bottom surface

VARIABLE 2 IS AT NODE 123 ITEM= TEMP COMP= NAME= wmidside

VARIABLE 3 IS AT NODE 1920 ITEM= TEMP COMP= NAME= wwpeside

VARIABLE 4 IS AT NODE 129 ITEM= TEMP COMP= NAME= wmidtop

VARIABLE 5 IS AT NODE 1926 ITEM= TEMP COMP= NAME= wwpetop

VARIABLE 6 IS AT NODE 122 ITEM= TEMP COMP= NAME= wmidbot

VARIABLE 7 IS AT NODE 1919 ITEM= TEMP COMP= NAME= wwpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES
VARI TYPE IDENTIFIERS NAME MINIMUM AT TIME MAXIMUM AT TIME

2	NSOL	123 TEMP	wmidside	26.14	.1000E-05	136.7	.3156E+09
3	NSOL	1920 TEMP	wwpeside	26.14	.1000E-05	132.2	.3156E+09
4	NSOL	129 TEMP	wmidtop	26.14	.1000E-05	136.2	.3156E+09

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5 NSOL 1926 TEMP      wwpetop 26.14      .1000E-05 132.1      .3156E+09
6 NSOL 122 TEMP       wmidbot 26.15      .1000E-05 137.9      .3156E+09
7 NSOL 1919 TEMP      wwpebot 26.14      .1000E-05 132.7      .3156E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:13 JAN 26, 1995 CP= 66502.400
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	123 TEMP wmidside	1920 TEMP wwpeside	129 TEMP wmidtop	1926 TEMP wwpetop	122 TEMP wmidbot	1919 TEMP wwpebot
.10000E-05	26.1419	26.1421	26.1367	26.1384	26.1461	26.1450
.20000E-05	57.7821	52.3342	57.8588	52.5267	57.6777	52.2142
31.558	57.7821	52.3342	57.8588	52.5267	57.6777	52.2142
.31558E+07	82.5142	75.7334	81.8054	75.5910	84.0446	76.3389
.63116E+07	89.7459	83.1476	89.0461	83.0076	91.2959	83.7711
.94673E+07	94.5260	88.0689	93.8368	87.9325	96.0707	88.6943
.12623E+08	98.1987	91.8515	97.5180	91.7185	99.7327	92.4743
.15779E+08	101.190	94.9348	100.518	94.8047	102.721	95.5591
.18935E+08	103.714	97.5371	103.049	97.4097	105.236	98.1585
.22090E+08	105.900	99.7927	105.242	99.6673	107.417	100.414
.25246E+08	107.830	101.783	107.177	101.660	109.339	102.402
.28402E+08	109.550	103.561	108.903	103.439	111.055	104.179
.31558E+08	111.105	105.166	110.463	105.046	112.602	105.782
.63115E+08	120.726	115.154	120.107	115.036	122.193	115.767
.94673E+08	125.782	120.420	125.188	120.308	127.204	121.016
.12623E+09	129.116	123.923	128.540	123.817	130.503	124.504
.15779E+09	131.557	126.497	130.999	126.397	132.907	127.062
.18935E+09	133.393	128.457	132.850	128.361	134.716	129.010
.22090E+09	134.784	129.958	134.252	129.864	136.082	130.500
.25246E+09	135.984	131.244	135.464	131.154	137.260	131.778
.28402E+09	136.406	131.799	135.900	131.712	137.648	132.318
.31558E+09	136.696	132.186	136.200	132.101	137.913	132.695
.63115E+09	135.151	131.319	134.729	131.246	136.184	131.750
.94673E+09	130.306	126.938	129.935	126.873	131.208	127.313
.12623E+10	124.453	121.485	124.126	121.427	125.237	121.810
.15779E+10	119.165	116.495	118.871	116.442	119.863	116.783
.18935E+10	114.685	112.249	114.416	112.200	115.314	112.508
.22090E+10	110.909	108.667	110.662	108.621	111.485	108.904
.25246E+10	107.276	105.216	107.049	105.173	107.800	105.431
.28402E+10	104.422	102.496	104.210	102.455	104.910	102.697
.31558E+10	102.065	100.253	101.864	100.214	102.521	100.440
.63115E+10	90.0358	88.8637	89.9048	88.8362	90.3245	88.9819
.94673E+10	85.1247	84.1831	85.0189	84.1602	85.3553	84.2780
.12623E+11	82.3462	81.5418	82.2555	81.5219	82.5415	81.6218
.15779E+11	80.3135	79.6084	80.2337	79.5906	80.4849	79.6791
.18935E+11	78.3673	77.7487	78.2970	77.7328	78.5166	77.8098
.22090E+11	76.7266	76.1742	76.6635	76.1595	76.8605	76.2295
.25246E+11	75.3118	74.8105	75.2542	74.7970	75.4324	74.8599
.28402E+11	74.0780	73.6180	74.0247	73.6052	74.1886	73.6634
.31558E+11	73.0272	72.6001	72.9773	72.5878	73.1308	72.6432

 * Waste Package Inside Shell Temperatures *

smidside = midlength side inside shell
 swpeside = end of WP side inside shell
 smidtop = midlength top inside shell
 swpetop = end of WP top inside shell
 smidbot = midlength bottom inside shell
 swpebot = end of WP bottom inside shell

VARIABLE 2 IS AT NODE 8 ITEM= TEMP COMP= NAME= smidside

*** WARNING *** CP= 66502.700 TIME= 01:19:13
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 1108 ITEM= TEMP COMP= NAME= swpeside
 VARIABLE 4 IS AT NODE 38 ITEM= TEMP COMP= NAME= smidtop
 VARIABLE 5 IS AT NODE 1258 ITEM= TEMP COMP= NAME= swpetop
 VARIABLE 6 IS AT NODE 2 ITEM= TEMP COMP= NAME= smidbot
 VARIABLE 7 IS AT NODE 1073 ITEM= TEMP COMP= NAME= swpebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	8 TEMP	smidside	26.14	.1000E-05	137.2	.3156E+09
3	NSOL	1108 TEMP	swpeside	26.14	.1000E-05	132.6	.3156E+09
4	NSOL	38 TEMP	smidtop	26.14	.1000E-05	136.7	.3156E+09
5	NSOL	1258 TEMP	swpetop	26.14	.1000E-05	132.5	.3156E+09
6	NSOL	2 TEMP	smidbot	26.15	.1000E-05	138.3	.3156E+09
7	NSOL	1073 TEMP	swpebot	26.14	.1000E-05	133.1	.3156E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:15 JAN 26, 1995 CP= 66504.280
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	8 TEMP smidside	1108 TEMP swpeside	38 TEMP smidtop	1258 TEMP swpetop	2 TEMP smidbot	1073 TEMP swpebot
.10000E-05	26.1419	26.1421	26.1368	26.1385	26.1461	26.1449
.20000E-05	58.3403	52.8720	58.4174	53.0631	58.2361	52.7450
31.558	58.3403	52.8720	58.4174	53.0631	58.2361	52.7450
.31558E+07	83.0640	76.2870	82.3589	76.1406	84.5471	76.8651
.63116E+07	90.2969	83.6995	89.6007	83.5552	91.7986	84.2945
.94673E+07	95.0766	88.6181	94.3906	88.4773	96.5730	89.2147
.12623E+08	98.7487	92.3982	98.0710	92.2606	100.235	92.9922
.15779E+08	101.740	95.4793	101.071	95.3446	103.223	96.0746
.18935E+08	104.263	98.0797	103.601	97.9476	105.737	98.6723
.22090E+08	106.448	100.333	105.793	100.203	107.917	100.926
.25246E+08	108.377	102.323	107.727	102.194	109.839	102.912
.28402E+08	110.097	104.098	109.452	103.971	111.553	104.687
.31558E+08	111.650	105.702	111.010	105.577	113.100	106.289
.63115E+08	121.261	115.676	120.645	115.553	122.682	116.260
.94673E+08	126.308	120.930	125.716	120.814	127.685	121.498
.12623E+09	129.633	124.423	129.059	124.312	130.976	124.976
.15779E+09	132.065	126.988	131.510	126.883	133.372	127.526
.18935E+09	133.893	128.938	133.352	128.838	135.173	129.466
.22090E+09	135.276	130.431	134.746	130.333	136.532	130.948
.25246E+09	136.470	131.711	135.951	131.617	137.705	132.219
.28402E+09	136.879	132.253	136.375	132.162	138.082	132.748
.31558E+09	137.160	132.632	136.666	132.542	138.338	133.116
.63115E+09	135.543	131.695	135.122	131.619	136.543	132.106
.94673E+09	130.644	127.263	130.273	127.195	131.516	127.621
.12623E+10	124.743	121.766	124.417	121.705	125.502	122.075
.15779E+10	119.419	116.743	119.127	116.687	120.095	117.018
.18935E+10	114.912	112.472	114.645	112.420	115.522	112.719
.22090E+10	111.115	108.869	110.869	108.821	111.672	109.095
.25246E+10	107.462	105.399	107.236	105.355	107.970	105.604

.28402E+10	104.594	102.666	104.383	102.623	105.066	102.857
.31558E+10	102.224	100.411	102.025	100.371	102.666	100.589
.63115E+10	90.1339	88.9620	90.0035	88.9337	90.4138	89.0748
.94673E+10	85.2019	84.2607	85.0967	84.2372	85.4253	84.3512
.12623E+11	82.4113	81.6076	82.3210	81.5871	82.6008	81.6839
.15779E+11	80.3702	79.6656	80.2909	79.6473	80.5362	79.7330
.18935E+11	78.4165	77.7986	78.3466	77.7823	78.5614	77.8570
.22090E+11	76.7704	76.2184	76.7077	76.2035	76.9000	76.2712
.25246E+11	75.3512	74.8505	75.2938	74.8367	75.4683	74.8978
.28402E+11	74.1139	73.6545	74.0609	73.6415	74.2214	73.6980
.31558E+11	73.0605	72.6339	73.0110	72.6214	73.1608	72.6750

 * Waste Package Center and Bottom of Invert *

wmidcent = midlength center of WP
 shellcnt = end of WP center inside shell
 wwpecent = end of WP center surface
 imidbot = midlength bottom of invert
 iwpebot = end of WP bottom of invert
 idfebot = end of drift bottom of invert

VARIABLE 2 IS AT NODE 1 ITEM= TEMP COMP= NAME= wmidcent

*** WARNING *** CP= 66504.580 TIME= 01:19:15
 NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 1078 ITEM= TEMP COMP= NAME= shellcnt

VARIABLE 4 IS AT NODE 1799 ITEM= TEMP COMP= NAME= wwpecent

VARIABLE 5 IS AT NODE 147 ITEM= TEMP COMP= NAME= imidbot

VARIABLE 6 IS AT NODE 2826 ITEM= TEMP COMP= NAME= iwpebot

VARIABLE 7 IS AT NODE 2814 ITEM= TEMP COMP= NAME= idfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	1 TEMP	wmidcent	26.14	.1000E-05	185.5	.2525E+09
3	NSOL	1078 TEMP	shellcnt	26.14	.1000E-05	135.9	.3156E+09
4	NSOL	1799 TEMP	wwpecent	26.14	.1000E-05	135.5	.3156E+09
5	NSOL	147 TEMP	imidbot	26.16	.2000E-05	116.8	.6312E+09
6	NSOL	2826 TEMP	iwpebot	26.16	.2000E-05	115.0	.6312E+09
7	NSOL	2814 TEMP	idfebot	26.16	.2000E-05	114.0	.6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:17 JAN 26, 1995 CP= 66506.150
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	1 TEMP wmidcent	1078 TEMP shellcnt	1799 TEMP wwpecent	147 TEMP imidbot	2826 TEMP iwpebot	2814 TEMP idfebot
.10000E-05	26.1417	26.1420	26.1420	26.1736	26.1737	26.1736
.20000E-05	114.636	57.0392	56.6007	26.1647	26.1647	26.1647
31.558	114.637	57.0393	56.6007	26.1647	26.1647	26.1647
.31558E+07	138.737	80.2469	79.8012	48.7445	45.1293	42.8965
.63116E+07	146.065	87.6422	87.1987	57.2556	53.7384	51.5367
.94673E+07	150.820	92.5498	92.1064	62.8776	59.4818	57.3612

.12623E+08	154.441	96.3264	95.8807	67.1902	63.8919	61.8377
.15779E+08	157.347	99.3911	98.9482	70.7054	67.4867	65.4865
.18935E+08	159.781	101.987	101.542	73.6743	70.5220	68.5665
.22090E+08	161.866	104.226	103.784	76.2439	73.1486	71.2313
.25246E+08	163.706	106.210	105.766	78.5100	75.4640	73.5798
.28402E+08	165.320	107.971	107.530	80.5339	77.5321	75.6773
.31558E+08	166.780	109.570	109.128	82.3617	79.3993	77.5707
.63115E+08	175.380	119.460	119.025	93.9930	91.3052	89.6511
.94673E+08	179.446	124.631	124.205	100.053	97.5360	95.9948
.12623E+09	181.843	128.057	127.636	104.197	101.745	100.263
.15779E+09	183.399	130.554	130.140	107.266	104.893	103.447
.18935E+09	184.383	132.440	132.034	109.669	107.358	105.951
.22090E+09	184.972	133.878	133.476	111.574	109.330	107.964
.25246E+09	185.516	135.107	134.713	113.172	110.972	109.633
.28402E+09	184.652	135.564	135.178	114.238	112.101	110.802
.31558E+09	183.993	135.876	135.498	115.006	112.920	111.652
.63115E+09	175.097	134.438	134.118	116.789	115.037	113.972
.94673E+09	164.691	129.627	129.353	114.232	112.688	111.751
.12623E+10	153.991	123.805	123.569	110.329	108.964	108.135
.15779E+10	145.116	118.536	118.330	106.493	105.260	104.510
.18935E+10	137.893	114.081	113.896	103.149	102.020	101.333
.22090E+10	131.924	110.326	110.160	100.301	99.2575	98.6217
.25246E+10	126.273	106.721	106.569	97.5407	96.5785	95.9913
.28402E+10	121.963	103.885	103.747	95.3242	94.4211	93.8710
.31558E+10	118.395	101.550	101.420	93.5139	92.6657	92.1478
.63115E+10	100.053	89.6653	89.5851	84.5184	83.9649	83.6259
.94673E+10	92.9962	84.8126	84.7512	80.6917	80.2453	79.9715
.12623E+11	88.9854	82.0765	82.0230	78.5624	78.1804	77.9458
.15779E+11	86.0815	80.0709	80.0261	76.9941	76.6587	76.4526
.18935E+11	83.3822	78.1540	78.1134	75.4582	75.1634	74.9823
.22090E+11	81.1743	76.5313	76.4969	74.1258	73.8621	73.7000
.25246E+11	79.3217	75.1355	75.1028	72.9554	72.7159	72.5685
.28402E+11	77.7373	73.9149	73.8850	71.9167	71.6966	71.5611
.31558E+11	76.4116	72.8721	72.8462	71.0186	70.8140	70.6879

* Surface Temperature of Invert *

imidcent = midlength center of invert surface
 iwpecent = end of WP center of invert surface
 idfcent = end of drift center of invert surface
 imidedge = midlength corner of invert surface
 iwpeedge = end of WP corner of invert surface
 idfeedge = end of drift corner of invert surface

VARIABLE 2 IS AT NODE 151 ITEM= TEMP COMP= NAME= imidcent

*** WARNING *** CP= 66506.450 TIME= 01:19:17

NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2832 ITEM= TEMP COMP= NAME= iwpecent

VARIABLE 4 IS AT NODE 2818 ITEM= TEMP COMP= NAME= idfcent

VARIABLE 5 IS AT NODE 157 ITEM= TEMP COMP= NAME= imidedge

VARIABLE 6 IS AT NODE 2867 ITEM= TEMP COMP= NAME= iwpeedge

VARIABLE 7 IS AT NODE 2857 ITEM= TEMP COMP= NAME= idfeedge

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	151 TEMP	imidcent	26.14	.2000E-05	128.9	.3156E+09
3	NSOL	2832 TEMP	iwpecent	26.14	.2000E-05	124.8	.6312E+09
4	NSOL	2818 TEMP	idfcent	26.14	.2000E-05	122.6	.6312E+09
5	NSOL	157 TEMP	imidedge	26.14	.2000E-05	124.1	.6312E+09

6 NSOL 2867 TEMP iwpeedge 26.14 .2000E-05 121.1 .6312E+09
 7 NSOL 2857 TEMP idfeedge 26.14 .2000E-05 119.9 .6312E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:19 JAN 26, 1995 CP= 66508.040
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	151 TEMP imidcent	2832 TEMP iwpecent	2818 TEMP idfecent	157 TEMP imidedge	2867 TEMP iwpeedge	2857 TEMP idfeedge
.10000E-05	26.1514	26.1511	26.1501	26.1551	26.1575	26.1580
.20000E-05	26.1413	26.1413	26.1413	26.1413	26.1413	26.1413
.31558E+07	26.1509	26.1458	26.1437	26.1440	26.1426	26.1421
.63116E+07	66.9322	59.1977	54.2995	58.0207	52.2442	49.6692
.94673E+07	75.2896	67.9324	63.2993	66.6780	61.0749	58.5935
.12623E+08	80.7717	73.6760	69.2315	72.3969	66.9554	64.5620
.15779E+08	84.9593	78.0609	73.7575	76.7761	71.4628	69.1380
.18935E+08	88.3515	81.6150	77.4259	80.3334	75.1271	72.8587
.22090E+08	91.2116	84.6091	80.5142	83.3337	78.2177	75.9964
.25246E+08	93.6781	87.1916	83.1778	85.9245	80.8875	78.7069
.28402E+08	95.8536	89.4673	85.5232	88.2088	83.2405	81.0952
.31558E+08	97.7890	91.4931	87.6116	90.2438	85.3380	83.2245
.34673E+08	99.5372	93.3216	89.4956	92.0811	87.2314	85.1461
.37799E+08	110.383	104.705	101.239	103.485	99.0510	97.1625
.40925E+08	116.067	110.680	107.408	109.542	105.299	103.509
.44051E+08	119.851	114.673	111.542	113.588	109.505	107.787
.47177E+08	122.634	117.623	114.601	116.579	112.609	110.946
.50303E+08	124.755	119.889	116.960	118.881	115.017	113.403
.53429E+08	126.389	121.651	118.802	120.662	116.904	115.331
.56555E+08	127.781	123.143	120.359	122.177	118.494	116.958
.59681E+08	128.454	123.956	121.259	123.016	119.446	117.959
.62807E+08	128.927	124.533	121.900	123.613	120.127	118.676
.65933E+08	128.542	124.836	122.621	124.052	121.123	119.908
.69059E+08	124.404	121.142	119.192	120.452	117.887	116.821
.72185E+08	119.145	116.259	114.532	115.650	113.393	112.452
.75311E+08	114.297	111.690	110.127	111.141	109.111	108.264
.78437E+08	110.171	107.784	106.351	107.282	105.432	104.657
.81563E+08	106.692	104.486	103.161	104.023	102.320	101.605
.84689E+08	103.349	101.316	100.092	100.891	99.3256	98.6674
.87815E+08	100.707	98.8007	97.6523	98.4028	96.9398	96.3232
.90941E+08	98.5392	96.7425	95.6591	96.3674	94.9916	94.4111
.94067E+08	87.6445	86.4706	85.7594	86.2266	85.3406	84.9637
.97193E+08	83.1627	82.2156	81.6405	82.0197	81.3088	81.0053
.100319E+09	80.6532	79.8424	79.3494	79.6749	79.0684	78.8090
.103445E+09	78.8146	78.1026	77.6693	77.9559	77.4246	77.1969
.106571E+09	77.0440	76.4182	76.0370	76.2895	75.8238	75.6240
.109697E+09	75.5341	74.9743	74.6329	74.8595	74.4437	74.2650
.112823E+09	74.2262	73.7174	73.4070	73.6133	73.2364	73.0742
.115949E+09	73.0768	72.6092	72.3237	72.5139	72.1682	72.0192
.119075E+09	72.0912	71.6565	71.3907	71.5683	71.2472	71.1087

 * Drift Wall Surface Temperatures *

dmidside = midlength drift wall side surface
 dwpeside = end of WP drift wall side surface
 ddfeside = end of drift side surface
 dmidtop = midlength drift wall top surface
 dwpetop = end of WP drift wall top surface
 ddfetop = end of drift top surface

VARIABLE 2 IS AT NODE 177 ITEM= TEMP COMP= NAME= dmidside

*** WARNING *** CP= 66508.340 TIME= 01:19:19
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2930 ITEM= TEMP COMP= NAME= dwpeside
 VARIABLE 4 IS AT NODE 2902 ITEM= TEMP COMP= NAME= ddfeside
 VARIABLE 5 IS AT NODE 229 ITEM= TEMP COMP= NAME= dmidtop
 VARIABLE 6 IS AT NODE 3053 ITEM= TEMP COMP= NAME= dwpetop
 VARIABLE 7 IS AT NODE 3031 ITEM= TEMP COMP= NAME= ddfetop

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES

VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	177 TEMP	dmidside	26.14	.1000E-05	125.2	.6312E+09
3	NSOL	2930 TEMP	dwpeside	26.14	.2000E-05	122.3	.6312E+09
4	NSOL	2902 TEMP	ddfeside	26.14	.2000E-05	121.3	.6312E+09
5	NSOL	229 TEMP	dmidtop	26.13	.1000E-05	124.3	.6312E+09
6	NSOL	3053 TEMP	dwpetop	26.12	.1000E-05	122.0	.6312E+09
7	NSOL	3031 TEMP	ddfetop	26.12	.1000E-05	121.1	.6312E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:21 JAN 26, 1995 CP= 66509.920
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	177 TEMP dmidside	2930 TEMP dwpeside	2902 TEMP ddfeside	229 TEMP dmidtop	3053 TEMP dwpetop	3031 TEMP ddfetop
.10000E-05	26.1413	26.1422	26.1425	26.1269	26.1230	26.1217
.20000E-05	26.1413	26.1413	26.1413	26.1413	26.1413	26.1413
31.558	26.1448	26.1431	26.1425	26.1445	26.1429	26.1424
.31558E+07	59.8648	54.1168	51.8157	58.1918	53.2968	51.3643
.63116E+07	68.5414	63.0078	60.8068	66.9100	62.2088	60.3650
.94673E+07	74.2517	68.8960	66.7781	72.6690	68.1275	66.3570
.12623E+08	78.6152	73.3973	71.3432	77.0742	72.6568	70.9424
.15779E+08	82.1547	77.0506	75.0486	80.6489	76.3336	74.6649
.18935E+08	85.1376	80.1290	78.1703	83.6616	79.4314	77.8006
.22090E+08	87.7116	82.7862	80.8650	86.2615	82.1051	80.5067
.25246E+08	89.9803	85.1273	83.2384	88.5526	84.4601	82.8897
.28402E+08	92.0004	87.2130	85.3532	90.5928	86.5580	85.0128
.31558E+08	93.8239	89.0952	87.2613	92.4343	88.4509	86.9279
.63115E+08	105.096	100.778	99.1272	103.804	100.204	98.8373
.94673E+08	111.086	106.970	105.394	109.872	106.420	105.117
.12623E+09	115.084	111.132	109.631	113.916	110.604	109.364
.15779E+09	118.055	114.214	112.760	116.929	113.707	112.505
.18935E+09	120.314	116.595	115.178	119.222	116.101	114.929
.22090E+09	122.066	118.444	117.075	120.999	117.964	116.833
.25246E+09	123.558	120.014	118.675	122.519	119.547	118.440
.28402E+09	124.357	120.924	119.628	123.349	120.472	119.400
.31558E+09	124.924	121.572	120.308	123.939	121.131	120.087
.63115E+09	125.161	122.341	121.281	124.330	121.969	121.094
.94673E+09	121.423	118.949	118.017	120.690	118.617	117.848
.12623E+10	116.503	114.323	113.499	115.855	114.027	113.346
.15779E+10	111.907	109.940	109.197	111.321	109.671	109.056
.18935E+10	107.979	106.181	105.500	107.441	105.932	105.368
.22090E+10	104.662	103.005	102.376	104.165	102.773	102.252
.25246E+10	101.476	99.9500	99.3699	101.017	99.7345	99.2534
.28402E+10	98.9473	97.5189	96.9751	98.5165	97.3152	96.8640

.31558E+10	96.8776	95.5322	95.0193	96.4703	95.3386	94.9128
.63115E+10	86.5472	85.6746	85.3401	86.2772	85.5410	85.2626
.94673E+10	82.2734	81.5712	81.3013	82.0543	81.4610	81.2361
.12623E+11	79.8897	79.2895	79.0586	79.7011	79.1938	79.0011
.15779E+11	78.1428	77.6164	77.4135	77.9765	77.5311	77.3618
.18935E+11	76.4520	75.9901	75.8119	76.3049	75.9138	75.7649
.22090E+11	75.0034	74.5905	74.4310	74.8711	74.5210	74.3876
.25246E+11	73.7427	73.3680	73.2231	73.6215	73.3035	73.1823
.28402E+11	72.6314	72.2873	72.1543	72.5191	72.2268	72.1153
.31558E+11	71.6762	71.3565	71.2327	71.5710	71.2988	71.1949

 * 1 meter Rock Temperatures *

1midside = midlength 1 meter from drift side
 1dfeside = end of drift 1 meter from drift side
 1midtop = midlength 1 meter above drift top
 1dfetop = end of drift 1 meter above drift top
 1midbot = midlength 1 meter below drift cut
 1dfebot = end of drift 1 meter below drift cut

VARIABLE 2 IS AT NODE 167 ITEM= TEMP COMP= NAME= 1midside

*** WARNING *** CP= 66510.210 TIME= 01:19:21
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 2892 ITEM= TEMP COMP= NAME= 1dfeside

VARIABLE 4 IS AT NODE 219 ITEM= TEMP COMP= NAME= 1midtop

VARIABLE 5 IS AT NODE 3021 ITEM= TEMP COMP= NAME= 1dfetop

VARIABLE 6 IS AT NODE 165 ITEM= TEMP COMP= NAME= 1midbot

VARIABLE 7 IS AT NODE 2890 ITEM= TEMP COMP= NAME= 1dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	167 TEMP	1midside	26.14	.2000E-05	112.2	.6312E+09
3	NSOL	2892 TEMP	1dfeside	26.14	.2000E-05	110.6	.6312E+09
4	NSOL	219 TEMP	1midtop	26.10	.1000E-05	112.0	.6312E+09
5	NSOL	3021 TEMP	1dfetop	26.10	.1000E-05	110.6	.6312E+09
6	NSOL	165 TEMP	1midbot	26.19	.2000E-05	107.5	.6312E+09
7	NSOL	2890 TEMP	1dfebot	26.19	.2000E-05	106.2	.6312E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:22 JAN 26, 1995 CP= 66511.800
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	167 TEMP 1midside	2892 TEMP 1dfeside	219 TEMP 1midtop	3021 TEMP 1dfetop	165 TEMP 1midbot	2890 TEMP 1dfebot
.10000E-05	26.1428	26.1432	26.0994	26.0975	26.1946	26.1948
.20000E-05	26.1427	26.1427	26.1108	26.1108	26.1870	26.1870
31.558	26.1427	26.1427	26.1108	26.1108	26.1870	26.1870
.31558E+07	42.6820	39.3514	41.9447	39.1026	37.5064	35.0854
.63116E+07	50.7814	47.4298	50.0246	47.1698	45.0401	42.4932
.94673E+07	56.3041	53.0509	55.5856	52.8194	50.3254	47.8469
.12623E+08	60.5778	57.4134	59.9042	57.2178	54.4747	52.0677

.15779E+08	64.0805	60.9901	63.4465	60.8265	57.9042	55.5574
.18935E+08	67.0502	64.0221	66.4495	63.8851	60.8266	58.5304
.22090E+08	69.6286	66.6542	69.0561	66.5394	63.3733	61.1203
.25246E+08	71.9072	68.9796	71.3586	68.8832	65.6290	63.4135
.28402E+08	73.9472	71.0614	73.4193	70.9807	67.6532	65.4709
.31558E+08	75.7922	72.9439	75.2823	72.8767	69.4868	67.3341
.63115E+08	87.5527	85.0368	87.1318	85.0383	81.4531	79.5099
.94673E+08	93.8726	91.4723	93.5066	91.4902	87.8738	86.0789
.12623E+09	98.1295	95.8350	97.7794	95.8605	92.2288	90.4813
.15779E+09	101.364	99.0947	101.042	99.1403	95.4388	93.7419
.18935E+09	103.880	101.658	103.576	101.706	97.9896	96.3186
.22090E+09	105.877	103.706	105.577	103.756	100.053	98.4503
.25246E+09	107.581	105.457	107.303	105.519	101.783	100.199
.28402E+09	108.774	106.715	108.508	106.776	103.102	101.554
.31558E+09	109.645	107.641	109.385	107.705	104.087	102.577
.63115E+09	112.242	110.561	112.020	110.608	107.515	106.249
.94673E+09	110.279	108.805	110.059	108.821	106.206	105.092
.12623E+10	106.894	105.592	106.679	105.585	103.382	102.397
.15779E+10	103.446	102.270	103.236	102.247	100.359	99.4689
.18935E+10	100.397	99.3224	100.191	99.2865	97.6467	96.8317
.22090E+10	97.7879	96.7951	97.5876	96.7512	95.3045	94.5490
.25246E+10	95.2501	94.3337	95.0554	94.2832	93.0097	92.3144
.28402E+10	93.1953	92.3394	93.0058	92.2837	91.1414	90.4913
.31558E+10	91.5207	90.7159	91.3354	90.6567	89.6214	89.0105
.63115E+10	83.2453	82.7229	83.0969	82.6549	82.1172	81.7188
.94673E+10	79.6723	79.2517	79.5441	79.1877	78.8020	78.4808
.12623E+11	77.6926	77.3330	77.5780	77.2732	76.9669	76.6920
.15779E+11	76.2318	75.9163	76.1275	75.8598	75.6072	75.3659
.18935E+11	74.7891	74.5122	74.6932	74.4580	74.2520	74.0400
.22090E+11	73.5272	73.2795	73.4376	73.2270	73.0561	72.8664
.25246E+11	72.4110	72.1862	72.3258	72.1346	71.9917	71.8195
.28402E+11	71.4154	71.2090	71.3332	71.1574	71.0383	70.8800
.31558E+11	70.5507	70.3587	70.4703	70.3066	70.2071	70.0599

 * 3 meter Rock Temperatures *

3midside = midlength 3 meter from drift side
 3dfeside = end of drift 3 meter from drift side
 3midtop = midlength 3 meter above drift top
 3dfetop = end of drift 3 meter above drift top
 3midbot = midlength 3 meter below drift cut
 3dfebot = end of drift 3 meter below drift cut

VARIABLE 2 IS AT NODE 279 ITEM= TEMP COMP= NAME= 3midside

*** WARNING *** CP= 66512.100 TIME= 01:19:23
 NSOL command erases all previously stored or calculated data
 unless STORE, MERGE is used.

VARIABLE 3 IS AT NODE 3409 ITEM= TEMP COMP= NAME= 3dfeside

VARIABLE 4 IS AT NODE 309 ITEM= TEMP COMP= NAME= 3midtop

VARIABLE 5 IS AT NODE 3581 ITEM= TEMP COMP= NAME= 3dfetop

VARIABLE 6 IS AT NODE 276 ITEM= TEMP COMP= NAME= 3midbot

VARIABLE 7 IS AT NODE 3406 ITEM= TEMP COMP= NAME= 3dfebot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	279 TEMP	3midside	26.14	.1000E-05	96.30	.9467E+09
3	NSOL	3409 TEMP	3dfeside	26.14	.1000E-05	96.03	.9467E+09
4	NSOL	309 TEMP	3midtop	26.06	.1000E-05	96.24	.9467E+09
5	NSOL	3581 TEMP	3dfetop	26.06	.1000E-05	96.01	.9467E+09
6	NSOL	276 TEMP	3midbot	26.23	.2000E-05	94.23	.9467E+09

7 NSOL 3406 TEMP 3dfefot 26.23 .2000E-05 94.02 .9467E+09
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:24 JAN 26, 1995 CP= 66513.690
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	279 TEMP 3midside	3409 TEMP 3dfeside	309 TEMP 3midtop	3581 TEMP 3dfetop	276 TEMP 3midbot	3406 TEMP 3dfefot
.10000E-05	26.1439	26.1439	26.0557	26.0554	26.2351	26.2351
.20000E-05	26.1440	26.1440	26.0634	26.0634	26.2296	26.2296
31.558	26.1440	26.1440	26.0634	26.0634	26.2296	26.2296
.31558E+07	29.0807	28.6538	28.7590	28.4083	28.0318	27.7560
.63116E+07	33.9384	33.3377	33.4990	32.9962	32.0541	31.5972
.94673E+07	38.0293	37.4200	37.6016	37.0901	35.7688	35.2937
.12623E+08	41.4669	40.8713	41.0793	40.5795	39.0004	38.5346
.15779E+08	44.4216	43.8402	44.0760	43.5889	41.8264	41.3721
.18935E+08	47.0085	46.4396	46.7011	46.2250	44.3262	43.8821
.22090E+08	49.3076	48.7494	49.0338	48.5671	46.5626	46.1273
.25246E+08	51.3752	50.8262	51.1304	50.6719	48.5832	48.1554
.28402E+08	53.2531	52.7124	53.0337	52.5823	50.4248	50.0036
.31558E+08	54.9721	54.4386	54.7748	54.3298	52.1148	51.6996
.63115E+08	66.6685	66.1974	66.5965	66.2064	63.7775	63.4037
.94673E+08	73.3356	72.8851	73.3078	72.9320	70.4759	70.1291
.12623E+09	77.9059	77.4813	77.9002	77.5499	75.0798	74.7450
.15779E+09	81.3539	80.9420	81.3708	81.0317	78.5300	78.2050
.18935E+09	84.0798	83.6703	84.1073	83.7673	81.2887	80.9687
.22090E+09	86.2895	85.8863	86.3212	85.9860	83.5323	83.2310
.25246E+09	88.1664	87.7841	88.2102	87.8957	85.4128	85.1128
.28402E+09	89.6771	89.2930	89.7246	89.4049	86.9699	86.6723
.31558E+09	90.8530	90.4873	90.9009	90.5988	88.2047	87.9156
.63115E+09	96.0927	95.7784	96.1015	95.8411	93.7488	93.5064
.94673E+09	96.3020	96.0253	96.2425	96.0130	94.2342	94.0196
.12623E+10	94.8028	94.5599	94.6977	94.4962	92.9851	92.7959
.15779E+10	92.8129	92.5931	92.6777	92.4949	91.1996	91.0277
.18935E+10	90.9014	90.7006	90.7452	90.5786	89.4635	89.3068
.22090E+10	89.2045	89.0190	89.0372	88.8828	87.9059	87.7612
.25246E+10	87.4992	87.3286	87.3237	87.1817	86.3307	86.1977
.28402E+10	86.0656	85.9063	85.8845	85.7518	84.9978	84.8733
.31558E+10	84.8966	84.7468	84.7124	84.5876	83.9134	83.7965
.63115E+10	79.1784	79.0812	78.9982	78.9170	78.6212	78.5451
.94673E+10	76.4779	76.3997	76.3157	76.2503	76.0655	76.0042
.12623E+11	74.9960	74.9291	74.8476	74.7915	74.6606	74.6082
.15779E+11	73.8886	73.8299	73.7505	73.7014	73.6063	73.5603
.18935E+11	72.7509	72.6994	72.6206	72.5774	72.5144	72.4739
.22090E+11	71.7188	71.6727	71.5941	71.5555	71.5176	71.4815
.25246E+11	70.7805	70.7387	70.6593	70.6242	70.6079	70.5750
.28402E+11	69.9273	69.8889	69.8076	69.7754	69.7788	69.7487
.31558E+11	69.1733	69.1376	69.0536	69.0236	69.0451	69.0170

* Upper Rock Layer Interface Temperatures *

surfTCw = center ground surface
TCwPTn = center TCw and PTn interface
PTnTSw1 = center PTn and TSw1 interface
TSw1TSw2 = center TSw1 and TSw2 interface
upmodel = center TSw2 1/2 drift spacing above WP
middrift = drift to drift midplane at rep. height

VARIABLE 2 IS AT NODE 887 ITEM= TEMP COMP= NAME= surfTCw

*** WARNING *** CP= 66513.980 TIME= 01:19:25

NSOL command erases all previously stored or calculated data
unless STORE,MERGE is used.

VARIABLE 3 IS AT NODE 866 ITEM= TEMP COMP= NAME= TCwPTn
VARIABLE 4 IS AT NODE 809 ITEM= TEMP COMP= NAME= PTnTSw1
VARIABLE 5 IS AT NODE 722 ITEM= TEMP COMP= NAME= TSw1TSw2
VARIABLE 6 IS AT NODE 491 ITEM= TEMP COMP= NAME= upmodel
VARIABLE 7 IS AT NODE 407 ITEM= TEMP COMP= NAME= middrift

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	887 TEMP	surfTCw	18.70	.1000E-05	18.70	.1000E-05
3	NSOL	866 TEMP	fCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	809 TEMP	PTnTSw1	21.24	.1000E-05	33.90	.3156E+11
5	NSOL	722 TEMP	TSw1TSw2	24.25	.1000E-05	53.60	.3156E+11
6	NSOL	491 TEMP	upmodel	25.33	.1000E-05	61.50	.2209E+11
7	NSOL	407 TEMP	middrift	26.14	.1000E-05	65.89	.1578E+11

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:26 JAN 26, 1995 CP= 66515.560
FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	887 TEMP surfTCw	866 TEMP TCwPTn	809 TEMP PTnTSw1	722 TEMP TSw1TSw2	491 TEMP upmodel	407 TEMP middrift
.10000E-05	18.7000	19.5281	21.2395	24.2502	25.3286	26.1445
.20000E-05	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
31.558	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.31558E+07	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.63116E+07	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.94673E+07	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.12623E+08	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.15779E+08	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.18935E+08	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.22090E+08	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.25246E+08	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.28402E+08	18.7000	19.5283	21.2402	24.2516	25.3304	26.1451
.31558E+08	18.7000	19.5283	21.2402	24.2516	25.3304	26.1452
.63115E+08	18.7000	19.5283	21.2402	24.2516	25.3348	26.1557
.94673E+08	18.7000	19.5283	21.2402	24.2516	25.3656	26.2263
.12623E+09	18.7000	19.5283	21.2402	24.2516	25.4540	26.4193
.15779E+09	18.7000	19.5283	21.2402	24.2516	25.6178	26.7654
.18935E+09	18.7000	19.5283	21.2402	24.2516	25.8577	27.2615
.22090E+09	18.7000	19.5283	21.2402	24.2517	26.1645	27.8856
.25246E+09	18.7000	19.5283	21.2402	24.2518	26.5251	28.6107
.28402E+09	18.7000	19.5283	21.2402	24.2522	26.9266	29.4108
.31558E+09	18.7000	19.5283	21.2402	24.2528	27.3579	30.2636
.63115E+09	18.7000	19.5283	21.2402	24.3324	32.0507	39.1102
.94673E+09	18.7000	19.5283	21.2402	24.6968	36.2693	46.0930
.12623E+10	18.7000	19.5283	21.2403	25.4058	39.7993	51.0702
.15779E+10	18.7000	19.5283	21.2407	26.3831	42.6973	54.5649
.18935E+10	18.7000	19.5283	21.2428	27.5255	45.0585	57.0244
.22090E+10	18.7000	19.5285	21.2485	28.7457	46.9907	58.7883
.25246E+10	18.7000	19.5290	21.2608	29.9818	48.5840	60.0796
.28402E+10	18.7000	19.5302	21.2830	31.1944	49.8979	61.0202
.31558E+10	18.7000	19.5327	21.3184	32.3596	50.9956	61.7236

.63115E+10	18.7000	19.7608	22.6070	40.8528	57.0323	65.0614
.94673E+10	18.7000	20.4141	24.9461	45.4535	59.0942	65.5261
.12623E+11	18.7000	21.1916	27.2854	48.2616	60.2489	65.7879
.15779E+11	18.7000	21.8827	29.2387	50.1773	60.9678	65.8934
.18935E+11	18.7000	22.4380	30.7717	51.5277	61.3646	65.8057
.22090E+11	18.7000	22.8669	31.9422	52.4485	61.5019	65.5577
.25246E+11	18.7000	23.1905	32.8162	53.0486	61.4768	65.2361
.28402E+11	18.7000	23.4289	33.4530	53.4104	61.3388	64.8705
.31558E+11	18.7000	23.6000	33.9034	53.5954	61.1290	64.4911

* Lower Rock Layer Interface Temperatures *

dwnmodel = center TSw2 1/2 drift spacing below WP
 TSw2TSw3 = center TSw2 and TSw3 interface
 TSw3CHnv = center TSw3 and CHn1v interface
 CHnvCHnz = center CHn1v and CHn1z interface
 CHnzCHn2 = center CHn1z and CHn2 interface
 CHn2bot = center actual lower contact of CHn2

VARIABLE 2 IS AT NODE 396 ITEM= TEMP COMP= NAME= dwnmodel

*** WARNING *** CP= 66515.860 TIME= 01:19:27

NSOL command erases all previously stored or calculated data
 unless STORE,MERGE is used.

VARIABLE 5 IS AT NODE 764 ITEM= TEMP COMP= NAME= TSw2TSw3

VARIABLE 6 IS AT NODE 908 ITEM= TEMP COMP= NAME= TSw3CHnv

VARIABLE 7 IS AT NODE 928 ITEM= TEMP COMP= NAME= CHnvCHnz

VARIABLE 7 IS AT NODE 947 ITEM= TEMP COMP= NAME= CHnzCHn2

VARIABLE 7 IS AT NODE 1004 ITEM= TEMP COMP= NAME= CHn2bot

STORAGE COMPLETE FOR 40 DATA POINTS

SUMMARY OF VARIABLES STORED THIS STEP AND EXTREME VALUES							
VARI	TYPE	IDENTIFIERS	NAME	MINIMUM	AT TIME	MAXIMUM	AT TIME
2	NSOL	396 TEMP	dwnmodel	26.96	.2000E-05	63.19	.2209E+11
3	NSOL	866 TEMP	TCwPTn	19.53	.1000E-05	23.60	.3156E+11
4	NSOL	809 TEMP	PTnTSw1	21.24	.1000E-05	33.90	.3156E+11
5	NSOL	764 TEMP	TSw2TSw3	27.69	.2209E+08	59.37	.3156E+11
6	NSOL	908 TEMP	TSw3CHnv	28.16	.1893E+08	57.19	.3156E+11
7	NSOL	1004 TEMP	CHn2bot	31.87	.2000E-05	43.34	.3156E+11

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 TRW ENVIRONMENT VERSION=HP 9000/7XX 01:19:28 JAN 26, 1995 CP= 66517.440
 FOR SUPPORT CALL BOB BAHNEY PHONE (702) 794-5337 FAX

***** ANSYS POST26 VARIABLE LISTING *****

TIME	396 TEMP dwnmodel	866 TEMP TCwPTn	809 TEMP PTnTSw1	764 TEMP TSw2TSw3	908 TEMP TSw3CHnv	1004 TEMP CHn2bot
.10000E-05	26.9606	19.5281	21.2395	27.6880	28.1594	31.8716
.20000E-05	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
31.558	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.31558E+07	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.63116E+07	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.94673E+07	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.12623E+08	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.15779E+08	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710

.18935E+08	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.22090E+08	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.25246E+08	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.28402E+08	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.31558E+08	26.9598	19.5283	21.2402	27.6873	28.1587	31.8710
.63115E+08	26.9642	19.5283	21.2402	27.6873	28.1587	31.8710
.94673E+08	26.9953	19.5283	21.2402	27.6873	28.1587	31.8710
.12623E+09	27.0838	19.5283	21.2402	27.6874	28.1587	31.8710
.15779E+09	27.2467	19.5283	21.2402	27.6875	28.1587	31.8710
.18935E+09	27.4840	19.5283	21.2402	27.6879	28.1587	31.8710
.22090E+09	27.7861	19.5283	21.2402	27.6892	28.1587	31.8710
.25246E+09	28.1403	19.5283	21.2402	27.6919	28.1588	31.8710
.28402E+09	28.5342	19.5283	21.2402	27.6971	28.1591	31.8710
.31558E+09	28.9571	19.5283	21.2402	27.7057	28.1597	31.8710
.63115E+09	33.5703	19.5283	21.2402	28.1314	28.2358	31.8710
.94673E+09	37.7533	19.5283	21.2402	29.2433	28.5877	31.8710
.12623E+10	41.2900	19.5283	21.2403	30.8102	29.2729	31.8710
.15779E+10	44.2259	19.5283	21.2407	32.5813	30.2201	31.8710
.18935E+10	46.6440	19.5283	21.2428	34.3880	31.3311	31.8713
.22090E+10	48.6417	19.5285	21.2485	36.1329	32.5218	31.8720
.25246E+10	50.3015	19.5290	21.2608	37.7680	33.7315	31.8739
.28402E+10	51.6781	19.5302	21.2830	39.2740	34.9210	31.8779
.31558E+10	52.8320	19.5327	21.3184	40.6467	36.0662	31.8852
.63115E+10	59.0700	19.7608	22.6070	49.3188	44.4297	32.3583
.94673E+10	61.0649	20.4141	24.9461	53.2294	48.9177	33.6193
.12623E+11	62.1180	21.1916	27.2854	55.4328	51.6123	35.2439
.15779E+11	62.7500	21.8827	29.2387	56.8742	53.4393	36.9034
.18935E+11	63.0845	22.4380	30.7717	57.8622	54.7485	38.4662
.22090E+11	63.1869	22.8669	31.9422	58.5152	55.6855	39.8926
.25246E+11	63.1552	23.1905	32.8162	58.9413	56.3580	41.1759
.28402E+11	63.0363	23.4289	33.4530	59.2093	56.8407	42.3221
.31558E+11	62.8673	23.6000	33.9034	59.3669	57.1853	43.3422

***** ROUTINE COMPLETED ***** CP = 66517.450

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= c12h5a.db
FOR POSSIBLE RESUME FROM THIS POINT

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NUMBER OF WARNING MESSAGES ENCOUNTERED=      46
NUMBER OF ERROR   MESSAGES ENCOUNTERED=       0
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*-----*
                        ANSYS RUN COMPLETED
*-----*

                REV. 5.0 A                                HP 9000/7XX

CP TIME          (sec) =      66525.770                TIME = 01:19:42
ELAPSED TIME (sec) =      88366.000                   DATE  = 01/26/95
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