Design Analysis Cover Sheet

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1. PURPOSE

The objective of this analysis is to determine appropriate dimensions and materials for waste package (WP) support and pier based on structural requirements. This document will explore the waste package support and pier resistance to the weight of the WP under static and seismic load conditions. The purpose of this analysis is to provide input for the WP support and pier drawings.

This design analysis first evaluates an original design concept, and then a second design configuration which was evolved from the results of the original analysis. A third design concept is also analyzed which is capable of supporting the maximum WP weight as is specified in Assumption EBD RD 3.7.1.J.2 of the Controlled Design Assumptions (CDA) Document (Ref. 5.1, p. 4-22).

2. QUALITY ASSURANCE

The Quality Assurance (QA) program applies to this analysis. The work reported in this document is part of the preliminary WP support and pier design analysis that will eventually support the License Application Design phase. This activity, when appropriately confirmed, 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. 4, 15, Ref. 5.2). The waste package is on the Q-List by direct inclusion by the Department of Energy (DOE), without conducting a QAP-2-3 evaluation. As determined by an evaluation performed in accordance with QAP-2-0, *Conduct of Activities*, the work performed for this analysis is subject to *Quality Assurance Requirements and Description* (QARD; Ref. 5.3) requirements. As specified in NLP-3-18, the development of this analysis is subject to QA controls. Although a documented evaluation is not required by the current revision of QAP-2-0, the Waste Package Design Development (WPDD) responsible manager has selected the applicable procedural controls for this activity commensurate with the work control activity evaluation entitled "Perform Criticality, Thermal, Structural, and Shielding Analyses" (Ref. 5.4).

All design inputs which are identified in this document are for the preliminary stage of the WP support and pier design process; all of these design inputs, excluding the codes and standards, will require subsequent confirmation (or superseding inputs) as the waste package design proceeds. This document will not directly support any construction, fabrication, or procurement activity and therefore is not required to be procedurally controlled as TBV (to be verified). In addition, the inputs associated with this analysis are not required to be procedurally controlled as TBV. However, use of any data from this analysis for input into documents supporting construction, fabrication, or procurement is required to be controlled as TBV in accordance with the appropriate procedures.

3. METHOD

Finite-element solutions of the problems were performed by making use of the commercially available ANSYS finite-element code. A finite-element model of the waste package support structure was developed and analyzed for static and seismic load conditions. The results of these analyses were plotted in terms of the maximum stress contours to determine at what location the stresses reached a critical magnitude, exceeding the yield strength in the material. Some analytical calculations were also performed by making use of basic relations of strength of materials. The results of the analytical and finite-element method solutions were then compared to the allowable stresses obtained for each component of the WP support and pier. Since the maximum stresses were determined to be less than the allowables, assumed dimensions were verified and recommended in Section 8 of the design analysis.

4. DESIGN INPUTS

All design inputs are for conceptual or preliminary designs; these design inputs, excluding codes and standards, will require subsequent qualification (or superseding inputs) as the waste package support and pier design proceeds to the final design.

4.1 Design Parameters

A three-dimensional (3-D) finite-element model of the support and pier was developed in order to evaluate the effect of the WP static weight on the support structure. Waste Package Development (WPD) design sketches were used to develop the solid finite-element model. These sketches are included in Attachments I, II, and XII.

Material Properties (see Assumption 4.3.1):

ASTM A500 Grade B (Tube material, see Assumption 4.3.2):

Density = 7859 kg/m³ (Ref. 5.5, p. 145) (see Assumption 4.3.3)

Poisson's ratio = 0.28 (Ref. 5.5, p. 339) (see Assumption 4.3.3)

Since the carbon content of A500 is less than 0.30% (Ref. 5.5, p. 326),

Modulus of elasticity = 203.4 GPa (calculated from English Unit, 29.5*10⁶ psi * 6895*10⁻⁹ GPa/psi, Ref. 5.6, p. 646) (Ref. 5.7, p. 614)

Yield strength = 317 MPa (46 ksi) (Ref. 5.8)

Compressive yield strength = 700 MPa (Ref. 5.5, p. 536) (see Assumption 4.3.4)

ASTM A501 (Pipe material, see Assumption 4.3.2):

Density = 7859 kg/m³ (Ref. 5.5, p. 145) (see Assumption 4.3.3)

Poisson's ratio = 0.28 (Ref. 5.5, p. 339) (see Assumption 4.3.3)

Since the carbon content of A501 is less than 0.30% (Ref. 5.5, p. 326),

Modulus of elasticity = 203.4 GPa (Ref. 5.7, p. 614)

Yield strength = 248 MPa (36 ksi) (Ref. 5.8)

Compressive yield strength = 700 MPa (Ref. 5.5, p. 536) (see Assumption 4.3.4)

ASTM A36 (Plate and round bar material, see Assumption 4.3.2):

Density = 7859 kg/m³ (Ref. 5.5, p. 145) (see Assumption 4.3.3)

Poisson's ratio = 0.28 (Ref. 5.5, p. 339) (see Assumption 4.3.3)

Since the carbon content of A36 is less than 0.30% (Ref. 5.5, p. 136),

Modulus of elasticity = 203.4 GPa (Ref. 5.7, p. 614)

Yield strength = 248 MPa (36 ksi) (Ref. 5.8)

Compressive yield strength = 700 MPa (Ref. 5.5, p. 536) (see Assumption 4.3.4)

ASTM A615 Grade 40, (reinforcing bar, see Assumption 4.3.2):

Yield strength = 276 MPa (40 ksi) (Ref. 5.11, pp. 18,19)

Concrete (Pier material, see Assumption 4.3.2):

Density = 2300 kg/m³ (Ref. 5.9, p. A13)

Poisson's ratio = 0.17 (Ref. 5.10)

Modulus of elasticity = 3.6×10^6 psi = 24.8 GPa (Ref. 5.10)

Concrete ultimate strength = 5000 psi = 34.5 MPa (prestressed concrete, Ref. 5.11, p. 11)

Although there is no significant lateral displacement between the surfaces of the tube and the plate, the following approximate values of coefficients of friction are obtained from Ref. 5.12, p. 441 as inputs to the analysis:

Coefficient of static friction = 0.6

Coefficient of kinetic friction = 0.4

A seismic load factor was applied to the static solution of the finite-element analysis. The acceleration of the waste package in the y-direction (vertical) is selected as the critical component for the finite-element solutions and a peak ground acceleration (PGA) of 0.66g is used (Ref. 5.13, Assumption 4.3.5).

A seismic load factor for the horizontal PGA, which is the same as the vertical component, was also obtained from Ref. 5.13 to be used in analytical evaluations (see Assumption 4.3.5).

4.2 Criteria

The following criteria are applicable to the design subject; however, it is not the intent of these analyses to show direct compliance with the following requirements from the Engineered Barrier Design Requirements Document (EBDRD) (Ref. 5.14). Rather, they are used as guidelines and design goals for the preliminary design. Each requirement from the EBDRD is followed by a statement of its use or relevance to the preliminary design. Similar requirements are listed together.

- 4.2.1.1 “The Repository Segment design will prevent free-liquid-phase water from contacting the waste package during the period from package insertion until repository closure.”
- [EBDRD 3.2.3.3.A.8.b]

- 4.2.1.2 “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.”
- [EBDRD 3.2.3.3.A.8.c]

The preliminary waste package support and pier designs presented in this document have been designed to support the WPs above the drift floor where water may collect. Therefore, the support and pier may assist the Repository Segment in meeting these requirements. However, the length of time that the supports will be functional has not yet been determined. These requirements are addressed in Section 7.

- 4.2.2 “All construction materials or substances to be used underground will first be reviewed for potential effects on engineered barriers, waste isolation, and on site characterization or other testing. They may be used only following review and approval and only in those areas where use has been approved, subject to whatever controls are established. Such materials or substances include, but are not limited to, the following (TBD).

- a. Concrete and other cementitious materials, such as shotcrete and grout.”
- [EBDRD 3.2.3.3.A.12.a]

This requirement is identified because the preliminary design of the pier includes the use of concrete. Before concrete can be used in construction, it must be reviewed and approved. However, this document does not support construction, fabrication, or procurement. If the final design of the waste package pier includes concrete, the process of review and approval of its use in the pier will be initiated. This requirement is addressed in Sections 7 and 8.

- 4.2.3 “Reliability of the Engineered Barrier Segment shall be as follows:

...
Emplacement hardware (TBD).”

[EBDRD 3.2.5.1.2.B.3]

The reliability of the emplacement hardware is evaluated throughout the design analysis by using the failure criteria for each structural component of the waste package support system.

- 4.2.4.1 “TESTING AND MAINTENANCE

Engineered Barrier Segment systems, structures and components that are

important to safety shall be designed to permit inspection, maintenance, and testing as necessary to ensure their continued functioning and readiness during the operational period until permanent closure of the repository.”

[EBDRD 3.2.5.2.1]

4.2.4.2 “Replaceability shall be addressed during design for all equipment.”

[EBDRD 3.2.5.2.4.C]

4.2.4.3 “The Engineered Barrier Segment shall be designed and constructed so that facilities are easily and economically maintained. Maintainability considerations include:

- ...
2. Ease of replacement of installed equipment (i.e., without structure modification).”

[EBDRD 3.2.5.2.8.A.2]

The waste package support and pier designs presented in this document have been developed as modular designs to address these maintenance requirements. The modular design is intended to be economical to manufacture, replace, and maintain. These requirements are addressed in Section 7. The specific requirement for testing of design in EBDRD requirement 3.2.5.2.1 is not addressed in this document.

4.2.5 “PORTABILITY AND LOAD CARRYING

Equipment and components that are developed for the Engineered Barrier Segment and that must be moved over short distances for maintenance or other purposes shall be designed to facilitate movement by taking into consideration such things as weight, hand grips, lifting aids, etc.”

[EBDRD 3.2.9]

The waste package support and pier will both have to be moved into the drift and possibly removed from the drift and replaced in the event that they are damaged. The weights of the support and pier are each more than can be lifted by hand, but are far less than the weights of the waste packages. Therefore, the support and pier can be lifted with a gantry. In order to facilitate lifting, lifting aids are included in the design of both the support, lifting holes, and the pier, lifting hooks. This requirement is addressed in Section 7.

4.2.6 “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 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.”

[EBDRD 3.7]

The waste package support and pier are emplacement hardware provided to support the emplaced waste package. The contributions made by the support and pier to isolating waste are keeping the waste from contacting water on the drift floor as previously discussed, and reducing detrimental effects of contact with the outer barrier. Contact with the outer barrier may potentially cause accelerated corrosion of the outer barrier if stresses are high or if the outer barrier acts as a sacrificial metal to the support. Therefore, the material selected for the preliminary design of the support is a carbon steel similar to that selected for outer barrier in preliminary designs of the waste package. The thickness of the material in the support is far less than the thickness of the outer barrier, thus resulting in a relatively soft interface for the outer barrier. The soft interface will result in a larger contact area between the waste package and support, helping to reduce outer barrier stresses at the interface. This requirement is addressed in Section 7.

4.2.7 “EMPLACEMENT HARDWARE REQUIREMENTS

The emplacement hardware requirements (TBD) are for hardware used to support and protect the emplaced waste packages. Examples of emplacement hardware are a pedestal under the waste package for the in-drift emplacement concept and a carriage and rail system for the horizontal opening concept. Emplacement hardware does not include ground support hardware which is part of the Repository Segment.

Emplacement hardware requirements will be added during and after ACD.”

[EBDRD 3.7.3]

This requirement is listed to acknowledge that additional requirements may be placed on emplacement hardware which includes the waste package support and pier.

The notation “TBD” in EBDRD requirements 3.2.3.3.A.12.a, 3.2.5.1.2.B.3, and 3.7.3, “TBR” in EBDRD requirement 3.7, and “TBV” in EBDRD requirement 3.2.3.3.A.8.c will not be carried to the conclusions of this analysis based on the rationale that the conclusions derived by this analysis are for conceptual or preliminary design that will not be used as input into documents supporting construction, fabrication, or procurement.

4.3 Assumptions

In the course of developing this document, several assumptions were made regarding the WP

support structure analysis. These assumptions along with the assumptions contained in the Controlled Design Assumptions (CDA) Document (Ref. 5.1) are identified below.

The relevant assumptions from the CDA (Ref. 5.1) are as follows:

“Assumption Identifier: Key 011

Subject: Horizontal In-Drift Emplacement

Waste packages will be emplaced in-drift in a horizontal mode.”

“Assumption Identifier: Key 046

Subject: Backfill in Emplacement Drifts

Backfill in emplacement drifts is not required. However, the repository design should not preclude the use of emplacement drift backfill at the end of the preclosure period. The specifications for the emplacement drift envelope to accommodate are: 1) level single layer backfill (quartz sand, crushed tuff, or other material of similar favorable thermohydrologic properties), and 2) waste packages should initially be covered with at least 0.6 meters of material.”

“Assumption Identifier: Key 066

Subject: Gantry Emplacement and Pedestal Support

Waste packages will be placed center in-drift, on pedestals, using gantry emplacement.”

“Assumption Identifier: EBDRD 3.7.1.J.2

Subject: Waste Package Maximum Weight

The waste package shall meet the following criteria

1. Weight shall not exceed 69,000 kg”

“Assumption Identifier: EBDRD 3.7.3

Subject: Emplacement Hardware Requirements

The emplacement hardware is used to support and protect the emplaced waste packages. Examples of emplacement hardware are a pedestal under the waste package for the in-drift emplacement concept and a carriage and rail system for the horizontal opening concept. Emplacement hardware does not include ground support hardware, which is part of the Repository Segment. Emplacement hardware requirements will be added during Advanced Conceptual Design (ACD) and Viability Assessment (VA).”

All assumptions are for conceptual or preliminary designs; all of these assumptions will require qualification/confirmation as the waste package design proceeds.

4.3.1 Temperature dependent material properties for ASTM A500 cold formed steel, ASTM

A501 hot formed steel, and ASTM A36 carbon steel were not available for structural analyses. For this reason, room temperature (20°C) material properties were used in these analyses. The properties of carbon steels for which temperature dependence is known change little for the temperature range of interest. Therefore, for this initial set of calculations, use of room temperature properties is adequate. This assumption is used in Section 4.1.

4.3.2 The following materials were assumed for corresponding structural members:

Tube: ASTM A500 Grade B cold formed steel

Pipe: ASTM A501 hot formed steel

Plate and round bar: ASTM A36 carbon steel

Reinforcing bar: ASTM A615 Grade 40, bar number 4

Pier: Concrete

This assumption is used in Section 4.1.

4.3.3 The density, modulus of elasticity, and Poisson's ratio were not available for ASTM A36, A500, and A501 carbon steels. Since the carbon contents are nearly the same (see Ref. 5.5, p. 136 and p. 326), the density of AISI-SAE grade 1024 carbon steel (7859 kg/m³) is used for these materials (Ref. 5.5, p. 145). The density and modulus of elasticity for AISI-SAE grade 1024 carbon steel and the steel provided in Ref. 5.5, p. 339, Table 6 are approximately the same. Therefore, Poisson's ratio for ASTM A36, A500, and A501 carbon steels is assumed to be 0.28. This assumption is used in Section 4.1.

4.3.4 The compressive mechanical properties of ASTM A36, A500, and A501 carbon steels were not available in the literature. Thus, the compressive yield strength of 86XX steel (700 MPa) with 0.20% carbon content lowest available tempering temperature is conservatively assumed for ASTM A36, A500, and A501 carbon steels (Ref. 5.5, p. 536). This is an acceptable assumption since the carbon contents are close in all four materials considered. This assumption is used in Section 4.1.

4.3.5 A dynamic load factor of 1.66 is assumed to represent the effect of a PGA of 0.66g. This assumption is consistent with CDA Key 064 since the PGA was obtained from Ref. 5.13. The duration of an earthquake is short compared to a repeated vibrational load from continuously operating machinery. The effect of any dynamic amplification or fatigue of the material is anticipated to be small for the WP support structure under seismic loading. The vertical and horizontal components of the PGA are also assumed to be the same for lower exceedance probabilities given in Ref. 5.13. This assumption is used throughout.

4.3.6 The maximum-normal-stress theory is assumed to be applicable in determining when material failure will occur. Thus, material failure will occur when the first principal stress, S_1 , exceeds the ultimate tensile strength, S_{ut} , or when the third principal stress,

S_3 , exceeds the ultimate compressive strength, S_{uc} . This assumption is used in Section 7.1.

- 4.3.7 The pier is modeled as if it is one piece; a structural component made of concrete. The steel plate shell around the concrete is not modeled. Thus, credit for the strength of the steel shell is not taken. This assumption is used in Section 7.2.
- 4.3.8 The WP weight is assumed to be uniformly distributed over four nodes on the steel tube. The location of these nodes were determined by considering approximate points of contact between the WP and the structural tube. The reason for selecting the subject nodes is that the tube side walls will deflect as a result of the WP weight, which will eventually increase the load on the tube vertical side walls rather than the face tangent to the WP. Thus, the nearest four nodes to the tube vertical side walls were used as the points of application for vertical forces. This assumption is used in Section 7.2.
- 4.3.9 A constant thickness for the pier is assumed for simplification of the finite-element-model. The smaller dimension at the top is selected for the thickness in order to perform conservative calculations. This assumption is used in Section 7.2.
- 4.3.10 One of the parameters in the ANSYS model is the contact stiffness between the tube and the plate. A very high stiffness value will cause stiffness matrix ill-conditioning and divergence. Similarly, an extremely small stiffness value will result in compatibility violations. Therefore, an optimum value for the contact stiffness is one that is between and is arrived at iteratively. The result of iterations revealed that the contact stiffness between the tube and the plate that works best is 1.5×10^8 N/m. This assumption is used in Section 7.2.
- 4.3.11 Tube outer width = 203.2 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.12 Tube thickness = 14.3 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.13 Tube height = 101.6 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.14 Projection of individual tube length on horizontal = 830 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.15 Tube angle from vertical = 60° (Attachment I-1). This assumption is used in Section 7.
- 4.3.16 Pier height = 450 mm (Attachment I-2). This assumption is used in Section 7.
- 4.3.17 Pier bottom width = 1500 mm (Attachment I-2). This assumption is used in Section 7.

- 4.3.18 Pier top length along the repository = Support plate length = 300 mm (Attachment I-2). This assumption is used in Section 7.
- 4.3.19 Pier side angle from horizontal = 56.3° (Attachment I-2). This assumption is used in Section 7.
- 4.3.20 Distance between two pipe centerlines = 1000 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.21 Pipe outer diameter = 114.3 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.22 Pipe inner diameter = 80.1 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.23 Pipe length below the top surface of the plate = 200 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.24 Support plate thickness = 20 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.25 Support plate width = 1660 mm (Attachment I-1). This assumption is used in Section 7.
- 4.3.26 Diameter of large round bar = 114.3 mm (Attachment II-1). This assumption is used in Section 7.
- 4.3.27 Diameter of small round bar = 80 mm (Attachment II-1). This assumption is used in Section 7.
- 4.3.28 Mass of one waste package support = 174.3 kg (Attachment II-1). The mass value in Attachment II-1 was calculated by Pro/Engineer Version 17.0 used for drafting the sketches. This assumption is used in Section 7.
- 4.3.29 Mass of the heaviest waste package currently under consideration (21 PWR UCF) = 50,423 kg (see Ref. 5.20 and Attachment XII-1). This assumption is used in Section 7.
- 4.3.30 The area of contact between the pipe and the plate is assumed to be the bearing stress area between the plate and the concrete pier. The load will be distributed through the plate onto the pier over an area larger than the assumed one since the plate is an elastic material. However, as a preliminary design approach, this assumption is made for conservatism. This assumption is used in Section 7.5.

- 4.3.31 It is assumed that the WP will be in contact with the WP support system at all times and the vertical component will be the source of the most critical seismic load. The support design allows the WP to align itself on the steel tubes. For preliminary analysis of the seismic effects, only the vertical component of dynamic load is considered in the finite-element solutions. This assumption is used throughout.
- 4.3.32 The gap between the bottom of the pier hole and the bottom of the pipe = 23 mm. This assumption has no effect on the results since the contact between the round bar and the pier concrete is not modeled. This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.33 Pier top length along the repository = 316 mm (Attachment XII-5). This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.34 Support plate thickness = 19.05 mm (Attachment XII-5). This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.35 Hole depth in the pier = 168 mm (Attachment XII-4). This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.36 Mass of one WP support = 205 kg (Attachment XII-3). The mass value in Attachment XII-3 was calculated by Pro/Engineer Version 17.0 used for drafting the sketches. This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.37 Pipe outer diameter = 168.3 mm (Attachment XII-3). This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.38 Pipe inner diameter = 124.4 mm (Attachment XII-3). This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.39 Diameter of the round bar = 123.8 mm (Attachment XII-3). This assumption is provided for the WP support third design concept and used in Section 7.7.
- 4.3.40 Pier mass = 947 kg (Attachment XII-4). The mass value in Attachment XII-4 was calculated by Pro/Engineer Version 17.0 used for drafting the sketches. This assumption is used in Section 7.7.
- 4.3.41 Lifting hook diameter = 12.7 mm (Attachment XII-10). This assumption is used in Section 7.7.
- 4.3.42 Support height = 477 mm (Attachment XII-3). This assumption is provided for the WP support third design concept and used in Section 7.7.

- 4.3.43 Extension of the round bar below the pipe = 140 mm (Attachment XII-3). This assumption is provided for the WP support third design concept and used in Section 7.7.

4.4 Codes and Standards

The use of codes and standards for the design of the waste package is restricted to being a source for material properties, specifically for A36, A500, and A501 carbon steel (American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code).

5. REFERENCES

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- 5.18 *ANSYS User's Manual for Revision 5.1, Volume III, Elements*, DN-R300:51-3 Upd0 2nd Revision, Swanson Analysis Systems Inc., September 30, 1994.
- 5.19 *Shock and Vibration Handbook*, Second Edition, C. M. Harris and C. E. Crede, Eds., McGraw-Hill Book Company, New York, NY, 1976.
- 5.20 *Update of Waste Package Spreadsheet for Sizing and Masses*, W. E. Wallin, Interoffice Correspondence, LV.WP.WEW.09/96-227, September 30, 1996, CRWMS/M&O.

6. USE OF COMPUTER SOFTWARE

The finite-element-analysis (FEA) computer code used for this analysis is ANSYS version (V) 5.1 which is identified with the Computer Software Configuration Item (CSCI) 30003 V5.1HP and was obtained from Software Configuration Management in accordance with appropriate procedures. ANSYS is a commercially available finite-element analysis code and is appropriate for structural analysis of waste packages as performed in this analysis. 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 Software Qualification Report for ANSYS Version 5.1HP (Ref. 5.15). The ANSYS evaluations performed for this design are fully within the range of the validation performed for the ANSYS V5.1 code. Access to and use of

the code for the analysis were granted and performed in accordance with the Life Cycle Plan for ANSYS Version 5.1HP (Ref. 5.16) and the QAP-SI series procedures.

The computational support software used in this analysis is Pro/Engineer Version 17.0. Pro/Engineer was executed on a Hewlett-Packard 9000 Series 735 workstation. Pro/Engineer Version 17.0 is not a controlled computer software and has not been qualified under the QAP-SI series of M&O procedures and will not be qualified under the M&O procedures. The densities given in Section 4.1 were used as inputs to Pro/Engineer Version 17.0 and the corresponding masses of solid components were obtained for use in the analytical evaluations.

The input/output files, figures, and results for all computer analyses performed in this report are presented in Attachments III through XI and XIII through XX.

7. DESIGN ANALYSIS

This design analysis first evaluates an original design concept using loads based on the mass of the 21 PWR UCF (see Attachment I), and then a second design configuration (see Attachment II) which was evolved from the results of the original analysis. A third design concept is also analyzed using the maximum WP mass as listed in Assumption EBDRD 3.7.1.J.2 of the Controlled Design Assumptions (CDA) Document (see Attachment XII). The dimensions given in Section 4.3 have been assumed for these three design concepts.

7.1 Failure Criteria

Two different failure criteria are incorporated in this analysis. Maximum-distortion-energy theory (von Mises criterion) is used to predict the beginning of yield in ductile materials (carbon steels). The ANSYS computer code is capable of including von Mises theory in the finite-element solution. According to this criterion, a given structural component is in the elastic region as long as the maximum value of the distortion energy per unit volume in that material remains smaller than the distortion energy per unit volume required to cause yield in a tensile-test specimen of the same material. Figure 7-1 shows this theory for triaxial stress states. Any given state of stress is represented in that figure by a point of coordinates S_1 , S_2 , and S_3 which are the three principal stress magnitudes. If this point falls within the volume shown in the figure, the structural component experiences elastic deformation only. If it falls outside this volume, the component plastically deforms (Ref. 5.6 and Ref. 5.17).

The von Mises stress is referred to as equivalent stress in the ANSYS user's manuals (Ref. 5.17). When the equivalent stress (S_{eqv}) is equal to a material yield parameter S_y , the material will develop plastic strains. Therefore, the elastic limit of the materials will not be exceeded as long as S_{eqv} is below S_y . A comparison of the maximum stresses and allowables will be presented in Section 8.

The maximum-normal-stress theory (see Assumption 4.3.6) will be used to determine the

beginning of compressive failure in the brittle material which is concrete in the pier. This theory states that failure occurs whenever one of the three principal stresses equals the strength. If the three principal stresses are arranged in the following form:

$$S_1 > S_2 > S_3$$

Then failure occurs whenever

$$S_1 \geq S_{ut} \quad \text{or} \quad S_3 \leq S_{uc}$$

where S_{ut} and S_{uc} are ultimate tensile and compressive strengths, respectively.

The concrete pier is under compressive load due to the weight of the WP and WP support structure. Therefore, the tensile strength part of the maximum-normal-stress theory is not applicable for determining failure in concrete.

Figure 7-1. The von Mises theory in three dimensions. The oblique elliptical cylinder encloses all values of stress resulting in elastic deformation given by S_1 , S_2 , and S_3 . Cylinder axis is the line $S_1 = S_2 = S_3$.

7.2 Model Development

A three-dimensional half-symmetry finite-element model of the WP support and pier structure has been developed in order to perform a static analysis on the system (see Figure III-1). The WP support consists of the tube, pipe, and the plate. The tube is placed on the pipe with an angle to provide a two-point contact with the waste package. The pipe is welded to the tube at the top and to the plate at the bottom. The WP support structure sits on top of the pier with no rigid connection. Although the pier contains a shell constructed of steel plates, the shell is omitted from the finite-element model which includes the pier as a uniform solid structure made of concrete (Assumption 4.3.7). The pier provides a wide, stable structural base for the WP support.

A static finite-element solution is obtained under two loads applied to the system. The first load is the weight of the structural components and the second is the vertical force applied to the tube to represent the WP weight. The force is uniformly distributed over four nodes on the structural tube. The locations of these nodes were determined by considering approximate points of contact between the WP and the structural tube. The reason for selecting the subject nodes is that the tube side walls will deflect as a result of the WP weight, which will eventually increase the load on the tube vertical side walls rather than the face tangent to the WP. Thus, the nearest four nodes to the tube vertical side walls were used as the points of application for vertical forces (Assumption 4.3.8).

A constant thickness for the pier is assumed for simplification of the finite-element-model. The smaller dimension at the top is selected for the thickness in order to perform conservative calculations (Assumption 4.3.9).

Displacement constraints are placed on the symmetry plane and at the bottom flat surface of the pier, perpendicular to the component surfaces. The constraints on the oblique surface of the pier are horizontal. These constraints prevent the support and the pier from moving along the three cartesian coordinate system directions.

The constraints on the oblique surface of the pier were intended to be perpendicular to the surface; however, the specific ANSYS command to define these boundary conditions was issued in the solution phase of the FEA software. Therefore, the warning messages on page 55 of Attachments VI, VII, XV, and XVI were caused by this attempt. Since this command is only valid in the preprocessor phase of the program, the software has ignored the command. However, this has no effect on the results of the FEA because it does not make any difference whether the constraints on the oblique surface of the pier are perpendicular to the surface or horizontal. This is justified by the fact that the pier has no significant displacement or any resulting stress magnitudes in the region of the oblique side surfaces.

The eight node brick element (Solid45) is commonly used for the three dimensional modeling of solid structures. This element has three degrees of freedom at each node (translations in the

nodal x, y, z directions) (Ref. 5.18). Solid45 also has plasticity, creep, swelling, stress stiffening, large deflection, and large strain capabilities. Since the stress magnitudes are not expected to exceed the yield strengths of the materials, an elastic analysis is performed. However, the analysis performed is nonlinear due to contact elements used between the tube and the plate.

One of the parameters in the ANSYS model is the contact stiffness between the tube and the plate. A very high stiffness value will cause stiffness matrix ill-conditioning and divergence. Similarly, an extremely small stiffness value will result in compatibility violations. Therefore, an optimum value for the contact stiffness is one that is between and is arrived at iteratively. The result of iterations revealed that the contact stiffness between the tube and the plate that works best is 1.5×10^8 N/m (Assumption 4.3.10).

Some of the input parameters for the finite-element model were calculated using the list of assumptions provided in Section 4.3 (Assumptions 4.3.11 through 4.3.28). These calculations are given below:

The tube length is calculated using the horizontal projection length and the angle between the tube and the vertical. Therefore,

Tube length = $830 / (\sin 60^\circ) = 958.4$ mm (see Section 4.3)

Pier bottom width (half) = $1500 / 2 = 750$ mm (see Section 4.3)

Pier angle from vertical = $90^\circ - 56.3^\circ = 33.7^\circ$ (see Section 4.3)

Pipe center from the symmetry plane = $1000 / 2 = 500$ mm (see Section 4.3)

Pipe outer radius = $114.3 / 2 = 57.15$ mm (see Section 4.3)

Pipe thickness = (pipe outer diameter - pipe inner diameter) / 2
= $(114.3 - 80.1) / 2 = 17.1$ mm (see Section 4.3)

Gap height below the pipe = $220 + 20 - 200 = 40$ mm (see Section 4.3)

Support plate width (half) = $1660 / 2 = 830$ mm (see Section 4.3)

Due to possible irregularities in pedestal heights, the waste package is considered to be resting on two pedestals instead of three.

The WP weight is distributed over four nodes on the tube. Therefore,
the force applied vertically on each node = WP weight / (number of nodes * number of supports * 2)
= $(9.81 * 50423) / (4 * 2 * 2)$
= 30915.6 N (see Assumption 4.3.29 for WP mass)

7.3 General Design Description - First Design Concept

Two design concepts have been considered which have small differences in their structures. This section includes a general description of the first design (see Attachment I) and common aspects with the second design for the WP support and pier.

A modular design was developed for the waste package support assembly. The assembly consists of a waste package pier and a waste package support. A modular design is desirable because it allows flexibility in waste package placement in the drifts and individual component replacement in the event that the support structure is damaged in a handling accident. In the event of a handling accident, it is less critical for the support structure to be damaged than for the waste package to be breached. Therefore, the support structure is not designed to withstand handling accidents.

7.3.1 Waste Package Support

The waste package support is constructed entirely of carbon steel. Steel was chosen over concrete as the material for its strength and ductility. The strength is required to support the weight of the waste package while the ductility provides a softer interface which allows loads to distribute. This is important because the initial interfaces between the supports and the waste package are line contacts. This is also beneficial if there is misalignment of the supports due to tolerances. The use of steel also allows the support to be designed with a lower stiffness than that of a concrete design. This will reduce damage to the waste package in the event that a waste package is dropped onto the support.

The waste package support is fabricated from 2 pieces of rectangular steel tubing and 2 pipes. The 2 pieces of rectangular steel tubing are welded together to form a vee shape. Then the two pipes are welded to the tubes and to the steel plate. The lower sections of the pipes engaging the pier serve as pins to position the supports on the pier and prevent tipping of the support. The upper sections of the pipes serve as columns to transmit load from the tubes to the plate and ultimately into the concrete of the pier. A standard size of rectangular tubing was selected to reduce manufacturing costs. The steel types chosen are ASTM A500 Grade B for the tube and ASTM A501 for the pipe. This carbon steel is a standard material for these shapes. The sizing of the support was dependent on the required strength, the available space in the drift, and the desired spacing between the invert and the bottom of the waste package.

7.3.2 Waste Package Pier

Concrete was chosen as the main structural material for the waste package pier. Concrete was chosen because it is relatively inexpensive and performs well under compression loading.

7.4 General Design Description - Second Design Concept

This section includes an evaluation of a slightly modified design concept by comparison with the results obtained from the previous design. This concept is shown in sketches provided in Attachment II. There are only a few differences between the two designs and the rest of the structures are the same as discussed in Section 7.3. In the second design, the waste package support includes 2 stepped circular steel bars instead of 2 pipes. The narrow sections of the bars serve as pins to position the supports on the pier and prevent tipping of the support. The

wider stepped sections of the bars serve as columns to transmit load from the support to the top plate of the pier. The steel type chosen for the bar is ASTM A36.

In the second design concept, the waste package pier is fabricated from steel plates, steel pipe, steel bars, concrete, and rebar. Steel is added to the pier mainly to improve interfaces with other components in the drift. The steel plates are welded to form the waste package pier shell. The steel chosen is ASTM A36 for the plates. This carbon steel is readily available in the shapes specified. The shell serves as the form for the concrete which is cast in the shell. The shell prevents chipping of the concrete and slows drying out of the concrete which could be caused by relatively high temperatures in the emplacement drift. The steel shell also provides a better interface between the pier and the concrete invert. The rebar design has not yet been developed, but small rebar sections have been included in the design sketches as lifting hooks. Holes on the top surface of the concrete and the top plate allow the attachment of the waste package support. The bars on the bottom of the pier are used for positioning on the invert, and the half section of pipe on the bottom of the pier is to allow for drainage of any water before it contacts the waste package.

Although the material yield strength is lower for ASTM A36, having a solid round bar instead of a pipe increases the strength of the support structure. Since the equivalent stresses are significantly below the yield strength of the pipe in the analysis of the first design, the results

obtained for the first design concept are bounding, indicating that the second design is also acceptable.

7.5 Bearing Stress Calculations for the Pier and the Plate - Second Design Concept

The pier design is evaluated for the bearing stress caused by the weight of the WP. Since the upper sections of the pipes serve as columns to transmit load from the support to the top plate of the pier, the maximum bearing stress on the pier must be compared to the allowable compressive strength of the concrete. A conservative assumption is made by using the area of contact between the pipe and the plate in order to determine the bearing stress (Assumption 4.3.30). Since the area of contact and the load are the same for the plate and the pier as a result of this assumption, the resulting stresses are also the same. The compressive strength of the steel is higher than that of the concrete. Therefore, the following calculations were performed to determine the bearing stress in the pier:

Mass of the heaviest waste package currently under consideration (21 PWR UCF) = 50,423 kg (see Assumption 4.3.29)

Mass of one waste package support = 174.3 kg (see Section 4.3)

Therefore, weight on one WP support structure = $((50423 / 2) + 174.3) * 9.81 = 249035 \text{ N}$.

Diameter of large round bar = 0.1143 m (see Section 4.3)

Diameter of small round bar = 0.08 m (see Section 4.3)

$$\begin{aligned}\text{Bearing area between the large round bar and the steel plate} &= \pi * (0.1143^2 - 0.08^2) / 4 \\ &= 5.234 * 10^{-3} \text{ m}^2\end{aligned}$$

$$\text{Bearing stress} = (249035 / 2) / 5.234 * 10^{-3} = 23.8 \text{ MPa}$$

This stress will be used to determine the bounding stress value in the next section.

7.6 Seismic Design Evaluations - Second Design Concept

When the WP support and pier structure is subject to a seismic input, the deflection of the structural members are caused by the dynamic load. This dynamic load is the force required to cause the support structure to deflect in response to the motion imposed by the ground surface. For practical purposes, as a preliminary design approach, the dynamic load may be considered as the static or dead-weight load multiplied by a dynamic load factor (Ref. 5.19). The structural members of the support system must be designed to withstand, without failure, the stress imposed by the dynamic load. In general, the stress in the member subject to a dynamic load is equal to that caused by a static load of the same magnitude. It does not necessarily follow, however, that the same design stress can be used for both static and dynamic conditions. Since a structure may fail under repeated occurrences of the stress, a lower value of acceptable stress must be used to recognize the effect of fatigue of the material.

A peak ground acceleration of 0.66g was provided in Section 4.1. The duration of an earthquake is short compared to a repeated vibrational load from continuously operating machinery. Therefore, the effect of any dynamic amplification or fatigue of the material is anticipated to be small for the WP support structure under seismic loading. Assuming that the WP will be in contact with the WP support system at all times and the vertical component will be source of the most critical seismic load (Assumption 4.3.31), a dynamic load factor of 1.66 can be used to obtain preliminary results for this problem (Assumption 4.3.5).

Using the bearing stress calculated in Section 7.5 and the seismic load factor, the bearing stress due to seismic load is determined as follows:

$$\begin{aligned}\text{Bearing stress due to seismic load} &= 1.66 * 23.8 = 39.5 \text{ MPa} \\ &= 5729 \text{ psi}\end{aligned}$$

This is the bounding ultimate strength for the concrete pier for the second design concept. However, as it will be seen in Section 7.7, a modified design (third design) will result in a lower value of the bearing stress and will be used as a basis to recommend a design strength for the pier concrete.

The results obtained for the static and seismic analyses of the first and second design concepts are given in Tables 7-1 and 7-2.

Table 7-1. WP Support and Pier Static Analysis Results (first and second design concepts)

WP Support and Pier Structural Components	Maximum Equivalent Stress (Seqv)	Tensile Yield Strength (Sy) (see Section 4.1)	Compressive Yield Strength (Syc) (see Section 4.1)
Tube	176.6 (IV-2)	317.0	700.0
Pipe	81.6 (IV-3)	248.0	700.0
Plate	29.5 (IV-4)	248.0	700.0

*All stress magnitudes are in MPa

Table 7-2. WP Support and Pier Seismic Analysis Results (first and second design concepts)

WP Support and Pier Structural Components	Maximum Equivalent Stress (Seqv)	Tensile Yield Strength (Sy) (see Section 4.1)	Compressive Yield Strength (Syc) (see Section 4.1)
Tube	293.3 (V-2)	317.0	700.0
Pipe	135.3 (V-3)	248.0	700.0
Plate	48.9 (V-4)	248.0	700.0

*All stress magnitudes are in MPa

7.7 General Design Description and Evaluations - Third Design Concept

The CDA document includes an assumption that the maximum WP mass will not exceed 69,000 kg (see Section 4.3). As a result of the increase in the WP mass, the dimensions of the second design concept are modified in order to meet the strength requirements of the WP support and pier design which can hold a WP mass of 69,000 kg. The modified design sketches are given in Attachment XII).

A larger pipe diameter is used in the modified design compared to the previous two concepts. The thickness of the pipe is also larger than that of the pipe described in Section 7.3 as a first design concept. The lower pipe is replaced by a round bar in order to increase the structural strength against horizontal seismic loads. The pier length, plate thickness, and the gap length between the pier hole bottom surface and the pipe bottom surface are also modified in this

design concept (Assumptions 4.3.32 through 4.3.38). Since the finite-element-model does not include a rigid contact between the pipe and the pier, the gap dimension has no effect in the results. Some of the analytical stress calculations and FEA results for this design are given in Sections 7.7.1 and 7.7.2.

7.7.1 Bearing Stress Calculations - Third Design Concept

The bounding waste package mass = 69,000 kg (see Section 4.3)

Mass of one waste package support = 205 kg (Assumption 4.3.36)

Therefore, weight on one WP support structure = $((69000 / 2) + 205) * 9.81 = 340456 \text{ N}$.

Pipe outer diameter = 0.1683 m (Assumption 4.3.37)

Pipe inner diameter = 0.1244 m (Assumption 4.3.38)

Bearing area between the pipe and the steel plate = $\pi * (0.1683^2 - 0.1244^2) / 4$
= 0.01009 m^2

Bearing stress = $(340456 / 2) / 0.01009 = 16.87 \text{ MPa} = 2447 \text{ psi}$

Therefore, a comparison of the concrete ultimate strength of 34.5 MPa (5000 psi) (see Section 4.1) with this bearing stress magnitude shows that the bearing stress is below the allowable stress for the pier.

The bearing stress on the steel plate is the same as above. Since the allowable compressive strength (700 MPa, see Section 4.1) is more than the one specified for the concrete, it is determined that the steel plate design is acceptable.

7.7.2 Seismic Design Calculations - Third Design Concept

Using the bearing stress and the seismic load factor, the bearing stress due to seismic load is determined as follows:

Bearing stress due to seismic load = $1.66 * 16.87 = 28 \text{ MPa}$
= 4062 psi

A comparison of this bearing stress with concrete ultimate strength also suggests that the bearing stress is smaller than the allowable. A similar observation is made for the steel plate since the bearing area is the same in both cases.

The shear and bending stress calculations on the modified design are also provided in this section. The second concept included solid bars in the support structure. Therefore, it was not evaluated for horizontal loads because of larger area moments of inertia and lower WP load. Since no sliding between the WP and the support is assumed, the calculations for the horizontal seismic load are conservatively performed as follows (see Section 4.1 for the

horizontal PGA which is the same as the vertical component):

$$\text{Shear force on each round bar} = 0.66 * (340456 / 2) = 112350 \text{ N}$$

$$\text{Diameter of the round bar} = 0.1238 \text{ m (Assumption 4.3.39)}$$

$$\begin{aligned} \text{Shear stress} &= \text{Shear force at the top surface of the plate} / \text{cross-sectional area of the round bar} \\ &= 112350 / (\pi (0.1238)^2 / 4) = 9.3 \text{ MPa} \end{aligned}$$

Bending stress on the round bar due to horizontal seismic input is calculated below:

Moment arm is the height from the contact point between the WP and the tube to the top surface of the plate. The contact point between the WP and the tube is assumed to be on a line normal to the tube surface which passes through the centerline of the pipe-tube interface.

Therefore,

$$\begin{aligned} \text{moment arm} &= \text{pipe height on centerline} + \text{vertical distance of the contact point from the pipe-tube interface on the centerline} \\ &= [0.477 - 0.14 - (0.1683 * (\tan 30) / 2)] + [0.1016 * (\sin 60)] \\ &= 0.3764 \text{ m (see Attachment XII, page 3 for geometry and dimensions) (Assumptions 4.3.42 and 4.3.43)} \end{aligned}$$

$$\begin{aligned} \text{Bending stress} &= \text{bending moment} * \text{radius of the round bar} / \text{area moment of inertia of the round bar} \\ &= (112350 * 0.3764) * (0.1238 / 2) / (\pi (0.1238)^4 / 64) = 227 \text{ MPa} \end{aligned}$$

The magnitudes of stresses determined for the shear and bending are acceptable since they are less than the yield strength of the material (248 MPa, see Section 4.1).

7.7.3 Handling Load Evaluations

A preliminary stress calculation for the lifting hook in the pier is performed to determine if the pier can be lifted using the material and dimensions assumed for this component. The calculation is provided for the normal stress in the hook as follows:

$$\text{Pier mass} = 947 \text{ kg (Assumption 4.3.40)}$$

$$\text{Pier weight} = 947 * 9.81 = 9290 \text{ N}$$

$$\text{Lifting hook diameter} = 0.5 \text{ in.} = 0.0127 \text{ m (Assumption 4.3.41)}$$

$$\text{Normal stress on the lifting hook} = (\text{Pier weight} / \text{number of rebars engaged into concrete}) / (\text{rebar cross-sectional area})$$

Therefore,

$$\text{normal stress on the lifting hook} = (9290 / 4) / (\pi * (0.0127)^2 / 4) = 18.3 \text{ MPa}$$

This magnitude of stress is significantly less than the allowable yield strength of the material (276 MPa, see Section 4.1) without any consideration of a dynamic load factor. However, this stress is so low that even if a load factor of 15 is applied, the normal stress would still be lower than the material yield strength. Since the handling load factor is anticipated to be significantly less than 15, the lifting hook design meets the structural requirement of lifting the pier.

The results obtained for the static and seismic analyses of the modified design are given in Tables 7-3 and 7-4.

Table 7-3. WP Support and Pier Static Analysis Results (third design concept)

WP Support and Pier Structural Components	Maximum Equivalent Stress (Seqv)	Tensile Yield Strength (Sy) (see Section 4.1)	Bearing Stress (compression) (see Section 7.7)	Compressive Yield Strength (Syc) (see Section 4.1)	Compressive Ultimate Strength (Suc) (see Section 4.1)
Tube	172.5 (XIII-2)	317.0	N/A	700.0	N/A
Pipe	89.0 (XIII-3)	248.0	N/A	700.0	N/A
Plate	40.3 (XIII-4)	248.0	N/A	700.0	N/A
Pier	N/A	N/A	16.87	N/A	34.5

*All stress magnitudes are in MPa

Table 7-4. WP Support and Pier Seismic Analysis Results (third design concept)

WP Support and Pier Structural Components	Maximum Equivalent Stress (Seqv)	Tensile Yield Strength (Sy) (see Section 4.1)	Bearing Stress (compression) (see Section 7.7)	Compressive Yield Strength (Syc) (see Section 4.1)	Compressive Ultimate Strength (Suc) (see Section 4.1)
Tube	286.7 (XIV-2)	317.0	N/A	700.0	N/A
Pipe	147.8 (XIV-3)	248.0	N/A	700.0	N/A
Plate	66.9 (XIV-4)	248.0	N/A	700.0	N/A
Pier	N/A	N/A	28.0	N/A	34.5

*All stress magnitudes are in MPa

8. CONCLUSIONS

As identified in Sections 2 and 4, this analysis is based on unqualified/unconfirmed input data, and use of any data from this analysis for input into documents supporting construction, fabrication, or procurement is required to be controlled as TBV in accordance with the appropriate procedures.

The failure criteria were explained in Section 7.1. Thus, the equivalent stresses from the ANSYS solution are compared to the stress allowables in order to evaluate the WP support and pier structure for any permanent deformation due to the WP static load. Tables 7-1 through 7-4 give the maximum values of the equivalent stress and allowable stress magnitudes.

A second failure criterion is used to determine any permanent deformation or crack in the concrete pier. The maximum-normal-stress theory requires the maximum compressive stress magnitude to be less than the compressive strength. This comparison is also provided in Tables 7-3 and 7-4. The attachment and page number where each stress magnitude can be found are shown in parentheses in Tables 7-1 through 7-4.

8.1 Tube Response to WP Static Load

Maximum-distortion-energy theory is based on a comparison of the material yield strength with the maximum equivalent stress (von Mises stress) observed in the material. The maximum equivalent stress magnitude occurs on the inner surface of the tube side wall. The maximum equivalent stress magnitude in the tube is 172.5 MPa, see Figure III-2 and Attachment XIII, page 2. When the yield strength of the tube (317 MPa) is compared to the equivalent stress value (172.5 MPa), it can be concluded that the elastic limit is not exceeded in the tube.

Having evaluated the results of the finite-element analysis of the tube in accordance with the maximum-distortion-energy theory, it is determined that the tube is able to withstand the static WP load without permanent deformation.

8.2 Pipe Response to WP Static Load

The maximum equivalent stress magnitude occurs on the outer surface of the pipe, in the region of contact with the tube. The maximum equivalent stress magnitude in the pipe is 89 MPa, see Attachment XIII, page 3. When the yield strength of the pipe (248 MPa) is compared to the equivalent stress value (89 MPa), it can be concluded that there is no permanent deformation in the pipe.

Having evaluated the results of the finite-element analysis of the pipe in accordance with the maximum-distortion-energy theory, it is determined that the pipe is able to withstand the static WP load without permanent deformation.

8.3 Plate Response to WP Static Load

The maximum equivalent stress magnitude occurs on the top surface of the plate in the region of contact with the pipe. The maximum equivalent stress magnitude in the plate is 40.3 MPa, see Attachment XIII, page 4. When the yield strength of the plate (248 MPa) is compared to the equivalent stress value (40.3 MPa), it is concluded that there is no permanent deformation in the plate.

8.4 Pier Response to WP Static Load

The results of the modified WP support design are also carried to the conclusions in terms of the pier response and maximum compressive stresses. Since the modified design has more strength and area of contact between the pipe and the plate, the resulting bearing stress in the pier is smaller despite a higher load from the WP (69,000 kg). Hence, the structural analyses of this concept revealed that the maximum bearing stress magnitude in the pier is 16.87 MPa, see Section 7.7. When the ultimate strength of concrete (34.5 MPa, see Section 4.1) is compared to the bearing stress (16.87 MPa), it is concluded that the concrete strength is not exceeded in the pier.

Having evaluated the results of the finite-element analysis of the pier in accordance with the maximum-normal-stress theory, it is determined that the pier is able to withstand the static WP load without failure.

8.5 Conclusions Drawn from Seismic Evaluations

A seismic factor of 1.66 was applied to the load of the static finite-element analysis in order to obtain a preliminary result for the seismic design of the support and pier structure (see Sections 7.6 and 7.7). The results are provided in Tables 7-2 and 7-4 and compared to the allowables. It has been concluded that the structural waste package support and pier design is acceptable for the seismic loads considered.

8.6 Maximum Deflection in the Support Structure

The maximum displacement in the system is determined to be 0.4 mm (Attachment XIX, page 2) and is in the region of contact between the tube and the pipe. (It should be noted that the results obtained from the finite-element model with the seismic load factor is reported for the maximum displacements in order to present the limiting case.) Since the maximum bending occurs in the tube lower plate due to the reaction force from the pipe, this is an expected result from the finite-element solution. The results also show that all stresses are in the elastic range of the stress-strain curve. This is why the maximum displacement in the support system is small.

8.7 Conclusions Drawn from Analyses of the WP Support Structure Designed to Hold the Maximum WP Weight as Specified in the CDA

The results of the structural analyses (see Tables 7-3 and 7-4) show that all stress magnitudes including the results of the seismic evaluations are below the stress allowables. Thus, it is determined that the design is structurally capable of withstanding the loads described in this document.

Structural evaluations of the WP support and pier design presented in this document show that the dimensions and material properties listed in Section 4.3 are acceptable and can be used to develop technical drawings of the subject structural components. Based on the results of this analysis, the assumed dimensions and materials for the third design concept are recommended for developing technical drawings for the WP support and pier design (Attachment XII).

The 600 mm Gantry Wheel design sketches are included in Attachment XII, pages 6 through 9. This design has a smaller pier thickness and larger width at the top. The most critical stress on the pier is the bearing stress due to load transfer from the pipe through the steel plate (see Section 7.7). Since the magnitude of the bearing stress is independent of the pier thickness and the width, the 600 mm Gantry Wheel design will experience a similar stress distribution with the 300 mm Gantry Wheel design concept. Thus, the dimensions provided for the 600 mm design concept in Attachment XII are recommended as an alternative for the WP support and pier design.

9. ATTACHMENTS

The following attachments are provided in this section :

Attachment I (2 pages):	WP support structure sketches provided for the first design concept
Attachment II (2 pages):	WP support structure sketches provided for the second design concept
Attachment III (2 pages):	Figures obtained from ANSYS V5.1 (third design concept)
Attachment IV (6 pages):	Equivalent and principal stresses for the support structure (static analysis results): eqvstrs.res: Jan 30 1997
Attachment V (6 pages):	Equivalent and principal stresses for the support structure (static analysis with a seismic load factor): eqvstrs1.res: Feb 20 1997
Attachment VI (72 pages):	Input/output files for static analysis: invert2.old1.out: Jan 30 1997
Attachment VII (72 pages):	Input/output files for static analysis performed with a seismic load factor: invert3.old1.out: Jan 30 1997
Attachment VIII (5 pages):	Postprocessing input/output files for static analysis: post2.old1.out: Jan 30 1997 (i/o files for Attachment IV)
Attachment IX (5 pages):	Postprocessing input/output files for static analysis performed with a seismic load factor: post2.old1.out: Feb 20 1997 (I/o files for Attachment V)
Attachment X (2 pages):	Maximum displacement in the waste package support and pier structure (static analysis with a seismic load factor): displ.res: Jan 31 1997
Attachment XI (4 pages):	Postprocessing input/output files for static analysis performed with a seismic load factor: post3.old1.out: Jan 31 1997 (I/o files for Attachment X)
Attachment XII (10 pages):	WP support structure sketches provided for the third design concept

- Attachment XIII (5 pages): Equivalent and principal stresses for the support structure (static analysis results) (for the third design concept): eqvstrsc.res: Feb 12 1997
- Attachment XIV (5 pages): Equivalent and principal stresses for the support structure (static analysis with a seismic load factor) (for the third design concept): eqvstrss.res: Feb 12 1997
- Attachment XV (72 pages): Input/output files for static analysis (for the third design concept): ingp2.old1.out: Feb 11 1997
- Attachment XVI (72 pages): Input/output files for static analysis performed with a seismic load factor (for the third design concept): ingp3.old1.out: Feb 11 1997
- Attachment XVII (5 pages): Postprocessing input/output files for static analysis (for the third design concept): post2gp.old1.out: Feb 12 1997 (I/o files for Attachment XIII)
- Attachment XVIII (5 pages): Postprocessing input/output files for static analysis performed with a seismic load factor (for the third design concept): post2s.old1.out: Feb 12 1997 (I/o files for Attachment XIV)
- Attachment XIX (2 pages): Maximum displacement in the waste package support and pier structure (static analysis with a seismic load factor) (for the third design concept): displsc.res: Feb 11 1997
- Attachment XX (4 pages): Postprocessing input/output files for static analysis performed with a seismic load factor (for the third design concept): post3s.old1.out: Feb 11 1997 (I/o files for Attachment XIX)

Units: mm

Waste Package Support Assembly

Sketch Number: SK-0006.Rev00

Originator: H. Wang

Date: 12/16/96

File: /users/wang/proe/support.invert/steel.drw

Units: mm

Waste Package Pier
Sketch Number: SK-0007.Rev00 Originator: H. Wang Date: 12/16/96 File: /users/wang/proe/support.invert/pier.drw

Mass: 174.3 kg

" For Information Only "

Waste Package Support Assembly

Sketch Number: SK-0006.Rev02
 Originator: H. Wang
 Date: 1/16/97
 File: /users/wang/proe/support_invert/sk0006_r2.drw

SCALE 0.090

Units: mm

NOTE: INTERNAL REBAR DESIGN
HAS NOT BEEN COMPLETED.

" For Information Only "

Waste Package Pier
(300 mm Gantry Wheel)

Sketch Number: SK-0007.Rev02
Originator: H. Wang
Date: 1/16/97
File: /users/wang/proe/support.invert/sk0007_r2.drw

SCALE 0.090 Units: mm

ANSYS 5.1
FEB 27 1997

ELEMENTS

Figure III-1. Waste Package Support and Pier Finite-Element Model (third design concept)

ANSYS 5.1
FEB 27 1997

NODAL SOLUTION
STEP=1
SUB =1
TIME=1
SEQV (Pa)

SMN =11964
SMX =0.173E+09
11964
0.192E+08
0.383E+08
0.575E+08
0.767E+08
0.959E+08
0.115E+09
0.134E+09
0.153E+09
0.173E+09

Figure III-2. Equivalent Stress Contour on the WP Support and Pier (third design concept)

MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

USE LOAD STEP 1 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 7.830 TIME= 14:33:52
Page file used.

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 3
TIME/FREQUENCY= 1.0000
TITLE= 3-D static support and pier analysis

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:35:40 JAN 30, 1997 CP= 33.650
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
5932	0.11996E+08	-0.57482E+08	-0.18876E+09	0.20076E+09	0.17659E+09

MINIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.11996E+08-0.57482E+08-0.18876E+09 0.20076E+09 0.17659E+09

MAXIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.11996E+08-0.57482E+08-0.18876E+09 0.20076E+09 0.17659E+09

MAXIMUM EQUIVALENT STRESS IN THE TUBE

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

5832 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:36:01 JAN 30, 1997 CP= 38.850
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE S1 S2 S3 SINT SEQV
5932 0.11996E+08-0.57482E+08-0.18876E+09 0.20076E+09 0.17659E+09

MINIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.11996E+08-0.57482E+08-0.18876E+09 0.20076E+09 0.17659E+09

MAXIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.11996E+08-0.57482E+08-0.18876E+09 0.20076E+09 0.17659E+09

MAXIMUM EQUIVALENT STRESS IN THE PIPE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1
153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1
15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1
18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1
2592 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2932 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:36:19 JAN 30, 1997 CP= 43.550
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
4724	-0.53781E+08	-0.60969E+08	-0.13875E+09	0.84969E+08	0.81613E+08

MINIMUM VALUES
NODE 4724 4724 4724 4724 4724
VALUE -0.53781E+08 -0.60969E+08 -0.13875E+09 0.84969E+08 0.81613E+08

MAXIMUM VALUES
NODE 4724 4724 4724 4724 4724
VALUE -0.53781E+08 -0.60969E+08 -0.13875E+09 0.84969E+08 0.81613E+08

MAXIMUM EQUIVALENT STRESS IN THE PLATE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 4 TO 4 STEP 1

1512 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

2016 NODES (OF 18690 DEFINED) SELECTED FROM
1512 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2196 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
2016 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:36:28 JAN 30, 1997 CP= 47.200
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
17400	0.42009E+07	-0.22306E+08	-0.27532E+08	0.31733E+08	0.29470E+08

MINIMUM VALUES

NODE	17400	17400	17400	17400	17400
VALUE	0.42009E+07	-0.22306E+08	-0.27532E+08	0.31733E+08	0.29470E+08

MAXIMUM VALUES

NODE	17400	17400	17400	17400	17400
VALUE	0.42009E+07	-0.22306E+08	-0.27532E+08	0.31733E+08	0.29470E+08

VALUE 0.42009E+07-0.22306E+08-0.27532E+08 0.31733E+08 0.29470E+08

THIRD PRINCIPAL (COMPRESSIVE) STRESS IN THE PIER

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 3 TO 3 STEP 1

5880 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

7147 NODES (OF 18690 DEFINED) SELECTED FROM
5880 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

6202 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
7147 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=3 ORDER= 1 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:36:52 JAN 30, 1997 CP= 54.190
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
11482	0.85102E+07	0.63336E+07	-0.14359E+08	0.22870E+08	0.21863E+08

MINIMUM VALUES

NODE	11482	11482	11482	11482	11482
VALUE	0.85102E+07	0.63336E+07	-0.14359E+08	0.22870E+08	0.21863E+08

MAXIMUM VALUES

NODE	11482	11482	11482	11482	11482
VALUE	0.85102E+07	0.63336E+07	-0.14359E+08	0.22870E+08	0.21863E+08

MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

USE LOAD STEP 1 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 7.410 TIME= 12:57:18
Page file used.

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 3
TIME/FREQUENCY= 1.0000

TITLE= 3-D static support and pier analysis with a seismic load factor

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 12:58:53 FEB 20, 1997 CP= 32.740
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
5932	0.19959E+08	-0.95487E+08	-0.31350E+09	0.33346E+09	0.29331E+09

MINIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.19959E+08-0.95487E+08-0.31350E+09 0.33346E+09 0.29331E+09

MAXIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.19959E+08-0.95487E+08-0.31350E+09 0.33346E+09 0.29331E+09

MAXIMUM EQUIVALENT STRESS IN THE TUBE

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

5832 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 12:59:12 FEB 20, 1997 CP= 37.920
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE S1 S2 S3 SINT SEQV
5932 0.19959E+08-0.95487E+08-0.31350E+09 0.33346E+09 0.29331E+09

MINIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.19959E+08-0.95487E+08-0.31350E+09 0.33346E+09 0.29331E+09

MAXIMUM VALUES
NODE 5932 5932 5932 5932 5932
VALUE 0.19959E+08-0.95487E+08-0.31350E+09 0.33346E+09 0.29331E+09

MAXIMUM EQUIVALENT STRESS IN THE PIPE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1

2592 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2932 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 12:59:26 FEB 20, 1997 CP= 42.400
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
4724	-0.89511E+08	-0.10133E+09	-0.23037E+09	0.14086E+09	0.13533E+09

MINIMUM VALUES
NODE 4724 4724 4724 4724 4724
VALUE -0.89511E+08 -0.10133E+09 -0.23037E+09 0.14086E+09 0.13533E+09

MAXIMUM VALUES
NODE 4724 4724 4724 4724 4724
VALUE -0.89511E+08 -0.10133E+09 -0.23037E+09 0.14086E+09 0.13533E+09

MAXIMUM EQUIVALENT STRESS IN THE PLATE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 4 TO 4 STEP 1

1512 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

2016 NODES (OF 18690 DEFINED) SELECTED FROM
1512 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2196 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
2016 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 12:59:34 FEB 20, 1997 CP= 45.970
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
17400	0.69783E+07	-0.37031E+08	-0.45700E+08	0.52678E+08	0.48923E+08

MINIMUM VALUES

NODE	17400	17400	17400	17400	17400
VALUE	0.69783E+07	-0.37031E+08	-0.45700E+08	0.52678E+08	0.48923E+08

MAXIMUM VALUES

NODE	17400	17400	17400	17400	17400
VALUE	0.69783E+07	-0.37031E+08	-0.45700E+08	0.52678E+08	0.48923E+08

VALUE 0.69783E+07-0.37031E+08-0.45700E+08 0.52678E+08 0.48923E+08

THIRD PRINCIPAL (COMPRESSIVE) STRESS IN THE PIER

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 3 TO 3 STEP 1

5880 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

7147 NODES (OF 18690 DEFINED) SELECTED FROM
5880 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

6202 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
7147 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=3 ORDER= 1 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 12:59:54 FEB 20, 1997 CP= 52.490
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
11482	0.14136E+08	0.10519E+08	-0.23841E+08	0.37977E+08	0.36304E+08

MINIMUM VALUES

NODE	11482	11482	11482	11482	11482
VALUE	0.14136E+08	0.10519E+08	-0.23841E+08	0.37977E+08	0.36304E+08

MAXIMUM VALUES

NODE	11482	11482	11482	11482	11482
VALUE	0.14136E+08	0.10519E+08	-0.23841E+08	0.37977E+08	0.36304E+08

-----*

W E L C O M E T O T H E A N S Y S P R O G R A M

-----*

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AFTER YOU HAVE READ AND UNDERSTAND THE PREVIOUS DISCLAIMER,
PRESS <CR> OR <ENTER> TO CONTINUE

***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = invert2
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.180 TIME= 09:32:41
There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=invert2 09:32:41 JAN 30, 1997 CP= 0.180

```

1 /config,nvpag,512
2 /units,si
3 /prep7
4 /title, 3-D static support and pier analysis
5 /vcon,,0
6 /nerr,,1000000
7 /com, Define Parameters
8 *afun,deg
9 /com, Tube
10 teow=.2032 ! Tube outer width
11 tets=.0143 ! Tube thickness
12 teiw=teow-2*tets ! Tube inner width
13 teht=.1016 ! Tube height
14 telh=.9584 ! Tube length
15 teang=60 ! Tube angle from vertical
16 /com, Pier
17 prht=.45 ! Pier height
18 pbwh=.75 ! Pier bottom width (half)
19 prlh=.3 ! Pier top length along the repository
20 prang=33.7 ! Pier angle from vertical
21 /com, Pipe
22 pecr=.5 ! Pipe center from the symmetry plane
23 peor=.05715 ! Pipe outer radius
24 pets=.0171 ! Pipe thickness
25 gap=.04 ! Gap height below the pipe
26 hebm=prht/2 ! Hole bottom from global origin
27 term1=(pecr+peor)*tan(90-teang)
28 term2=tets/cos(90-teang)
29 peht=prht-hebm+term1+term2 ! Pipe height
30 /com, Support plate
31 plths=.02 ! Support plate thickness
32 pltw=.83 ! Support plate width (half)
33 rec=pbwh+(prht)*tan(prang)-pltw
34 drag1=pecr/cos(90-teang) ! Tube length used for vdrag1
35 argen1=.5*(telh-(pecr+peor)/cos(90-teang))
36 argen2=.5*(2*telh-(pecr+peor)/cos(90-teang))
37 /com, Define Element Properties
38 et,1,solid45 ! tube
39 et,2,solid45 ! pipe
40 et,3,solid45 ! pier
41 et,4,solid45 ! plate
42 et,5,contact49,,0,1,,,1 ! 3D Contact
43 r,5,1.5e8,,,1.5,15 ! Real Constant Set for Contact, kn=1.5E8
44 /com, ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%
45 mp,ex,1,203.4e9 ! A500 Grade B Cold Formed Steel
46 mp,ex,2,203.4e9 ! A500 Grade B Cold Formed Steel
47 mp,ex,3,24.8e9 ! concrete
48 mp,ex,4,203.4e9 ! A36 Carbon Steel
49 mp,nuxy,1,0.28 ! A500 Grade B Cold Formed Steel
50 mp,nuxy,2,0.28 ! A500 Grade B Cold Formed Steel

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length 03/07/97


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51 mp,nuxy,3,0.17      ! concrete
52 mp,nuxy,4,0.28      ! A36 Carbon Steel
53 mp,dens,1,7859.0    ! A500 Grade B Cold Formed Steel
54 mp,dens,2,7859.0    ! A500 Grade B Cold Formed Steel
55 mp,dens,3,2300.0    ! concrete
56 mp,dens,4,7859.0    ! A36 Carbon Steel
57 mp,mu,5,0.4         ! Kinetic Coefficient of Friction (Steel on Steel)
58 /com, Define keypoints in the support tube
59 local,11,0,0,prht,0,0,teang-90
60 k,1,-teow/2,0
61 k,2,0,0
62 k,3,teow/2,0
63 k,4,teow/2,teht
64 k,5,-teow/2,teht
65 k,6,-teiw/2,tets
66 k,7,0,tets
67 k,8,teiw/2,tets
68 k,9,teiw/2,teht-tets
69 k,10,-teiw/2,teht-tets
70 k,11,0,0,telh
71 k,12,0,0,drag1
72 l,2,12
73 l,12,11
74 a,2,1,6,7
75 a,1,5,10,6
76 a,10,5,4,9
77 a,9,4,3,8
78 a,7,8,3,2
79 vdrag,all,,,,,1
80 asel,s,loc,z,drag1-.0001,drag1+.0001
81 vdrag,all,,,,,2
82 asel,none
83 csys,0
84 k,,teow/2,1.5*teht+prht
85 k,, -teow/2,1.5*teht+prht
86 k,, -teow/2,prht,-1.5*teht
87 l,1,35
88 a,1,34,33,3
89 vdrag,all,,,,,68
90 vsbv,1,11,,delete,keep
91 vsbv,2,11,,delete,keep
92 vsbv,3,11,,delete,keep
93 vsbv,4,11,,delete,keep
94 vsbv,5,11,,delete,delete
95 asel,none
96 cm,tube,volu
97 vsel,none
98 /com, Define pipe volume
99 csys,0
100 local,12,1,0,hebm,pecr,-90,0,-90
101 k,,peor,0
102 k,,peor,90
103 k,,peor,180
104 k,,peor,270
105 k,,peor-pets,0
106 k,,peor-pets,90
107 k,,peor-pets,180
108 k,,peor-pets,270
109 k,,0,0,0
110 k,,0,0,gap
111 k,,0,0,peht
112 l,49,50
113 l,50,51
114 a,7,36,37,8
115 a,8,37,38,33
116 a,33,38,39,34
117 a,34,39,36,7
118 vdrag,all,,,,,6
119 asel,s,loc,z,gap-.0001,gap+.0001
120 vdrag,all,,,,,14

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121 cm,pipe,volu
122 allsel
123 vsbv,pipe,tube,,delete,keep
124 vdele,19,20
125 vdele,25,26
126 aslv
127 asel,inve
128 adel,all
129 allsel
130 lsia
131 lsel,inve
132 ldel,all
133 allsel
134 ksll
135 ksel,inve
136 kdel,all
137 allsel
138 asel,s,,,104,108,4
139 asel,a,,,100,111,11
140 csys,11
141 vdrag,all,,,,,50
142 csys,0
143 vptn,all
144 aslv
145 asel,inve
146 adel,all
147 allsel
148 lsia
149 lsel,inve
150 ldel,all
151 allsel
152 ksll
153 ksel,inve
154 kdel,all
155 allsel
156 asel,s,,,34,42,4
157 cm,cpa,area
158 csys,11
159 agen,2,all,,,0,0,-argen1
160 cm,cpa1,area
161 asel,s,,,cpa
162 agen,2,all,,,0,0,-argen2
163 /com, The following may require modification
164 /com, if optimization required
165 a,49,73,5,10
166 a,49,73,45,64
167 a,78,50,72,71
168 a,78,50,68,65
169 cm,cpa2,area
170 asel,a,,,cpa1
171 asel,u,,,cpa
172 cm,allcp,area
173 vsel,s,,,7,9
174 vsel,a,,,35,38
175 vsel,a,,,27,28
176 vsel,a,,,1
177 cm,vols,volu
178 vcta,allcp,vols
179 /com, Combine two lines
180 nummrg,kp
181 lcomb,138,139,0
182 lcomb,144,145,0
183 /com, Define pier
184 asel,none
185 csys,0
186 k,,0,0,0
187 k,,0,hebm
188 k,,0,hebm+gap
189 k,,0,prht-pltts
190 k,,0,0,pecr
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191 k,,0,hebm,pecr
192 k,,0,hebm+gap,pecr
193 k,,0,prht-pltts,pecr
194 k,,0,prht,pecr
195 k,,0,0,pbwh
196 k,,0,hebm,pbwh+hebm*tan(prang)
197 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)
198 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)
199 k,,0,prht,pbwh+(prht)*tan(prang)
200 k,,0,0,pbwh-rec
201 k,,0,hebm,pbwh+hebm*tan(prang)-rec
202 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)-rec
203 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)-rec
204 k,,0,prht,pbwh+(prht)*tan(prang)-rec
205 k,,prlh/2,0,0
206 k,,prlh/2,0,0
207 l,62,98
208 l,62,99
209 nummrg,kp
210 asel,none
211 a,62,83,84,63
212 a,63,84,85,81
213 a,81,85,86,82
214 a,82,86,87,2
215 a,83,93,94,84
216 a,84,94,95,85
217 a,85,95,96,86
218 a,86,96,97,87
219 a,93,88,89,94
220 a,94,89,90,95
221 a,95,90,91,96
222 a,96,91,92,97
223 cm,pdrg1,area
224 vdrag,all,,,,,20
225 asel,s,,,pdrg1
226 vdrag,all,,,,,37
227 /com, Intersection of the volumes between
228 /com, pier and pipe
229 /com, This section may require modification
230 /com, if optimization required
231 allsel
232 vptn,32,35,36
233 vptn,31,55,56
234 vptn,22,51,52
235 vptn,23,8,9
236 vptn,13,7
237 vptn,14,28
238 vptn,11,50
239 vptn,5,54
240 vdel,22
241 vdel,31,35,4
242 vdel,61
243 vdel,32,62,30
244 vdel,51,55,4
245 vdel,7,9
246 vdel,5
247 vdel,11,14,3
248 vdel,28,50,22
249 /com, Define areas in the pier to cut volumes
250 a,97,128,121,93
251 a,97,108,101,93
252 a,128,2,62,121
253 a,108,2,62,101
254 vcta,208,27,13,66,67
255 vcta,31,53,81,70,71
256 vcta,225,49,80,74,75
257 vcta,343,1,23,78,79
258 nummrg,kp
259 /com, Name the volumes
260 vsel,s,,,2,4

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261 vset,a,,,6,10,4
262 vset,a,,,12
263 vset,a,,,15,21
264 vset,a,,,24,26
265 vset,a,,,29,30
266 vset,a,,,33,34
267 vset,a,,,39,46
268 cm,tube,volu
269 vset,s,,,36
270 vset,a,,,52,56,4
271 vset,a,,,63,65
272 vset,a,,,68,69
273 vset,a,,,72,73
274 vset,a,,,76,77
275 cm,pipe,volu
276 vset,s,,,5
277 vset,a,,,7,9
278 vset,a,,,11
279 vset,a,,,13,14
280 vset,a,,,27
281 vset,a,,,31,32
282 vset,a,,,35
283 vset,a,,,37,38
284 vset,a,,,47,50
285 vset,a,,,53,55,2
286 vset,a,,,57,62
287 vset,a,,,66,67
288 vset,a,,,74,75
289 vset,a,,,80,82
290 cm,pier,volu
291 vset,s,,,22,28,6
292 vset,a,,,51,54,3
293 vset,a,,,70,71
294 vset,a,,,83,84
295 cm,plate,volu
296 esize,,6
297 /com, Elements for the tube
298 type,1 ! SOLID45
299 mat,1 ! Carbon Steel
300 vset,s,,,tube
301 vmesh,all
302 /com, Elements for the pipe
303 type,2 ! SOLID45
304 mat,2 ! Carbon Steel
305 vset,s,,,pipe
306 vmesh,all
307 /com, Elements for the pier
308 type,3 ! SOLID45
309 mat,3 ! Concrete
310 vset,s,,,pier
311 vmesh,all
312 /com, Elements for the plate
313 type,4 ! SOLID45
314 mat,4 ! Carbon Steel
315 vset,s,,,plate
316 vmesh,all
317 /com, Contact Elements Generation
318 nummrg,node
319 nummrg,kp
320 type,5
321 real,5
322 mat,5
323 csys,0
324 nsel,s,,,18151,18156
325 nsel,a,,,5426
326 nsel,a,,,18397,18401
327 nsel,a,,,18361,18366,5
328 nsel,a,,,18439,18441,2
329 nsel,a,,,18428
330 nsel,a,,,18434,18435

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331 nsel,a,,,18335
332 nsel,a,,,18561
333 nsel,a,,,17971
334 nsel,a,,,18021
335 nsel,a,,,17940
336 nsel,a,,,18169,18170
337 nsel,a,,,18161,18163,2
338 nsel,a,,,18174,18176,2
339 cm,surfa,node
340 allsel
341 esel,s,type,,1
342 nsle
343 nsel,r,loc,z,-.001,.001
344 nsel,r,loc,x,-prlh/2-.001,prlh/2+.001
345 nsel,r,loc,y,prht-.001,prht+.001
346 cm,surfb,node
347 allsel
348 gcgen,surfb,surfa
349 allsel
350 modmsh,detach
351 esel,s,type,,2
352 nsle
353 esln
354 nsle
355 esel,r,type,,3
356 edele,all
357 allsel
358 save
359 fini
360 /solu
361 antype,static
362 nlgeom,on
363 /com, Define constraints
364 nsel,s,loc,z,-.001,.001
365 d,all,uz,0
366 nsel,s,loc,y,-.001,.001
367 d,all,uy,0
368 nsel,s,loc,x,-.001,.001
369 nsel,r,loc,y,-.001,.001
370 d,all,ux,0
371 nsel,s,,,12547
372 nsel,a,,,12553,12558
373 nsel,a,,,12589,12630
374 nsel,a,,,12841,12882
375 nsel,a,,,13093,13134
376 nsel,a,,,13345,13386
377 nsel,a,,,14484,14489
378 nsel,a,,,14520,14555
379 nsel,a,,,14736,14771
380 nsel,a,,,14952,14987
381 nsel,a,,,15168,15203
382 cs,15,0,12553,12558,12601
383 nrotat,all
384 d,all,uz
385 csys,0
386 nsel,s,,,344
387 nsel,a,,,1340,1344,4
388 nsel,a,,,1304
389 /com, Vertical force divided over four nodes
390 f,all,fy,-30915.6
391 allsel
392 acel,,9.81
393 outres,all,1
394 solve
395 finish
396 /exit,
397 /eof
```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REPLOT /REPLOT

PARAMETER PI = 3.141593

ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,

ABBREVIATION= RAS /show,,0,

ABBREVIATION= INP /input,,inp,

ABBREVIATION= ESC /exit,nosav,

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= PR1 /psf,pres,norm,1,

ABBREVIATION= PRO /psf,pres,norm,0,

ABBREVIATION= U1 /pbc,u,1,

ABBREVIATION= U0 /pbc,u,0,

ABBREVIATION= X3D /show,3d,

ABBREVIATION= X11 /show,x11,

ABBREVIATION= X11C /show,x11c,

ABBREVIATION= ON /menu,on,
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 color
x11c for X-term color contour

type: on

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

SI UNITS SPECIFIED FOR INTERNAL

LENGTH (l) = METER(M)
MASS (M) = KILOGRAM(KG)
TIME (t) = SECOND(SEC)
TEMPERATURE (T) = KELVIN(K)
TOFFSET = 0.0 KELVIN
CHARGE (Q) = COULOMB
CURRENT (i) = AMPERE (COULOMBS/SEC)
FORCE (f) = NEWTON(N) (KG-M/SEC2)
PRESSURE = PASCAL (NEWTON/M**2)
ENERGY (W) = JOULE (N-M)
POWER (P) = WATT (N-M/SEC)
CAPACITANCE (C) = FARAD
INDUCTANCE (L) = HENRY
MAGNETIC FLUX = WEBER
RESISTANCE (R) = OHM
ELECTRIC POTENTIAL = VOLT

INPUT UNITS ARE ALSO SET TO SI

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 09:32:41 JAN 30, 1997 CP= 0.320
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=
3-D static support and pier analysis

VIEW CONE ANGLE FOR WINDOW 1 0.00

NUMBER OF DISPLAYED ERRORS ALLOWED PER COMMAND= 200
NUMBER OF ERRORS ALLOWED PER COMMAND BEFORE ANSYS ABORT= *****
Define Parameters

ANGULAR FUNCTION UNITS SET TO DEGREES
Tube

PARAMETER TEOW = 0.2032000

PARAMETER TETS = 0.1430000E-01

PARAMETER TEIW = 0.1746000
 PARAMETER TEHT = 0.1016000
 PARAMETER TELH = 0.9584000
 PARAMETER TEANG = 60.00000
 Pier
 PARAMETER PRHT = 0.4500000
 PARAMETER PBWH = 0.7500000
 PARAMETER PRLH = 0.3000000
 PARAMETER PRANG = 33.70000
 Pipe
 PARAMETER PECR = 0.5000000
 PARAMETER PEOR = 0.5715000E-01
 PARAMETER PETS = 0.1710000E-01
 PARAMETER GAP = 0.4000000E-01
 PARAMETER HEBM = 0.2250000
 PARAMETER TERM1 = 0.3216707
 PARAMETER TERM2 = 0.1651222E-01
 PARAMETER PEHT = 0.5631829
 Support plate
 PARAMETER PLTTS = 0.2000000E-01
 PARAMETER PLTWH = 0.8300000
 PARAMETER REC = 0.2201127
 PARAMETER DRAG1 = 0.5773503
 PARAMETER ARGEN1 = 0.2235204
 PARAMETER ARGEN2 = 0.6367293
 Define Element Properties

ELEMENT TYPE 1 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 3 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 4 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ

THREE-DIMENSIONAL MODEL

ELEMENT TYPE 5 IS CONTAC49 3D GENERAL CONTACT ELEMENT
 KEYOPT(1-12)= 0 0 1 0 0 0 0 0 0 0 0 0
 INOPR = 1

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

REAL CONSTANT SET 5 ITEMS 1 TO 6
 0.15000E+09 0.00000E+00 0.00000E+00 1.5000 15.000 0.00000E+00
 ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%

MATERIAL 1 EX = 0.2034000E+12
 MATERIAL 2 EX = 0.2034000E+12
 MATERIAL 3 EX = 0.2480000E+11
 MATERIAL 4 EX = 0.2034000E+12
 MATERIAL 1 NUXY = 0.2800000
 MATERIAL 2 NUXY = 0.2800000
 MATERIAL 3 NUXY = 0.1700000
 MATERIAL 4 NUXY = 0.2800000
 MATERIAL 1 DENS = 7859.000
 MATERIAL 2 DENS = 7859.000
 MATERIAL 3 DENS = 2300.000
 MATERIAL 4 DENS = 7859.000
 MATERIAL 5 MU = 0.4000000
 Define keypoints in the support tube

COORDINATE SYSTEM 11 DEFINITION. TYPE= 0 (CARTESIAN)
 XC,YC,ZC= 0.00000E+00 0.45000 0.00000E+00
 ANGLES= 0.00 -30.00 0.00 PARAMETERS= 1.000 1.000
 ORIENTATION= 1.00 0.00 0.00 0.00 0.87 -0.50 0.00 0.50 0.87

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT 1 X,Y,Z= -0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11
 -0.101600 0.450000 0.000000E+00 IN CSYS= 0
 KEYPOINT 2 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 11
 0.000000E+00 0.450000 0.000000E+00 IN CSYS= 0
 KEYPOINT 3 X,Y,Z= 0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11
 0.101600 0.450000 0.000000E+00 IN CSYS= 0
 KEYPOINT 4 X,Y,Z= 0.101600 0.101600 0.000000E+00 IN CSYS= 11
 0.101600 0.537988 -0.508000E-01 IN CSYS= 0
 KEYPOINT 5 X,Y,Z= -0.101600 0.101600 0.000000E+00 IN CSYS= 11
 -0.101600 0.537988 -0.508000E-01 IN CSYS= 0
 KEYPOINT 6 X,Y,Z= -0.873000E-01 0.143000E-01 0.000000E+00 IN CSYS= 11
 -0.873000E-01 0.462384 -0.715000E-02 IN CSYS= 0

KEYPOINT 7 X,Y,Z= 0.000000E+00 0.143000E-01 0.000000E+00 IN CSYS= 11
0.000000E+00 0.462384 -0.715000E-02 IN CSYS= 0
KEYPOINT 8 X,Y,Z= 0.873000E-01 0.143000E-01 0.000000E+00 IN CSYS= 11
0.873000E-01 0.462384 -0.715000E-02 IN CSYS= 0
KEYPOINT 9 X,Y,Z= 0.873000E-01 0.873000E-01 0.000000E+00 IN CSYS= 11
0.873000E-01 0.525604 -0.436500E-01 IN CSYS= 0
KEYPOINT 10 X,Y,Z= -0.873000E-01 0.873000E-01 0.000000E+00 IN CSYS= 11
-0.873000E-01 0.525604 -0.436500E-01 IN CSYS= 0
KEYPOINT 11 X,Y,Z= 0.000000E+00 0.000000E+00 0.958400 IN CSYS= 11
0.000000E+00 0.929200 0.829999 IN CSYS= 0
KEYPOINT 12 X,Y,Z= 0.000000E+00 0.000000E+00 0.577350 IN CSYS= 11
0.000000E+00 0.738675 0.500000 IN CSYS= 0

LINE CONNECTS KEYPOINTS 2 12
LINE NO.= 1 KP1= 2 TAN1= 0.0000 -0.5000 -0.8660
KP2= 12 TAN2= 0.0000 0.5000 0.8660

LINE CONNECTS KEYPOINTS 12 11
LINE NO.= 2 KP1= 12 TAN1= 0.0000 -0.5000 -0.8660
KP2= 11 TAN2= 0.0000 0.5000 0.8660

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 2 1 6 7
AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 1 5 10 6
AREA NUMBER = 2

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 10 5 4 9
AREA NUMBER = 3

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 9 4 3 8
AREA NUMBER = 4

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 7 8 3 2
AREA NUMBER = 5

DRAG ALL SELECTED AREAS
ALONG LINES
1,

*** WARNING *** CP= 0.520 TIME= 09:32:41
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.520 TIME= 09:32:41
Area 2 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.520 TIME= 09:32:41
Area 3 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.520 TIME= 09:32:41
Area 4 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.520 TIME= 09:32:41
Area 5 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.57725 AND 0.57745
KABS= 0. TOLERANCE= 0.000000E+00

5 AREAS (OF 25 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
2,

*** WARNING *** CP= 0.760 TIME= 09:32:41
Area 10 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.760 TIME= 09:32:41
Area 14 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.760 TIME= 09:32:41
Area 18 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.770 TIME= 09:32:41
Area 22 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.770 TIME= 09:32:41
Area 25 is not meshed. Volume will be generated without elements.

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 45 STEP 1

0 AREAS (OF 45 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 33

KEYPOINT 0 X,Y,Z= -0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 34

KEYPOINT 0 X,Y,Z= -0.101600 0.450000 -0.152400 IN CSYS= 0

KEYPOINT NUMBER = 35

LINE CONNECTS KEYPOINTS 1 35
LINE NO.= 68 KP1= 1 TAN1= 0.0000 0.0000 1.0000
KP2= 35 TAN2= 0.0000 0.0000 -1.0000

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 1 34 33 3

AREA NUMBER = 46

DRAG ALL SELECTED AREAS
ALONG LINES
68,

*** WARNING *** CP= 1.040 TIME= 09:32:41
Area 46 is not meshed. Volume will be generated without elements.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 1
VOLUMES OPERATED ON WILL BE DELETED

VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 12

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 2
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 1

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 3
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 2

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 4
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 3

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
VOLUMES SUBTRACTED WILL BE DELETED
OUTPUT VOLUMES = 4

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 60 STEP 1

0 AREAS (OF 50 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

NONE SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 12 STEP 1

0 VOLUMES (OF 10 DEFINED) SELECTED BY VSEL COMMAND.
Define pipe volume

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

COORDINATE SYSTEM 12 DEFINITION. TYPE= 1 (CYLINDRICAL)
XC,YC,ZC= 0.00000E+00 0.22500 0.50000
ANGLES= -90.00 0.00 -90.00 PARAMETERS= 1.000 1.000
ORIENTATION= 0.00 0.00 1.00 1.00 0.00 0.00 0.00 1.00 0.00

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

KEYPOINT 0 X,Y,Z= 0.571500E-01 0.000000E+00 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 7

0.214278E-33 0.225000 0.557150 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.571500E-01 90.0000 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 8

0.571500E-01 0.225000 0.500000 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.571500E-01 180.000 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 33

```

0.997456E-11 0.225000 0.442850 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.571500E-01 270.000 0.000000E+00 IN CSYS= 12
KEYPOINT NUMBER = 34
-0.571500E-01 0.225000 0.500000 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.400500E-01 0.000000E+00 0.000000E+00 IN CSYS= 12
KEYPOINT NUMBER = 36
0.150163E-33 0.225000 0.540050 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.400500E-01 90.0000 0.000000E+00 IN CSYS= 12
KEYPOINT NUMBER = 37
0.400500E-01 0.225000 0.500000 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.400500E-01 180.000 0.000000E+00 IN CSYS= 12
KEYPOINT NUMBER = 38
0.699004E-11 0.225000 0.459950 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.400500E-01 270.000 0.000000E+00 IN CSYS= 12
KEYPOINT NUMBER = 39
-0.400500E-01 0.225000 0.500000 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 12
KEYPOINT NUMBER = 49
0.000000E+00 0.225000 0.500000 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.400000E-01 IN CSYS= 12
KEYPOINT NUMBER = 50
-0.244929E-17 0.265000 0.500000 IN CSYS= 0
KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.563183 IN CSYS= 12
KEYPOINT NUMBER = 51
-0.344850E-16 0.788183 0.500000 IN CSYS= 0
LINE CONNECTS KEYPOINTS 49 50
LINE NO.= 6 KP1= 49 TAN1= 0.0000 -1.0000 0.0000
KP2= 50 TAN2= 0.0000 1.0000 0.0000
LINE CONNECTS KEYPOINTS 50 51
LINE NO.= 14 KP1= 50 TAN1= 0.0000 -1.0000 0.0000
KP2= 51 TAN2= 0.0000 1.0000 0.0000
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 7 36 37 8
AREA NUMBER = 5
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 8 37 38 33
AREA NUMBER = 9
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 33 38 39 34

```

AREA NUMBER = 20

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 34 39 36 7

AREA NUMBER = 23

DRAG ALL SELECTED AREAS

ALONG LINES

6,

*** WARNING *** CP= 21.170 TIME= 09:33:21
Area 5 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.170 TIME= 09:33:21
Area 9 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.170 TIME= 09:33:21
Area 20 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.170 TIME= 09:33:21
Area 23 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.39900E-01 AND 0.40100E-01
KABS= 0. TOLERANCE= 0.000000E+00

4 AREAS (OF 70 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS

ALONG LINES

14,

*** WARNING *** CP= 21.650 TIME= 09:33:22
Area 50 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.650 TIME= 09:33:22
Area 63 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.650 TIME= 09:33:22
Area 67 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.660 TIME= 09:33:22
Area 70 is not meshed. Volume will be generated without elements.

DEFINITION OF COMPONENT = PIPE ENTITY=VOLUME

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLUME COMPONENT=
IN RANGE 1 TO 18 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 134 STEP 1

134 LINES (OF 134 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 67 STEP 1

67 KEYPOINTS (OF 67 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=

IN RANGE 0 TO 0 STEP 1
0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5 11 13 14 15
VOLUME NUMBERS TO BE OPERATED ON = 16 17 18
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 1 2 3 4 6
VOLUME NUMBERS TO BE SUBTRACTED = 7 8 9 10 12
OUTPUT VOLUMES = 5 11 13 14 19 20 21 22 23 24
OUTPUT VOLUMES = 25 26

DELETE SELECTED VOLUMES FROM 19 TO 20 BY 1
DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 25 TO 26 BY 1
DELETED 2 VOLUMES

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

86 AREAS (OF 108 DEFINED) SELECTED FROM
18 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 120 STEP 1

22 AREAS (OF 108 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 22 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 120 STEP 1

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

171 LINES (OF 171 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

86 KEYPOINTS (OF 86 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=

IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT LINES ASSOCIATED WITH SELECTED AREAS

129 LINES (OF 171 DEFINED) SELECTED FROM
86 SELECTED AREAS BY LSLA COMMAND.

INVERT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

42 LINES (OF 171 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM 1 TO 179 BY 1

DELETED 42 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 120 STEP 1

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

129 LINES (OF 129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

86 KEYPOINTS (OF 86 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT ALL KEYPOINTS ON ANY LINE IN LINE SET.

61 KEYPOINTS (OF 86 DEFINED) SELECTED FROM
129 SELECTED LINES BY KSLI COMMAND.

INVERT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

25 KEYPOINTS (OF 86 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 1 TO 120 STEP 1

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

129 LINES (OF 129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

61 KEYPOINTS (OF 61 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 104 TO 108 STEP 4

2 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 111 STEP 11

4 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

DRAG ALL SELECTED AREAS
ALONG LINES
50,

*** WARNING *** CP= 77.440 TIME= 09:35:06
Area 100 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 77.440 TIME= 09:35:06
Area 104 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 77.440 TIME= 09:35:06
Area 108 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 77.440 TIME= 09:35:06
Area 111 is not meshed. Volume will be generated without elements.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

PARTITION VOLUMES

INPUT VOLUMES =	1	2	3	4	5	6	7	8	9	10
INPUT VOLUMES =	11	12	13	14	15	16	17	18	21	22
INPUT VOLUMES =	23	24								
INPUT VOLUMES WILL BE DELETED										
OUTPUT VOLUMES =	1	5	7	8	9	11	13	14	19	20
OUTPUT VOLUMES =	22	23	25	26	27	28	29	30	31	32
OUTPUT VOLUMES =	33	34	35	36	37	38				

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

109 AREAS (OF 109 DEFINED) SELECTED FROM
26 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

```
0 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 0 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT LINES ASSOCIATED WITH SELECTED AREAS

147 LINES (OF 147 DEFINED) SELECTED FROM
109 SELECTED AREAS BY LSLA COMMAND.

INVERT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

0 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM 1 TO 179 BY 1

DELETED 0 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.
```

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT ALL KEYPOINTS ON ANY LINE IN LINE SET.

64 KEYPOINTS (OF 64 DEFINED) SELECTED FROM
147 SELECTED LINES BY KSLI COMMAND.

INVERT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

0 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 34 TO 42 STEP 4

3 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = CPA ENTITY=AREA

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

GENERATE 2 TOTAL SETS OF AREAS
SET IS ALL SELECTED AREAS

```
DX,DY,DZ= 0.000E+00 0.000E+00 -0.224 CSYS= 11
DEFINITION OF COMPONENT = CPA1 ENTITY=AREA
3 AREAS (OF 112 DEFINED) SELECTED BY ASEL COMMAND.
GENERATE 2 TOTAL SETS OF AREAS
SET IS ALL SELECTED AREAS
DX,DY,DZ= 0.000E+00 0.000E+00 -0.637 CSYS= 11
The following may require modification
if optimization required
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 49 73 5 10
*** WARNING *** CP= 193.460 TIME= 09:38:32
Lines 116, 82, 9, and 83 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.
AREA NUMBER = 12
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 49 73 45 64
*** WARNING *** CP= 193.480 TIME= 09:38:32
Lines 116, 84, 18, and 85 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.
AREA NUMBER = 13
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 78 50 72 71
*** WARNING *** CP= 193.500 TIME= 09:38:32
Lines 119, 95, 49, and 97 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.
AREA NUMBER = 16
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 78 50 68 65
*** WARNING *** CP= 193.530 TIME= 09:38:32
Lines 119, 154, 32, and 165 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.
AREA NUMBER = 17
DEFINITION OF COMPONENT = CPA2 ENTITY=AREA
13 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.
10 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.
DEFINITION OF COMPONENT = ALLCP ENTITY=AREA
SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1
3 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 35 TO 38 STEP 1
7 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.
```

ALSO SELECT FOR ITEM=VOLUME COMPONENT=
IN RANGE 27 TO 28 STEP 1

9 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLUME COMPONENT=
IN RANGE 1 TO 1 STEP 1

10 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = VOLS ENTITY=VOLUME

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS =	2	3	4	6	7	10	12	13	16	17
INPUT VOLUMES TO BE CUT =	1	7	8	9	27	28	35	36	37	38
INPUT VOLUMES TO BE CUT WILL BE DELETED										
THE RESULT OF CUTTING VOLUMES	1 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	2									
THE 2ND HALF:										
OUTPUT VOLUMES =	3									
THE RESULT OF CUTTING VOLUMES	7 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	4									
THE 2ND HALF:										
OUTPUT VOLUMES =	6									
THE RESULT OF CUTTING VOLUMES	8 :-									
THE 1ST HALF:										
OUTPUT VOLUMES =	10									
THE 2ND HALF:										
OUTPUT VOLUMES =	12									
THE RESULT OF CUTTING VOLUMES	9 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	15									
THE 2ND HALF:										
OUTPUT VOLUMES =	16									
THE RESULT OF CUTTING VOLUMES	27 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	17									
THE 2ND HALF:										
OUTPUT VOLUMES =	18									
THE RESULT OF CUTTING VOLUMES	28 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	21									
THE 2ND HALF:										
OUTPUT VOLUMES =	24									
THE RESULT OF CUTTING VOLUMES	35 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	39									
THE 2ND HALF:										
OUTPUT VOLUMES =	40									
THE RESULT OF CUTTING VOLUMES	36 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	41									
THE 2ND HALF:										
OUTPUT VOLUMES =	42									
THE RESULT OF CUTTING VOLUMES	37 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	43									
THE 2ND HALF:										
OUTPUT VOLUMES =	44									
THE RESULT OF CUTTING VOLUMES	38 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	45									
THE 2ND HALF:										
OUTPUT VOLUMES =	46									

*** WARNING ***

Assembly TUBE is deleted.

CP= 220.940 TIME= 09:39:22

*** WARNING ***

CP= 220.990 TIME= 09:39:22

Assembly VOLS is deleted.

Combine two lines

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

COMBINE LINES 138 AND 139
 LINE NO.= 138 KP1= 74 TAN1= 1.0000 0.0000 0.0000
 KP2= 79 TAN2= 0.0000 -0.5000 -0.8660

COMBINE LINES 144 AND 145
 LINE NO.= 144 KP1= 73 TAN1= -1.0000 0.0000 0.0000
 KP2= 76 TAN2= 0.0000 -0.5000 -0.8660

Define pier

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 175 STEP 1

0 AREAS (OF 147 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 62

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 63

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 81

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 82

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 83

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 84

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 85

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 86

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 87

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.750000 IN CSYS= 0

KEYPOINT NUMBER = 88

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.900056 IN CSYS= 0

KEYPOINT NUMBER = 89

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.926733 IN CSYS= 0

KEYPOINT NUMBER = 90

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 1.03677 IN CSYS= 0

KEYPOINT NUMBER = 91

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 1.05011 IN CSYS= 0

KEYPOINT NUMBER = 92

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.529887 IN CSYS= 0

KEYPOINT NUMBER = 93

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.679944 IN CSYS= 0

KEYPOINT NUMBER = 94

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.706620 IN CSYS= 0

KEYPOINT NUMBER = 95

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 0.816662 IN CSYS= 0

KEYPOINT NUMBER = 96

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 0.830000 IN CSYS= 0

KEYPOINT NUMBER = 97

KEYPOINT 0 X,Y,Z= -0.150000 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 98

KEYPOINT 0 X,Y,Z= 0.150000 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 99

LINE CONNECTS KEYPOINTS 62 98
 LINE NO.= 20 KP1= 62 TAN1= 1.0000 0.0000 0.0000
 KP2= 98 TAN2= -1.0000 0.0000 0.0000

LINE CONNECTS KEYPOINTS 62 99
 LINE NO.= 37 KP1= 62 TAN1= -1.0000 0.0000 0.0000
 KP2= 99 TAN2= 1.0000 0.0000 0.0000

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 175 STEP 1

0 AREAS (OF 147 DEFINED) SELECTED BY ASEL COMMAND.

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 62 83 84 63

AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 63 84 85 81

AREA NUMBER = 8

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 81 85 86 82

AREA NUMBER = 11

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 82 86 87 2

AREA NUMBER = 15

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 83 93 94 84

AREA NUMBER = 27

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 84 94 95 85

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 85 95 96 86

AREA NUMBER = 32

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 86 96 97 87

AREA NUMBER = 33

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 93 88 89 94

AREA NUMBER = 35

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 94 89 90 95

AREA NUMBER = 36

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 95 90 91 96

AREA NUMBER = 37

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 96 91 92 97

AREA NUMBER = 39

DEFINITION OF COMPONENT = PDRG1 ENTITY=AREA

DRAG ALL SELECTED AREAS

ALONG LINES

20,

*** WARNING *** CP= 221.560 TIME= 09:39:24
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.560 TIME= 09:39:24
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.560 TIME= 09:39:24
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.560 TIME= 09:39:24
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.560 TIME= 09:39:24
Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.560 TIME= 09:39:24
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.570 TIME= 09:39:24
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.570 TIME= 09:39:24
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.570 TIME= 09:39:24
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.570 TIME= 09:39:24
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.570 TIME= 09:39:24
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 221.570 TIME= 09:39:24
Area 39 is not meshed. Volume will be generated without elements.

12 AREAS (OF 202 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
37,

*** WARNING *** CP= 222.030 TIME= 09:39:25
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 222.040 TIME= 09:39:25
Area 39 is not meshed. Volume will be generated without elements.

Intersection of the volumes between
pier and pipe
This section may require modification
if optimization required

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLUME COMPONENT=
IN RANGE 1 TO 60 STEP 1

60 VOLUMES (OF 60 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 245 STEP 1

245 AREAS (OF 245 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 324 STEP 1

324 LINES (OF 324 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 139 STEP 1

139 KEYPOINTS (OF 139 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

PARTITION VOLUMES

INPUT VOLUMES = 32 35 36
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 232.490 TIME= 09:39:45
Entity numbers from the Boolean operation were assigned based on geometry. If you are planning to do optimization, (or input looping), do not rely on the entity numbers for loads, etc. To suppress this warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 61 62 63 64 65 66 67

PARTITION VOLUMES

INPUT VOLUMES = 31 55 56
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 243.600 TIME= 09:40:05
Entity numbers from the Boolean operation were assigned based on geometry. If you are planning to do optimization, (or input looping), do not rely on the entity numbers for loads, etc. To suppress this warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 32 35 36 68 69 70 71

PARTITION VOLUMES

INPUT VOLUMES = 22 51 52
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 254.440 TIME= 09:40:24
Entity numbers from the Boolean operation were assigned based on geometry. If you are planning to do optimization, (or input looping), do not rely on the entity numbers for loads, etc. To suppress this warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 31 55 56 72 73 74 75

PARTITION VOLUMES

INPUT VOLUMES = 23 8 9
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 264.420 TIME= 09:40:42
Entity numbers from the Boolean operation were assigned based on geometry. If you are planning to do optimization, (or input looping), do not rely on the entity numbers for loads, etc. To suppress this warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 22 51 52 76 77 78 79

PARTITION VOLUMES

INPUT VOLUMES = 13 7
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 8 9 23

PARTITION VOLUMES
INPUT VOLUMES = 14 28
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 7 13 14

PARTITION VOLUMES
INPUT VOLUMES = 11 50
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 11 28 80

PARTITION VOLUMES
INPUT VOLUMES = 5 54
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 5 50 81

DELETE SELECTED VOLUMES FROM 22 TO 22 BY 1
DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 31 TO 35 BY 4
DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 61 TO 61 BY 1
DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 32 TO 62 BY 30
DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 51 TO 55 BY 4
DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 7 TO 9 BY 1
DELETED 3 VOLUMES

DELETE SELECTED VOLUMES FROM 5 TO 5 BY 1
DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 11 TO 14 BY 3

*** WARNING *** CP= 285.800 TIME= 09:41:21
Assembly PIPE is deleted.

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 28 TO 50 BY 22

DELETED 2 VOLUMES
Define areas in the pier to cut volumes

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 97 128 121 93

*** WARNING *** CP= 285.820 TIME= 09:41:21
Lines 59, 209, 283, and 438 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 97 108 101 93

*** WARNING *** CP= 285.860 TIME= 09:41:21

Lines 439, 440, 441, and 438 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 208

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 128 2 62 121

AREA NUMBER = 225

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 108 2 62 101

AREA NUMBER = 343

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 208

INPUT VOLUMES TO BE CUT = 27 13 66 67

INPUT VOLUMES TO BE CUT WILL BE DELETED

THE RESULT OF CUTTING VOLUMES 27 :

THE 1ST HALF:

OUTPUT VOLUMES = 5

THE 2ND HALF:

OUTPUT VOLUMES = 7

THE RESULT OF CUTTING VOLUMES 13 :

THE 1ST HALF:

OUTPUT VOLUMES = 8

THE 2ND HALF:

OUTPUT VOLUMES = 9

THE RESULT OF CUTTING VOLUMES 66 :

THE 1ST HALF:

OUTPUT VOLUMES = 11

THE 2ND HALF:

OUTPUT VOLUMES = 14

THE RESULT OF CUTTING VOLUMES 67 :

THE 1ST HALF:

OUTPUT VOLUMES = 22

THE 2ND HALF:

OUTPUT VOLUMES = 28

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 31

INPUT VOLUMES TO BE CUT = 53 81 70 71

INPUT VOLUMES TO BE CUT WILL BE DELETED

THE RESULT OF CUTTING VOLUMES 53 :

THE 1ST HALF:

OUTPUT VOLUMES = 13

THE 2ND HALF:

OUTPUT VOLUMES = 27

THE RESULT OF CUTTING VOLUMES 81 :

THE 1ST HALF:

OUTPUT VOLUMES = 31

THE 2ND HALF:

OUTPUT VOLUMES = 32

THE RESULT OF CUTTING VOLUMES 70 :

THE 1ST HALF:

OUTPUT VOLUMES = 35

THE 2ND HALF:

OUTPUT VOLUMES = 50

THE RESULT OF CUTTING VOLUMES 71 :

THE 1ST HALF:

OUTPUT VOLUMES = 51

THE 2ND HALF:

OUTPUT VOLUMES = 54

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 225
 INPUT VOLUMES TO BE CUT = 49 80 74 75
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 49 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 53
 THE 2ND HALF:
 OUTPUT VOLUMES = 55
 THE RESULT OF CUTTING VOLUMES 80 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 61
 THE 2ND HALF:
 OUTPUT VOLUMES = 62
 THE RESULT OF CUTTING VOLUMES 74 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 66
 THE 2ND HALF:
 OUTPUT VOLUMES = 67
 THE RESULT OF CUTTING VOLUMES 75 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 70
 THE 2ND HALF:
 OUTPUT VOLUMES = 71

CUT VOLUMES BY AREAS
 INPUT CUTTING AREAS = 343
 INPUT VOLUMES TO BE CUT = 1 23 78 79
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 1 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 49
 THE 2ND HALF:
 OUTPUT VOLUMES = 74
 THE RESULT OF CUTTING VOLUMES 23 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 75
 THE 2ND HALF:
 OUTPUT VOLUMES = 80
 THE RESULT OF CUTTING VOLUMES 78 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 81
 THE 2ND HALF:
 OUTPUT VOLUMES = 82
 THE RESULT OF CUTTING VOLUMES 79 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 83
 THE 2ND HALF:
 OUTPUT VOLUMES = 84

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

KEYPOINT	98 USED FOR KEYPOINT(S)	100
KEYPOINT	99 USED FOR KEYPOINT(S)	120
KEYPOINT	146 USED FOR KEYPOINT(S)	154
KEYPOINT	142 USED FOR KEYPOINT(S)	150
KEYPOINT	143 USED FOR KEYPOINT(S)	167
KEYPOINT	147 USED FOR KEYPOINT(S)	169
KEYPOINT	145 USED FOR KEYPOINT(S)	171
KEYPOINT	141 USED FOR KEYPOINT(S)	165
KEYPOINT	144 USED FOR KEYPOINT(S)	152
KEYPOINT	140 USED FOR KEYPOINT(S)	148
KEYPOINT	151 USED FOR KEYPOINT(S)	159
KEYPOINT	155 USED FOR KEYPOINT(S)	162
KEYPOINT	149 USED FOR KEYPOINT(S)	157
KEYPOINT	153 USED FOR KEYPOINT(S)	160
KEYPOINT	158 USED FOR KEYPOINT(S)	166
KEYPOINT	163 USED FOR KEYPOINT(S)	168
KEYPOINT	156 USED FOR KEYPOINT(S)	164
KEYPOINT	161 USED FOR KEYPOINT(S)	170
LINE	20 USED FOR LINE(S)	224
LINE	37 USED FOR LINE(S)	275

LINE	74	USED FOR LINE(S)	155
LINE	110	USED FOR LINE(S)	426
LINE	404	USED FOR LINE(S)	421
LINE	396	USED FOR LINE(S)	427
LINE	379	USED FOR LINE(S)	401
LINE	339	USED FOR LINE(S)	429
LINE	354	USED FOR LINE(S)	435
LINE	345	USED FOR LINE(S)	377
LINE	347	USED FOR LINE(S)	424
LINE	346	USED FOR LINE(S)	423
LINE	344	USED FOR LINE(S)	373
LINE	342	USED FOR LINE(S)	376
LINE	343	USED FOR LINE(S)	422
LINE	340	USED FOR LINE(S)	431
LINE	336	USED FOR LINE(S)	418
LINE	338	USED FOR LINE(S)	369
LINE	335	USED FOR LINE(S)	361
LINE	337	USED FOR LINE(S)	368
LINE	325	USED FOR LINE(S)	358
LINE	152	USED FOR LINE(S)	326
LINE	352	USED FOR LINE(S)	382
LINE	349	USED FOR LINE(S)	432
LINE	350	USED FOR LINE(S)	380
LINE	332	USED FOR LINE(S)	366
LINE	331	USED FOR LINE(S)	415
LINE	355	USED FOR LINE(S)	385
LINE	356	USED FOR LINE(S)	437
LINE	329	USED FOR LINE(S)	413
LINE	328	USED FOR LINE(S)	363
LINE	378	USED FOR LINE(S)	399
LINE	374	USED FOR LINE(S)	400
LINE	371	USED FOR LINE(S)	395
LINE	370	USED FOR LINE(S)	394
LINE	362	USED FOR LINE(S)	393
LINE	384	USED FOR LINE(S)	410
LINE	148	USED FOR LINE(S)	359
LINE	381	USED FOR LINE(S)	406
LINE	367	USED FOR LINE(S)	389
LINE	386	USED FOR LINE(S)	412
LINE	364	USED FOR LINE(S)	387
LINE	402	USED FOR LINE(S)	419
LINE	403	USED FOR LINE(S)	420
LINE	397	USED FOR LINE(S)	428
LINE	392	USED FOR LINE(S)	417
LINE	147	USED FOR LINE(S)	150
LINE	409	USED FOR LINE(S)	434
LINE	390	USED FOR LINE(S)	416
LINE	407	USED FOR LINE(S)	433
LINE	213	USED FOR LINE(S)	293
LINE	411	USED FOR LINE(S)	436
AREA	286	USED FOR AREA(S)	304
AREA	61	USED FOR AREA(S)	106
AREA	65	USED FOR AREA(S)	107
AREA	268	USED FOR AREA(S)	335
AREA	306	USED FOR AREA(S)	321
AREA	260	USED FOR AREA(S)	284
AREA	312	USED FOR AREA(S)	334
AREA	253	USED FOR AREA(S)	319
AREA	261	USED FOR AREA(S)	323
AREA	256	USED FOR AREA(S)	330
AREA	255	USED FOR AREA(S)	279
AREA	185	USED FOR AREA(S)	252
AREA	267	USED FOR AREA(S)	291
AREA	265	USED FOR AREA(S)	288
AREA	264	USED FOR AREA(S)	331
AREA	272	USED FOR AREA(S)	339
AREA	271	USED FOR AREA(S)	295
AREA	103	USED FOR AREA(S)	248
AREA	249	USED FOR AREA(S)	276
AREA	280	USED FOR AREA(S)	300

AREA 292 USED FOR AREA(S) 313
AREA 188 USED FOR AREA(S) 298
AREA 289 USED FOR AREA(S) 309
AREA 296 USED FOR AREA(S) 317
AREA 96 USED FOR AREA(S) 277
AREA 301 USED FOR AREA(S) 327
AREA 217 USED FOR AREA(S) 231
AREA 310 USED FOR AREA(S) 332
AREA 97 USED FOR AREA(S) 212
AREA 316 USED FOR AREA(S) 338

Name the volumes

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 2 TO 4 STEP 1
3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 6 TO 10 STEP 4
5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 12 TO 12 STEP 1
6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 15 TO 21 STEP 1
13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 24 TO 26 STEP 1
16 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 29 TO 30 STEP 1
18 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 33 TO 34 STEP 1
20 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 39 TO 46 STEP 1
28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 36 TO 36 STEP 1
1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 52 TO 56 STEP 4
3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 63 TO 65 STEP 1
6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=

IN RANGE 68 TO 69 STEP 1
8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 72 TO 73 STEP 1
10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 76 TO 77 STEP 1
12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
DEFINITION OF COMPONENT = PIPE ENTITY=VOLU
SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 5 TO 5 STEP 1
1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1
4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 11 TO 11 STEP 1
5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 13 TO 14 STEP 1
7 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 27 TO 27 STEP 1
8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 31 TO 32 STEP 1
10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 35 TO 35 STEP 1
11 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 37 TO 38 STEP 1
13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 47 TO 50 STEP 1
17 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 53 TO 55 STEP 2
19 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 57 TO 62 STEP 1
25 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 66 TO 67 STEP 1
27 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 74 TO 75 STEP 1
29 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 80 TO 82 STEP 1
32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PIER ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 22 TO 28 STEP 6
2 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 51 TO 54 STEP 3
4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 70 TO 71 STEP 1
6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 83 TO 84 STEP 1
8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PLATE ENTITY=VOLU

DEFAULT ELEMENT DIVISIONS PER LINE = 6
Elements for the tube

ELEMENT TYPE SET TO 1

MATERIAL NUMBER SET TO 1

28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 328.010 TIME= 09:42:37
Volume 2 area 58 has a corner angle of 41 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 328.440 TIME= 09:42:37
Meshing of volume 2 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 2 WITH EXCESSIVE DISTORTION ***

73	78	79	84	85	90	91	96
97	102	103	108	109	114	115	120
121	126	127	132	133	138	139	144
145	150	151	156	157	162	163	168
169	174	175	180	181	186	187	192
193	198	199	204	205	210	211	216

*** WARNING *** CP= 331.990 TIME= 09:42:44
Volume 17 area 116 has a corner angle of 41 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 332.430 TIME= 09:42:45
 Meshing of volume 17 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 17 WITH EXCESSIVE DISTORTION ***

1801	1802	1803	1804	1805	1806	1831	1832
1833	1834	1835	1836	1837	1838	1839	1840
1841	1842	1867	1868	1869	1870	1871	1872
1873	1874	1875	1876	1877	1878	1903	1904
1905	1906	1907	1908	1909	1910	1911	1912
1913	1914	1939	1940	1941	1942	1943	1944

*** WARNING *** CP= 337.890 TIME= 09:42:55
 Volume 39 area 161 has a corner angle of 28 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 337.930 TIME= 09:42:55
 Volume 39 area 160 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 338.360 TIME= 09:42:55
 Meshing of volume 39 produced 111 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 39 WITH EXCESSIVE DISTORTION ***

4123	4124	4125	4126	4127	4128	4129	4130
4131	4132	4133	4134	4135	4136	4137	4138
4139	4140	4155	4156	4157	4158	4159	4160
4161	4162	4163	4164	4165	4166	4167	4168
4169	4170	4171	4172	4173	4174	4175	4176
4189	4190	4191	4192	4193	4194	4195	4196
4197	4198	4199	4200	4201	4202	4203	4204
4205	4206	4207	4208	4209	4210	4211	4212
4223	4224	4225	4226	4227	4228	4229	4230
4231	4232	4233	4234	4235	4236	4237	4238
4239	4240	4241	4242	4243	4244	4245	4246
4247	4248	4260	4264	4265	4266	4268	4269
4270	4271	4272	4273	4274	4275	4276	4277
4278	4279	4280	4281	4282	4283	4284	

*** WARNING *** CP= 338.440 TIME= 09:42:56
 Volume 40 area 163 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 338.480 TIME= 09:42:56
 Volume 40 area 162 has a corner angle of 152 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 338.870 TIME= 09:42:56
 Meshing of volume 40 produced 132 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 40 WITH EXCESSIVE DISTORTION ***

4321	4322	4323	4324	4325	4326	4327	4328
4329	4330	4331	4332	4333	4334	4335	4336
4337	4338	4339	4340	4341	4342	4343	4344
4345	4346	4347	4348	4349	4350	4351	4352
4353	4354	4355	4356	4357	4358	4359	4360
4361	4362	4363	4364	4365	4366	4367	4368
4369	4370	4371	4372	4373	4374	4375	4376
4377	4378	4379	4380	4381	4382	4383	4384
4385	4386	4387	4388	4389	4390	4391	4392
4393	4394	4395	4396	4397	4398	4399	4400
4401	4402	4403	4404	4405	4406	4407	4408
4409	4410	4411	4412	4413	4414	4415	4416
4417	4418	4419	4420	4421	4422	4423	4424
4425	4426	4427	4428	4453	4454	4455	4456
4457	4458	4459	4460	4461	4462	4463	4464
4470	4476	4482	4488	4494	4500	4506	4512
4518	4524	4530	4536				

*** WARNING *** CP= 338.920 TIME= 09:42:56
Volume 41 area 164 has a corner angle of 28 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 339.000 TIME= 09:42:56
Volume 41 area 165 has a corner angle of 155 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 339.390 TIME= 09:42:57
Meshing of volume 41 produced 132 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 41 WITH EXCESSIVE DISTORTION ***

4537	4538	4539	4540	4541	4542	4543	4544
4545	4546	4547	4548	4549	4550	4551	4552
4553	4554	4555	4556	4557	4558	4559	4560
4561	4562	4563	4564	4565	4566	4567	4568
4569	4570	4571	4572	4573	4574	4575	4576
4577	4578	4579	4580	4581	4582	4583	4584
4585	4586	4587	4588	4589	4590	4591	4592
4593	4594	4595	4596	4597	4598	4599	4600
4601	4602	4603	4604	4605	4606	4607	4608
4609	4610	4611	4612	4613	4614	4615	4616
4617	4618	4619	4620	4621	4622	4623	4624
4625	4626	4627	4628	4629	4630	4631	4632
4633	4634	4635	4636	4637	4638	4639	4640
4641	4642	4643	4644	4649	4650	4655	4656
4661	4662	4667	4668	4673	4674	4679	4680
4711	4712	4713	4714	4715	4716	4747	4748
4749	4750	4751	4752				

*** WARNING *** CP= 339.470 TIME= 09:42:57
Volume 42 area 167 has a corner angle of 28 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 339.510 TIME= 09:42:57
Volume 42 area 166 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 339.910 TIME= 09:42:58
Meshing of volume 42 produced 111 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 42 WITH EXCESSIVE DISTORTION ***

4815	4820	4821	4827	4828	4833	4834	4839
4840	4841	4844	4845	4846	4847	4850	4851
4852	4853	4856	4857	4858	4859	4863	4864
4865	4866	4868	4869	4870	4871	4872	4874
4875	4876	4877	4878	4880	4881	4882	4883
4884	4886	4887	4888	4889	4890	4892	4893
4894	4895	4896	4898	4899	4900	4901	4902
4904	4905	4906	4907	4908	4910	4911	4912
4913	4914	4916	4917	4918	4919	4920	4922
4923	4924	4925	4926	4928	4929	4930	4931
4932	4934	4935	4936	4937	4938	4940	4941
4942	4943	4944	4946	4947	4948	4949	4950
4952	4953	4954	4955	4956	4958	4959	4960
4961	4962	4964	4965	4966	4967	4968	

*** WARNING *** CP= 339.960 TIME= 09:42:58
Volume 43 area 169 has a corner angle of 44 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 340.000 TIME= 09:42:58
Volume 43 area 168 has a corner angle of 42 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 340.440 TIME= 09:42:59

Meshing of volume 43 produced 1 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
4999

*** WARNING *** CP= 340.480 TIME= 09:42:59
Volume 44 area 171 has a corner angle of 136 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 340.940 TIME= 09:43:00
Meshing of volume 44 produced 6 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
5185 5186 5187 5188 5189 5190

*** WARNING *** CP= 340.980 TIME= 09:43:00
Volume 45 area 172 has a corner angle of 44 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 341.460 TIME= 09:43:01
Meshing of volume 45 produced 6 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
5401 5407 5413 5419 5425 5431

*** WARNING *** CP= 341.510 TIME= 09:43:01
Volume 46 area 174 has a corner angle of 44 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 341.540 TIME= 09:43:01
Volume 46 area 175 has a corner angle of 42 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 341.980 TIME= 09:43:02
Meshing of volume 46 produced 1 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
5827

NUMBER OF VOLUMES MESHED = 28
MAXIMUM NODE NUMBER = 7014
MAXIMUM ELEMENT NUMBER = 5832
Elements for the pipe

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

NUMBER OF VOLUMES MESHED = 12
MAXIMUM NODE NUMBER = 10038
MAXIMUM ELEMENT NUMBER = 8424
Elements for the pier

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 350.570 TIME= 09:43:17

Volume 5 area 345 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 350.610 TIME= 09:43:17
Volume 5 area 344 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 350.920 TIME= 09:43:17
Meshing of volume 5 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 5 WITH EXCESSIVE DISTORTION ***

8431	8432	8454	8461	8462	8463	8470	8471
8472	8473	8474	8494	8499	8500	8501	8503
8504	8506	8507	8508	8509	8510	8511	8512
8513	8514	8515	8516	8517	8518	8519	8520
8521	8522	8523	8524	8525	8526	8527	8528
8529	8530	8531	8532	8535	8544	8553	8562
8565	8571	8574	8577	8580	8582	8583	8585
8586							

*** WARNING *** CP= 350.940 TIME= 09:43:17
Volume 7 area 347 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 350.980 TIME= 09:43:18
Volume 7 area 348 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 351.310 TIME= 09:43:18
Meshing of volume 7 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 7 WITH EXCESSIVE DISTORTION ***

8587	8588	8589	8590	8591	8596	8597	8598
8606	8607	8616	8625	8634	8641	8642	8643
8644	8645	8646	8647	8648	8649	8650	8651
8652	8653	8654	8655	8656	8657	8658	8659
8660	8661	8662	8663	8664	8665	8666	8667
8670	8671	8672	8674	8675	8683	8697	8699
8700	8702	8703	8706	8709	8712	8715	8743
8746							

*** WARNING *** CP= 351.360 TIME= 09:43:18
Volume 8 area 349 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 351.720 TIME= 09:43:19
Meshing of volume 8 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 8 WITH EXCESSIVE DISTORTION ***

8752	8753	8755	8756	8761	8762	8764	8765
8770	8773	8774	8779	8782	8783	8791	8792
8800	8801	8859	8868	8877	8886	8895	8904

*** WARNING *** CP= 351.830 TIME= 09:43:19
Volume 9 area 352 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 351.850 TIME= 09:43:19
Volume 9 area 351 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 352.260 TIME= 09:43:20
Meshing of volume 9 produced 21 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 9 WITH EXCESSIVE DISTORTION ***

9022	9023	9024	9055	9056	9057	9058	9059
9060	9065	9066	9091	9092	9093	9094	9095

9096 9099 9100 9101 9102

*** WARNING *** CP= 352.310 TIME= 09:43:20
Volume 11 area 353 has a corner angle of 25 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 352.670 TIME= 09:43:20
Meshing of volume 11 produced 63 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 11 WITH EXCESSIVE DISTORTION ***

9127	9128	9129	9130	9131	9132	9133	9134
9135	9136	9137	9138	9139	9140	9141	9142
9143	9144	9145	9146	9147	9148	9149	9150
9151	9152	9153	9154	9155	9156	9157	9158
9159	9160	9161	9162	9165	9166	9167	9168
9169	9170	9171	9174	9175	9176	9177	9178
9179	9180	9183	9192	9201	9235	9236	9237
9245	9246	9254	9255	9264	9273	9282	

*** WARNING *** CP= 352.710 TIME= 09:43:21
Volume 13 area 177 has a corner angle of 40 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 352.760 TIME= 09:43:21
Volume 13 area 147 has a corner angle of 11 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 353.070 TIME= 09:43:21
Meshing of volume 13 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 13 WITH EXCESSIVE DISTORTION ***

9292	9295	9318	9327	9330	9333	9336	9338
9339	9341	9342	9345	9354	9363	9371	9372
9379	9380	9381	9388	9389	9390	9391	9392
9412	9417	9418	9419	9421	9422	9424	9425
9426	9427	9428	9429	9430	9431	9432	9433
9434	9435	9436	9437	9438	9439	9440	9441
9442	9443	9444	9445	9446	9447	9448	9449
9450							

*** WARNING *** CP= 353.120 TIME= 09:43:21
Volume 14 area 355 has a corner angle of 25 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 353.580 TIME= 09:43:22
Meshing of volume 14 produced 71 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 14 WITH EXCESSIVE DISTORTION ***

9492	9497	9498	9503	9504	9524	9525	9526
9527	9528	9530	9531	9532	9533	9534	9538
9539	9540	9559	9560	9561	9562	9563	9564
9565	9566	9567	9568	9569	9570	9573	9574
9575	9576	9582	9595	9596	9597	9598	9599
9600	9601	9602	9603	9604	9605	9606	9608
9609	9610	9611	9612	9618	9631	9632	9633
9634	9635	9636	9637	9638	9639	9640	9641
9642	9644	9645	9646	9647	9648	9654	

*** WARNING *** CP= 353.610 TIME= 09:43:22
Volume 27 area 269 has a corner angle of 11 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 353.650 TIME= 09:43:22
Volume 27 area 270 has a corner angle of 40 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 353.960 TIME= 09:43:23
Meshing of volume 27 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 27 WITH EXCESSIVE DISTORTION ***

9667	9668	9669	9670	9671	9672	9673	9674
9675	9676	9677	9678	9679	9680	9681	9682
9683	9684	9685	9686	9687	9688	9689	9690
9691	9692	9693	9696	9697	9698	9700	9701
9709	9723	9725	9726	9728	9729	9732	9735
9738	9741	9744	9750	9759	9768	9775	9776
9777	9778	9779	9784	9785	9786	9795	9826
9827							

*** WARNING *** CP= 354.010 TIME= 09:43:23
Volume 31 area 359 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 354.150 TIME= 09:43:23
Volume 31 area 273 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 354.540 TIME= 09:43:24
Meshing of volume 31 produced 21 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 31 WITH EXCESSIVE DISTORTION ***

9853	9854	9855	9856	9859	9860	9861	9862
9863	9864	9889	9890	9895	9896	9897	9898
9899	9900	9931	9932	9933			

*** WARNING *** CP= 354.570 TIME= 09:43:24
Volume 32 area 361 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 354.920 TIME= 09:43:24
Meshing of volume 32 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 32 WITH EXCESSIVE DISTORTION ***

10048	10049	10051	10052	10057	10058	10060	10061
10066	10069	10070	10075	10078	10079	10084	10087
10093	10096	10101	10110	10119	10128	10137	10146

*** WARNING *** CP= 354.970 TIME= 09:43:25
Volume 35 area 363 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 355.460 TIME= 09:43:25
Meshing of volume 35 produced 71 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 35 WITH EXCESSIVE DISTORTION ***

10219	10225	10226	10227	10228	10229	10231	10232
10233	10234	10235	10236	10237	10238	10239	10240
10241	10242	10255	10261	10262	10263	10264	10265
10267	10268	10269	10270	10271	10272	10273	10274
10275	10276	10277	10278	10291	10297	10298	10299
10300	10303	10304	10305	10306	10307	10308	10309
10310	10311	10312	10313	10314	10333	10334	10335
10339	10340	10341	10342	10343	10345	10346	10347
10348	10349	10369	10370	10375	10376	10381	

*** WARNING *** CP= 357.480 TIME= 09:43:29
Volume 49 area 205 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 357.560 TIME= 09:43:29
Volume 49 area 203 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 357.850 TIME= 09:43:30
Meshing of volume 49 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 49 WITH EXCESSIVE DISTORTION ***

11287	11288	11289	11296	11297	11298	11305	11306
11307	11314	11315	11316	11323	11324	11325	11332
11333	11334	11341	11342	11343	11344	11345	11346
11347	11348	11349	11350	11351	11352	11353	11354
11355	11356	11357	11358	11359	11360	11361	11362
11363	11364	11365	11366	11367	11368	11369	11370
11371	11372	11373	11374	11375	11376	11377	11378
11379	11380	11381	11382	11383	11384	11385	11386
11387	11388	11389	11390	11391	11392	11393	11394
11397	11400	11403	11406	11409	11412	11415	11418
11421	11424	11427	11430	11433	11436	11439	11442
11445	11448						

*** WARNING *** CP= 357.930 TIME= 09:43:30
Volume 50 area 364 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 358.250 TIME= 09:43:30
Meshing of volume 50 produced 63 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 50 WITH EXCESSIVE DISTORTION ***

11451	11452	11453	11454	11455	11456	11457	11460
11461	11462	11463	11464	11465	11466	11467	11468
11469	11470	11471	11472	11473	11474	11475	11476
11477	11478	11479	11480	11481	11482	11483	11484
11485	11486	11487	11488	11489	11490	11491	11492
11493	11494	11495	11496	11497	11498	11499	11500
11501	11502	11532	11541	11550	11559	11568	11577
11585	11586	11594	11595	11602	11603	11604	

*** WARNING *** CP= 358.280 TIME= 09:43:30
Volume 53 area 220 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 358.320 TIME= 09:43:30
Volume 53 area 209 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 358.640 TIME= 09:43:31
Meshing of volume 53 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 53 WITH EXCESSIVE DISTORTION ***

11611	11612	11613	11620	11621	11622	11629	11630
11631	11638	11639	11640	11647	11648	11649	11656
11657	11658	11665	11666	11667	11668	11669	11670
11671	11672	11673	11674	11675	11676	11677	11678
11679	11680	11681	11682	11683	11684	11685	11686
11687	11688	11689	11690	11691	11692	11693	11694
11695	11696	11697	11698	11699	11700	11701	11702
11703	11704	11705	11706	11707	11708	11709	11710
11711	11712	11713	11714	11715	11716	11717	11718
11721	11724	11727	11730	11733	11736	11739	11742
11745	11748	11751	11754	11757	11760	11763	11766
11769	11772						

*** WARNING *** CP= 358.670 TIME= 09:43:31
Volume 55 area 293 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 358.690 TIME= 09:43:31
Volume 55 area 294 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 359.020 TIME= 09:43:32
 Meshing of volume 55 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 55 WITH EXCESSIVE DISTORTION ***

11773	11774	11775	11776	11777	11778	11779	11780
11781	11782	11783	11784	11785	11786	11787	11788
11789	11790	11791	11792	11793	11794	11795	11796
11797	11798	11799	11800	11801	11802	11803	11804
11805	11806	11807	11808	11809	11810	11811	11812
11813	11814	11815	11816	11817	11818	11819	11820
11821	11822	11823	11824	11825	11826	11829	11832
11835	11838	11841	11844	11847	11850	11853	11856
11859	11862	11865	11868	11871	11874	11877	11880
11881	11882	11883	11890	11891	11892	11899	11900
11901	11908	11909	11910	11917	11918	11919	11926
11927	11928						

*** WARNING *** CP= 361.030 TIME= 09:43:35
 Volume 61 area 369 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 361.160 TIME= 09:43:36
 Volume 61 area 368 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 361.550 TIME= 09:43:36
 Meshing of volume 61 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 61 WITH EXCESSIVE DISTORTION ***

12799	12800	12801	12802	12803	12804	12805	12806
12807	12808	12809	12810	12811	12812	12813	12814
12815	12816	12817	12818	12819	12820	12821	12822
12823	12824	12825	12826	12827	12828	12835	12836
12837	12838	12839	12840	12841	12842	12843	12844
12845	12846	12847	12848	12849	12850	12851	12852
12853	12854	12855	12856	12857	12858	12859	12860
12861	12862	12863	12864	12871	12872	12873	12874
12875	12876	12877	12878	12879	12880	12881	12882
12883	12884	12885	12886	12887	12888	12889	12890
12891	12892	12893	12894	12895	12896	12897	12898
12899	12900	12907	12908	12909	12910	12911	12912
12913	12914	12915	12916	12917	12918	12919	12920
12921	12922	12923	12924	12925	12926	12927	12928
12929	12930	12931	12932	12933	12934	12935	12936
12943	12944	12945	12946	12947	12948	12949	12950
12951	12952	12953	12954	12955	12956	12957	12958
12959	12960	12961	12962	12963	12964	12965	12966
12967	12968	12969	12970	12971	12972	12985	12986
12987	12988	12989	12990	12991	12992	12993	12994
12995	12996	12997	12998	12999	13000	13001	13002
13003	13004	13005	13006	13007	13008		

*** WARNING *** CP= 361.590 TIME= 09:43:36
 Volume 62 area 370 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 361.960 TIME= 09:43:37
 Meshing of volume 62 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 62 WITH EXCESSIVE DISTORTION ***

13017	13020	13023	13026	13029	13032	13035	13038
13041	13044	13047	13050	13053	13056	13059	13062
13065	13068	13069	13070	13071	13078	13079	13080
13087	13088	13089	13096	13097	13098	13105	13106
13107	13114	13115	13116	13123	13124	13125	13126
13127	13128	13129	13130	13131	13132	13133	13134
13135	13136	13137	13138	13139	13140	13141	13142

13143	13144	13145	13146	13147	13148	13149	13150
13151	13152	13153	13154	13155	13156	13157	13158
13159	13160	13161	13162	13163	13164	13165	13166
13167	13168	13169	13170	13171	13172	13173	13174
13175	13176						

*** WARNING *** CP= 362.000 TIME= 09:43:37
Volume 66 area 372 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.470 TIME= 09:43:38
Meshing of volume 66 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 66 WITH EXCESSIVE DISTORTION ***

13177	13178	13179	13180	13181	13182	13183	13184
13185	13186	13187	13188	13189	13190	13191	13192
13193	13194	13195	13196	13197	13198	13199	13200
13201	13202	13203	13204	13205	13206	13213	13214
13215	13216	13217	13218	13219	13220	13221	13222
13223	13224	13225	13226	13227	13228	13229	13230
13231	13232	13233	13234	13235	13236	13237	13238
13239	13240	13241	13242	13249	13250	13251	13252
13253	13254	13255	13256	13257	13258	13259	13260
13261	13262	13263	13264	13265	13266	13267	13268
13269	13270	13271	13272	13273	13274	13275	13276
13277	13278	13285	13286	13287	13288	13289	13290
13291	13292	13293	13294	13295	13296	13297	13298
13299	13300	13301	13302	13303	13304	13305	13306
13307	13308	13309	13310	13311	13312	13313	13314
13321	13322	13323	13324	13325	13326	13327	13328
13329	13330	13331	13332	13333	13334	13335	13336
13337	13338	13339	13340	13341	13342	13343	13344
13345	13346	13347	13348	13349	13350	13363	13364
13365	13366	13367	13368	13369	13370	13371	13372
13373	13374	13375	13376	13377	13378	13379	13380
13381	13382	13383	13384	13385	13386		

*** WARNING *** CP= 362.510 TIME= 09:43:38
Volume 67 area 373 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.860 TIME= 09:43:39
Meshing of volume 67 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 67 WITH EXCESSIVE DISTORTION ***

13395	13398	13401	13404	13407	13410	13413	13416
13419	13422	13425	13428	13431	13434	13437	13440
13443	13446	13447	13448	13449	13456	13457	13458
13465	13466	13467	13474	13475	13476	13483	13484
13485	13492	13493	13494	13501	13502	13503	13504
13505	13506	13507	13508	13509	13510	13511	13512
13513	13514	13515	13516	13517	13518	13519	13520
13521	13522	13523	13524	13525	13526	13527	13528
13529	13530	13531	13532	13533	13534	13535	13536
13537	13538	13539	13540	13541	13542	13543	13544
13545	13546	13547	13548	13549	13550	13551	13552
13553	13554						

*** WARNING *** CP= 362.880 TIME= 09:43:39
Volume 74 area 315 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.940 TIME= 09:43:39
Volume 74 area 318 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.260 TIME= 09:43:39

Meshing of volume 74 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 74 WITH EXCESSIVE DISTORTION ***
13555 13556 13557 13558 13559 13560 13561 13562
13563 13564 13565 13566 13567 13568 13569 13570
13571 13572 13573 13574 13575 13576 13577 13578
13579 13580 13581 13582 13583 13584 13585 13586
13587 13588 13589 13590 13591 13592 13593 13594
13595 13596 13597 13598 13599 13600 13601 13602
13603 13604 13605 13606 13607 13608 13611 13614
13617 13620 13623 13626 13629 13632 13635 13638
13641 13644 13647 13650 13653 13656 13659 13662
13663 13664 13665 13672 13673 13674 13681 13682
13683 13690 13691 13692 13699 13700 13701 13708
13709 13710
```

*** WARNING *** CP= 363.300 TIME= 09:43:39
Volume 75 area 342 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.660 TIME= 09:43:40
Meshing of volume 75 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
13717 13718 13719 13726 13727 13728 13735 13736
13737 13744 13745 13746 13753 13754 13755 13762
13763 13764 13771 13772 13773 13774 13775 13776
13777 13778 13779 13780 13781 13782 13783 13784
13785 13786 13787 13788 13789 13790 13791 13792
13793 13794 13795 13796 13797 13798 13799 13800
13801 13802 13803 13804 13805 13806 13807 13808
13809 13810 13811 13812 13813 13814 13815 13816
13817 13818 13819 13820 13821 13822 13823 13824
13827 13830 13833 13836 13839 13842 13845 13848
13851 13854 13857 13860 13863 13866 13869 13872
13875 13878
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*** WARNING *** CP= 363.760 TIME= 09:43:40
Volume 80 area 378 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.800 TIME= 09:43:40
Volume 80 area 379 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.210 TIME= 09:43:41
Meshing of volume 80 produced 174 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 80 WITH EXCESSIVE DISTORTION ***
13885 13886 13887 13888 13889 13890 13891 13892
13893 13894 13895 13896 13897 13898 13899 13900
13901 13902 13903 13904 13905 13906 13907 13908
13921 13922 13923 13924 13925 13926 13927 13928
13929 13930 13931 13932 13933 13934 13935 13936
13937 13938 13939 13940 13941 13942 13943 13944
13945 13946 13947 13948 13949 13950 13957 13958
13959 13960 13961 13962 13963 13964 13965 13966
13967 13968 13969 13970 13971 13972 13973 13974
13975 13976 13977 13978 13979 13980 13981 13982
13983 13984 13985 13986 13993 13994 13995 13996
13997 13998 13999 14000 14001 14002 14003 14004
14005 14006 14007 14008 14009 14010 14011 14012
14013 14014 14015 14016 14017 14018 14019 14020
14021 14022 14029 14030 14031 14032 14033 14034
14035 14036 14037 14038 14039 14040 14041 14042
14043 14044 14045 14046 14047 14048 14049 14050
14051 14052 14053 14054 14055 14056 14057 14058
14065 14066 14067 14068 14069 14070 14071 14072
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14073	14074	14075	14076	14077	14078	14079	14080
14081	14082	14083	14084	14085	14086	14087	14088
14089	14090	14091	14092	14093	14094		

*** WARNING *** CP= 364.250 TIME= 09:43:41
Volume 81 area 380 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.600 TIME= 09:43:42
Meshing of volume 81 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 81 WITH EXCESSIVE DISTORTION ***

14095	14096	14097	14104	14105	14106	14113	14114
14115	14122	14123	14124	14131	14132	14133	14140
14141	14142	14149	14150	14151	14152	14153	14154
14155	14156	14157	14158	14159	14160	14161	14162
14163	14164	14165	14166	14167	14168	14169	14170
14171	14172	14173	14174	14175	14176	14177	14178
14179	14180	14181	14182	14183	14184	14185	14186
14187	14188	14189	14190	14191	14192	14193	14194
14195	14196	14197	14198	14199	14200	14201	14202
14205	14208	14211	14214	14217	14220	14223	14226
14229	14232	14235	14238	14241	14244	14247	14250
14253	14256						

*** WARNING *** CP= 364.700 TIME= 09:43:42
Volume 82 area 382 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 365.120 TIME= 09:43:42
Meshing of volume 82 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 82 WITH EXCESSIVE DISTORTION ***

14263	14264	14265	14266	14267	14268	14269	14270
14271	14272	14273	14274	14275	14276	14277	14278
14279	14280	14281	14282	14283	14284	14285	14286
14299	14300	14301	14302	14303	14304	14305	14306
14307	14308	14309	14310	14311	14312	14313	14314
14315	14316	14317	14318	14319	14320	14321	14322
14323	14324	14325	14326	14327	14328	14335	14336
14337	14338	14339	14340	14341	14342	14343	14344
14345	14346	14347	14348	14349	14350	14351	14352
14353	14354	14355	14356	14357	14358	14359	14360
14361	14362	14363	14364	14371	14372	14373	14374
14375	14376	14377	14378	14379	14380	14381	14382
14383	14384	14385	14386	14387	14388	14389	14390
14391	14392	14393	14394	14395	14396	14397	14398
14399	14400	14407	14408	14409	14410	14411	14412
14413	14414	14415	14416	14417	14418	14419	14420
14421	14422	14423	14424	14425	14426	14427	14428
14429	14430	14431	14432	14433	14434	14435	14436
14443	14444	14445	14446	14447	14448	14449	14450
14451	14452	14453	14454	14455	14456	14457	14458
14459	14460	14461	14462	14463	14464	14465	14466
14467	14468	14469	14470	14471	14472		

NUMBER OF VOLUMES MESHED = 32
MAXIMUM NODE NUMBER = 17185
MAXIMUM ELEMENT NUMBER = 14472
Elements for the plate

ELEMENT TYPE SET TO 4

MATERIAL NUMBER SET TO 4

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 365.420 TIME= 09:43:43
Volume 22 area 356 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 365.730 TIME= 09:43:44
Meshing of volume 22 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 22 WITH EXCESSIVE DISTORTION ***

14473	14474	14475	14476	14477	14478	14479	14480
14481	14482	14483	14484	14485	14486	14487	14488
14489	14490	14491	14492	14493	14494	14495	14496
14497	14498	14499	14500	14501	14502	14503	14504
14505	14506	14507	14508	14509	14510	14511	14512
14513	14514	14515	14516	14517	14518	14519	14520
14521	14522	14523	14524	14525	14526	14529	14532
14535	14538	14541	14544	14547	14550	14553	14556
14559	14562	14565	14568	14571	14574	14577	14580
14583	14592	14601	14610	14619	14628		

*** WARNING *** CP= 365.800 TIME= 09:43:44
Volume 28 area 358 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 366.240 TIME= 09:43:44
Meshing of volume 28 produced 114 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 28 WITH EXCESSIVE DISTORTION ***

14635	14636	14637	14638	14639	14641	14642	14643
14644	14645	14647	14648	14649	14650	14651	14653
14654	14655	14656	14671	14672	14673	14674	14675
14677	14678	14679	14680	14681	14683	14684	14685
14686	14687	14689	14690	14691	14692	14707	14708
14709	14710	14711	14713	14714	14715	14716	14717
14719	14720	14721	14722	14723	14725	14726	14727
14728	14743	14744	14745	14746	14747	14749	14750
14751	14752	14753	14755	14756	14757	14758	14759
14761	14762	14763	14764	14779	14780	14781	14782
14783	14785	14786	14787	14788	14789	14791	14792
14793	14794	14795	14797	14798	14799	14800	14815
14816	14817	14818	14819	14821	14822	14823	14824
14825	14827	14828	14829	14830	14831	14833	14834
14835	14836						

*** WARNING *** CP= 366.380 TIME= 09:43:45
Volume 51 area 366 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 366.770 TIME= 09:43:45
Meshing of volume 51 produced 114 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 51 WITH EXCESSIVE DISTORTION ***

14851	14852	14853	14854	14857	14858	14859	14860
14863	14864	14865	14866	14869	14870	14871	14872
14875	14876	14877	14878	14881	14882	14883	14884
14887	14888	14889	14890	14893	14894	14895	14896
14899	14900	14901	14902	14905	14906	14907	14908
14911	14912	14913	14914	14917	14918	14919	14920
14923	14924	14925	14926	14929	14930	14931	14932
14935	14936	14937	14938	14941	14942	14943	14944
14947	14948	14949	14950	14953	14954	14955	14956
14959	14960	14961	14962	14965	14966	14967	14968
14971	14972	14973	14974	14977	14978	14979	14980
14983	14984	14985	14986	14989	14990	14991	14992
14995	14996	14997	15001	15002	15003	15007	15008
15009	15013	15014	15015	15019	15020	15021	15025
15026	15027						

*** WARNING *** CP= 366.840 TIME= 09:43:45
Volume 54 area 367 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 367.190 TIME= 09:43:46
Meshing of volume 54 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 54 WITH EXCESSIVE DISTORTION ***

15067	15068	15069	15070	15071	15072	15073	15074
15075	15076	15077	15078	15079	15080	15081	15082
15083	15084	15085	15086	15087	15088	15089	15090
15091	15092	15093	15094	15095	15096	15097	15098
15099	15100	15101	15102	15103	15104	15105	15106
15107	15108	15109	15110	15111	15112	15113	15114
15115	15116	15117	15118	15119	15120	15123	15132
15141	15150	15159	15168	15175	15176	15177	15184
15185	15186	15193	15194	15195	15202	15203	15204
15211	15212	15213	15220	15221	15222		

*** WARNING *** CP= 367.300 TIME= 09:43:46
Volume 70 area 375 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 367.700 TIME= 09:43:47
Meshing of volume 70 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 70 WITH EXCESSIVE DISTORTION ***

15230	15231	15232	15233	15234	15236	15237	15238
15239	15240	15242	15243	15244	15245	15246	15248
15249	15250	15251	15252	15254	15255	15256	15257
15258	15260	15261	15262	15263	15264	15266	15267
15268	15269	15270	15272	15273	15274	15275	15276
15278	15279	15280	15281	15282	15284	15285	15286
15287	15288	15290	15291	15292	15293	15294	15296
15297	15298	15299	15300	15302	15303	15304	15305
15306	15308	15309	15310	15311	15312	15314	15315
15316	15317	15318	15320	15321	15322	15323	15324
15326	15327	15328	15329	15330	15332	15333	15334
15335	15336	15338	15339	15340	15341	15342	15344
15345	15346	15347	15348	15350	15351	15352	15353
15354	15356	15357	15358	15359	15360	15362	15363
15364	15365	15366	15368	15369	15370	15371	15372
15374	15375	15376	15377	15378	15380	15381	15382
15383	15384	15386	15387	15388	15389	15390	15392
15393	15394	15395	15396	15398	15399	15400	15401
15402	15404	15405	15406	15407	15408	15410	15411
15412	15413	15416	15417	15418	15419	15422	15423
15424	15425	15428	15429	15430	15431	15434	15435
15436	15437	15440	15441	15442	15443		

*** WARNING *** CP= 367.740 TIME= 09:43:47
Volume 71 area 376 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 368.110 TIME= 09:43:48
Meshing of volume 71 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 71 WITH EXCESSIVE DISTORTION ***

15447	15450	15453	15456	15459	15462	15465	15468
15471	15474	15477	15480	15483	15486	15489	15492
15495	15498	15499	15500	15501	15508	15509	15510
15517	15518	15519	15526	15527	15528	15535	15536
15537	15544	15545	15546	15553	15554	15555	15556
15557	15558	15559	15560	15561	15562	15563	15564
15565	15566	15567	15568	15569	15570	15571	15572
15573	15574	15575	15576	15577	15578	15579	15580

15581	15582	15583	15584	15585	15586	15587	15588
15589	15590	15591	15592	15593	15594	15595	15596
15597	15598	15599	15600	15601	15602	15603	15604
15605	15606						

*** WARNING *** CP= 368.190 TIME= 09:43:48
 Volume 83 area 383 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 368.500 TIME= 09:43:48
 Meshing of volume 83 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 83 WITH EXCESSIVE DISTORTION ***

15607	15608	15609	15616	15617	15618	15625	15626
15627	15634	15635	15636	15643	15644	15645	15652
15653	15654	15661	15662	15663	15664	15665	15666
15667	15668	15669	15670	15671	15672	15673	15674
15675	15676	15677	15678	15679	15680	15681	15682
15683	15684	15685	15686	15687	15688	15689	15690
15691	15692	15693	15694	15695	15696	15697	15698
15699	15700	15701	15702	15703	15704	15705	15706
15707	15708	15709	15710	15711	15712	15713	15714
15717	15720	15723	15726	15729	15732	15735	15738
15741	15744	15747	15750	15753	15756	15759	15762
15765	15768						

*** WARNING *** CP= 368.600 TIME= 09:43:49
 Volume 84 area 385 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 369.020 TIME= 09:43:49
 Meshing of volume 84 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 84 WITH EXCESSIVE DISTORTION ***

15770	15771	15772	15773	15776	15777	15778	15779
15782	15783	15784	15785	15788	15789	15790	15791
15794	15795	15796	15797	15800	15801	15802	15803
15805	15806	15807	15808	15809	15811	15812	15813
15814	15815	15817	15818	15819	15820	15821	15823
15824	15825	15826	15827	15829	15830	15831	15832
15833	15835	15836	15837	15838	15839	15841	15842
15843	15844	15845	15847	15848	15849	15850	15851
15853	15854	15855	15856	15857	15859	15860	15861
15862	15863	15865	15866	15867	15868	15869	15871
15872	15873	15874	15875	15877	15878	15879	15880
15881	15883	15884	15885	15886	15887	15889	15890
15891	15892	15893	15895	15896	15897	15898	15899
15901	15902	15903	15904	15905	15907	15908	15909
15910	15911	15913	15914	15915	15916	15917	15919
15920	15921	15922	15923	15925	15926	15927	15928
15929	15931	15932	15933	15934	15935	15937	15938
15939	15940	15941	15943	15944	15945	15946	15947
15949	15950	15951	15952	15953	15955	15956	15957
15958	15959	15961	15962	15963	15964	15965	15967
15968	15969	15970	15971	15973	15974	15975	15976
15977	15979	15980	15981	15982	15983		

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 18690
 MAXIMUM ELEMENT NUMBER = 15984
 Contact Elements Generation

MERGE COINCIDENT NODES WITHIN TOLERANCE OF 0.10000E-03

*** NOTE *** CP= 394.930 TIME= 09:44:35
 Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

ELEMENT TYPE SET TO 5

REAL CONSTANT NUMBER= 5

MATERIAL NUMBER SET TO 5

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18151 TO 18156 STEP 1

6 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 5426 TO 5426 STEP 1

7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18397 TO 18401 STEP 1

12 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18361 TO 18366 STEP 5

14 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18439 TO 18441 STEP 2

16 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18428 TO 18428 STEP 1

17 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18434 TO 18435 STEP 1

19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18335 TO 18335 STEP 1

20 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18561 TO 18561 STEP 1

21 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 17971 TO 17971 STEP 1

22 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18021 TO 18021 STEP 1

23 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 17940 TO 17940 STEP 1

24 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18169 TO 18170 STEP 1

26 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18161 TO 18163 STEP 2

28 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18174 TO 18176 STEP 2

30 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFA ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 15984 STEP 1

15984 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

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

5832 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

7014 NODES (OF 18690 DEFINED) SELECTED FROM
5832 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

210 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN-0.15100 AND 0.15100
KABS= 0. TOLERANCE= 0.000000E+00

210 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 0.44900 AND 0.45100

KABS= 0. TOLERANCE= 0.000000E+00

13 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFB ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 15984 STEP 1

15984 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

GENERATE ELEMENTS BETWEEN CONTACT (SURFB) AND TARGET (SURFA) SURFACES.
TARGET SURFACE OF PLATE OR BEAM ELEMENTS IS TOP.
ELEMENT TYPE TO BE GENERATED = CONTAC49.

*** WARNING *** CP= 399.410 TIME= 09:44:43
Contact elements are not generated between contact nodes and target
faces which include those nodes.

NUMBER OF CONTACT ELEMENTS GENERATED = 178

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

16162 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DESTROY ASSOCIATIVITY OF FINITE ELEMENT MODEL AND SOLID MODEL

*** WARNING *** CP= 399.700 TIME= 09:44:44
CLEAR, SELECT, and MESH boundary condition commands are not possible
after MODMSH.
NUMBER OF MESH ITEMS DISCONNECTED FROM NODES AND ELEMENTS = 756

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1

2592 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

3100 ELEMENTS (OF 16162 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3832 NODES (OF 18690 DEFINED) SELECTED FROM
3100 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 3 TO 3 STEP 1

168 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= invert2.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 410.010

***** ANSYS SOLUTION ROUTINE *****

PERFORM A STATIC ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS
Define constraints

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

534 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

319 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

1164 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12547 TO 12547 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12553 TO 12558 STEP 1

7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12589 TO 12630 STEP 1

49 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12841 TO 12882 STEP 1

```
91 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13093 TO 13134 STEP 1

133 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13345 TO 13386 STEP 1

175 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14484 TO 14489 STEP 1

181 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14520 TO 14555 STEP 1

217 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14736 TO 14771 STEP 1

253 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14952 TO 14987 STEP 1

289 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 15168 TO 15203 STEP 1

325 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
COORDINATE SYSTEM 15 DEFINITION. TYPE= 0 (CARTESIAN)
ORIGIN NODE= 12553 XNODE= 12558 YNODE= 12601 PARAMETERS= 1.000 1.000
ORIENTATION= 1.00 0.00 0.00 0.00 0.83 0.55 0.00 -0.55 0.83
THXY,THYZ,THZX= 0.000 33.700 0.000
ACTIVE COORDINATE SYSTEM SET TO 15 (CARTESIAN)

*** WARNING *** CP= 412.550 TIME= 09:45:07
NROTAT is not a recognized SOLUTION command, abbreviation, or macro.
This command will be ignored.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)
SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 344 TO 344 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1340 TO 1344 STEP 4

3 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1304 TO 1304 STEP 1

4 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
Vertical force divided over four nodes

SPECIFIED NODAL LOAD FY FOR SELECTED NODES 1 TO 18690 BY 1
```

REAL= -30915.6000 IMAG= 0.000000000E+00

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ACEL= 0.00000E+00 9.8100 0.00000E+00

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 414.910 TIME= 09:45:11
Element 73 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.910 TIME= 09:45:11
Element 78 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.910 TIME= 09:45:11
Element 79 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.920 TIME= 09:45:11
Element 84 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.920 TIME= 09:45:11
Element 85 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.920 TIME= 09:45:11
Element 90 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.930 TIME= 09:45:11
Element 91 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.930 TIME= 09:45:11

Element 96 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.930 TIME= 09:45:11
Element 97 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.940 TIME= 09:45:11
Element 102 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.940 TIME= 09:45:11
Element 103 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.950 TIME= 09:45:11
Element 108 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.950 TIME= 09:45:11
Element 109 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.950 TIME= 09:45:11
Element 109 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.950 TIME= 09:45:11
Element 114 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.950 TIME= 09:45:11
Element 114 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.960 TIME= 09:45:11
Element 115 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.960 TIME= 09:45:11
Element 115 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.960 TIME= 09:45:11
Element 120 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.960 TIME= 09:45:11
Element 120 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.970 TIME= 09:45:11
Element 121 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.970 TIME= 09:45:11
Element 121 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.970 TIME= 09:45:11
Element 126 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.970 TIME= 09:45:11
Element 126 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.970 TIME= 09:45:11
Element 127 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.980 TIME= 09:45:11
Element 127 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.980 TIME= 09:45:11
Element 132 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.980 TIME= 09:45:11
Element 132 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.980 TIME= 09:45:11
Element 133 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.980 TIME= 09:45:11
Element 133 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.990 TIME= 09:45:11
Element 138 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.990 TIME= 09:45:11
Element 138 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.990 TIME= 09:45:11
Element 139 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 414.990 TIME= 09:45:11
Element 139 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.000 TIME= 09:45:11
Element 144 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.000 TIME= 09:45:11
Element 144 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.000 TIME= 09:45:11
Element 145 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.000 TIME= 09:45:11
Element 145 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.010 TIME= 09:45:11
Element 150 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.010 TIME= 09:45:11
Element 150 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.010 TIME= 09:45:11
Element 151 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.010 TIME= 09:45:11
Element 151 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.020 TIME= 09:45:11

Element 156 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.020 TIME= 09:45:11
Element 156 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.020 TIME= 09:45:11
Element 157 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.020 TIME= 09:45:11
Element 157 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.030 TIME= 09:45:11
Element 162 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.030 TIME= 09:45:11
Element 162 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.030 TIME= 09:45:11
Element 163 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.030 TIME= 09:45:11
Element 163 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.040 TIME= 09:45:11
Element 168 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.040 TIME= 09:45:11
Element 168 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.040 TIME= 09:45:11
Element 169 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.040 TIME= 09:45:11
Element 169 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.040 TIME= 09:45:11
Element 174 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.050 TIME= 09:45:11
Element 174 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.050 TIME= 09:45:11
Element 175 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.050 TIME= 09:45:11
Element 175 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.050 TIME= 09:45:11
Element 180 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.060 TIME= 09:45:11
Element 180 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.060 TIME= 09:45:11
Element 181 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.060 TIME= 09:45:11
Element 181 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.060 TIME= 09:45:11
Element 186 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.060 TIME= 09:45:11
Element 186 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.070 TIME= 09:45:11
Element 187 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.070 TIME= 09:45:11
Element 187 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.070 TIME= 09:45:11
Element 192 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.070 TIME= 09:45:11
Element 192 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.070 TIME= 09:45:11
Element 193 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.080 TIME= 09:45:11
Element 193 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.080 TIME= 09:45:11
Element 198 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.080 TIME= 09:45:11
Element 198 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.080 TIME= 09:45:11
Element 199 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.090 TIME= 09:45:11
Element 199 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.090 TIME= 09:45:11
Element 204 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.090 TIME= 09:45:11
Element 204 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.090 TIME= 09:45:11
Element 205 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.090 TIME= 09:45:11

Element 205 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.100 TIME= 09:45:11
Element 210 has an angle between adjacent edges of 137.977129 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.100 TIME= 09:45:11
Element 210 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.100 TIME= 09:45:11
Element 211 has an angle between adjacent edges of 137.977129 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.100 TIME= 09:45:11
Element 211 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.110 TIME= 09:45:11
Element 216 has an angle between adjacent edges of 137.977129 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 415.110 TIME= 09:45:11
Element 216 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.110 TIME= 09:45:13
Element 1801 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.110 TIME= 09:45:13
Element 1802 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.110 TIME= 09:45:13
Element 1803 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.110 TIME= 09:45:13
Element 1804 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.110 TIME= 09:45:13
Element 1805 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.120 TIME= 09:45:13
Element 1806 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.130 TIME= 09:45:13
Element 1831 has an angle between adjacent edges of 43.8537786 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.130 TIME= 09:45:13
Element 1832 has an angle between adjacent edges of 43.8537786 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 416.140 TIME= 09:45:13
Element 1833 has an angle between adjacent edges of 43.8537786 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

degrees.

*** WARNING *** CP= 416.140 TIME= 09:45:13
Element 1834 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.140 TIME= 09:45:13
Element 1835 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.140 TIME= 09:45:13
Element 1836 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.140 TIME= 09:45:13
Element 1837 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.150 TIME= 09:45:13
Element 1837 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.150 TIME= 09:45:13
Element 1838 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.150 TIME= 09:45:13
Element 1838 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.150 TIME= 09:45:13
Element 1839 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.150 TIME= 09:45:13
Element 1839 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.150 TIME= 09:45:13
Element 1840 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.160 TIME= 09:45:13
Element 1840 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.160 TIME= 09:45:13
Element 1841 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.160 TIME= 09:45:13
Element 1841 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.160 TIME= 09:45:13
Element 1842 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 416.160 TIME= 09:45:13
Element 1842 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.180 TIME= 09:45:13
Element 1867 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.180 TIME= 09:45:13
Element 1868 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.180 TIME= 09:45:13
Element 1868 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.190 TIME= 09:45:13
Element 1868 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.190 TIME= 09:45:13
Element 1869 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.190 TIME= 09:45:13
Element 1869 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.190 TIME= 09:45:13
Element 1870 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.190 TIME= 09:45:13
Element 1870 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.190 TIME= 09:45:13
Element 1871 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.200 TIME= 09:45:13
Element 1871 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.200 TIME= 09:45:13
Element 1872 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.200 TIME= 09:45:13
Element 1872 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.200 TIME= 09:45:13
Element 1873 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 416.200 TIME= 09:45:13
Element 1873 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.200 TIME= 09:45:13
Element 1874 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.210 TIME= 09:45:13
Element 1874 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.210 TIME= 09:45:13
Element 1875 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.210 TIME= 09:45:13
Element 1875 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.210 TIME= 09:45:13
Element 1876 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.210 TIME= 09:45:13
Element 1876 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.210 TIME= 09:45:13
Element 1877 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.220 TIME= 09:45:13
Element 1877 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.220 TIME= 09:45:13
Element 1878 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.220 TIME= 09:45:13
Element 1878 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.240 TIME= 09:45:13
Element 1903 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.240 TIME= 09:45:13
Element 1903 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.240 TIME= 09:45:13
Element 1904 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 416.240 TIME= 09:45:13
Element 1904 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.240 TIME= 09:45:13
Element 1905 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.250 TIME= 09:45:13
Element 1905 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.250 TIME= 09:45:13
Element 1906 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.250 TIME= 09:45:13
Element 1906 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.250 TIME= 09:45:13
Element 1907 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.250 TIME= 09:45:13
Element 1907 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.260 TIME= 09:45:13
Element 1908 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.260 TIME= 09:45:13
Element 1908 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.260 TIME= 09:45:13
Element 1909 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.260 TIME= 09:45:13
Element 1909 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.260 TIME= 09:45:13
Element 1910 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.260 TIME= 09:45:13
Element 1910 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.270 TIME= 09:45:13
Element 1911 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 416.270 TIME= 09:45:13
Element 1911 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.270 TIME= 09:45:13
Element 1912 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.270 TIME= 09:45:13
Element 1912 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.270 TIME= 09:45:13
Element 1913 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.280 TIME= 09:45:13
Element 1913 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.280 TIME= 09:45:13
Element 1914 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.280 TIME= 09:45:13
Element 1914 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.290 TIME= 09:45:13
Element 1939 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.300 TIME= 09:45:13
Element 1939 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.300 TIME= 09:45:13
Element 1940 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.300 TIME= 09:45:13
Element 1940 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.300 TIME= 09:45:13
Element 1941 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.300 TIME= 09:45:13
Element 1941 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.310 TIME= 09:45:13
Element 1942 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 416.310 TIME= 09:45:13
Element 1942 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.310 TIME= 09:45:13
Element 1943 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.310 TIME= 09:45:13
Element 1943 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.310 TIME= 09:45:13
Element 1944 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 416.310 TIME= 09:45:13
Element 1944 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.670 TIME= 09:45:16
Element 4123 has an angle between adjacent edges of 140.634734 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.670 TIME= 09:45:16
Element 4123 has an angle between adjacent edges of 139.943038 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.670 TIME= 09:45:16
Element 4124 has an angle between adjacent edges of 141.335859 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.670 TIME= 09:45:16
Element 4124 has an angle between adjacent edges of 140.634734 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.670 TIME= 09:45:16
Element 4125 has an angle between adjacent edges of 142.046391 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.670 TIME= 09:45:16
Element 4125 has an angle between adjacent edges of 141.335859 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.680 TIME= 09:45:16
Element 4126 has an angle between adjacent edges of 142.766299 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.680 TIME= 09:45:16
Element 4126 has an angle between adjacent edges of 142.046391 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.680 TIME= 09:45:16
Element 4127 has an angle between adjacent edges of 143.495537 on face
3 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 417.680 TIME= 09:45:16
Element 4127 has an angle between adjacent edges of 142.766299 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.680 TIME= 09:45:16
Element 4128 has an angle between adjacent edges of 144.234047 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.680 TIME= 09:45:16
Element 4128 has an angle between adjacent edges of 143.495537 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.690 TIME= 09:45:16
Element 4129 has an angle between adjacent edges of 146.672082 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.690 TIME= 09:45:16
Element 4129 has an angle between adjacent edges of 40.0577585 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.690 TIME= 09:45:16
Element 4130 has an angle between adjacent edges of 147.373275 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.690 TIME= 09:45:16
Element 4130 has an angle between adjacent edges of 39.3659959 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.690 TIME= 09:45:16
Element 4131 has an angle between adjacent edges of 148.083878 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.690 TIME= 09:45:16
Element 4131 has an angle between adjacent edges of 38.6648032 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.700 TIME= 09:45:16
Element 4132 has an angle between adjacent edges of 148.803858 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.700 TIME= 09:45:16
Element 4132 has an angle between adjacent edges of 37.9542006 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.700 TIME= 09:45:16
Element 4133 has an angle between adjacent edges of 149.53317 on face 3
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 417.700 TIME= 09:45:16
Element 4133 has an angle between adjacent edges of 37.2342205 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.700 TIME= 09:45:16
Element 4134 has an angle between adjacent edges of 150.271757 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.710 TIME= 09:45:16
Element 4134 has an angle between adjacent edges of 36.5049078 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.710 TIME= 09:45:16
Element 4135 has an angle between adjacent edges of 150.882604 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.710 TIME= 09:45:16
Element 4135 has an angle between adjacent edges of 34.0204766 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.710 TIME= 09:45:16
Element 4136 has an angle between adjacent edges of 151.583865 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.710 TIME= 09:45:16
Element 4136 has an angle between adjacent edges of 33.3286479 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.720 TIME= 09:45:16
Element 4137 has an angle between adjacent edges of 152.294538 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.720 TIME= 09:45:16
Element 4137 has an angle between adjacent edges of 32.627387 on face 5
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 417.720 TIME= 09:45:16
Element 4138 has an angle between adjacent edges of 153.014591 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 417.720 TIME= 09:45:16
Element 4138 has an angle between adjacent edges of 31.9167142 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

Error messages discontinued after 200 messages were displayed.
More may exist. See (invert2.err) for suppressed messages.

*** NOTE *** CP= 433.050 TIME= 09:45:43
The model data was checked and warning messages were found.
Please review output or errors file (invert2.err) for these warning
messages.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 09:45:43 JAN 30, 1997 CP= 433.050
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.UX UY UZ
ANALYSIS TYPESTATIC (STEADY-STATE)
NONLINEAR GEOMETRIC EFFECTSON
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 434.930 TIME= 09:45:46
Present time 0 is less than or equal to the previous time.
Time will default to 1.

*** NOTE *** CP= 434.930 TIME= 09:45:46
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. 1.0000
NUMBER OF SUBSTEPS. 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 0.00000E+00 9.8100 0.00000E+00
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 373.22

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = 0.12663E-09	IXX = 160.7	IXX = 43.68
YC = 0.34039	IYY = 101.0	IYY = 27.21
ZC = 0.44458	IZZ = 64.86	IZZ = 21.62
	IXY = -0.2643E-07	IXY = -0.1034E-07
	IYZ = -58.65	IYZ = -2.166
	IZX = -0.2836E-07	IZX = -0.7348E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
1	57.6774
2	19.2167
3	259.094
4	37.2289

Range of element maximum matrix coefficients in global coordinates
Maximum= 1.628307862E+10 at element 15550.
Minimum= 92679403.7 at element 10026.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	54.870	0.009
2	2592	SOLID45	24.580	0.009
3	5880	SOLID45	55.240	0.009
4	1512	SOLID45	14.160	0.009
5	178	CONTAC49	0.200	0.001

Time at end of element matrix formulation CP= 600.19.
FORCE CONVERGENCE VALUE = 0.6183E+05 CRITERION= 61.83

Estimated number of active DOF= 54873.

Maximum wavefront= 2095.

Time at end of matrix triangularization CP= 2467.37.

Equation solver maximum pivot= 6.025291661E+10 at node 17942 UY.

Equation solver minimum pivot= 16793206.3 at node 1527 UX.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.2738E-03

FORCE CONVERGENCE VALUE = 0.1245E+05 CRITERION= 64.62

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.1063E-04

FORCE CONVERGENCE VALUE = 75.20 CRITERION= 64.54

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.3980E-07

FORCE CONVERGENCE VALUE = 1.776 CRITERION= 64.54 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** NOTE ***

CP= 6892.580 TIME= 13:24:55

Page file used.

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

1	5832	SOLID45	49.060	0.008
---	------	---------	--------	-------

2	2592	SOLID45	21.540	0.008
---	------	---------	--------	-------

3	5880	SOLID45	48.030	0.008
---	------	---------	--------	-------

4	1512	SOLID45	12.440	0.008
---	------	---------	--------	-------

5	178	CONTAC49	0.290	0.002
---	-----	----------	-------	-------

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
------	--------	-------	----------	--------

1	5832	SOLID45	1.630	0.000
---	------	---------	-------	-------

2	2592	SOLID45	0.540	0.000
---	------	---------	-------	-------

3	5880	SOLID45	1.550	0.000
---	------	---------	-------	-------

4	1512	SOLID45	0.390	0.000
---	------	---------	-------	-------

5	178	CONTAC49	0.040	0.000
---	-----	----------	-------	-------

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 3

*** TIME = 1.00000 TIME INC = 1.00000

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 54873

R.M.S. WAVEFRONT SIZE = 1365.3

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096

82.000 MB WRITTEN ON ELEMENT MATRIX FILE: invert2.emat

82.297 MB WRITTEN ON ELEMENT SAVED DATA FILE: invert2.esav

553.063 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: invert2.tri

32.125 MB WRITTEN ON RESULTS FILE: invert2.rst

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 6994.350

PURGE ALL SOLUTION AND POST DATA

SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= invert2.db

FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 6853

NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***

NUMBER OF R/W OPERATIONS= 2664

MAXIMUM RECORD NUMBER = 1053

RECORD SIZE (1*4 WORDS) = 16384

PAGE FILE SIZE (MB) = 65.813

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED |
|-----|
|               REV. 5.1  24         | HP 9000/7XX
| CP TIME      (sec) =      7008.020 | TIME = 13:30:25
| ELAPSED TIME (sec) =     14266.000 | DATE  = 01/30/97
|                                     |
*-----*
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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

-----*

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PRESS <CR> OR <ENTER> TO CONTINUE

***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = invert3
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.180 TIME= 14:45:32
There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=invert3 14:45:32 JAN 30, 1997 CP= 0.190

```

1 /config,nvpag,512
2 /units,si
3 /prep7
4 /title, 3-D static support and pier analysis with a seismic load factor
5 /vcon,,0
6 /nerr,,1000000
7 /com, Define Parameters
8 *afun,deg
9 /com, Tube
10 teow=.2032 ! Tube outer width
11 tets=.0143 ! Tube thickness
12 teiw=teow-2*tets ! Tube inner width
13 teht=.1016 ! Tube height
14 telh=.9584 ! Tube length
15 teang=60 ! Tube angle from vertical
16 /com, Pier
17 prht=.45 ! Pier height
18 pbwh=.75 ! Pier bottom width (half)
19 prlh=.3 ! Pier top length along the repository
20 prang=33.7 ! Pier angle from vertical
21 /com, Pipe
22 peocr=.5 ! Pipe center from the symmetry plane
23 peor=.05715 ! Pipe outer radius
24 pets=.0171 ! Pipe thickness
25 gap=.04 ! Gap height below the pipe
26 hebm=prht/2 ! Hole bottom from global origin
27 term1=(peocr+peor)*tan(90-teang)
28 term2=tets/cos(90-teang)
29 peht=prht-hebm+term1+term2 ! Pipe height
30 /com, Support plate
31 pltts=.02 ! Support plate thickness
32 pltwh=.83 ! Support plate width (half)
33 rec=pbwh+(prht)*tan(prang)-pltwh
34 drag1=peocr/cos(90-teang) ! Tube length used for vdrag1
35 argen1=.5*(telh-(peocr+peor)/cos(90-teang))
36 argen2=.5*(2*telh-(peocr+peor)/cos(90-teang))
37 /com, Define Element Properties
38 et,1,solid45 ! tube
39 et,2,solid45 ! pipe
40 et,3,solid45 ! pier
41 et,4,solid45 ! plate
42 et,5,contac49,,0,1,,,1 ! 3D Contact
43 r,5,1.5e8,,,1.5,15 ! Real Constant Set for Contact, kn=1.5E8
44 /com, ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%
45 mp,ex,1,203.4e9 ! A500 Grade B Cold Formed Steel
46 mp,ex,2,203.4e9 ! A500 Grade B Cold Formed Steel
47 mp,ex,3,24.8e9 ! concrete
48 mp,ex,4,203.4e9 ! A36 Carbon Steel
49 mp,nuxy,1,0.28 ! A500 Grade B Cold Formed Steel
50 mp,nuxy,2,0.28 ! A500 Grade B Cold Formed Steel

```

length 2.6 03/07/97


```

51 mp,nuxy,3,0.17      ! concrete
52 mp,nuxy,4,0.28      ! A36 Carbon Steel
53 mp,dens,1,7859.0     ! A500 Grade B Cold Formed Steel
54 mp,dens,2,7859.0     ! A500 Grade B Cold Formed Steel
55 mp,dens,3,2300.0     ! concrete
56 mp,dens,4,7859.0     ! A36 Carbon Steel
57 mp,mu,5,0.4         ! Kinetic Coefficient of Friction (Steel on Steel)
58 /com, Define keypoints in the support tube
59 local,11,0,0,prht,0,0,teang-90
60 k,1,-teow/2,0
61 k,2,0,0
62 k,3,teow/2,0
63 k,4,teow/2,teht
64 k,5,-teow/2,teht
65 k,6,-teiw/2,tets
66 k,7,0,tets
67 k,8,teiw/2,tets
68 k,9,teiw/2,teht-tets
69 k,10,-teiw/2,teht-tets
70 k,11,0,0,telh
71 k,12,0,0,drag1
72 l,2,12
73 l,12,11
74 a,2,1,6,7
75 a,1,5,10,6
76 a,10,5,4,9
77 a,9,4,3,8
78 a,7,8,3,2
79 vdrag,all,,,,,,,,1
80 asel,s,loc,z,drag1-.0001,drag1+.0001
81 vdrag,all,,,,,,,,2
82 asel,none
83 csys,0
84 k,,teow/2,1.5*teht+prht
85 k,, -teow/2,1.5*teht+prht
86 k,, -teow/2,prht,-1.5*teht
87 l,1,35
88 a,1,34,33,3
89 vdrag,all,,,,,,,,68
90 vsbv,1,11,,delete,keep
91 vsbv,2,11,,delete,keep
92 vsbv,3,11,,delete,keep
93 vsbv,4,11,,delete,keep
94 vsbv,5,11,,delete,delete
95 asel,none
96 cm,tube,volu
97 vset,none
98 /com, Define pipe volume
99 csys,0
100 local,12,1,0,hebm,pecr,-90,0,-90
101 k,,peor,0
102 k,,peor,90
103 k,,peor,180
104 k,,peor,270
105 k,,peor-pets,0
106 k,,peor-pets,90
107 k,,peor-pets,180
108 k,,peor-pets,270
109 k,,0,0,0
110 k,,0,0,gap
111 k,,0,0,peht
112 l,49,50
113 l,50,51
114 a,7,36,37,8
115 a,8,37,38,33
116 a,33,38,39,34
117 a,34,39,36,7
118 vdrag,all,,,,,,,,6
119 asel,s,loc,z,gap-.0001,gap+.0001
120 vdrag,all,,,,,,,,14

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121 cm,pipe,volu
122 allsel
123 vsbv,pipe,tube,,delete,keep
124 vdele,19,20
125 vdele,25,26
126 aslv
127 asel,inve
128 adel,all
129 allsel
130 lsia
131 lsel,inve
132 ldel,all
133 allsel
134 ksil
135 ksel,inve
136 kdel,all
137 allsel
138 asel,s,,,104,108,4
139 asel,a,,,100,111,11
140 csys,11
141 vdrag,all,,,,,50
142 csys,0
143 vp tn,all
144 aslv
145 asel,inve
146 adel,all
147 allsel
148 lsia
149 lsel,inve
150 ldel,all
151 allsel
152 ksil
153 ksel,inve
154 kdel,all
155 allsel
156 asel,s,,,34,42,4
157 cm,cpa,area
158 csys,11
159 agen,2,all,,,0,0,-argen1
160 cm,cpa1,area
161 asel,s,,,cpa
162 agen,2,all,,,0,0,-argen2
163 /com, The following may require modification
164 /com, if optimization required
165 a,49,73,5,10
166 a,49,73,45,64
167 a,78,50,72,71
168 a,78,50,68,65
169 cm,cpa2,area
170 asel,a,,,cpa1
171 asel,u,,,cpa
172 cm,allcp,area
173 vsel,s,,,7,9
174 vsel,a,,,35,38
175 vsel,a,,,27,28
176 vsel,a,,,1
177 cm,vols,volu
178 vcta,allcp,vols
179 /com, Combine two lines
180 nummrg,kp
181 lcomb,138,139,0
182 lcomb,144,145,0
183 /com, Define pier
184 asel,none
185 csys,0
186 k,,0,0,0
187 k,,0,hebm
188 k,,0,hebm+gap
189 k,,0,prht-pltts
190 k,,0,0,pecr
```

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191 k,,0,hebm,pecr
192 k,,0,hebm+gap,pecr
193 k,,0,prht-pltts,pecr
194 k,,0,prht,pecr
195 k,,0,0,pbwh
196 k,,0,hebm,pbwh+hebm*tan(prang)
197 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)
198 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)
199 k,,0,prht,pbwh+(prht)*tan(prang)
200 k,,0,0,pbwh-rec
201 k,,0,hebm,pbwh+hebm*tan(prang)-rec
202 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)-rec
203 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)-rec
204 k,,0,prht,pbwh+(prht)*tan(prang)-rec
205 k,,prlh/2,0,0
206 k,,prlh/2,0,0
207 l,62,98
208 l,62,99
209 nummrg,kp
210 asel,none
211 a,62,83,84,63
212 a,63,84,85,81
213 a,81,85,86,82
214 a,82,86,87,2
215 a,83,93,94,84
216 a,84,94,95,85
217 a,85,95,96,86
218 a,86,96,97,87
219 a,93,88,89,94
220 a,94,89,90,95
221 a,95,90,91,96
222 a,96,91,92,97
223 cm,pdrg1,area
224 vdrag,all,,,,,20
225 asel,s,,,pdrg1
226 vdrag,all,,,,,37
227 /com, Intersection of the volumes between
228 /com, pier and pipe
229 /com, This section may require modification
230 /com, if optimization required
231 allsel
232 vp tn,32,35,36
233 vp tn,31,55,56
234 vp tn,22,51,52
235 vp tn,23,8,9
236 vp tn,13,7
237 vp tn,14,28
238 vp tn,11,50
239 vp tn,5,54
240 vdel,22
241 vdel,31,35,4
242 vdel,61
243 vdel,32,62,30
244 vdel,51,55,4
245 vdel,7,9
246 vdel,5
247 vdel,11,14,3
248 vdel,28,50,22
249 /com, Define areas in the pier to cut volumes
250 a,97,128,121,93
251 a,97,108,101,93
252 a,128,2,62,121
253 a,108,2,62,101
254 vcta,208,27,13,66,67
255 vcta,31,53,81,70,71
256 vcta,225,49,80,74,75
257 vcta,343,1,23,78,79
258 nummrg,kp
259 /com, Name the volumes
260 vsel,s,,,2,4

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261 vsel,a,,,6,10,4
262 vsel,a,,,12
263 vsel,a,,,15,21
264 vsel,a,,,24,26
265 vsel,a,,,29,30
266 vsel,a,,,33,34
267 vsel,a,,,39,46
268 cm,tube,volu
269 vsel,s,,,36
270 vsel,a,,,52,56,4
271 vsel,a,,,63,65
272 vsel,a,,,68,69
273 vsel,a,,,72,73
274 vsel,a,,,76,77
275 cm,pipe,volu
276 vsel,s,,,5
277 vsel,a,,,7,9
278 vsel,a,,,11
279 vsel,a,,,13,14
280 vsel,a,,,27
281 vsel,a,,,31,32
282 vsel,a,,,35
283 vsel,a,,,37,38
284 vsel,a,,,47,50
285 vsel,a,,,53,55,2
286 vsel,a,,,57,62
287 vsel,a,,,66,67
288 vsel,a,,,74,75
289 vsel,a,,,80,82
290 cm,pier,volu
291 vsel,s,,,22,28,6
292 vsel,a,,,51,54,3
293 vsel,a,,,70,71
294 vsel,a,,,83,84
295 cm,plate,volu
296 esize,,6
297 /com, Elements for the tube
298 type,1 ! SOLID45
299 mat,1 ! Carbon Steel
300 vsel,s,,,tube
301 vmesh,all
302 /com, Elements for the pipe
303 type,2 ! SOLID45
304 mat,2 ! Carbon Steel
305 vsel,s,,,pipe
306 vmesh,all
307 /com, Elements for the pier
308 type,3 ! SOLID45
309 mat,3 ! Concrete
310 vsel,s,,,pier
311 vmesh,all
312 /com, Elements for the plate
313 type,4 ! SOLID45
314 mat,4 ! Carbon Steel
315 vsel,s,,,plate
316 vmesh,all
317 /com, Contact Elements Generation
318 nummrg,node
319 nummrg,kp
320 type,5
321 real,5
322 mat,5
323 csys,0
324 nsel,s,,,18151,18156
325 nsel,a,,,5426
326 nsel,a,,,18397,18401
327 nsel,a,,,18361,18366,5
328 nsel,a,,,18439,18441,2
329 nsel,a,,,18428
330 nsel,a,,,18434,18435

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331 nsel,a,,,18335
332 nsel,a,,,18561
333 nsel,a,,,17971
334 nsel,a,,,18021
335 nsel,a,,,17940
336 nsel,a,,,18169,18170
337 nsel,a,,,18161,18163,2
338 nsel,a,,,18174,18176,2
339 cm,surfa,node
340 allsel
341 esel,s,type,,1
342 nsle
343 nsel,r,loc,z,-.001,.001
344 nsel,r,loc,x,-prlh/2-.001,prlh/2+.001
345 nsel,r,loc,y,prht-.001,prht+.001
346 cm,surfb,node
347 allsel
348 gcgen,surfb,surfa
349 allsel
350 modmsh,detach
351 esel,s,type,,2
352 nsle
353 esln
354 nsle
355 esel,r,type,,3
356 edele,all
357 allsel
358 save
359 fini
360 /solu
361 antype,static
362 nlgeom,on
363 /com, Define constraints
364 nsel,s,loc,z,-.001,.001
365 d,all,uz,0
366 nsel,s,loc,y,-.001,.001
367 d,all,uy,0
368 nsel,s,loc,x,-.001,.001
369 nsel,r,loc,y,-.001,.001
370 d,all,ux,0
371 nsel,s,,,12547
372 nsel,a,,,12553,12558
373 nsel,a,,,12589,12630
374 nsel,a,,,12841,12882
375 nsel,a,,,13093,13134
376 nsel,a,,,13345,13386
377 nsel,a,,,14484,14489
378 nsel,a,,,14520,14555
379 nsel,a,,,14736,14771
380 nsel,a,,,14952,14987
381 nsel,a,,,15168,15203
382 cs,15,0,12553,12558,12601
383 nrotat,all
384 d,all,uz
385 csys,0
386 nsel,s,,,344
387 nsel,a,,,1340,1344,4
388 nsel,a,,,1304
389 /com, Vertical force divided over four nodes
390 f,all,fy,-51319.9
391 allsel
392 acel,,16.28
393 outres,all,1
394 solve
395 finish
396 /exit,
397 /eof

```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REplot /REplot

PARAMETER PI = 3.141593

ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,

ABBREVIATION= RAS /show,,0,

ABBREVIATION= INP /input,,inp,

ABBREVIATION= ESC /exit,nosav,

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= PR1 /psf,pres,norm,1,

ABBREVIATION= PRO /psf,pres,norm,0,

ABBREVIATION= U1 /pbc,u,1,

ABBREVIATION= U0 /pbc,u,0,

ABBREVIATION= X3D /show,3d,

ABBREVIATION= X11 /show,x11,

ABBREVIATION= X11C /show,x11c,

ABBREVIATION= ON /menu,on,
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 color
x11c for X-term color contour

type: on

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

SI UNITS SPECIFIED FOR INTERNAL

LENGTH (L) = METER(M)
MASS (M) = KILOGRAM(KG)
TIME (t) = SECOND(SEC)
TEMPERATURE (T) = KELVIN(K)
TOFFSET = 0.0 KELVIN
CHARGE (Q) = COULOMB
CURRENT (i) = AMPERE (COULOMBS/SEC)
FORCE (f) = NEWTON(N) (KG-M/SEC2)
PRESSURE = PASCAL (NEWTON/M**2)
ENERGY (W) = JOULE (N-M)
POWER (P) = WATT (N-M/SEC)
CAPACITANCE (C) = FARAD
INDUCTANCE (L) = HENRY
MAGNETIC FLUX = WEBER
RESISTANCE (R) = OHM
ELECTRIC POTENTIAL = VOLT

INPUT UNITS ARE ALSO SET TO SI

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:45:32 JAN 30, 1997 CP= 0.330
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=

3-D static support and pier analysis with a seismic load factor

VIEW CONE ANGLE FOR WINDOW 1 0.00

NUMBER OF DISPLAYED ERRORS ALLOWED PER COMMAND= 200
NUMBER OF ERRORS ALLOWED PER COMMAND BEFORE ANSYS ABORT= *****
Define Parameters

ANGULAR FUNCTION UNITS SET TO DEGREES
Tube

PARAMETER TEOW = 0.2032000

PARAMETER TETS = 0.1430000E-01

PARAMETER TEIW = 0.1746000
 PARAMETER TEHT = 0.1016000
 PARAMETER TELH = 0.9584000
 PARAMETER TEANG = 60.00000
 Pier
 PARAMETER PRHT = 0.4500000
 PARAMETER PBWH = 0.7500000
 PARAMETER PRLH = 0.3000000
 PARAMETER PRANG = 33.70000
 Pipe
 PARAMETER PECR = 0.5000000
 PARAMETER PEOR = 0.5715000E-01
 PARAMETER PETS = 0.1710000E-01
 PARAMETER GAP = 0.4000000E-01
 PARAMETER HEBM = 0.2250000
 PARAMETER TERM1 = 0.3216707
 PARAMETER TERM2 = 0.1651222E-01
 PARAMETER PEHT = 0.5631829
 Support plate
 PARAMETER PLTTS = 0.2000000E-01
 PARAMETER PLTWH = 0.8300000
 PARAMETER REC = 0.2201127
 PARAMETER DRAG1 = 0.5773503
 PARAMETER ARGEN1 = 0.2235204
 PARAMETER ARGEN2 = 0.6367293
 Define Element Properties

ELEMENT TYPE 1 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 3 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 4 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ

THREE-DIMENSIONAL MODEL

ELEMENT TYPE 5 IS CONTAC49 3D GENERAL CONTACT ELEMENT
KEYOPT(1-12)= 0 0 1 0 0 0 0 0 0 0 0 0
INOPR = 1

CURRENT NODAL DOF SET IS UX UY UZ
THREE-DIMENSIONAL MODEL

REAL CONSTANT SET 5 ITEMS 1 TO 6
0.15000E+09 0.00000E+00 0.00000E+00 1.5000 15.000 0.00000E+00
ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%

MATERIAL 1 EX = 0.2034000E+12

MATERIAL 2 EX = 0.2034000E+12

MATERIAL 3 EX = 0.2480000E+11

MATERIAL 4 EX = 0.2034000E+12

MATERIAL 1 NUXY = 0.2800000

MATERIAL 2 NUXY = 0.2800000

MATERIAL 3 NUXY = 0.1700000

MATERIAL 4 NUXY = 0.2800000

MATERIAL 1 DENS = 7859.000

MATERIAL 2 DENS = 7859.000

MATERIAL 3 DENS = 2300.000

MATERIAL 4 DENS = 7859.000

MATERIAL 5 MU = 0.4000000

Define keypoints in the support tube

COORDINATE SYSTEM 11 DEFINITION. TYPE= 0 (CARTESIAN)
XC,YC,ZC= 0.00000E+00 0.45000 0.00000E+00
ANGLES= 0.00 -30.00 0.00 PARAMETERS= 1.000 1.000
ORIENTATION= 1.00 0.00 0.00 0.00 0.87 -0.50 0.00 0.50 0.87

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT 1 X,Y,Z= -0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11
-0.101600 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 2 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 11
0.000000E+00 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 3 X,Y,Z= 0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11
0.101600 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 4 X,Y,Z= 0.101600 0.101600 0.000000E+00 IN CSYS= 11
0.101600 0.537988 -0.508000E-01 IN CSYS= 0

KEYPOINT 5 X,Y,Z= -0.101600 0.101600 0.000000E+00 IN CSYS= 11
-0.101600 0.537988 -0.508000E-01 IN CSYS= 0

KEYPOINT 6 X,Y,Z= -0.873000E-01 0.143000E-01 0.000000E+00 IN CSYS= 11
-0.873000E-01 0.462384 -0.715000E-02 IN CSYS= 0

```

KEYPOINT      7  X,Y,Z=  0.000000E+00  0.143000E-01  0.000000E+00  IN CSYS= 11
                  0.000000E+00  0.462384    -0.715000E-02  IN CSYS=  0
KEYPOINT      8  X,Y,Z=  0.873000E-01  0.143000E-01  0.000000E+00  IN CSYS= 11
                  0.873000E-01  0.462384    -0.715000E-02  IN CSYS=  0
KEYPOINT      9  X,Y,Z=  0.873000E-01  0.873000E-01  0.000000E+00  IN CSYS= 11
                  0.873000E-01  0.525604    -0.436500E-01  IN CSYS=  0
KEYPOINT     10  X,Y,Z= -0.873000E-01  0.873000E-01  0.000000E+00  IN CSYS= 11
                  -0.873000E-01  0.525604    -0.436500E-01  IN CSYS=  0
KEYPOINT     11  X,Y,Z=  0.000000E+00  0.000000E+00  0.958400      IN CSYS= 11
                  0.000000E+00  0.929200     0.829999      IN CSYS=  0
KEYPOINT     12  X,Y,Z=  0.000000E+00  0.000000E+00  0.577350      IN CSYS= 11
                  0.000000E+00  0.738675     0.500000      IN CSYS=  0

```

```

LINE CONNECTS KEYPOINTS      2      12
LINE NO.=      1  KP1=      2  TAN1=  0.0000  -0.5000  -0.8660
                  KP2=     12  TAN2=  0.0000   0.5000   0.8660

```

```

LINE CONNECTS KEYPOINTS     12      11
LINE NO.=      2  KP1=     12  TAN1=  0.0000  -0.5000  -0.8660
                  KP2=     11  TAN2=  0.0000   0.5000   0.8660

```

```

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      2      1      6      7
      AREA NUMBER =      1

```

```

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      1      5     10      6
      AREA NUMBER =      2

```

```

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =     10      5      4      9
      AREA NUMBER =      3

```

```

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      9      4      3      8
      AREA NUMBER =      4

```

```

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      7      8      3      2
      AREA NUMBER =      5

```

```

DRAG ALL SELECTED AREAS
ALONG LINES
1,

```

```

*** WARNING ***                      CP=      0.530  TIME= 14:45:32
Area 1 is not meshed. Volume will be generated without elements.

```

```

*** WARNING ***                      CP=      0.530  TIME= 14:45:32
Area 2 is not meshed. Volume will be generated without elements.

```

```

*** WARNING ***                      CP=      0.530  TIME= 14:45:32
Area 3 is not meshed. Volume will be generated without elements.

```

*** WARNING *** CP= 0.530 TIME= 14:45:32
Area 4 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.530 TIME= 14:45:32
Area 5 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.57725 AND 0.57745
KABS= 0. TOLERANCE= 0.000000E+00

5 AREAS (OF 25 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
2,

*** WARNING *** CP= 0.790 TIME= 14:45:33
Area 10 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.790 TIME= 14:45:33
Area 14 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.800 TIME= 14:45:33
Area 18 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.800 TIME= 14:45:33
Area 22 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.800 TIME= 14:45:33
Area 25 is not meshed. Volume will be generated without elements.

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 45 STEP 1

0 AREAS (OF 45 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 33

KEYPOINT 0 X,Y,Z= -0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 34

KEYPOINT 0 X,Y,Z= -0.101600 0.450000 -0.152400 IN CSYS= 0

KEYPOINT NUMBER = 35

LINE CONNECTS KEYPOINTS 1 35
LINE NO.= 68 KP1= 1 TAN1= 0.0000 0.0000 1.0000
KP2= 35 TAN2= 0.0000 0.0000 -1.0000

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 1 34 33 3

AREA NUMBER = 46

DRAG ALL SELECTED AREAS
ALONG LINES
68,

*** WARNING *** CP= 1.090 TIME= 14:45:33
Area 46 is not meshed. Volume will be generated without elements.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 1
VOLUMES OPERATED ON WILL BE DELETED

VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 12

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 2
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 1

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 3
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 2

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 4
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
OUTPUT VOLUMES = 3

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 11
VOLUMES SUBTRACTED WILL BE DELETED
OUTPUT VOLUMES = 4

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 60 STEP 1

0 AREAS (OF 50 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

NONE SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 12 STEP 1

0 VOLUMES (OF 10 DEFINED) SELECTED BY VSEL COMMAND.
Define pipe volume

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

COORDINATE SYSTEM 12 DEFINITION. TYPE= 1 (CYLINDRICAL)
XC,YC,ZC= 0.00000E+00 0.22500 0.50000
ANGLES= -90.00 0.00 -90.00 PARAMETERS= 1.000 1.000
ORIENTATION= 0.00 0.00 1.00 1.00 0.00 0.00 0.00 1.00 0.00

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

KEYPOINT 0 X,Y,Z= 0.571500E-01 0.000000E+00 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 7

0.214278E-33 0.225000 0.557150 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.571500E-01 90.0000 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 8

0.571500E-01 0.225000 0.500000 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.571500E-01 180.000 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 33

0.997456E-11 0.225000 0.442850 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.571500E-01 270.000 0.000000E+00 IN CSYS= 12
 KEYPOINT NUMBER = 34

-0.571500E-01 0.225000 0.500000 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.400500E-01 0.000000E+00 0.000000E+00 IN CSYS= 12
 KEYPOINT NUMBER = 36

0.150163E-33 0.225000 0.540050 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.400500E-01 90.0000 0.000000E+00 IN CSYS= 12
 KEYPOINT NUMBER = 37

0.400500E-01 0.225000 0.500000 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.400500E-01 180.000 0.000000E+00 IN CSYS= 12
 KEYPOINT NUMBER = 38

0.699004E-11 0.225000 0.459950 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.400500E-01 270.000 0.000000E+00 IN CSYS= 12
 KEYPOINT NUMBER = 39

-0.400500E-01 0.225000 0.500000 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 12
 KEYPOINT NUMBER = 49

0.000000E+00 0.225000 0.500000 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.400000E-01 IN CSYS= 12
 KEYPOINT NUMBER = 50

-0.244929E-17 0.265000 0.500000 IN CSYS= 0
 KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.563183 IN CSYS= 12
 KEYPOINT NUMBER = 51

-0.344850E-16 0.788183 0.500000 IN CSYS= 0
 LINE CONNECTS KEYPOINTS 49 50
 LINE NO.= 6 KP1= 49 TAN1= 0.0000 -1.0000 0.0000
 KP2= 50 TAN2= 0.0000 1.0000 0.0000

LINE CONNECTS KEYPOINTS 50 51
 LINE NO.= 14 KP1= 50 TAN1= 0.0000 -1.0000 0.0000
 KP2= 51 TAN2= 0.0000 1.0000 0.0000

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 7 36 37 8
 AREA NUMBER = 5

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 8 37 38 33
 AREA NUMBER = 9

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 33 38 39 34

AREA NUMBER = 20

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 34 39 36 7

AREA NUMBER = 23

DRAG ALL SELECTED AREAS

ALONG LINES

6,

*** WARNING *** CP= 21.820 TIME= 14:46:14
Area 5 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.820 TIME= 14:46:14
Area 9 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.820 TIME= 14:46:14
Area 20 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 21.820 TIME= 14:46:14
Area 23 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.39900E-01 AND 0.40100E-01
KABS= 0. TOLERANCE= 0.000000E+00

4 AREAS (OF 70 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS

ALONG LINES

14,

*** WARNING *** CP= 22.340 TIME= 14:46:15
Area 50 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 22.340 TIME= 14:46:15
Area 63 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 22.340 TIME= 14:46:15
Area 67 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 22.340 TIME= 14:46:15
Area 70 is not meshed. Volume will be generated without elements.

DEFINITION OF COMPONENT = PIPE ENTITY=VOLU

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 18 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 134 STEP 1

134 LINES (OF 134 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 67 STEP 1

67 KEYPOINTS (OF 67 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=

IN RANGE 0 TO 0 STEP 1
0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5 11 13 14 15
VOLUME NUMBERS TO BE OPERATED ON = 16 17 18
VOLUMES OPERATED ON WILL BE DELETED
VOLUME NUMBERS TO BE SUBTRACTED = 1 2 3 4 6
VOLUME NUMBERS TO BE SUBTRACTED = 7 8 9 10 12
OUTPUT VOLUMES = 5 11 13 14 19 20 21 22 23 24
OUTPUT VOLUMES = 25 26

DELETE SELECTED VOLUMES FROM 19 TO 20 BY 1

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 25 TO 26 BY 1

DELETED 2 VOLUMES

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

86 AREAS (OF 108 DEFINED) SELECTED FROM
18 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 120 STEP 1

22 AREAS (OF 108 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 22 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 120 STEP 1

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

171 LINES (OF 171 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

86 KEYPOINTS (OF 86 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=

```
IN RANGE      0 TO      0 STEP      1
      0 NODES (OF      0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT      LINES ASSOCIATED WITH SELECTED AREAS

      129 LINES (OF      171 DEFINED) SELECTED FROM
      86 SELECTED AREAS BY LSLA COMMAND.

INVERT      FOR ITEM=LINE COMPONENT=
IN RANGE      1 TO      179 STEP      1

      42 LINES (OF      171 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM      1 TO      179 BY      1

      DELETED      42 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT    FOR ITEM=VOLU COMPONENT=
IN RANGE      1 TO      26 STEP      1

      18 VOLUMES (OF      18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT    FOR ITEM=AREA COMPONENT=
IN RANGE      1 TO      120 STEP      1

      86 AREAS (OF      86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT    FOR ITEM=LINE COMPONENT=
IN RANGE      1 TO      179 STEP      1

      129 LINES (OF      129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT    FOR ITEM=KP    COMPONENT=
IN RANGE      1 TO      86 STEP      1

      86 KEYPOINTS (OF      86 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT    FOR ITEM=ELEM COMPONENT=
IN RANGE      0 TO      0 STEP      1

      0 ELEMENTS (OF      0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT    FOR ITEM=NODE COMPONENT=
IN RANGE      0 TO      0 STEP      1

      0 NODES (OF      0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT      ALL KEYPOINTS ON ANY LINE IN LINE SET.

      61 KEYPOINTS (OF      86 DEFINED) SELECTED FROM
      129 SELECTED LINES BY KSLL COMMAND.

INVERT      FOR ITEM=KP    COMPONENT=
IN RANGE      1 TO      86 STEP      1

      25 KEYPOINTS (OF      86 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT    FOR ITEM=VOLU COMPONENT=
IN RANGE      1 TO      26 STEP      1

      18 VOLUMES (OF      18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT    FOR ITEM=AREA COMPONENT=
```


IN RANGE 1 TO 120 STEP 1

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

129 LINES (OF 129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

61 KEYPOINTS (OF 61 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 104 TO 108 STEP 4

2 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 111 STEP 11

4 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

DRAG ALL SELECTED AREAS
ALONG LINES
50,

*** WARNING *** CP= 80.590 TIME= 14:47:53
Area 100 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 80.600 TIME= 14:47:53
Area 104 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 80.600 TIME= 14:47:53
Area 108 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 80.600 TIME= 14:47:53
Area 111 is not meshed. Volume will be generated without elements.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

PARTITION VOLUMES

INPUT VOLUMES =	1	2	3	4	5	6	7	8	9	10
INPUT VOLUMES =	11	12	13	14	15	16	17	18	21	22
INPUT VOLUMES =	23	24								
INPUT VOLUMES WILL BE DELETED										
OUTPUT VOLUMES =	1	5	7	8	9	11	13	14	19	20
OUTPUT VOLUMES =	22	23	25	26	27	28	29	30	31	32
OUTPUT VOLUMES =	33	34	35	36	37	38				

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

109 AREAS (OF 109 DEFINED) SELECTED FROM
26 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

0 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 0 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT LINES ASSOCIATED WITH SELECTED AREAS

147 LINES (OF 147 DEFINED) SELECTED FROM
109 SELECTED AREAS BY LSLA COMMAND.

INVERT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

0 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM 1 TO 179 BY 1

DELETED 0 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1
64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT ALL KEYPOINTS ON ANY LINE IN LINE SET.
64 KEYPOINTS (OF 64 DEFINED) SELECTED FROM
147 SELECTED LINES BY KSLI COMMAND.

INVERT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1
0 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1
26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1
109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 179 STEP 1
147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 86 STEP 1
64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 34 TO 42 STEP 4
3 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = CPA ENTITY=AREA

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

GENERATE 2 TOTAL SETS OF AREAS
SET IS ALL SELECTED AREAS

DX,DY,DZ= 0.000E+00 0.000E+00 -0.224 CSYS= 11

DEFINITION OF COMPONENT = CPA1 ENTITY=AREA

3 AREAS (OF 112 DEFINED) SELECTED BY ASEL COMMAND.

GENERATE 2 TOTAL SETS OF AREAS

SET IS ALL SELECTED AREAS

DX,DY,DZ= 0.000E+00 0.000E+00 -0.637 CSYS= 11

The following may require modification
if optimization required

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 49 73 5 10

*** WARNING *** CP= 208.460 TIME= 14:50:28

Lines 116, 82, 9, and 83 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 12

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 49 73 45 64

*** WARNING *** CP= 208.490 TIME= 14:50:28

Lines 116, 84, 18, and 85 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 13

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 78 50 72 71

*** WARNING *** CP= 208.510 TIME= 14:50:28

Lines 119, 95, 49, and 97 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 16

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 78 50 68 65

*** WARNING *** CP= 208.530 TIME= 14:50:28

Lines 119, 154, 32, and 165 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 17

DEFINITION OF COMPONENT = CPA2 ENTITY=AREA

13 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

10 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = ALLCP ENTITY=AREA

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1

3 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

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

7 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 27 TO 28 STEP 1

9 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 1 STEP 1

10 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = VOLS ENTITY=VOLU

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS =	2	3	4	6	7	10	12	13	16	17
INPUT VOLUMES TO BE CUT =	1	7	8	9	27	28	35	36	37	38
INPUT VOLUMES TO BE CUT WILL BE DELETED										
THE RESULT OF CUTTING VOLUMES	1 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	2									
THE 2ND HALF:										
OUTPUT VOLUMES =	3									
THE RESULT OF CUTTING VOLUMES	7 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	4									
THE 2ND HALF:										
OUTPUT VOLUMES =	6									
THE RESULT OF CUTTING VOLUMES	8 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	10									
THE 2ND HALF:										
OUTPUT VOLUMES =	12									
THE RESULT OF CUTTING VOLUMES	9 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	15									
THE 2ND HALF:										
OUTPUT VOLUMES =	16									
THE RESULT OF CUTTING VOLUMES	27 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	17									
THE 2ND HALF:										
OUTPUT VOLUMES =	18									
THE RESULT OF CUTTING VOLUMES	28 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	21									
THE 2ND HALF:										
OUTPUT VOLUMES =	24									
THE RESULT OF CUTTING VOLUMES	35 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	39									
THE 2ND HALF:										
OUTPUT VOLUMES =	40									
THE RESULT OF CUTTING VOLUMES	36 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	41									
THE 2ND HALF:										
OUTPUT VOLUMES =	42									
THE RESULT OF CUTTING VOLUMES	37 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	43									
THE 2ND HALF:										
OUTPUT VOLUMES =	44									
THE RESULT OF CUTTING VOLUMES	38 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	45									
THE 2ND HALF:										
OUTPUT VOLUMES =	46									

*** WARNING ***
Assembly TUBE is deleted.

CP= 239.590 TIME= 14:51:02

*** WARNING ***

CP= 239.650 TIME= 14:51:03

Assembly VOLS is deleted.

Combine two lines

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

COMBINE LINES 138 AND 139
 LINE NO.= 138 KP1= 74 TAN1= 1.0000 0.0000 0.0000
 KP2= 79 TAN2= 0.0000 -0.5000 -0.8660

COMBINE LINES 144 AND 145
 LINE NO.= 144 KP1= 73 TAN1= -1.0000 0.0000 0.0000
 KP2= 76 TAN2= 0.0000 -0.5000 -0.8660

Define pier

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 175 STEP 1

0 AREAS (OF 147 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 62

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 63

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 81

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 82

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 83

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 84

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 85

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 86

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 87

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.750000 IN CSYS= 0

KEYPOINT NUMBER = 88

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.900056 IN CSYS= 0

KEYPOINT NUMBER = 89

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.926733 IN CSYS= 0

KEYPOINT NUMBER = 90

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 1.03677 IN CSYS= 0

KEYPOINT NUMBER = 91

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 1.05011 IN CSYS= 0

KEYPOINT NUMBER = 92

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.529887 IN CSYS= 0

KEYPOINT NUMBER = 93

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.225000 0.679944 IN CSYS= 0

KEYPOINT NUMBER = 94

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.265000 0.706620 IN CSYS= 0

KEYPOINT NUMBER = 95

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430000 0.816662 IN CSYS= 0

KEYPOINT NUMBER = 96

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 0.830000 IN CSYS= 0

KEYPOINT NUMBER = 97

KEYPOINT 0 X,Y,Z= -0.150000 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 98

KEYPOINT 0 X,Y,Z= 0.150000 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 99

LINE CONNECTS KEYPOINTS 62 98
 LINE NO.= 20 KP1= 62 TAN1= 1.0000 0.0000 0.0000
 KP2= 98 TAN2= -1.0000 0.0000 0.0000

LINE CONNECTS KEYPOINTS 62 99
 LINE NO.= 37 KP1= 62 TAN1= -1.0000 0.0000 0.0000
 KP2= 99 TAN2= 1.0000 0.0000 0.0000

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 175 STEP 1

0 AREAS (OF 147 DEFINED) SELECTED BY ASEL COMMAND.

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 62 83 84 63
 AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 63 84 85 81
 AREA NUMBER = 8

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 81 85 86 82
 AREA NUMBER = 11

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 82 86 87 2
 AREA NUMBER = 15

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 83 93 94 84

AREA NUMBER = 27

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 84 94 95 85

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 85 95 96 86

AREA NUMBER = 32

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 86 96 97 87

AREA NUMBER = 33

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 93 88 89 94

AREA NUMBER = 35

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 94 89 90 95

AREA NUMBER = 36

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 95 90 91 96

AREA NUMBER = 37

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 96 91 92 97

AREA NUMBER = 39

DEFINITION OF COMPONENT = PDRG1 ENTITY=AREA

DRAG ALL SELECTED AREAS

ALONG LINES

20,

*** WARNING *** CP= 240.360 TIME= 14:51:03
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.360 TIME= 14:51:03
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.360 TIME= 14:51:03
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.370 TIME= 14:51:03
Area 39 is not meshed. Volume will be generated without elements.

12 AREAS (OF 202 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
37,

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.960 TIME= 14:51:04
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 240.970 TIME= 14:51:04
Area 39 is not meshed. Volume will be generated without elements.

Intersection of the volumes between
pier and pipe
This section may require modification
if optimization required

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLUME COMPONENT=
IN RANGE 1 TO 60 STEP 1

60 VOLUMES (OF 60 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 245 STEP 1

245 AREAS (OF 245 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 324 STEP 1

324 LINES (OF 324 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 139 STEP 1

139 KEYPOINTS (OF 139 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

PARTITION VOLUMES

INPUT VOLUMES = 32 35 36
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 252.930 TIME= 14:51:17
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 61 62 63 64 65 66 67

PARTITION VOLUMES

INPUT VOLUMES = 31 55 56
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 264.820 TIME= 14:51:35
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 32 35 36 68 69 70 71

PARTITION VOLUMES

INPUT VOLUMES = 22 51 52
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 276.330 TIME= 14:51:55
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 31 55 56 72 73 74 75

PARTITION VOLUMES

INPUT VOLUMES = 23 8 9
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 287.030 TIME= 14:52:14
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 22 51 52 76 77 78 79

PARTITION VOLUMES

INPUT VOLUMES = 13 7
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 8 9 23

PARTITION VOLUMES
INPUT VOLUMES = 14 28
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 7 13 14

PARTITION VOLUMES
INPUT VOLUMES = 11 50
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 11 28 80

PARTITION VOLUMES
INPUT VOLUMES = 5 54
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 5 50 81

DELETE SELECTED VOLUMES FROM 22 TO 22 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 31 TO 35 BY 4

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 61 TO 61 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 32 TO 62 BY 30

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 51 TO 55 BY 4

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 7 TO 9 BY 1

DELETED 3 VOLUMES

DELETE SELECTED VOLUMES FROM 5 TO 5 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 11 TO 14 BY 3

*** WARNING *** CP= 309.260 TIME= 14:52:51
Assembly PIPE is deleted.

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 28 TO 50 BY 22

DELETED 2 VOLUMES

Define areas in the pier to cut volumes

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 97 128 121 93

*** WARNING *** CP= 309.280 TIME= 14:52:51
Lines 59, 209, 283, and 438 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 97 108 101 93

*** WARNING *** CP= 309.310 TIME= 14:52:51

Lines 439, 440, 441, and 438 do not lie on a common coordinate value in the currently active coordinate system (CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 208

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 128 2 62 121

AREA NUMBER = 225

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 108 2 62 101

AREA NUMBER = 343

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 208

INPUT VOLUMES TO BE CUT = 27 13 66 67

INPUT VOLUMES TO BE CUT WILL BE DELETED

THE RESULT OF CUTTING VOLUMES 27 :

THE 1ST HALF:

OUTPUT VOLUMES = 5

THE 2ND HALF:

OUTPUT VOLUMES = 7

THE RESULT OF CUTTING VOLUMES 13 :

THE 1ST HALF:

OUTPUT VOLUMES = 8

THE 2ND HALF:

OUTPUT VOLUMES = 9

THE RESULT OF CUTTING VOLUMES 66 :

THE 1ST HALF:

OUTPUT VOLUMES = 11

THE 2ND HALF:

OUTPUT VOLUMES = 14

THE RESULT OF CUTTING VOLUMES 67 :

THE 1ST HALF:

OUTPUT VOLUMES = 22

THE 2ND HALF:

OUTPUT VOLUMES = 28

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 31

INPUT VOLUMES TO BE CUT = 53 81 70 71

INPUT VOLUMES TO BE CUT WILL BE DELETED

THE RESULT OF CUTTING VOLUMES 53 :

THE 1ST HALF:

OUTPUT VOLUMES = 13

THE 2ND HALF:

OUTPUT VOLUMES = 27

THE RESULT OF CUTTING VOLUMES 81 :

THE 1ST HALF:

OUTPUT VOLUMES = 31

THE 2ND HALF:

OUTPUT VOLUMES = 32

THE RESULT OF CUTTING VOLUMES 70 :

THE 1ST HALF:

OUTPUT VOLUMES = 35

THE 2ND HALF:

OUTPUT VOLUMES = 50

THE RESULT OF CUTTING VOLUMES 71 :

THE 1ST HALF:

OUTPUT VOLUMES = 51

THE 2ND HALF:

OUTPUT VOLUMES = 54

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 225
 INPUT VOLUMES TO BE CUT = 49 80 74 75
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 49 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 53
 THE 2ND HALF:
 OUTPUT VOLUMES = 55
 THE RESULT OF CUTTING VOLUMES 80 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 61
 THE 2ND HALF:
 OUTPUT VOLUMES = 62
 THE RESULT OF CUTTING VOLUMES 74 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 66
 THE 2ND HALF:
 OUTPUT VOLUMES = 67
 THE RESULT OF CUTTING VOLUMES 75 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 70
 THE 2ND HALF:
 OUTPUT VOLUMES = 71

CUT VOLUMES BY AREAS
 INPUT CUTTING AREAS = 343
 INPUT VOLUMES TO BE CUT = 1 23 78 79
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 1 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 49
 THE 2ND HALF:
 OUTPUT VOLUMES = 74
 THE RESULT OF CUTTING VOLUMES 23 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 75
 THE 2ND HALF:
 OUTPUT VOLUMES = 80
 THE RESULT OF CUTTING VOLUMES 78 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 81
 THE 2ND HALF:
 OUTPUT VOLUMES = 82
 THE RESULT OF CUTTING VOLUMES 79 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 83
 THE 2ND HALF:
 OUTPUT VOLUMES = 84

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

KEYPOINT	98 USED FOR KEYPOINT(S)	100
KEYPOINT	99 USED FOR KEYPOINT(S)	120
KEYPOINT	146 USED FOR KEYPOINT(S)	154
KEYPOINT	142 USED FOR KEYPOINT(S)	150
KEYPOINT	143 USED FOR KEYPOINT(S)	167
KEYPOINT	147 USED FOR KEYPOINT(S)	169
KEYPOINT	145 USED FOR KEYPOINT(S)	171
KEYPOINT	141 USED FOR KEYPOINT(S)	165
KEYPOINT	144 USED FOR KEYPOINT(S)	152
KEYPOINT	140 USED FOR KEYPOINT(S)	148
KEYPOINT	151 USED FOR KEYPOINT(S)	159
KEYPOINT	155 USED FOR KEYPOINT(S)	162
KEYPOINT	149 USED FOR KEYPOINT(S)	157
KEYPOINT	153 USED FOR KEYPOINT(S)	160
KEYPOINT	158 USED FOR KEYPOINT(S)	166
KEYPOINT	163 USED FOR KEYPOINT(S)	168
KEYPOINT	156 USED FOR KEYPOINT(S)	164
KEYPOINT	161 USED FOR KEYPOINT(S)	170
LINE	20 USED FOR LINE(S)	224
LINE	37 USED FOR LINE(S)	275

LINE	74	USED FOR LINE(S)	155
LINE	110	USED FOR LINE(S)	426
LINE	404	USED FOR LINE(S)	421
LINE	396	USED FOR LINE(S)	427
LINE	379	USED FOR LINE(S)	401
LINE	339	USED FOR LINE(S)	429
LINE	354	USED FOR LINE(S)	435
LINE	345	USED FOR LINE(S)	377
LINE	347	USED FOR LINE(S)	424
LINE	346	USED FOR LINE(S)	423
LINE	344	USED FOR LINE(S)	373
LINE	342	USED FOR LINE(S)	376
LINE	343	USED FOR LINE(S)	422
LINE	340	USED FOR LINE(S)	431
LINE	336	USED FOR LINE(S)	418
LINE	338	USED FOR LINE(S)	369
LINE	335	USED FOR LINE(S)	361
LINE	337	USED FOR LINE(S)	368
LINE	325	USED FOR LINE(S)	358
LINE	152	USED FOR LINE(S)	326
LINE	352	USED FOR LINE(S)	382
LINE	349	USED FOR LINE(S)	432
LINE	350	USED FOR LINE(S)	380
LINE	332	USED FOR LINE(S)	366
LINE	331	USED FOR LINE(S)	415
LINE	355	USED FOR LINE(S)	385
LINE	356	USED FOR LINE(S)	437
LINE	329	USED FOR LINE(S)	413
LINE	328	USED FOR LINE(S)	363
LINE	378	USED FOR LINE(S)	399
LINE	374	USED FOR LINE(S)	400
LINE	371	USED FOR LINE(S)	395
LINE	370	USED FOR LINE(S)	394
LINE	362	USED FOR LINE(S)	393
LINE	384	USED FOR LINE(S)	410
LINE	148	USED FOR LINE(S)	359
LINE	381	USED FOR LINE(S)	406
LINE	367	USED FOR LINE(S)	389
LINE	386	USED FOR LINE(S)	412
LINE	364	USED FOR LINE(S)	387
LINE	402	USED FOR LINE(S)	419
LINE	403	USED FOR LINE(S)	420
LINE	397	USED FOR LINE(S)	428
LINE	392	USED FOR LINE(S)	417
LINE	147	USED FOR LINE(S)	150
LINE	409	USED FOR LINE(S)	434
LINE	390	USED FOR LINE(S)	416
LINE	407	USED FOR LINE(S)	433
LINE	213	USED FOR LINE(S)	293
LINE	411	USED FOR LINE(S)	436
AREA	286	USED FOR AREA(S)	304
AREA	61	USED FOR AREA(S)	106
AREA	65	USED FOR AREA(S)	107
AREA	268	USED FOR AREA(S)	335
AREA	306	USED FOR AREA(S)	321
AREA	260	USED FOR AREA(S)	284
AREA	312	USED FOR AREA(S)	334
AREA	253	USED FOR AREA(S)	319
AREA	261	USED FOR AREA(S)	323
AREA	256	USED FOR AREA(S)	330
AREA	255	USED FOR AREA(S)	279
AREA	185	USED FOR AREA(S)	252
AREA	267	USED FOR AREA(S)	291
AREA	265	USED FOR AREA(S)	288
AREA	264	USED FOR AREA(S)	331
AREA	272	USED FOR AREA(S)	339
AREA	271	USED FOR AREA(S)	295
AREA	103	USED FOR AREA(S)	248
AREA	249	USED FOR AREA(S)	276
AREA	280	USED FOR AREA(S)	300

AREA 292 USED FOR AREA(S) 313
 AREA 188 USED FOR AREA(S) 298
 AREA 289 USED FOR AREA(S) 309
 AREA 296 USED FOR AREA(S) 317
 AREA 96 USED FOR AREA(S) 277
 AREA 301 USED FOR AREA(S) 327
 AREA 217 USED FOR AREA(S) 231
 AREA 310 USED FOR AREA(S) 332
 AREA 97 USED FOR AREA(S) 212
 AREA 316 USED FOR AREA(S) 338

Name the volumes

SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 2 TO 4 STEP 1
 3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 6 TO 10 STEP 4
 5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 12 TO 12 STEP 1
 6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 15 TO 21 STEP 1
 13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 24 TO 26 STEP 1
 16 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 29 TO 30 STEP 1
 18 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 33 TO 34 STEP 1
 20 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 39 TO 46 STEP 1
 28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 36 TO 36 STEP 1
 1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 52 TO 56 STEP 4
 3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 63 TO 65 STEP 1
 6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=

IN RANGE 68 TO 69 STEP 1

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 72 TO 73 STEP 1

10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 76 TO 77 STEP 1

12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PIPE ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 5 TO 5 STEP 1

1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1

4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 11 TO 11 STEP 1

5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 13 TO 14 STEP 1

7 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 27 TO 27 STEP 1

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 31 TO 32 STEP 1

10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 35 TO 35 STEP 1

11 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 37 TO 38 STEP 1

13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 47 TO 50 STEP 1

17 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 53 TO 55 STEP 2

19 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 57 TO 62 STEP 1

25 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 66 TO 67 STEP 1
27 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 74 TO 75 STEP 1
29 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 80 TO 82 STEP 1
32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PIER ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 22 TO 28 STEP 6
2 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 51 TO 54 STEP 3
4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 70 TO 71 STEP 1
6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 83 TO 84 STEP 1
8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PLATE ENTITY=VOLU

DEFAULT ELEMENT DIVISIONS PER LINE = 6
Elements for the tube

ELEMENT TYPE SET TO 1

MATERIAL NUMBER SET TO 1

28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 352.890 TIME= 14:54:05
Volume 2 area 58 has a corner angle of 41 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 353.330 TIME= 14:54:06
Meshing of volume 2 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 2 WITH EXCESSIVE DISTORTION ***

73	78	79	84	85	90	91	96
97	102	103	108	109	114	115	120
121	126	127	132	133	138	139	144
145	150	151	156	157	162	163	168
169	174	175	180	181	186	187	192
193	198	199	204	205	210	211	216

*** WARNING *** CP= 356.880 TIME= 14:54:12
Volume 17 area 116 has a corner angle of 41 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 357.320 TIME= 14:54:13
 Meshing of volume 17 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 17 WITH EXCESSIVE DISTORTION ***

1801	1802	1803	1804	1805	1806	1831	1832
1833	1834	1835	1836	1837	1838	1839	1840
1841	1842	1867	1868	1869	1870	1871	1872
1873	1874	1875	1876	1877	1878	1903	1904
1905	1906	1907	1908	1909	1910	1911	1912
1913	1914	1939	1940	1941	1942	1943	1944

*** WARNING *** CP= 362.860 TIME= 14:54:22
 Volume 39 area 161 has a corner angle of 28 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.890 TIME= 14:54:22
 Volume 39 area 160 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.300 TIME= 14:54:23
 Meshing of volume 39 produced 111 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 39 WITH EXCESSIVE DISTORTION ***

4123	4124	4125	4126	4127	4128	4129	4130
4131	4132	4133	4134	4135	4136	4137	4138
4139	4140	4155	4156	4157	4158	4159	4160
4161	4162	4163	4164	4165	4166	4167	4168
4169	4170	4171	4172	4173	4174	4175	4176
4189	4190	4191	4192	4193	4194	4195	4196
4197	4198	4199	4200	4201	4202	4203	4204
4205	4206	4207	4208	4209	4210	4211	4212
4223	4224	4225	4226	4227	4228	4229	4230
4231	4232	4233	4234	4235	4236	4237	4238
4239	4240	4241	4242	4243	4244	4245	4246
4247	4248	4260	4264	4265	4266	4268	4269
4270	4271	4272	4273	4274	4275	4276	4277
4278	4279	4280	4281	4282	4283	4284	

*** WARNING *** CP= 363.390 TIME= 14:54:23
 Volume 40 area 163 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.430 TIME= 14:54:23
 Volume 40 area 162 has a corner angle of 152 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.820 TIME= 14:54:23
 Meshing of volume 40 produced 132 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 40 WITH EXCESSIVE DISTORTION ***

4321	4322	4323	4324	4325	4326	4327	4328
4329	4330	4331	4332	4333	4334	4335	4336
4337	4338	4339	4340	4341	4342	4343	4344
4345	4346	4347	4348	4349	4350	4351	4352
4353	4354	4355	4356	4357	4358	4359	4360
4361	4362	4363	4364	4365	4366	4367	4368
4369	4370	4371	4372	4373	4374	4375	4376
4377	4378	4379	4380	4381	4382	4383	4384
4385	4386	4387	4388	4389	4390	4391	4392
4393	4394	4395	4396	4397	4398	4399	4400
4401	4402	4403	4404	4405	4406	4407	4408
4409	4410	4411	4412	4413	4414	4415	4416
4417	4418	4419	4420	4421	4422	4423	4424
4425	4426	4427	4428	4453	4454	4455	4456
4457	4458	4459	4460	4461	4462	4463	4464
4470	4476	4482	4488	4494	4500	4506	4512
4518	4524	4530	4536				

*** WARNING *** CP= 363.880 TIME= 14:54:24
Volume 41 area 164 has a corner angle of 28 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.950 TIME= 14:54:24
Volume 41 area 165 has a corner angle of 155 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.340 TIME= 14:54:24
Meshing of volume 41 produced 132 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 41 WITH EXCESSIVE DISTORTION ***

4537	4538	4539	4540	4541	4542	4543	4544
4545	4546	4547	4548	4549	4550	4551	4552
4553	4554	4555	4556	4557	4558	4559	4560
4561	4562	4563	4564	4565	4566	4567	4568
4569	4570	4571	4572	4573	4574	4575	4576
4577	4578	4579	4580	4581	4582	4583	4584
4585	4586	4587	4588	4589	4590	4591	4592
4593	4594	4595	4596	4597	4598	4599	4600
4601	4602	4603	4604	4605	4606	4607	4608
4609	4610	4611	4612	4613	4614	4615	4616
4617	4618	4619	4620	4621	4622	4623	4624
4625	4626	4627	4628	4629	4630	4631	4632
4633	4634	4635	4636	4637	4638	4639	4640
4641	4642	4643	4644	4649	4650	4655	4656
4661	4662	4667	4668	4673	4674	4679	4680
4711	4712	4713	4714	4715	4716	4747	4748
4749	4750	4751	4752				

*** WARNING *** CP= 364.430 TIME= 14:54:24
Volume 42 area 167 has a corner angle of 28 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.460 TIME= 14:54:24
Volume 42 area 166 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.860 TIME= 14:54:25
Meshing of volume 42 produced 111 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 42 WITH EXCESSIVE DISTORTION ***

4815	4820	4821	4827	4828	4833	4834	4839
4840	4841	4844	4845	4846	4847	4850	4851
4852	4853	4856	4857	4858	4859	4863	4864
4865	4866	4868	4869	4870	4871	4872	4874
4875	4876	4877	4878	4880	4881	4882	4883
4884	4886	4887	4888	4889	4890	4892	4893
4894	4895	4896	4898	4899	4900	4901	4902
4904	4905	4906	4907	4908	4910	4911	4912
4913	4914	4916	4917	4918	4919	4920	4922
4923	4924	4925	4926	4928	4929	4930	4931
4932	4934	4935	4936	4937	4938	4940	4941
4942	4943	4944	4946	4947	4948	4949	4950
4952	4953	4954	4955	4956	4958	4959	4960
4961	4962	4964	4965	4966	4967	4968	

*** WARNING *** CP= 364.910 TIME= 14:54:25
Volume 43 area 169 has a corner angle of 44 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.950 TIME= 14:54:25
Volume 43 area 168 has a corner angle of 42 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 365.410 TIME= 14:54:26

Meshing of volume 43 produced 1 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
4999

*** WARNING *** CP= 365.440 TIME= 14:54:26
Volume 44 area 171 has a corner angle of 136 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 365.910 TIME= 14:54:27
Meshing of volume 44 produced 6 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 44 WITH EXCESSIVE DISTORTION ***
5185 5186 5187 5188 5189 5190

*** WARNING *** CP= 365.960 TIME= 14:54:27
Volume 45 area 172 has a corner angle of 44 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 366.420 TIME= 14:54:28
Meshing of volume 45 produced 6 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 45 WITH EXCESSIVE DISTORTION ***
5401 5407 5413 5419 5425 5431

*** WARNING *** CP= 366.480 TIME= 14:54:28
Volume 46 area 174 has a corner angle of 44 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 366.500 TIME= 14:54:28
Volume 46 area 175 has a corner angle of 42 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 366.940 TIME= 14:54:29
Meshing of volume 46 produced 1 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
5827

NUMBER OF VOLUMES MESHED = 28
MAXIMUM NODE NUMBER = 7014
MAXIMUM ELEMENT NUMBER = 5832
Elements for the pipe

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

NUMBER OF VOLUMES MESHED = 12
MAXIMUM NODE NUMBER = 10038
MAXIMUM ELEMENT NUMBER = 8424
Elements for the pier

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 375.510 TIME= 14:54:43

Volume 5 area 345 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 375.560 TIME= 14:54:44
Volume 5 area 344 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 375.880 TIME= 14:54:44
Meshing of volume 5 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 5 WITH EXCESSIVE DISTORTION ***

8431	8432	8454	8461	8462	8463	8470	8471
8472	8473	8474	8494	8499	8500	8501	8503
8504	8506	8507	8508	8509	8510	8511	8512
8513	8514	8515	8516	8517	8518	8519	8520
8521	8522	8523	8524	8525	8526	8527	8528
8529	8530	8531	8532	8535	8544	8553	8562
8565	8571	8574	8577	8580	8582	8583	8585
8586							

*** WARNING *** CP= 375.890 TIME= 14:54:44
Volume 7 area 347 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 375.930 TIME= 14:54:44
Volume 7 area 348 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 376.280 TIME= 14:54:45
Meshing of volume 7 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 7 WITH EXCESSIVE DISTORTION ***

8587	8588	8589	8590	8591	8596	8597	8598
8606	8607	8616	8625	8634	8641	8642	8643
8644	8645	8646	8647	8648	8649	8650	8651
8652	8653	8654	8655	8656	8657	8658	8659
8660	8661	8662	8663	8664	8665	8666	8667
8670	8671	8672	8674	8675	8683	8697	8699
8700	8702	8703	8706	8709	8712	8715	8743
8746							

*** WARNING *** CP= 376.340 TIME= 14:54:45
Volume 8 area 349 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 376.690 TIME= 14:54:45
Meshing of volume 8 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 8 WITH EXCESSIVE DISTORTION ***

8752	8753	8755	8756	8761	8762	8764	8765
8770	8773	8774	8779	8782	8783	8791	8792
8800	8801	8859	8868	8877	8886	8895	8904

*** WARNING *** CP= 376.800 TIME= 14:54:46
Volume 9 area 352 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 376.820 TIME= 14:54:46
Volume 9 area 351 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 377.240 TIME= 14:54:46
Meshing of volume 9 produced 21 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 9 WITH EXCESSIVE DISTORTION ***

9022	9023	9024	9055	9056	9057	9058	9059
9060	9065	9066	9091	9092	9093	9094	9095

9096 9099 9100 9101 9102

*** WARNING *** CP= 377.290 TIME= 14:54:46
Volume 11 area 353 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 377.640 TIME= 14:54:47
Meshing of volume 11 produced 63 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 11 WITH EXCESSIVE DISTORTION ***

9127	9128	9129	9130	9131	9132	9133	9134
9135	9136	9137	9138	9139	9140	9141	9142
9143	9144	9145	9146	9147	9148	9149	9150
9151	9152	9153	9154	9155	9156	9157	9158
9159	9160	9161	9162	9165	9166	9167	9168
9169	9170	9171	9174	9175	9176	9177	9178
9179	9180	9183	9192	9201	9235	9236	9237
9245	9246	9254	9255	9264	9273	9282	

*** WARNING *** CP= 377.690 TIME= 14:54:47
Volume 13 area 177 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 377.730 TIME= 14:54:47
Volume 13 area 147 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.050 TIME= 14:54:48
Meshing of volume 13 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 13 WITH EXCESSIVE DISTORTION ***

9292	9295	9318	9327	9330	9333	9336	9338
9339	9341	9342	9345	9354	9363	9371	9372
9379	9380	9381	9388	9389	9390	9391	9392
9412	9417	9418	9419	9421	9422	9424	9425
9426	9427	9428	9429	9430	9431	9432	9433
9434	9435	9436	9437	9438	9439	9440	9441
9442	9443	9444	9445	9446	9447	9448	9449
9450							

*** WARNING *** CP= 378.100 TIME= 14:54:48
Volume 14 area 355 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.560 TIME= 14:54:48
Meshing of volume 14 produced 71 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 14 WITH EXCESSIVE DISTORTION ***

9492	9497	9498	9503	9504	9524	9525	9526
9527	9528	9530	9531	9532	9533	9534	9538
9539	9540	9559	9560	9561	9562	9563	9564
9565	9566	9567	9568	9569	9570	9573	9574
9575	9576	9582	9595	9596	9597	9598	9599
9600	9601	9602	9603	9604	9605	9606	9608
9609	9610	9611	9612	9618	9631	9632	9633
9634	9635	9636	9637	9638	9639	9640	9641
9642	9644	9645	9646	9647	9648	9654	

*** WARNING *** CP= 378.590 TIME= 14:54:48
Volume 27 area 269 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.650 TIME= 14:54:49
Volume 27 area 270 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.970 TIME= 14:54:49
 Meshing of volume 27 produced 57 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 27 WITH EXCESSIVE DISTORTION ***

9667	9668	9669	9670	9671	9672	9673	9674
9675	9676	9677	9678	9679	9680	9681	9682
9683	9684	9685	9686	9687	9688	9689	9690
9691	9692	9693	9696	9697	9698	9700	9701
9709	9723	9725	9726	9728	9729	9732	9735
9738	9741	9744	9750	9759	9768	9775	9776
9777	9778	9779	9784	9785	9786	9795	9826
9827							

*** WARNING *** CP= 379.020 TIME= 14:54:49
 Volume 31 area 359 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 379.160 TIME= 14:54:49
 Volume 31 area 273 has a corner angle of 40 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 379.550 TIME= 14:54:50
 Meshing of volume 31 produced 21 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 31 WITH EXCESSIVE DISTORTION ***

9853	9854	9855	9856	9859	9860	9861	9862
9863	9864	9889	9890	9895	9896	9897	9898
9899	9900	9931	9932	9933			

*** WARNING *** CP= 379.580 TIME= 14:54:50
 Volume 32 area 361 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 379.930 TIME= 14:54:51
 Meshing of volume 32 produced 24 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 32 WITH EXCESSIVE DISTORTION ***

10048	10049	10051	10052	10057	10058	10060	10061
10066	10069	10070	10075	10078	10079	10084	10087
10093	10096	10101	10110	10119	10128	10137	10146

*** WARNING *** CP= 379.970 TIME= 14:54:51
 Volume 35 area 363 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 380.440 TIME= 14:54:52
 Meshing of volume 35 produced 71 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 35 WITH EXCESSIVE DISTORTION ***

10219	10225	10226	10227	10228	10229	10231	10232
10233	10234	10235	10236	10237	10238	10239	10240
10241	10242	10255	10261	10262	10263	10264	10265
10267	10268	10269	10270	10271	10272	10273	10274
10275	10276	10277	10278	10291	10297	10298	10299
10300	10303	10304	10305	10306	10307	10308	10309
10310	10311	10312	10313	10314	10333	10334	10335
10339	10340	10341	10342	10343	10345	10346	10347
10348	10349	10369	10370	10375	10376	10381	

*** WARNING *** CP= 382.500 TIME= 14:54:55
 Volume 49 area 205 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 382.560 TIME= 14:54:55
 Volume 49 area 203 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 382.850 TIME= 14:54:55
 Meshing of volume 49 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 49 WITH EXCESSIVE DISTORTION ***

11287	11288	11289	11296	11297	11298	11305	11306
11307	11314	11315	11316	11323	11324	11325	11332
11333	11334	11341	11342	11343	11344	11345	11346
11347	11348	11349	11350	11351	11352	11353	11354
11355	11356	11357	11358	11359	11360	11361	11362
11363	11364	11365	11366	11367	11368	11369	11370
11371	11372	11373	11374	11375	11376	11377	11378
11379	11380	11381	11382	11383	11384	11385	11386
11387	11388	11389	11390	11391	11392	11393	11394
11397	11400	11403	11406	11409	11412	11415	11418
11421	11424	11427	11430	11433	11436	11439	11442
11445	11448						

*** WARNING *** CP= 382.920 TIME= 14:54:56
 Volume 50 area 364 has a corner angle of 25 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.240 TIME= 14:54:56
 Meshing of volume 50 produced 63 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 50 WITH EXCESSIVE DISTORTION ***

11451	11452	11453	11454	11455	11456	11457	11460
11461	11462	11463	11464	11465	11466	11467	11468
11469	11470	11471	11472	11473	11474	11475	11476
11477	11478	11479	11480	11481	11482	11483	11484
11485	11486	11487	11488	11489	11490	11491	11492
11493	11494	11495	11496	11497	11498	11499	11500
11501	11502	11532	11541	11550	11559	11568	11577
11585	11586	11594	11595	11602	11603	11604	

*** WARNING *** CP= 383.280 TIME= 14:54:56
 Volume 53 area 220 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.320 TIME= 14:54:56
 Volume 53 area 209 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.650 TIME= 14:54:57
 Meshing of volume 53 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 53 WITH EXCESSIVE DISTORTION ***

11611	11612	11613	11620	11621	11622	11629	11630
11631	11638	11639	11640	11647	11648	11649	11656
11657	11658	11665	11666	11667	11668	11669	11670
11671	11672	11673	11674	11675	11676	11677	11678
11679	11680	11681	11682	11683	11684	11685	11686
11687	11688	11689	11690	11691	11692	11693	11694
11695	11696	11697	11698	11699	11700	11701	11702
11703	11704	11705	11706	11707	11708	11709	11710
11711	11712	11713	11714	11715	11716	11717	11718
11721	11724	11727	11730	11733	11736	11739	11742
11745	11748	11751	11754	11757	11760	11763	11766
11769	11772						

*** WARNING *** CP= 383.680 TIME= 14:54:57
 Volume 55 area 293 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.720 TIME= 14:54:57
 Volume 55 area 294 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.060 TIME= 14:54:57
 Meshing of volume 55 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 55 WITH EXCESSIVE DISTORTION ***

11773	11774	11775	11776	11777	11778	11779	11780
11781	11782	11783	11784	11785	11786	11787	11788
11789	11790	11791	11792	11793	11794	11795	11796
11797	11798	11799	11800	11801	11802	11803	11804
11805	11806	11807	11808	11809	11810	11811	11812
11813	11814	11815	11816	11817	11818	11819	11820
11821	11822	11823	11824	11825	11826	11829	11832
11835	11838	11841	11844	11847	11850	11853	11856
11859	11862	11865	11868	11871	11874	11877	11880
11881	11882	11883	11890	11891	11892	11899	11900
11901	11908	11909	11910	11917	11918	11919	11926
11927	11928						

*** WARNING *** CP= 386.110 TIME= 14:55:01
 Volume 61 area 369 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 386.240 TIME= 14:55:01
 Volume 61 area 368 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 386.650 TIME= 14:55:02
 Meshing of volume 61 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 61 WITH EXCESSIVE DISTORTION ***

12799	12800	12801	12802	12803	12804	12805	12806
12807	12808	12809	12810	12811	12812	12813	12814
12815	12816	12817	12818	12819	12820	12821	12822
12823	12824	12825	12826	12827	12828	12835	12836
12837	12838	12839	12840	12841	12842	12843	12844
12845	12846	12847	12848	12849	12850	12851	12852
12853	12854	12855	12856	12857	12858	12859	12860
12861	12862	12863	12864	12871	12872	12873	12874
12875	12876	12877	12878	12879	12880	12881	12882
12883	12884	12885	12886	12887	12888	12889	12890
12891	12892	12893	12894	12895	12896	12897	12898
12899	12900	12907	12908	12909	12910	12911	12912
12913	12914	12915	12916	12917	12918	12919	12920
12921	12922	12923	12924	12925	12926	12927	12928
12929	12930	12931	12932	12933	12934	12935	12936
12943	12944	12945	12946	12947	12948	12949	12950
12951	12952	12953	12954	12955	12956	12957	12958
12959	12960	12961	12962	12963	12964	12965	12966
12967	12968	12969	12970	12971	12972	12985	12986
12987	12988	12989	12990	12991	12992	12993	12994
12995	12996	12997	12998	12999	13000	13001	13002
13003	13004	13005	13006	13007	13008		

*** WARNING *** CP= 386.690 TIME= 14:55:02
 Volume 62 area 370 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 387.060 TIME= 14:55:02
 Meshing of volume 62 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 62 WITH EXCESSIVE DISTORTION ***

13017	13020	13023	13026	13029	13032	13035	13038
13041	13044	13047	13050	13053	13056	13059	13062
13065	13068	13069	13070	13071	13078	13079	13080
13087	13088	13089	13096	13097	13098	13105	13106
13107	13114	13115	13116	13123	13124	13125	13126
13127	13128	13129	13130	13131	13132	13133	13134
13135	13136	13137	13138	13139	13140	13141	13142

13143	13144	13145	13146	13147	13148	13149	13150
13151	13152	13153	13154	13155	13156	13157	13158
13159	13160	13161	13162	13163	13164	13165	13166
13167	13168	13169	13170	13171	13172	13173	13174
13175	13176						

*** WARNING *** CP= 387.100 TIME= 14:55:02
Volume 66 area 372 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 387.580 TIME= 14:55:03
Meshing of volume 66 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 66 WITH EXCESSIVE DISTORTION ***

13177	13178	13179	13180	13181	13182	13183	13184
13185	13186	13187	13188	13189	13190	13191	13192
13193	13194	13195	13196	13197	13198	13199	13200
13201	13202	13203	13204	13205	13206	13213	13214
13215	13216	13217	13218	13219	13220	13221	13222
13223	13224	13225	13226	13227	13228	13229	13230
13231	13232	13233	13234	13235	13236	13237	13238
13239	13240	13241	13242	13249	13250	13251	13252
13253	13254	13255	13256	13257	13258	13259	13260
13261	13262	13263	13264	13265	13266	13267	13268
13269	13270	13271	13272	13273	13274	13275	13276
13277	13278	13285	13286	13287	13288	13289	13290
13291	13292	13293	13294	13295	13296	13297	13298
13299	13300	13301	13302	13303	13304	13305	13306
13307	13308	13309	13310	13311	13312	13313	13314
13321	13322	13323	13324	13325	13326	13327	13328
13329	13330	13331	13332	13333	13334	13335	13336
13337	13338	13339	13340	13341	13342	13343	13344
13345	13346	13347	13348	13349	13350	13363	13364
13365	13366	13367	13368	13369	13370	13371	13372
13373	13374	13375	13376	13377	13378	13379	13380
13381	13382	13383	13384	13385	13386		

*** WARNING *** CP= 387.620 TIME= 14:55:03
Volume 67 area 373 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 387.990 TIME= 14:55:04
Meshing of volume 67 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 67 WITH EXCESSIVE DISTORTION ***

13395	13398	13401	13404	13407	13410	13413	13416
13419	13422	13425	13428	13431	13434	13437	13440
13443	13446	13447	13448	13449	13456	13457	13458
13465	13466	13467	13474	13475	13476	13483	13484
13485	13492	13493	13494	13501	13502	13503	13504
13505	13506	13507	13508	13509	13510	13511	13512
13513	13514	13515	13516	13517	13518	13519	13520
13521	13522	13523	13524	13525	13526	13527	13528
13529	13530	13531	13532	13533	13534	13535	13536
13537	13538	13539	13540	13541	13542	13543	13544
13545	13546	13547	13548	13549	13550	13551	13552
13553	13554						

*** WARNING *** CP= 388.010 TIME= 14:55:04
Volume 74 area 315 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 388.060 TIME= 14:55:04
Volume 74 area 318 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 388.390 TIME= 14:55:04

Meshing of volume 74 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 74 WITH EXCESSIVE DISTORTION ***
13555 13556 13557 13558 13559 13560 13561 13562
13563 13564 13565 13566 13567 13568 13569 13570
13571 13572 13573 13574 13575 13576 13577 13578
13579 13580 13581 13582 13583 13584 13585 13586
13587 13588 13589 13590 13591 13592 13593 13594
13595 13596 13597 13598 13599 13600 13601 13602
13603 13604 13605 13606 13607 13608 13611 13614
13617 13620 13623 13626 13629 13632 13635 13638
13641 13644 13647 13650 13653 13656 13659 13662
13663 13664 13665 13672 13673 13674 13681 13682
13683 13690 13691 13692 13699 13700 13701 13708
13709 13710
```

*** WARNING *** CP= 388.430 TIME= 14:55:05
Volume 75 area 342 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 388.790 TIME= 14:55:05
Meshing of volume 75 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***
13717 13718 13719 13726 13727 13728 13735 13736
13737 13744 13745 13746 13753 13754 13755 13762
13763 13764 13771 13772 13773 13774 13775 13776
13777 13778 13779 13780 13781 13782 13783 13784
13785 13786 13787 13788 13789 13790 13791 13792
13793 13794 13795 13796 13797 13798 13799 13800
13801 13802 13803 13804 13805 13806 13807 13808
13809 13810 13811 13812 13813 13814 13815 13816
13817 13818 13819 13820 13821 13822 13823 13824
13827 13830 13833 13836 13839 13842 13845 13848
13851 13854 13857 13860 13863 13866 13869 13872
13875 13878
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*** WARNING *** CP= 388.900 TIME= 14:55:05
Volume 80 area 378 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 388.930 TIME= 14:55:05
Volume 80 area 379 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 389.360 TIME= 14:55:06
Meshing of volume 80 produced 174 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 80 WITH EXCESSIVE DISTORTION ***
13885 13886 13887 13888 13889 13890 13891 13892
13893 13894 13895 13896 13897 13898 13899 13900
13901 13902 13903 13904 13905 13906 13907 13908
13921 13922 13923 13924 13925 13926 13927 13928
13929 13930 13931 13932 13933 13934 13935 13936
13937 13938 13939 13940 13941 13942 13943 13944
13945 13946 13947 13948 13949 13950 13957 13958
13959 13960 13961 13962 13963 13964 13965 13966
13967 13968 13969 13970 13971 13972 13973 13974
13975 13976 13977 13978 13979 13980 13981 13982
13983 13984 13985 13986 13993 13994 13995 13996
13997 13998 13999 14000 14001 14002 14003 14004
14005 14006 14007 14008 14009 14010 14011 14012
14013 14014 14015 14016 14017 14018 14019 14020
14021 14022 14029 14030 14031 14032 14033 14034
14035 14036 14037 14038 14039 14040 14041 14042
14043 14044 14045 14046 14047 14048 14049 14050
14051 14052 14053 14054 14055 14056 14057 14058
14065 14066 14067 14068 14069 14070 14071 14072
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14073	14074	14075	14076	14077	14078	14079	14080
14081	14082	14083	14084	14085	14086	14087	14088
14089	14090	14091	14092	14093	14094		

*** WARNING *** CP= 389.410 TIME= 14:55:06
 Volume 81 area 380 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 389.770 TIME= 14:55:07
 Meshing of volume 81 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 81 WITH EXCESSIVE DISTORTION ***

14095	14096	14097	14104	14105	14106	14113	14114
14115	14122	14123	14124	14131	14132	14133	14140
14141	14142	14149	14150	14151	14152	14153	14154
14155	14156	14157	14158	14159	14160	14161	14162
14163	14164	14165	14166	14167	14168	14169	14170
14171	14172	14173	14174	14175	14176	14177	14178
14179	14180	14181	14182	14183	14184	14185	14186
14187	14188	14189	14190	14191	14192	14193	14194
14195	14196	14197	14198	14199	14200	14201	14202
14205	14208	14211	14214	14217	14220	14223	14226
14229	14232	14235	14238	14241	14244	14247	14250
14253	14256						

*** WARNING *** CP= 389.850 TIME= 14:55:07
 Volume 82 area 382 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 390.270 TIME= 14:55:08
 Meshing of volume 82 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 82 WITH EXCESSIVE DISTORTION ***

14263	14264	14265	14266	14267	14268	14269	14270
14271	14272	14273	14274	14275	14276	14277	14278
14279	14280	14281	14282	14283	14284	14285	14286
14299	14300	14301	14302	14303	14304	14305	14306
14307	14308	14309	14310	14311	14312	14313	14314
14315	14316	14317	14318	14319	14320	14321	14322
14323	14324	14325	14326	14327	14328	14335	14336
14337	14338	14339	14340	14341	14342	14343	14344
14345	14346	14347	14348	14349	14350	14351	14352
14353	14354	14355	14356	14357	14358	14359	14360
14361	14362	14363	14364	14371	14372	14373	14374
14375	14376	14377	14378	14379	14380	14381	14382
14383	14384	14385	14386	14387	14388	14389	14390
14391	14392	14393	14394	14395	14396	14397	14398
14399	14400	14407	14408	14409	14410	14411	14412
14413	14414	14415	14416	14417	14418	14419	14420
14421	14422	14423	14424	14425	14426	14427	14428
14429	14430	14431	14432	14433	14434	14435	14436
14443	14444	14445	14446	14447	14448	14449	14450
14451	14452	14453	14454	14455	14456	14457	14458
14459	14460	14461	14462	14463	14464	14465	14466
14467	14468	14469	14470	14471	14472		

NUMBER OF VOLUMES MESHED = 32
 MAXIMUM NODE NUMBER = 17185
 MAXIMUM ELEMENT NUMBER = 14472
 Elements for the plate

ELEMENT TYPE SET TO 4

MATERIAL NUMBER SET TO 4

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 390.560 TIME= 14:55:08
Volume 22 area 356 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 390.860 TIME= 14:55:09
Meshing of volume 22 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 22 WITH EXCESSIVE DISTORTION ***

14473	14474	14475	14476	14477	14478	14479	14480
14481	14482	14483	14484	14485	14486	14487	14488
14489	14490	14491	14492	14493	14494	14495	14496
14497	14498	14499	14500	14501	14502	14503	14504
14505	14506	14507	14508	14509	14510	14511	14512
14513	14514	14515	14516	14517	14518	14519	14520
14521	14522	14523	14524	14525	14526	14529	14532
14535	14538	14541	14544	14547	14550	14553	14556
14559	14562	14565	14568	14571	14574	14577	14580
14583	14592	14601	14610	14619	14628		

*** WARNING *** CP= 390.930 TIME= 14:55:09
Volume 28 area 358 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 391.370 TIME= 14:55:09
Meshing of volume 28 produced 114 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 28 WITH EXCESSIVE DISTORTION ***

14635	14636	14637	14638	14639	14641	14642	14643
14644	14645	14647	14648	14649	14650	14651	14653
14654	14655	14656	14671	14672	14673	14674	14675
14677	14678	14679	14680	14681	14683	14684	14685
14686	14687	14689	14690	14691	14692	14707	14708
14709	14710	14711	14713	14714	14715	14716	14717
14719	14720	14721	14722	14723	14725	14726	14727
14728	14743	14744	14745	14746	14747	14749	14750
14751	14752	14753	14755	14756	14757	14758	14759
14761	14762	14763	14764	14779	14780	14781	14782
14783	14785	14786	14787	14788	14789	14791	14792
14793	14794	14795	14797	14798	14799	14800	14815
14816	14817	14818	14819	14821	14822	14823	14824
14825	14827	14828	14829	14830	14831	14833	14834
14835	14836						

*** WARNING *** CP= 391.510 TIME= 14:55:10
Volume 51 area 366 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 391.910 TIME= 14:55:10
Meshing of volume 51 produced 114 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 51 WITH EXCESSIVE DISTORTION ***

14851	14852	14853	14854	14857	14858	14859	14860
14863	14864	14865	14866	14869	14870	14871	14872
14875	14876	14877	14878	14881	14882	14883	14884
14887	14888	14889	14890	14893	14894	14895	14896
14899	14900	14901	14902	14905	14906	14907	14908
14911	14912	14913	14914	14917	14918	14919	14920
14923	14924	14925	14926	14929	14930	14931	14932
14935	14936	14937	14938	14941	14942	14943	14944
14947	14948	14949	14950	14953	14954	14955	14956
14959	14960	14961	14962	14965	14966	14967	14968
14971	14972	14973	14974	14977	14978	14979	14980
14983	14984	14985	14986	14989	14990	14991	14992
14995	14996	14997	15001	15002	15003	15007	15008
15009	15013	15014	15015	15019	15020	15021	15025
15026	15027						

*** WARNING *** CP= 391.980 TIME= 14:55:10
Volume 54 area 367 has a corner angle of 24 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 392.300 TIME= 14:55:11
Meshing of volume 54 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 54 WITH EXCESSIVE DISTORTION ***

15067	15068	15069	15070	15071	15072	15073	15074
15075	15076	15077	15078	15079	15080	15081	15082
15083	15084	15085	15086	15087	15088	15089	15090
15091	15092	15093	15094	15095	15096	15097	15098
15099	15100	15101	15102	15103	15104	15105	15106
15107	15108	15109	15110	15111	15112	15113	15114
15115	15116	15117	15118	15119	15120	15123	15132
15141	15150	15159	15168	15175	15176	15177	15184
15185	15186	15193	15194	15195	15202	15203	15204
15211	15212	15213	15220	15221	15222		

*** WARNING *** CP= 392.410 TIME= 14:55:11
Volume 70 area 375 has a corner angle of 17 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 392.810 TIME= 14:55:12
Meshing of volume 70 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 70 WITH EXCESSIVE DISTORTION ***

15230	15231	15232	15233	15234	15236	15237	15238
15239	15240	15242	15243	15244	15245	15246	15248
15249	15250	15251	15252	15254	15255	15256	15257
15258	15260	15261	15262	15263	15264	15266	15267
15268	15269	15270	15272	15273	15274	15275	15276
15278	15279	15280	15281	15282	15284	15285	15286
15287	15288	15290	15291	15292	15293	15294	15296
15297	15298	15299	15300	15302	15303	15304	15305
15306	15308	15309	15310	15311	15312	15314	15315
15316	15317	15318	15320	15321	15322	15323	15324
15326	15327	15328	15329	15330	15332	15333	15334
15335	15336	15338	15339	15340	15341	15342	15344
15345	15346	15347	15348	15350	15351	15352	15353
15354	15356	15357	15358	15359	15360	15362	15363
15364	15365	15366	15368	15369	15370	15371	15372
15374	15375	15376	15377	15378	15380	15381	15382
15383	15384	15386	15387	15388	15389	15390	15392
15393	15394	15395	15396	15398	15399	15400	15401
15402	15404	15405	15406	15407	15408	15410	15411
15412	15413	15416	15417	15418	15419	15422	15423
15424	15425	15428	15429	15430	15431	15434	15435
15436	15437	15440	15441	15442	15443		

*** WARNING *** CP= 392.850 TIME= 14:55:12
Volume 71 area 376 has a corner angle of 17 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 393.210 TIME= 14:55:12
Meshing of volume 71 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 71 WITH EXCESSIVE DISTORTION ***

15447	15450	15453	15456	15459	15462	15465	15468
15471	15474	15477	15480	15483	15486	15489	15492
15495	15498	15499	15500	15501	15508	15509	15510
15517	15518	15519	15526	15527	15528	15535	15536
15537	15544	15545	15546	15553	15554	15555	15556
15557	15558	15559	15560	15561	15562	15563	15564
15565	15566	15567	15568	15569	15570	15571	15572
15573	15574	15575	15576	15577	15578	15579	15580

15581	15582	15583	15584	15585	15586	15587	15588
15589	15590	15591	15592	15593	15594	15595	15596
15597	15598	15599	15600	15601	15602	15603	15604
15605	15606						

*** WARNING *** CP= 393.290 TIME= 14:55:13
Volume 83 area 383 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 393.590 TIME= 14:55:13
Meshing of volume 83 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 83 WITH EXCESSIVE DISTORTION ***

15607	15608	15609	15616	15617	15618	15625	15626
15627	15634	15635	15636	15643	15644	15645	15652
15653	15654	15661	15662	15663	15664	15665	15666
15667	15668	15669	15670	15671	15672	15673	15674
15675	15676	15677	15678	15679	15680	15681	15682
15683	15684	15685	15686	15687	15688	15689	15690
15691	15692	15693	15694	15695	15696	15697	15698
15699	15700	15701	15702	15703	15704	15705	15706
15707	15708	15709	15710	15711	15712	15713	15714
15717	15720	15723	15726	15729	15732	15735	15738
15741	15744	15747	15750	15753	15756	15759	15762
15765	15768						

*** WARNING *** CP= 393.680 TIME= 14:55:13
Volume 84 area 385 has a corner angle of 17 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 394.110 TIME= 14:55:14
Meshing of volume 84 produced 174 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 84 WITH EXCESSIVE DISTORTION ***

15770	15771	15772	15773	15776	15777	15778	15779
15782	15783	15784	15785	15788	15789	15790	15791
15794	15795	15796	15797	15800	15801	15802	15803
15805	15806	15807	15808	15809	15811	15812	15813
15814	15815	15817	15818	15819	15820	15821	15823
15824	15825	15826	15827	15829	15830	15831	15832
15833	15835	15836	15837	15838	15839	15841	15842
15843	15844	15845	15847	15848	15849	15850	15851
15853	15854	15855	15856	15857	15859	15860	15861
15862	15863	15865	15866	15867	15868	15869	15871
15872	15873	15874	15875	15877	15878	15879	15880
15881	15883	15884	15885	15886	15887	15889	15890
15891	15892	15893	15895	15896	15897	15898	15899
15901	15902	15903	15904	15905	15907	15908	15909
15910	15911	15913	15914	15915	15916	15917	15919
15920	15921	15922	15923	15925	15926	15927	15928
15929	15931	15932	15933	15934	15935	15937	15938
15939	15940	15941	15943	15944	15945	15946	15947
15949	15950	15951	15952	15953	15955	15956	15957
15958	15959	15961	15962	15963	15964	15965	15967
15968	15969	15970	15971	15973	15974	15975	15976
15977	15979	15980	15981	15982	15983		

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 18690
MAXIMUM ELEMENT NUMBER = 15984
Contact Elements Generation

MERGE COINCIDENT NODES WITHIN TOLERANCE OF 0.10000E-03

*** NOTE *** CP= 420.020 TIME= 14:55:57
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

ELEMENT TYPE SET TO 5

REAL CONSTANT NUMBER= 5

MATERIAL NUMBER SET TO 5

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18151 TO 18156 STEP 1

6 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 5426 TO 5426 STEP 1

7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18397 TO 18401 STEP 1

12 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18361 TO 18366 STEP 5

14 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18439 TO 18441 STEP 2

16 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18428 TO 18428 STEP 1

17 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18434 TO 18435 STEP 1

19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18335 TO 18335 STEP 1

20 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18561 TO 18561 STEP 1

21 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 17971 TO 17971 STEP 1

22 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18021 TO 18021 STEP 1

23 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 17940 TO 17940 STEP 1

24 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18169 TO 18170 STEP 1

26 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18161 TO 18163 STEP 2

28 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18174 TO 18176 STEP 2

30 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFA ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 15984 STEP 1

15984 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

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

5832 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

7014 NODES (OF 18690 DEFINED) SELECTED FROM
5832 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

210 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN-0.15100 AND 0.15100
KABS= 0. TOLERANCE= 0.000000E+00

210 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 0.44900 AND 0.45100

KABS= 0. TOLERANCE= 0.000000E+00

13 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFB ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 15984 STEP 1

15984 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

GENERATE ELEMENTS BETWEEN CONTACT (SURFB) AND TARGET (SURFA) SURFACES.
TARGET SURFACE OF PLATE OR BEAM ELEMENTS IS TOP.
ELEMENT TYPE TO BE GENERATED = CONTAC49.

*** WARNING *** CP= 424.470 TIME= 14:56:05
Contact elements are not generated between contact nodes and target
faces which include those nodes.

NUMBER OF CONTACT ELEMENTS GENERATED = 178

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

16162 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DESTROY ASSOCIATIVITY OF FINITE ELEMENT MODEL AND SOLID MODEL

*** WARNING *** CP= 424.760 TIME= 14:56:05
CLEAR, SELECT, and MESH boundary condition commands are not possible
after MODMSH.

NUMBER OF MESH ITEMS DISCONNECTED FROM NODES AND ELEMENTS = 756

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1

2592 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

3100 ELEMENTS (OF 16162 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3832 NODES (OF 18690 DEFINED) SELECTED FROM
3100 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 3 TO 3 STEP 1

168 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= invert3.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 435.140

***** ANSYS SOLUTION ROUTINE *****

PERFORM A STATIC ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS
Define constraints

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

534 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

319 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

1164 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12547 TO 12547 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12553 TO 12558 STEP 1

7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12589 TO 12630 STEP 1

49 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12841 TO 12882 STEP 1

```
91 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13093 TO 13134 STEP 1

133 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13345 TO 13386 STEP 1

175 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14484 TO 14489 STEP 1

181 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14520 TO 14555 STEP 1

217 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14736 TO 14771 STEP 1

253 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14952 TO 14987 STEP 1

289 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 15168 TO 15203 STEP 1

325 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

COORDINATE SYSTEM 15 DEFINITION. TYPE= 0 (CARTESIAN)
ORIGIN NODE= 12553 XNODE= 12558 YNODE= 12601 PARAMETERS= 1.000 1.000
ORIENTATION= 1.00 0.00 0.00 0.00 0.83 0.55 0.00 -0.55 0.83
THXY,THYZ,THZX= 0.000 33.700 0.000

ACTIVE COORDINATE SYSTEM SET TO 15 (CARTESIAN)

*** WARNING *** CP= 437.700 TIME= 14:56:27
NROTAT is not a recognized SOLUTION command, abbreviation, or macro.
This command will be ignored.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 344 TO 344 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1340 TO 1344 STEP 4

3 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1304 TO 1304 STEP 1

4 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
Vertical force divided over four nodes

SPECIFIED NODAL LOAD FY FOR SELECTED NODES 1 TO 18690 BY 1
```

REAL= -51319.9000 IMAG= 0.000000000E+00

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ACEL= 0.00000E+00 16.280 0.00000E+00

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 440.060 TIME= 14:56:31
Element 73 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.070 TIME= 14:56:31
Element 78 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.070 TIME= 14:56:31
Element 79 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.080 TIME= 14:56:31
Element 84 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.080 TIME= 14:56:31
Element 85 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.080 TIME= 14:56:31
Element 90 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.080 TIME= 14:56:31
Element 91 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.090 TIME= 14:56:31

Element 96 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.090 TIME= 14:56:31
Element 97 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.100 TIME= 14:56:31
Element 102 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.100 TIME= 14:56:31
Element 103 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.100 TIME= 14:56:31
Element 108 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.100 TIME= 14:56:31
Element 109 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.100 TIME= 14:56:31
Element 109 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.100 TIME= 14:56:31
Element 114 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.100 TIME= 14:56:31
Element 114 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.110 TIME= 14:56:31
Element 115 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.110 TIME= 14:56:31
Element 115 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.110 TIME= 14:56:31
Element 120 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.110 TIME= 14:56:31
Element 120 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.120 TIME= 14:56:31
Element 121 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.120 TIME= 14:56:31
Element 121 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.120 TIME= 14:56:31
Element 126 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.120 TIME= 14:56:31
Element 126 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.120 TIME= 14:56:31
Element 127 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 127 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 132 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 132 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 133 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 133 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 138 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 138 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.130 TIME= 14:56:31
Element 139 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.140 TIME= 14:56:31
Element 139 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.140 TIME= 14:56:31
Element 144 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.140 TIME= 14:56:31
Element 144 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.140 TIME= 14:56:31
Element 145 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.150 TIME= 14:56:31
Element 145 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.150 TIME= 14:56:31
Element 150 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.150 TIME= 14:56:31
Element 150 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.150 TIME= 14:56:31
Element 151 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.150 TIME= 14:56:31
Element 151 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.160 TIME= 14:56:31

Element 156 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.160 TIME= 14:56:31
Element 156 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.160 TIME= 14:56:31
Element 157 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.160 TIME= 14:56:31
Element 157 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.170 TIME= 14:56:31
Element 162 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.170 TIME= 14:56:31
Element 162 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.170 TIME= 14:56:31
Element 163 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.170 TIME= 14:56:31
Element 163 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.180 TIME= 14:56:31
Element 168 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.180 TIME= 14:56:31
Element 168 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.180 TIME= 14:56:31
Element 169 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.180 TIME= 14:56:31
Element 169 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.190 TIME= 14:56:31
Element 174 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.190 TIME= 14:56:31
Element 174 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.190 TIME= 14:56:31
Element 175 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.190 TIME= 14:56:31
Element 175 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.190 TIME= 14:56:31
Element 180 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.200 TIME= 14:56:31
Element 180 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.200 TIME= 14:56:31
Element 181 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.200 TIME= 14:56:31
Element 181 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.200 TIME= 14:56:31
Element 186 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.210 TIME= 14:56:31
Element 186 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.210 TIME= 14:56:31
Element 187 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.210 TIME= 14:56:31
Element 187 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.210 TIME= 14:56:31
Element 192 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.210 TIME= 14:56:31
Element 192 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.220 TIME= 14:56:31
Element 193 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.220 TIME= 14:56:31
Element 193 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.220 TIME= 14:56:31
Element 198 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.220 TIME= 14:56:31
Element 198 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.240 TIME= 14:56:31
Element 199 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.240 TIME= 14:56:31
Element 199 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.240 TIME= 14:56:31
Element 204 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.240 TIME= 14:56:31
Element 204 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.240 TIME= 14:56:31
Element 205 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.250 TIME= 14:56:31

Element 205 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.250 TIME= 14:56:31
Element 210 has an angle between adjacent edges of 137.977129 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.250 TIME= 14:56:31
Element 210 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.250 TIME= 14:56:31
Element 211 has an angle between adjacent edges of 137.977129 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.260 TIME= 14:56:31
Element 211 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.260 TIME= 14:56:31
Element 216 has an angle between adjacent edges of 137.977129 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 440.260 TIME= 14:56:31
Element 216 has an angle between adjacent edges of 139.106605 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.250 TIME= 14:56:33
Element 1801 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.250 TIME= 14:56:33
Element 1802 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.250 TIME= 14:56:33
Element 1803 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.250 TIME= 14:56:33
Element 1804 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.260 TIME= 14:56:33
Element 1805 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.260 TIME= 14:56:33
Element 1806 has an angle between adjacent edges of 136.146221 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.280 TIME= 14:56:33
Element 1831 has an angle between adjacent edges of 43.8537786 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.280 TIME= 14:56:33
Element 1832 has an angle between adjacent edges of 43.8537786 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 441.280 TIME= 14:56:33
Element 1833 has an angle between adjacent edges of 43.8537786 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

degrees.

*** WARNING *** CP= 441.280 TIME= 14:56:33
Element 1834 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.280 TIME= 14:56:33
Element 1835 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.290 TIME= 14:56:33
Element 1836 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.290 TIME= 14:56:33
Element 1837 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.290 TIME= 14:56:33
Element 1837 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.290 TIME= 14:56:33
Element 1838 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.290 TIME= 14:56:33
Element 1838 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.300 TIME= 14:56:33
Element 1839 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.300 TIME= 14:56:33
Element 1839 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.300 TIME= 14:56:33
Element 1840 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.300 TIME= 14:56:33
Element 1840 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.300 TIME= 14:56:33
Element 1841 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.310 TIME= 14:56:33
Element 1841 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.310 TIME= 14:56:33
Element 1842 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 441.310 TIME= 14:56:33
Element 1842 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.320 TIME= 14:56:33
Element 1867 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.330 TIME= 14:56:33
Element 1867 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.330 TIME= 14:56:33
Element 1868 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.330 TIME= 14:56:33
Element 1868 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.330 TIME= 14:56:33
Element 1869 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.330 TIME= 14:56:33
Element 1869 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.340 TIME= 14:56:33
Element 1870 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.340 TIME= 14:56:33
Element 1870 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.340 TIME= 14:56:33
Element 1871 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.340 TIME= 14:56:33
Element 1871 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.340 TIME= 14:56:33
Element 1872 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.340 TIME= 14:56:33
Element 1872 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.350 TIME= 14:56:33
Element 1873 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 441.350 TIME= 14:56:33
Element 1873 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.350 TIME= 14:56:33
Element 1874 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.350 TIME= 14:56:33
Element 1874 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.350 TIME= 14:56:33
Element 1875 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.350 TIME= 14:56:33
Element 1875 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.360 TIME= 14:56:33
Element 1876 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.360 TIME= 14:56:33
Element 1876 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.360 TIME= 14:56:33
Element 1877 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.360 TIME= 14:56:33
Element 1877 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.360 TIME= 14:56:33
Element 1878 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.360 TIME= 14:56:33
Element 1878 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.380 TIME= 14:56:33
Element 1903 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.380 TIME= 14:56:33
Element 1903 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.380 TIME= 14:56:33
Element 1904 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 441.390 TIME= 14:56:33
Element 1904 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.390 TIME= 14:56:33
Element 1905 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.390 TIME= 14:56:33
Element 1905 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.390 TIME= 14:56:33
Element 1906 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.390 TIME= 14:56:33
Element 1906 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.400 TIME= 14:56:33
Element 1907 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.400 TIME= 14:56:33
Element 1907 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.400 TIME= 14:56:33
Element 1908 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.400 TIME= 14:56:33
Element 1908 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.400 TIME= 14:56:33
Element 1909 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.400 TIME= 14:56:33
Element 1909 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.410 TIME= 14:56:33
Element 1910 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.420 TIME= 14:56:33
Element 1910 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.420 TIME= 14:56:33
Element 1911 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 441.420 TIME= 14:56:33
Element 1911 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.420 TIME= 14:56:33
Element 1912 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.420 TIME= 14:56:33
Element 1912 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.420 TIME= 14:56:33
Element 1913 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.430 TIME= 14:56:33
Element 1913 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.430 TIME= 14:56:33
Element 1914 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.430 TIME= 14:56:33
Element 1914 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.450 TIME= 14:56:33
Element 1939 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.450 TIME= 14:56:33
Element 1939 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.450 TIME= 14:56:33
Element 1940 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.450 TIME= 14:56:33
Element 1940 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.450 TIME= 14:56:33
Element 1941 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.450 TIME= 14:56:33
Element 1941 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.450 TIME= 14:56:33
Element 1942 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 441.460 TIME= 14:56:33
Element 1942 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.460 TIME= 14:56:33
Element 1943 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.460 TIME= 14:56:33
Element 1943 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.460 TIME= 14:56:33
Element 1944 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 441.460 TIME= 14:56:33
Element 1944 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.800 TIME= 14:56:35
Element 4123 has an angle between adjacent edges of 140.634734 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.810 TIME= 14:56:35
Element 4123 has an angle between adjacent edges of 139.943038 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.810 TIME= 14:56:35
Element 4124 has an angle between adjacent edges of 141.335859 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.810 TIME= 14:56:35
Element 4124 has an angle between adjacent edges of 140.634734 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.810 TIME= 14:56:35
Element 4125 has an angle between adjacent edges of 142.046391 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.810 TIME= 14:56:35
Element 4125 has an angle between adjacent edges of 141.335859 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.810 TIME= 14:56:35
Element 4126 has an angle between adjacent edges of 142.766299 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.820 TIME= 14:56:35
Element 4126 has an angle between adjacent edges of 142.046391 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.820 TIME= 14:56:35
Element 4127 has an angle between adjacent edges of 143.495537 on face
3 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 442.820 TIME= 14:56:35
Element 4127 has an angle between adjacent edges of 142.766299 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.820 TIME= 14:56:35
Element 4128 has an angle between adjacent edges of 144.234047 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.820 TIME= 14:56:35
Element 4128 has an angle between adjacent edges of 143.495537 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.820 TIME= 14:56:35
Element 4129 has an angle between adjacent edges of 146.672082 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.830 TIME= 14:56:35
Element 4129 has an angle between adjacent edges of 40.0577585 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.830 TIME= 14:56:35
Element 4130 has an angle between adjacent edges of 147.373275 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.840 TIME= 14:56:35
Element 4130 has an angle between adjacent edges of 39.3659959 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.840 TIME= 14:56:35
Element 4131 has an angle between adjacent edges of 148.083878 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.840 TIME= 14:56:35
Element 4131 has an angle between adjacent edges of 38.6648032 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.840 TIME= 14:56:35
Element 4132 has an angle between adjacent edges of 148.803858 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.840 TIME= 14:56:35
Element 4132 has an angle between adjacent edges of 37.9542006 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:35
Element 4133 has an angle between adjacent edges of 149.53317 on face 3
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:35
Element 4133 has an angle between adjacent edges of 37.2342205 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:36
Element 4134 has an angle between adjacent edges of 150.271757 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:36
Element 4134 has an angle between adjacent edges of 36.5049078 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:36
Element 4135 has an angle between adjacent edges of 150.882604 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:36
Element 4135 has an angle between adjacent edges of 34.0204766 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:36
Element 4136 has an angle between adjacent edges of 151.583865 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.850 TIME= 14:56:36
Element 4136 has an angle between adjacent edges of 33.3286479 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.860 TIME= 14:56:36
Element 4137 has an angle between adjacent edges of 152.294538 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.860 TIME= 14:56:36
Element 4137 has an angle between adjacent edges of 32.627387 on face
5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 442.860 TIME= 14:56:36
Element 4138 has an angle between adjacent edges of 153.014591 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 442.860 TIME= 14:56:36
Element 4138 has an angle between adjacent edges of 31.9167142 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

Error messages discontinued after 200 messages were displayed.
More may exist. See (invert3.err) for suppressed messages.

*** NOTE *** CP= 458.560 TIME= 14:57:00
The model data was checked and warning messages were found.
Please review output or errors file (invert3.err) for these warning
messages.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:57:00 JAN 30, 1997 CP= 458.560
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM. UX UY UZ
ANALYSIS TYPE.STATIC (STEADY-STATE)
NONLINEAR GEOMETRIC EFFECTS.ON
NEWTON-RAPHSON OPTION.PROGRAM CHOSEN

*** NOTE *** CP= 460.520 TIME= 14:57:03
Present time 0 is less than or equal to the previous time.
Time will default to 1.

*** NOTE *** CP= 460.530 TIME= 14:57:03
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. 1.0000
NUMBER OF SUBSTEPS. 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 0.00000E+00 16.280 0.00000E+00
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 373.22

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = 0.12663E-09	IXX = 160.7	IXX = 43.68
YC = 0.34039	IYY = 101.0	IYY = 27.21
ZC = 0.44458	IZZ = 64.86	IZZ = 21.62
	IXY = -0.2643E-07	IXY = -0.1034E-07
	IYZ = -58.65	IYZ = -2.166
	IZX = -0.2836E-07	IZX = -0.7348E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
1	57.6774
2	19.2167
3	259.094
4	37.2289

Range of element maximum matrix coefficients in global coordinates
Maximum= 1.628307862E+10 at element 15550.
Minimum= 92679403.7 at element 10026.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	55.150	0.009
2	2592	SOLID45	24.630	0.010
3	5880	SOLID45	56.870	0.010
4	1512	SOLID45	14.180	0.009
5	178	CONTAC49	0.180	0.001

Time at end of element matrix formulation CP= 628.81.
FORCE CONVERGENCE VALUE = 0.1026E+06 CRITERION= 102.6

Estimated number of active DOF= 54873.

Maximum wavefront= 2095.

Time at end of matrix triangularization CP= 2458.85.

Equation solver maximum pivot= 6.025291661E+10 at node 17942 UY.

Equation solver minimum pivot= 16793206.3 at node 1527 UX.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.4545E-03

FORCE CONVERGENCE VALUE = 0.2239E+05 CRITERION= 107.3

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.1767E-04

FORCE CONVERGENCE VALUE = 125.4 CRITERION= 107.1

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.6482E-07

FORCE CONVERGENCE VALUE = 2.968 CRITERION= 107.1 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** NOTE ***

CP= 6855.780 TIME= 18:37:45

Page file used.

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	49.280	0.008
2	2592	SOLID45	21.610	0.008
3	5880	SOLID45	47.700	0.008
4	1512	SOLID45	12.650	0.008
5	178	CONTAC49	0.290	0.002

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	1.420	0.000
2	2592	SOLID45	0.770	0.000
3	5880	SOLID45	1.490	0.000
4	1512	SOLID45	0.410	0.000
5	178	CONTAC49	0.040	0.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 3

*** TIME = 1.00000 TIME INC = 1.00000

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 54873

R.M.S. WAVEFRONT SIZE = 1365.3

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096

82.000 MB WRITTEN ON ELEMENT MATRIX FILE: invert3.emat

82.297 MB WRITTEN ON ELEMENT SAVED DATA FILE: invert3.esav

553.063 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: invert3.tri

33.109 MB WRITTEN ON RESULTS FILE: invert3.rst

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 6957.660

PURGE ALL SOLUTION AND POST DATA

SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= invert3.db

FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 6853

NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***

NUMBER OF R/W OPERATIONS= 2664

MAXIMUM RECORD NUMBER = 1053

RECORD SIZE (I*4 WORDS) = 16384

PAGE FILE SIZE (MB) = 65.813

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED |
|-----|
|               REV. 5.1  24         |               HP 9000/7XX
| CP TIME      (sec) =      6970.950 | TIME = 18:43:21
| ELAPSED TIME (sec) =     14270.000 | DATE  = 01/30/97
|                                     |
*-----*
```

-----*

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-----*

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***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = post2
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.190 TIME= 14:33:35
There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=post2 14:33:35 JAN 30, 1997 CP= 0.200

```
1 resume,invert2,db
2 /filnam,invert2
3 /post1
4 /out,eqvstrs,res
5 /com,
6 /com,
7 /com, MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE
8 /com,
9 /com,
10 allsel
11 set,1,1
12 nsort,s,eqv,0,0,1
13 prns,s,prin
14 /com,
15 /com,
16 /com, MAXIMUM EQUIVALENT STRESS IN THE TUBE
17 /com,
18 /com,
19 esel,s,type,,1
20 nsort,s,eqv,0,0,1
21 prns,s,prin
22 /com,
23 /com,
24 /com, MAXIMUM EQUIVALENT STRESS IN THE PIPE
25 /com,
26 /com,
27 allsel
28 esel,s,type,,2
29 nsle
30 esln
31 nsort,s,eqv,0,0,1
32 prns,s,prin
33 /com,
34 /com,
35 /com, MAXIMUM EQUIVALENT STRESS IN THE PLATE
36 /com,
37 /com,
38 allsel
39 esel,s,type,,4
40 nsle
41 esln
42 nsort,s,eqv,0,0,1
43 prns,s,prin
44 /com,
45 /com,
46 /com, THIRD PRINCIPAL (COMPRESSIVE) STRESS IN THE PIER
47 /com,
48 /com,
49 allsel
50 esel,s,type,,3
```



```

51 nsle
52 esln
53 nsort,s,3,1,0,1
54 prns,s,prin
55 /out
56 fini
57 /exit
58 /eof

```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REplot /REplot

PARAMETER PI = 3.141593

```

*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= VEC      /show,,1,
ABBREVIATION= RAS      /show,,0,
ABBREVIATION= INP      /input,,inp,
ABBREVIATION= ESC      /exit,nosav,
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= PR1      /psf,pres,norm,1,

```

ABBREVIATION= PRO /psf,pres,norm,0,
ABBREVIATION= U1 /pbc,u,1,
ABBREVIATION= U0 /pbc,u,0,
ABBREVIATION= X3D /show,3d,
ABBREVIATION= X11 /show,x11,
ABBREVIATION= X11C /show,x11c,
ABBREVIATION= ON /menu,on,
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 color
x11c for X-term color contour

type: on

RESUME ANSYS DATA FROM FILE NAME=invert2.db

*** ANSYS GLOBAL STATUS ***

TITLE = 3-D static support and pier analysis

ANALYSIS TYPE = STATIC (STEADY-STATE)

NUMBER OF ELEMENT TYPES = 5

15994 ELEMENTS CURRENTLY SELECTED. MAX ELEMENT NUMBER = 16162

18690 NODES CURRENTLY SELECTED. MAX NODE NUMBER = 18690

153 KEYPOINTS CURRENTLY SELECTED. MAX KEYPOINT NUMBER = 163

406 LINES CURRENTLY SELECTED. MAX LINE NUMBER = 458

349 AREAS CURRENTLY SELECTED. MAX AREA NUMBER = 385

80 VOLUMES CURRENTLY SELECTED. MAX VOL. NUMBER = 84

11 COMPONENTS CURRENTLY DEFINED

MAXIMUM LINEAR PROPERTY NUMBER = 5

MAXIMUM REAL CONSTANT SET NUMBER = 5

ACTIVE COORDINATE SYSTEM = 0 (CARTESIAN)

NUMBER OF SPECIFIED CONSTRAINTS = 1197

NUMBER OF NODAL LOADS = 4

INITIAL JOBNAME = post2

CURRENT JOBNAME = post2

CURRENT JOBNAME REDEFINED AS invert2

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 14:33:47 JAN 30, 1997 CP= 5.550
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** ANSYS RESULTS INTERPRETATION (POST1) *****

/OUTPUT FILE= eqvstrs.res

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 54.240

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= invert2.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 0
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 7438
MAXIMUM RECORD NUMBER = 978
RECORD SIZE (I*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 61.125

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|               REV. 5.1  24               HP 9000/7XX               |
|               CP TIME   (sec) =      69.600   TIME = 14:38:33      |
|               ELAPSED TIME (sec) =    299.000   DATE  = 01/30/97      |
|-----|
*-----*
```

-----*

W E L C O M E T O T H E A N S Y S P R O G R A M

-----*

***** D I S C L A I M E R O F W A R R A N T Y *****
***** A N D N O T I C E O F C O P Y R I G H T *****

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PRESS <CR> OR <ENTER> TO CONTINUE

***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = post2
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.160 TIME= 12:57:05

There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=post2 12:57:05 FEB 20, 1997 CP= 0.160

```
1 resume,invert3,db
2 /filnam,invert3
3 /post1
4 /out,eqvstrs1,res
5 /com,
6 /com,
7 /com, MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE
8 /com,
9 /com,
10 allsel
11 set,1,1
12 nsort,s,eqv,0,0,1
13 prns,s,prin
14 /com,
15 /com,
16 /com, MAXIMUM EQUIVALENT STRESS IN THE TUBE
17 /com,
18 /com,
19 esel,s,type,,1
20 nsort,s,eqv,0,0,1
21 prns,s,prin
22 /com,
23 /com,
24 /com, MAXIMUM EQUIVALENT STRESS IN THE PIPE
25 /com,
26 /com,
27 allsel
28 esel,s,type,,2
29 nsle
30 esln
31 nsort,s,eqv,0,0,1
32 prns,s,prin
33 /com,
34 /com,
35 /com, MAXIMUM EQUIVALENT STRESS IN THE PLATE
36 /com,
37 /com,
38 allsel
39 esel,s,type,,4
40 nsle
41 esln
42 nsort,s,eqv,0,0,1
43 prns,s,prin
44 /com,
45 /com,
46 /com, THIRD PRINCIPAL (COMPRESSIVE) STRESS IN THE PIER
47 /com,
```

```

48 /com,
49 allsel
50 esel,s,type,,3
51 nsle
52 esln
53 nsort,s,3,1,0,1
54 prns,s,prin
55 /out
56 fini
57 /exit
58 /eof

```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REPLOT /REPLOT

PARAMETER PI = 3.141593

```

*****
ANSYS STARTUP FILE start.ans
*****

```

```

ABBREVIATION= VEC      /show,,1,
ABBREVIATION= RAS      /show,,0,
ABBREVIATION= INP      /input,,inp,
ABBREVIATION= ESC      /exit,nosav,
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= PR1 /psf,pres,norm,1,
 ABBREVIATION= PRO /psf,pres,norm,0,
 ABBREVIATION= U1 /pbc,u,1,
 ABBREVIATION= U0 /pbc,u,0,
 ABBREVIATION= X3D /show,3d,
 ABBREVIATION= X11 /show,x11,
 ABBREVIATION= X11C /show,x11c,
 ABBREVIATION= ON /menu,on,
 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 color
 x11c for X-term color contour

type: on

RESUME ANSYS DATA FROM FILE NAME=invert3.db

*** ANSYS GLOBAL STATUS ***

TITLE = 3-D static support and pier analysis with a seismic load factor

ANALYSIS TYPE = STATIC (STEADY-STATE)

NUMBER OF ELEMENT TYPES = 5

15994 ELEMENTS CURRENTLY SELECTED. MAX ELEMENT NUMBER = 16162

18690 NODES CURRENTLY SELECTED. MAX NODE NUMBER = 18690

153 KEYPOINTS CURRENTLY SELECTED. MAX KEYPOINT NUMBER = 163

406 LINES CURRENTLY SELECTED. MAX LINE NUMBER = 458

349 AREAS CURRENTLY SELECTED. MAX AREA NUMBER = 385

80 VOLUMES CURRENTLY SELECTED. MAX VOL. NUMBER = 84

11 COMPONENTS CURRENTLY DEFINED

MAXIMUM LINEAR PROPERTY NUMBER = 5

MAXIMUM REAL CONSTANT SET NUMBER = 5

ACTIVE COORDINATE SYSTEM = 0 (CARTESIAN)

NUMBER OF SPECIFIED CONSTRAINTS = 1197

NUMBER OF NODAL LOADS = 4

INITIAL JOBNAME = post2

CURRENT JOBNAME = post2

CURRENT JOBNAME REDEFINED AS invert3

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****

38303 VERSION=HP 9000/7XX 12:57:15 FEB 20, 1997 CP= 5.430

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** ANSYS RESULTS INTERPRETATION (POST1) *****

/OUTPUT FILE= eqvstrs1.res

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 52.530

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= invert3.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 0
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 7453
MAXIMUM RECORD NUMBER = 978
RECORD SIZE (1*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 61.125

```

*-----*
|                                     |
|               ANSYS RUN COMPLETED |
|                                     |
|-----|
|               REV. 5.1  24          | HP 9000/7XX
|               CP TIME   (sec) =    66.850   TIME = 13:01:19
|               ELAPSED TIME (sec) =   255.000   DATE  = 02/20/97
|               |
|-----|
*-----*

```


MAXIMUM DISPLACEMENT IN THE WASTE PACKAGE SUPPORT AND PIER STRUCTURE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

USE LOAD STEP 1 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 7.440 TIME= 11:21:39
Page file used.

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 3
TIME/FREQUENCY= 1.0000

TITLE= 3-D static support and pier analysis with a seismic load factor

SORT ON ITEM=U COMPONENT=SUM ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT U NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 11:22:35 JAN 31, 1997 CP= 22.380
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL DEGREE OF FREEDOM LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

THE FOLLOWING DEGREE OF FREEDOM RESULTS ARE IN GLOBAL COORDINATES

NODE	UX	UY	UZ	USUM
------	----	----	----	------

1387 -0.60106E-10-0.45315E-03 0.24455E-03 0.51492E-03

MAXIMUM ABSOLUTE VALUES

NODE	1387	1387	1387	1387
VALUE	-0.60106E-10	-0.45315E-03	0.24455E-03	0.51492E-03

-----*

W E L C O M E T O T H E A N S Y S P R O G R A M

-----*

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AFTER YOU HAVE READ AND UNDERSTAND THE PREVIOUS DISCLAIMER,
PRESS <CR> OR <ENTER> TO CONTINUE

***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = post3
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.180 TIME= 11:21:27
There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=post3 11:21:27 JAN 31, 1997 CP= 0.180

```
1 resume,invert3,db
2 /filnam,invert3
3 /post1
4 /out,displ,res
5 /com,
6 /com,
7 /com, MAXIMUM DISPLACEMENT IN THE WASTE PACKAGE SUPPORT AND PIER STRUCTURE
8 /com,
9 /com,
10 allsel
11 set,1,1
12 nsort,u,sum,0,0,1
13 prns,u,comp
14 /out
15 fini
16 /exit
17 /eof
```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REplot /REplot

PARAMETER PI = 3.141593

ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,
ABBREVIATION= RAS /show,,0,
ABBREVIATION= INP /input,,inp,
ABBREVIATION= ESC /exit,nosav,
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= PR1 /psf,pres,norm,1,
 ABBREVIATION= PR0 /psf,pres,norm,0,
 ABBREVIATION= U1 /pbc,u,1,
 ABBREVIATION= U0 /pbc,u,0,
 ABBREVIATION= X3D /show,3d,
 ABBREVIATION= X11 /show,x11,
 ABBREVIATION= X11C /show,x11c,
 ABBREVIATION= ON /menu,on,
 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 color
 x11c for X-term color contour

type: on

RESUME ANSYS DATA FROM FILE NAME=invert3.db

*** ANSYS GLOBAL STATUS ***

TITLE = 3-D static support and pier analysis with a seismic load factor
 ANALYSIS TYPE = STATIC (STEADY-STATE)
 NUMBER OF ELEMENT TYPES = 5
 6202 ELEMENTS CURRENTLY SELECTED. MAX ELEMENT NUMBER = 16162
 7147 NODES CURRENTLY SELECTED. MAX NODE NUMBER = 18690
 153 KEYPOINTS CURRENTLY SELECTED. MAX KEYPOINT NUMBER = 163
 406 LINES CURRENTLY SELECTED. MAX LINE NUMBER = 458

349 AREAS CURRENTLY SELECTED. MAX AREA NUMBER = 385
80 VOLUMES CURRENTLY SELECTED. MAX VOL. NUMBER = 84
11 COMPONENTS CURRENTLY DEFINED
MAXIMUM LINEAR PROPERTY NUMBER = 5
MAXIMUM REAL CONSTANT SET NUMBER = 5
ACTIVE COORDINATE SYSTEM = 0 (CARTESIAN)
NUMBER OF SPECIFIED CONSTRAINTS = 1197
NUMBER OF NODAL LOADS = 4

INITIAL JOBNAME = post3

CURRENT JOBNAME = post3

CURRENT JOBNAME REDEFINED AS invert3

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 11:21:37 JAN 31, 1997 CP= 5.360
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** ANSYS RESULTS INTERPRETATION (POST1) *****

/OUTPUT FILE= displ.res

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 22.470

PURGE ALL SOLUTION AND POST DATA

SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= invert3.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 0
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***

NUMBER OF R/W OPERATIONS= 3547
MAXIMUM RECORD NUMBER = 943
RECORD SIZE (1*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 58.938

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|          REV. 5.1  24          HP 9000/7XX          |
|          CP TIME      (sec) =    36.930      TIME = 11:23:45 |
|          ELAPSED TIME (sec) =   139.000      DATE  = 01/31/97 |
|                                     |
|-----|
*-----*
```

Table 1

WP TYPE	SIZE (diameter x length)	DISTANCE	WP LOADED MASS (kg)
21 PWR UCF	1649.7 x 5335	1833	50,423 est.
44 BWR UCF	1603.9 x 5335	1806	46,424 est.
12 PWR UCF	1297.7 x 5335	1629	32,236 est.
4 PACK DHLW	1786.0 x 3790 est.	1911	30,511 est.
5 PACK DHLW	1970.0 x 3790 est.	2018	35,692 est.

(The distance varies with different WP sizes. See Table 1 & SK-0009)

" For Information Only "

Waste Package Support Layout
(300 mm Gantry Wheel)

Sketch Number: SK-0004.Rev05
Originator: H. Wang /w SMB TWD
Date: 2/20/97 2/24/97 02/24/97 2-24-97
File: /users/wang/proe/supprt1_invert/sk0004_r5.drw

SCALE 0.035

Units: mm

Approximate Mass : 1,152 kg

" For Information Only "

Waste Package Support/Pier Assembly
(300 mm Gantry Wheel)

Sketch Number: SK-0005.Rev03
Originator: H. Wang *Hw* *SMB* *Tuj*
Date: 2/20/97 *2/21/97* *02/24/97* *2-24-97*
File: /users/wang/proe/supprt1.invert/sk0005_r3.drw

SCALE 0.070

Units: mm

Approximate Mass: 205 kg

" For Information Only "

Waste Package Support Assembly

Sketch Number: SK-0006.Rev03
Originator: H. Wang /Hw SMB TWD
Date: 2/14/97 2/24/97 02/24/97 2-24-97
File: /users/wang/proe/supprt1.invert/sk0006.r3.drw

SCALE 0.090 Units: mm

Approximate Mass : 947 kg

NOTE: INTERNAL REBAR DESIGN HAS NOT BEEN COMPLETED.

" For Information Only "

Waste Package Pier
(300 mm Gantry Wheel)

Sketch Number: SK-0007.Rev03
Originator: H. Wang /fw SMB TWS
Date: 2/20/97 2/24/97 02/24/97 2/24/97
File: /users/wang/proe/supprt1.invert/sk0007_r3.drw

SCALE 0.090 Units: mm

Table 1

WP TYPE	SIZE (diameter x length)	DISTANCE	WP LOADED MASS (kg)
21 PWR UCF	1649.7 x 5335	1758	50,423 est.
44 BWR UCF	1603.9 x 5335	1731	46,424 est.
12 PWR UCF	1297.7 x 5335	1555	32,236 est.
4 PACK DHLW	1786.0 x 3790 est.	1836	30,511 est.
5 PACK DHLW	1970.0 x 3790 est.	1943	35,692 est.

(The distance varies with different WP sizes. See Table 1 & SK-0012)

" For Information Only "

Waste Package Support Layout (600 mm Gantry Wheel)	
Sketch Number: SK-0011.Rev03	
Originator: H. Wang <i>HW</i> <i>SMB</i> <i>TWD</i>	
Date: 2/25/97 <i>2/25/97</i> <i>02/25/97</i> <i>2.25.97</i>	
File: /users/wang/proe/supprt1.invertlow/sk0011_r3.drw	

SCALE 0.035

Units: mm

Approximate Mass : 1,027 kg

SCALE 0.070

Units: mm

" For Information Only "

Waste Package Support/Pier Assembly
(600 mm Gantry Wheel)

Sketch Number: SK-0013.Rev01

Originator: H. Wang *HW smg TWD*

Date: 2/24/97 *2/25/97 02/25/97 2.25.97*

File: /users/wang/proe/supprt1.invertlow/sk0013_r1.drw

Approximate Mass : 822 kg

NOTE: INTERNAL REBAR DESIGN
HAS NOT BEEN COMPLETED.

" For Information Only "

Waste Package Pier (600 mm Gantry Wheel)	
Sketch Number: SK-0014.Rev01	
Originator: H. Wang	HW SMG YWD
Date: 2/25/97	2/25/97 02/25/97 2-25-97
File: /users/wang/proe/supprt1_invertlow/sk0014_r1.drw	

SCALE 0.090 Units: mm

SECTION D-D
SCALE 0.080

" For Information Only "

Waste Package Pier Shell

(600 mm Gantry Wheel)

Sketch Number: SK-0015.Rev01

Originator: H. Wang HW SMB

Date: 2/24/97 2/25/97 02/25/97

File: /users/wang/proe/supprt1.invertlow/sk0015_r1.drw

Units: mm

SCALE 0.300

Units: mm

"For Information Only"

Waste Package Support Lifting Hook

Sketch Number: SK-0016.Rev00
 Originator: H. Wang
 Date: 1/28/97
 File: /users/wang/proe/support_invert/sk0016.r0.drw

HW SMB
 2/3/97 02/03/97
 2.3.97

MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

USE LOAD STEP 1 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 8.010 TIME= 10:15:58
Page file used.

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 3
TIME/FREQUENCY= 1.0000
TITLE= 3-D static support and pier analysis

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:19:27 FEB 12, 1997 CP= 35.960
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
428	-0.63291E+07	-0.38057E+08	-0.19252E+09	0.18619E+09	0.17253E+09

MINIMUM VALUES
 NODE 428 428 428 428 428
 VALUE -0.63291E+07-0.38057E+08-0.19252E+09 0.18619E+09 0.17253E+09

MAXIMUM VALUES
 NODE 428 428 428 428 428
 VALUE -0.63291E+07-0.38057E+08-0.19252E+09 0.18619E+09 0.17253E+09

MAXIMUM EQUIVALENT STRESS IN THE TUBE

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

5832 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
 38303 VERSION=HP 9000/7XX 10:20:25 FEB 12, 1997 CP= 41.570
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
 TIME= 1.0000 LOAD CASE= 0

NODE S1 S2 S3 SINT SEQV
 428 -0.63291E+07-0.38057E+08-0.19252E+09 0.18619E+09 0.17253E+09

MINIMUM VALUES
 NODE 428 428 428 428 428
 VALUE -0.63291E+07-0.38057E+08-0.19252E+09 0.18619E+09 0.17253E+09

MAXIMUM VALUES
 NODE 428 428 428 428 428
 VALUE -0.63291E+07-0.38057E+08-0.19252E+09 0.18619E+09 0.17253E+09

MAXIMUM EQUIVALENT STRESS IN THE PIPE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1

2592 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2932 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:21:04 FEB 12, 1997 CP= 46.490
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
4173	-0.50281E+08	-0.61365E+08	-0.14430E+09	0.94016E+08	0.88993E+08

MINIMUM VALUES
NODE 4173 4173 4173 4173 4173
VALUE -0.50281E+08 -0.61365E+08 -0.14430E+09 0.94016E+08 0.88993E+08

MAXIMUM VALUES
NODE 4173 4173 4173 4173 4173
VALUE -0.50281E+08 -0.61365E+08 -0.14430E+09 0.94016E+08 0.88993E+08

MAXIMUM EQUIVALENT STRESS IN THE PLATE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 4 TO 4 STEP 1

1512 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

2016 NODES (OF 18690 DEFINED) SELECTED FROM
1512 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2196 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
2016 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:21:27 FEB 12, 1997 CP= 50.470
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
17399	0.58288E+07	-0.22833E+08	-0.40249E+08	0.46078E+08	0.40299E+08

MINIMUM VALUES

NODE	17399	17399	17399	17399	17399
VALUE	0.58288E+07	-0.22833E+08	-0.40249E+08	0.46078E+08	0.40299E+08

MAXIMUM VALUES

NODE	17399	17399	17399	17399	17399
VALUE	0.58288E+07	-0.22833E+08	-0.40249E+08	0.46078E+08	0.40299E+08

VALUE 0.58288E+07-0.22833E+08-0.40249E+08 0.46078E+08 0.40299E+08

MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

USE LOAD STEP 1 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 7.820 TIME= 10:17:25
Page file used.

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 3
TIME/FREQUENCY= 1.0000
TITLE= 3-D static support and pier analysis with a seismic load factor

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:20:36 FEB 12, 1997 CP= 35.100
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
428	-0.10560E+08	-0.63400E+08	-0.32003E+09	0.30947E+09	0.28672E+09

MINIMUM VALUES

NODE	428	428	428	428	428
VALUE	-0.10560E+08	-0.63400E+08	-0.32003E+09	0.30947E+09	0.28672E+09

MAXIMUM VALUES

NODE	428	428	428	428	428
VALUE	-0.10560E+08	-0.63400E+08	-0.32003E+09	0.30947E+09	0.28672E+09

MAXIMUM EQUIVALENT STRESS IN THE TUBE

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

5832 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:21:33 FEB 12, 1997 CP= 40.940
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
428	-0.10560E+08	-0.63400E+08	-0.32003E+09	0.30947E+09	0.28672E+09

MINIMUM VALUES

NODE	428	428	428	428	428
VALUE	-0.10560E+08	-0.63400E+08	-0.32003E+09	0.30947E+09	0.28672E+09

MAXIMUM VALUES

NODE	428	428	428	428	428
VALUE	-0.10560E+08	-0.63400E+08	-0.32003E+09	0.30947E+09	0.28672E+09

MAXIMUM EQUIVALENT STRESS IN THE PIPE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1
153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1
15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1
18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1
2592 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.
3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.
2932 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1
SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:22:41 FEB 12, 1997 CP= 45.760
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
4173	-0.83612E+08	-0.10214E+09	-0.23976E+09	0.15615E+09	0.14776E+09

MINIMUM VALUES
NODE 4173 4173 4173 4173 4173
VALUE -0.83612E+08 -0.10214E+09 -0.23976E+09 0.15615E+09 0.14776E+09

MAXIMUM VALUES
NODE 4173 4173 4173 4173 4173
VALUE -0.83612E+08 -0.10214E+09 -0.23976E+09 0.15615E+09 0.14776E+09

MAXIMUM EQUIVALENT STRESS IN THE PLATE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 4 TO 4 STEP 1

1512 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

2016 NODES (OF 18690 DEFINED) SELECTED FROM
1512 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2196 ELEMENTS (OF 15994 DEFINED) SELECTED FROM
2016 SELECTED NODES BY ESLN COMMAND.

SORT ON ITEM=S COMPONENT=EQV ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:23:20 FEB 12, 1997 CP= 49.580
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL STRESS LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

NODE	S1	S2	S3	SINT	SEQV
17399	0.96829E+07	-0.37906E+08	-0.66812E+08	0.76494E+08	0.66902E+08

MINIMUM VALUES

NODE	17399	17399	17399	17399	17399
VALUE	0.96829E+07	-0.37906E+08	-0.66812E+08	0.76494E+08	0.66902E+08

MAXIMUM VALUES

NODE	17399	17399	17399	17399	17399
VALUE	0.96829E+07	-0.37906E+08	-0.66812E+08	0.76494E+08	0.66902E+08

VALUE 0.96829E+07-0.37906E+08-0.66812E+08 0.76494E+08 0.66902E+08

-----*

W E L C O M E T O T H E A N S Y S P R O G R A M

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***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = ingp2
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.200 TIME= 17:52:00
There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=ingp2 17:52:00 FEB 11, 1997 CP= 0.210

```

1 /config,nvpag,512
2 /units,si
3 /prep7
4 /title, 3-D static support and pier analysis
5 /vcon,,0
6 /nerr,,1000000
7 /com, Define Parameters
8 *afun,deg
9 /com, Tube
10 teow=.2032 ! Tube outer width
11 tets=.0143 ! Tube thickness
12 teiw=teow-2*tets ! Tube inner width
13 teht=.1016 ! Tube height
14 telh=.9584 ! Tube length
15 teang=60 ! Tube angle from vertical
16 /com, Pier
17 prht=.45 ! Pier height
18 pbwh=.75 ! Pier bottom width (half)
19 prlh=.316 ! Pier top legth along the repository
20 prang=33.7 ! Pier angle from vertical
21 /com, Pipe
22 peocr=.5 ! Pipe center from the symmetry plane
23 peor=.0841375 ! Pipe outer radius
24 pets=.0219456 ! Pipe thickness
25 gap=.023 ! Gap height below the pipe
26 hebm=.282 ! Hole bottom from global origin
27 term1=(peocr+peor)*tan(90-teang)
28 term2=tets/cos(90-teang)
29 peht=prht-hebm+term1+term2 ! Pipe height
30 /com, Support plate
31 pltts=.01905 ! Support plate thickness
32 pltwh=.83 ! Support plate width (half)
33 rec=pbwh+(prht)*tan(prang)-pltwh
34 drag1=peocr/cos(90-teang) ! Tube length used for vdrag1
35 argen1=.5*(telh-(peocr+peor)/cos(90-teang))
36 argen2=.5*(2*telh-(peocr+peor)/cos(90-teang))
37 /com, Define Element Properties
38 et,1,solid45 ! tube
39 et,2,solid45 ! pipe
40 et,3,solid45 ! pier
41 et,4,solid45 ! plate
42 et,5,contac49,,0,1,,,1 ! 3D Contact
43 r,5,1.5e8,,,1.5,15 ! Real Constant Set for Contact, kn=1.5E8
44 /com, ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%
45 mp,ex,1,203.4e9 ! A500 Grade B Cold Formed Steel
46 mp,ex,2,203.4e9 ! A500 Grade B Cold Formed Steel
47 mp,ex,3,24.8e9 ! concrete

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48 mp,ex,4,203.4e9      ! A36 Carbon Steel
49 mp,nuxy,1,0.28       ! A500 Grade B Cold Formed Steel
50 mp,nuxy,2,0.28       ! A500 Grade B Cold Formed Steel
51 mp,nuxy,3,0.17       ! concrete
52 mp,nuxy,4,0.28       ! A36 Carbon Steel
53 mp,dens,1,7859.0      ! A500 Grade B Cold Formed Steel
54 mp,dens,2,7859.0      ! A500 Grade B Cold Formed Steel
55 mp,dens,3,2300.0      ! concrete
56 mp,dens,4,7859.0      ! A36 Carbon Steel
57 mp,mu,5,0.4          ! Kinetic Coefficient of Friction (Steel on Steel)
58 /com, Define keypoints in the support tube
59 local,11,0,0,prht,0,0,teang-90
60 k,1,-teow/2,0
61 k,2,0,0
62 k,3,teow/2,0
63 k,4,teow/2,teht
64 k,5,-teow/2,teht
65 k,6,-teiw/2,tets
66 k,7,0,tets
67 k,8,teiw/2,tets
68 k,9,teiw/2,teht-tets
69 k,10,-teiw/2,teht-tets
70 k,11,0,0,telh
71 k,12,0,0,drag1
72 l,2,12
73 l,12,11
74 a,2,1,6,7
75 a,1,5,10,6
76 a,10,5,4,9
77 a,9,4,3,8
78 a,7,8,3,2
79 vdrag,all,,,,,,,,1
80 asel,s,loc,z,drag1-.0001,drag1+.0001
81 vdrag,all,,,,,,,,2
82 asel,none
83 csys,0
84 k,,teow/2,1.5*teht+prht
85 k,,teow/2,1.5*teht+prht
86 k,,teow/2,prht,-1.5*teht
87 l,1,35
88 a,1,34,33,3
89 vdrag,all,,,,,,,,68
90 vsbv,1,11,,delete,keep
91 vsbv,2,11,,delete,keep
92 vsbv,3,11,,delete,keep
93 vsbv,4,11,,delete,keep
94 vsbv,5,11,,delete,delete
95 asel,none
96 cm,tube,volu
97 vsel,none
98 /com, Define pipe volume
99 csys,0
100 local,12,1,0,hebm,pecr,-90,0,-90
101 k,,peor,0
102 k,,peor,90
103 k,,peor,180
104 k,,peor,270
105 k,,peor-pets,0
106 k,,peor-pets,90
107 k,,peor-pets,180
108 k,,peor-pets,270
109 k,,0,0,0
110 k,,0,0,gap
111 k,,0,0,peht
112 l,49,50
113 l,50,51
114 a,7,36,37,8
115 a,8,37,38,33
116 a,33,38,39,34
117 a,34,39,36,7

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118 vdrag,all,,,,,6
119 asel,s,loc,z,gap-.0001,gap+.0001
120 vdrag,all,,,,,14
121 cm,pipe,volu
122 allsel
123 vsbv,pipe,tube,,delete,keep
124 vdele,19,20
125 vdele,25,26
126 aslv
127 asel,inve
128 adel,all
129 allsel
130 lsia
131 lsel,inve
132 ldel,all
133 allsel
134 ksll
135 ksel,inve
136 kdel,all
137 allsel
138 asel,s,,,104,108,4
139 asel,a,,,100,111,11
140 csys,11
141 vdrag,all,,,,,50
142 csys,0
143 vpfn,all
144 aslv
145 asel,inve
146 adel,all
147 allsel
148 lsia
149 lsel,inve
150 ldel,all
151 allsel
152 ksll
153 ksel,inve
154 kdel,all
155 allsel
156 asel,s,,,34,42,4
157 cm,cpa,area
158 csys,11
159 agen,2,all,,,0,0,-argen1
160 cm,cpa1,area
161 asel,s,,,cpa
162 agen,2,all,,,0,0,-argen2
163 /com, The following may require modification
164 /com, if optimization required
165 a,49,73,5,10
166 a,49,73,45,64
167 a,78,50,72,71
168 a,78,50,68,65
169 cm,cpa2,area
170 asel,a,,,cpa1
171 asel,u,,,cpa
172 cm,allcp,area
173 vsel,s,,,7,9
174 vsel,a,,,35,38
175 vsel,a,,,27,28
176 vsel,a,,,1
177 cm,vols,volu
178 vcta,allcp,vols
179 /com, Combine two lines
180 nummrg,kp
181 lcomb,138,139,0
182 lcomb,144,145,0
183 /com, Define pier
184 asel,none
185 csys,0
186 k,,0,0,0
187 k,,0,hebm

```

```

188 k,,0,hebm+gap
189 k,,0,prht-pltts
190 k,,0,0,pecr
191 k,,0,hebm,pecr
192 k,,0,hebm+gap,pecr
193 k,,0,prht-pltts,pecr
194 k,,0,prht,pecr
195 k,,0,0,pbwh
196 k,,0,hebm,pbwh+hebm*tan(prang)
197 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)
198 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)
199 k,,0,prht,pbwh+(prht)*tan(prang)
200 k,,0,0,pbwh-rec
201 k,,0,hebm,pbwh+hebm*tan(prang)-rec
202 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)-rec
203 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)-rec
204 k,,0,prht,pbwh+(prht)*tan(prang)-rec
205 k,,,-prlh/2,0,0
206 k,,prlh/2,0,0
207 l,62,98
208 l,62,99
209 nummrg,kp
210 asel,none
211 a,62,83,84,63
212 a,63,84,85,81
213 a,81,85,86,82
214 a,82,86,87,2
215 a,83,93,94,84
216 a,84,94,95,85
217 a,85,95,96,86
218 a,86,96,97,87
219 a,93,88,89,94
220 a,94,89,90,95
221 a,95,90,91,96
222 a,96,91,92,97
223 cm,pdrg1,area
224 vdrag,all,,,,,20
225 asel,s,,,pdrg1
226 vdrag,all,,,,,37
227 /com, Intersection of the volumes between
228 /com, pier and pipe
229 /com, This section may require modification
230 /com, if optimization required
231 allsel
232 vptn,32,35,36
233 vptn,31,55,56
234 vptn,22,51,52
235 vptn,23,8,9
236 vptn,13,7
237 vptn,14,28
238 vptn,11,50
239 vptn,5,54
240 vdel,22
241 vdel,31,35,4
242 vdel,61
243 vdel,32,62,30
244 vdel,51,55,4
245 vdel,7,9
246 vdel,5
247 vdel,11,14,3
248 vdel,28,50,22
249 /com, Define areas in the pier to cut volumes
250 a,97,128,121,93
251 a,97,108,101,93
252 a,128,2,62,121
253 a,108,2,62,101
254 vcta,208,27,13,66,67
255 vcta,31,53,81,70,71
256 vcta,225,49,80,74,75
257 vcta,343,1,23,78,79

```

```

258 nummrg,kp
259 /com, Name the volumes
260 vsel,s,,,2,4
261 vsel,a,,,6,10,4
262 vsel,a,,,12
263 vsel,a,,,15,21
264 vsel,a,,,24,26
265 vsel,a,,,29,30
266 vsel,a,,,33,34
267 vsel,a,,,39,46
268 cm,tube,volu
269 vsel,s,,,36
270 vsel,a,,,52,56,4
271 vsel,a,,,63,65
272 vsel,a,,,68,69
273 vsel,a,,,72,73
274 vsel,a,,,76,77
275 cm,pipe,volu
276 vsel,s,,,5
277 vsel,a,,,7,9
278 vsel,a,,,11
279 vsel,a,,,13,14
280 vsel,a,,,27
281 vsel,a,,,31,32
282 vsel,a,,,35
283 vsel,a,,,37,38
284 vsel,a,,,47,50
285 vsel,a,,,53,55,2
286 vsel,a,,,57,62
287 vsel,a,,,66,67
288 vsel,a,,,74,75
289 vsel,a,,,80,82
290 cm,pier,volu
291 vsel,s,,,22,28,6
292 vsel,a,,,51,54,3
293 vsel,a,,,70,71
294 vsel,a,,,83,84
295 cm,plate,volu
296 esize,,6
297 /com, Elements for the tube
298 type,1 ! SOLID45
299 mat,1 ! Carbon Steel
300 vsel,s,,,tube
301 vmesh,all
302 /com, Elements for the pipe
303 type,2 ! SOLID45
304 mat,2 ! Carbon Steel
305 vsel,s,,,pipe
306 vmesh,all
307 /com, Elements for the pier
308 type,3 ! SOLID45
309 mat,3 ! Concrete
310 vsel,s,,,pier
311 vmesh,all
312 /com, Elements for the plate
313 type,4 ! SOLID45
314 mat,4 ! Carbon Steel
315 vsel,s,,,plate
316 vmesh,all
317 /com, Contact Elements Generation
318 nummrg,node
319 nummrg,kp
320 type,5
321 real,5
322 mat,5
323 csys,0
324 nsel,s,,,18151,18156
325 nsel,a,,,5426
326 nsel,a,,,18397,18401
327 nsel,a,,,18361,18366,5

```



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328 nsel,a,,,18439,18441,2
329 nsel,a,,,18428
330 nsel,a,,,18434,18435
331 nsel,a,,,18335
332 nsel,a,,,18561
333 nsel,a,,,17971
334 nsel,a,,,18021
335 nsel,a,,,17940
336 nsel,a,,,18169,18170
337 nsel,a,,,18161,18163,2
338 nsel,a,,,18174,18176,2
339 cm,surfa,node
340 allsel
341 esel,s,type,,1
342 nsle
343 nsel,r,loc,z,-.001,.001
344 nsel,r,loc,x,-prlh/2-.001,prlh/2+.001
345 nsel,r,loc,y,prht-.001,prht+.001
346 cm,surfb,node
347 allsel
348 gcgen,surfb,surfa
349 allsel
350 modmsh,detach
351 esel,s,type,,2
352 nsle
353 esln
354 nsle
355 esel,r,type,,3
356 edele,all
357 allsel
358 save
359 fini
360 /solu
361 antype,static
362 nlgeom,on
363 /com, Define constraints
364 nsel,s,loc,z,-.001,.001
365 d,all,uz,0
366 nsel,s,loc,y,-.001,.001
367 d,all,uy,0
368 nsel,s,loc,x,-.001,.001
369 nsel,r,loc,y,-.001,.001
370 d,all,ux,0
371 nsel,s,,,12547
372 nsel,a,,,12553,12558
373 nsel,a,,,12589,12630
374 nsel,a,,,12841,12882
375 nsel,a,,,13093,13134
376 nsel,a,,,13345,13386
377 nsel,a,,,14484,14489
378 nsel,a,,,14520,14555
379 nsel,a,,,14736,14771
380 nsel,a,,,14952,14987
381 nsel,a,,,15168,15203
382 cs,15,0,12553,12558,12601
383 nrotat,all
384 d,all,uz
385 csys,0
386 nsel,s,,,344
387 nsel,a,,,1340,1344,4
388 nsel,a,,,1304
389 /com, Vertical force divided over four nodes
390 f,all,fy,-42305.625
391 allsel
392 acel,,9.81
393 outres,all,1
394 solve
395 finish
396 /exit,
397 /eof

```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REPlot /REPlot

PARAMETER PI = 3.141593

 ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,
 ABBREVIATION= RAS /show,,0,
 ABBREVIATION= INP /input,,inp,
 ABBREVIATION= ESC /exit,nosav,
 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= PR1 /psf,pres,norm,1,
 ABBREVIATION= PR0 /psf,pres,norm,0,
 ABBREVIATION= U1 /pbc,u,1,
 ABBREVIATION= U0 /pbc,u,0,
 ABBREVIATION= X3D /show,3d,

ABBREVIATION= X11 /show,x11,

ABBREVIATION= X11C /show,x11c,

ABBREVIATION= ON /menu,on,

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 color
x11c for X-term color contour

type: on

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

SI UNITS SPECIFIED FOR INTERNAL

LENGTH (l) = METER(M)
MASS (M) = KILOGRAM(KG)
TIME (t) = SECOND(SEC)
TEMPERATURE (T) = KELVIN(K)
TOFFSET = 0.0 KELVIN
CHARGE (Q) = COULOMB
CURRENT (i) = AMPERE (COULOMBS/SEC)
FORCE (f) = NEWTON(N) (KG-M/SEC2)
PRESSURE = PASCAL (NEWTON/M**2)
ENERGY (W) = JOULE (N-M)
POWER (P) = WATT (N-M/SEC)
CAPACITANCE (C) = FARAD
INDUCTANCE (L) = HENRY
MAGNETIC FLUX = WEBER
RESISTANCE (R) = OHM
ELECTRIC POTENTIAL = VOLT

INPUT UNITS ARE ALSO SET TO SI

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 17:52:00 FEB 11, 1997 CP= 0.360
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=

3-D static support and pier analysis

VIEW CONE ANGLE FOR WINDOW 1 0.00

NUMBER OF DISPLAYED ERRORS ALLOWED PER COMMAND= 200

NUMBER OF ERRORS ALLOWED PER COMMAND BEFORE ANSYS ABORT= *****
Define Parameters

ANGULAR FUNCTION UNITS SET TO DEGREES

Tube

PARAMETER TEOW = 0.2032000

PARAMETER TETS = 0.1430000E-01
 PARAMETER TEIW = 0.1746000
 PARAMETER TEHT = 0.1016000
 PARAMETER TELH = 0.9584000
 PARAMETER TEANG = 60.00000
 Pier
 PARAMETER PRHT = 0.4500000
 PARAMETER PBWH = 0.7500000
 PARAMETER PRLH = 0.3160000
 PARAMETER PRANG = 33.70000
 Pipe
 PARAMETER PECR = 0.5000000
 PARAMETER PEOR = 0.8413750E-01
 PARAMETER PETS = 0.2194560E-01
 PARAMETER GAP = 0.2300000E-01
 PARAMETER HEBM = 0.2820000
 PARAMETER TERM1 = 0.3372519
 PARAMETER TERM2 = 0.1651222E-01
 PARAMETER PEHT = 0.5217642
 Support plate
 PARAMETER PLTTS = 0.1905000E-01
 PARAMETER PLTWH = 0.8300000
 PARAMETER REC = 0.2201127
 PARAMETER DRAG1 = 0.5773503
 PARAMETER ARGEN1 = 0.2391017
 PARAMETER ARGEN2 = 0.6211481
 Define Element Properties

ELEMENT TYPE 1 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 3 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 4 IS SOLID45 3-D STRUCTURAL SOLID

KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 5 IS CONTAC49 3D GENERAL CONTACT ELEMENT
KEYOPT(1-12)= 0 0 1 0 0 0 0 0 0 0 0 0
INOPR = 1

CURRENT NODAL DOF SET IS UX UY UZ
THREE-DIMENSIONAL MODEL

REAL CONSTANT SET 5 ITEMS 1 TO 6
0.15000E+09 0.00000E+00 0.00000E+00 1.5000 15.000 0.00000E+00
ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%

MATERIAL 1 EX = 0.2034000E+12

MATERIAL 2 EX = 0.2034000E+12

MATERIAL 3 EX = 0.2480000E+11

MATERIAL 4 EX = 0.2034000E+12

MATERIAL 1 NUXY = 0.2800000

MATERIAL 2 NUXY = 0.2800000

MATERIAL 3 NUXY = 0.1700000

MATERIAL 4 NUXY = 0.2800000

MATERIAL 1 DENS = 7859.000

MATERIAL 2 DENS = 7859.000

MATERIAL 3 DENS = 2300.000

MATERIAL 4 DENS = 7859.000

MATERIAL 5 MU = 0.4000000

Define keypoints in the support tube

COORDINATE SYSTEM 11 DEFINITION. TYPE= 0 (CARTESIAN)
XC,YC,ZC= 0.00000E+00 0.45000 0.00000E+00
ANGLES= 0.00 -30.00 0.00 PARAMETERS= 1.000 1.000
ORIENTATION= 1.00 0.00 0.00 0.00 0.87 -0.50 0.00 0.50 0.87

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT 1 X,Y,Z= -0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11

-0.101600 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 2 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 11

0.000000E+00 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 3 X,Y,Z= 0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11

0.101600 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 4 X,Y,Z= 0.101600 0.101600 0.000000E+00 IN CSYS= 11

0.101600 0.537988 -0.508000E-01 IN CSYS= 0

KEYPOINT 5 X,Y,Z= -0.101600 0.101600 0.000000E+00 IN CSYS= 11

-0.101600 0.537988 -0.508000E-01 IN CSYS= 0

KEYPOINT 6 X,Y,Z= -0.873000E-01 0.143000E-01 0.000000E+00 IN CSYS= 11
 -0.873000E-01 0.462384 -0.715000E-02 IN CSYS= 0

KEYPOINT 7 X,Y,Z= 0.000000E+00 0.143000E-01 0.000000E+00 IN CSYS= 11
 0.000000E+00 0.462384 -0.715000E-02 IN CSYS= 0

KEYPOINT 8 X,Y,Z= 0.873000E-01 0.143000E-01 0.000000E+00 IN CSYS= 11
 0.873000E-01 0.462384 -0.715000E-02 IN CSYS= 0

KEYPOINT 9 X,Y,Z= 0.873000E-01 0.873000E-01 0.000000E+00 IN CSYS= 11
 0.873000E-01 0.525604 -0.436500E-01 IN CSYS= 0

KEYPOINT 10 X,Y,Z= -0.873000E-01 0.873000E-01 0.000000E+00 IN CSYS= 11
 -0.873000E-01 0.525604 -0.436500E-01 IN CSYS= 0

KEYPOINT 11 X,Y,Z= 0.000000E+00 0.000000E+00 0.958400 IN CSYS= 11
 0.000000E+00 0.929200 0.829999 IN CSYS= 0

KEYPOINT 12 X,Y,Z= 0.000000E+00 0.000000E+00 0.577350 IN CSYS= 11
 0.000000E+00 0.738675 0.500000 IN CSYS= 0

LINE CONNECTS KEYPOINTS 2 12
 LINE NO.= 1 KP1= 2 TAN1= 0.0000 -0.5000 -0.8660
 KP2= 12 TAN2= 0.0000 0.5000 0.8660

LINE CONNECTS KEYPOINTS 12 11
 LINE NO.= 2 KP1= 12 TAN1= 0.0000 -0.5000 -0.8660
 KP2= 11 TAN2= 0.0000 0.5000 0.8660

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 2 1 6 7
 AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 1 5 10 6
 AREA NUMBER = 2

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 10 5 4 9
 AREA NUMBER = 3

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 9 4 3 8
 AREA NUMBER = 4

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 7 8 3 2
 AREA NUMBER = 5

DRAG ALL SELECTED AREAS
 ALONG LINES
 1,

*** WARNING *** CP= 0.590 TIME= 17:52:01
 Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.590 TIME= 17:52:01
 Area 2 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.590 TIME= 17:52:01
Area 3 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.600 TIME= 17:52:01
Area 4 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.600 TIME= 17:52:01
Area 5 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.57725 AND 0.57745
KABS= 0. TOLERANCE= 0.000000E+00

5 AREAS (OF 25 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
2,

*** WARNING *** CP= 0.900 TIME= 17:52:01
Area 10 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.910 TIME= 17:52:01
Area 14 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.910 TIME= 17:52:01
Area 18 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.910 TIME= 17:52:01
Area 22 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.910 TIME= 17:52:01
Area 25 is not meshed. Volume will be generated without elements.

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 45 STEP 1

0 AREAS (OF 45 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 33

KEYPOINT 0 X,Y,Z= -0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 34

KEYPOINT 0 X,Y,Z= -0.101600 0.450000 -0.152400 IN CSYS= 0

KEYPOINT NUMBER = 35

LINE CONNECTS KEYPOINTS 1 35
LINE NO.= 68 KP1= 1 TAN1= 0.0000 0.0000 1.0000
KP2= 35 TAN2= 0.0000 0.0000 -1.0000

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 1 34 33 3

AREA NUMBER = 46

DRAG ALL SELECTED AREAS
ALONG LINES
68,

*** WARNING *** CP= 1.250 TIME= 17:52:01
Area 46 is not meshed. Volume will be generated without elements.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 1
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 12

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 2
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 1

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 3
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 2

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 4
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 3

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 VOLUMES SUBTRACTED WILL BE DELETED
 OUTPUT VOLUMES = 4

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 60 STEP 1

0 AREAS (OF 50 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

NONE SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 12 STEP 1

0 VOLUMES (OF 10 DEFINED) SELECTED BY VSEL COMMAND.
 Define pipe volume

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

COORDINATE SYSTEM 12 DEFINITION. TYPE= 1 (CYLINDRICAL)
 XC,YC,ZC= 0.00000E+00 0.28200 0.50000
 ANGLES= -90.00 0.00 -90.00 PARAMETERS= 1.000 1.000
 ORIENTATION= 0.00 0.00 1.00 1.00 0.00 0.00 0.00 1.00 0.00

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

KEYPOINT 0 X,Y,Z= 0.841375E-01 0.000000E+00 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 7

0.315465E-33 0.282000 0.584138 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.841375E-01 90.0000 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 8

0.841375E-01 0.282000 0.500000 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.841375E-01 180.000 0.000000E+00 IN CSYS= 12


```

KEYPOINT NUMBER =      33
                        0.146848E-10  0.282000      0.415863      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.841375E-01  270.000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      34
                        -0.841375E-01  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  0.000000E+00  0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      36
                        0.233182E-33  0.282000      0.562192      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  90.0000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      37
                        0.621919E-01  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  180.000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      38
                        0.108545E-10  0.282000      0.437808      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  270.000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      39
                        -0.621919E-01  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.000000E+00  0.000000E+00  0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      49
                        0.000000E+00  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.000000E+00  0.000000E+00  0.230000E-01  IN CSYS= 12
KEYPOINT NUMBER =      50
                        -0.140834E-17  0.305000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.000000E+00  0.000000E+00  0.521764      IN CSYS= 12
KEYPOINT NUMBER =      51
                        -0.319488E-16  0.803764      0.500000      IN CSYS=  0
LINE CONNECTS KEYPOINTS      49      50
LINE NO.=      6  KP1=      49  TAN1=      0.0000  -1.0000  0.0000
                  KP2=      50  TAN2=      0.0000   1.0000  0.0000
LINE CONNECTS KEYPOINTS      50      51
LINE NO.=     14  KP1=      50  TAN1=      0.0000  -1.0000  0.0000
                  KP2=      51  TAN2=      0.0000   1.0000  0.0000
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      7      36      37      8
AREA NUMBER =      5
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      8      37      38      33
AREA NUMBER =      9

```

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 33 38 39 34

AREA NUMBER = 20

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 34 39 36 7

AREA NUMBER = 23

DRAG ALL SELECTED AREAS

ALONG LINES

6,

*** WARNING *** CP= 23.200 TIME= 17:52:31
Area 5 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 23.200 TIME= 17:52:31
Area 9 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 23.200 TIME= 17:52:31
Area 20 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 23.200 TIME= 17:52:31
Area 23 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.22900E-01 AND 0.23100E-01
KABS= 0. TOLERANCE= 0.000000E+00

4 AREAS (OF 70 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS

ALONG LINES

14,

*** WARNING *** CP= 23.670 TIME= 17:52:32
Area 50 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 23.670 TIME= 17:52:32
Area 63 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 23.680 TIME= 17:52:32
Area 67 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 23.680 TIME= 17:52:32
Area 70 is not meshed. Volume will be generated without elements.

DEFINITION OF COMPONENT = PIPE ENTITY=VOLU

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 18 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 134 STEP 1

134 LINES (OF 134 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 67 STEP 1

67 KEYPOINTS (OF 67 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5 11 13 14 15

VOLUME NUMBERS TO BE OPERATED ON = 16 17 18

VOLUMES OPERATED ON WILL BE DELETED

VOLUME NUMBERS TO BE SUBTRACTED = 1 2 3 4 6

VOLUME NUMBERS TO BE SUBTRACTED = 7 8 9 10 12

*** WARNING *** CP= 84.800 TIME= 17:54:43
Entity numbers from the Boolean operation were assigned based on geometry. If you are planning to do optimization, (or input looping), do not rely on the entity numbers for loads, etc. To suppress this warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 5 11 13 14 19 20 21 22 23 24

OUTPUT VOLUMES = 25 26

DELETE SELECTED VOLUMES FROM 19 TO 20 BY 1

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 25 TO 26 BY 1

DELETED 2 VOLUMES

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

86 AREAS (OF 110 DEFINED) SELECTED FROM
18 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 124 STEP 1

24 AREAS (OF 110 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 24 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

177 LINES (OF 177 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=

IN RANGE 1 TO 92 STEP 1
90 KEYPOINTS (OF 90 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT LINES ASSOCIATED WITH SELECTED AREAS

129 LINES (OF 177 DEFINED) SELECTED FROM
86 SELECTED AREAS BY LSLA COMMAND.

INVERT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1
48 LINES (OF 177 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM 1 TO 190 BY 1

DELETED 48 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1
18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 124 STEP 1
86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1
129 LINES (OF 129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1
90 KEYPOINTS (OF 90 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT ALL KEYPOINTS ON ANY LINE IN LINE SET.

61 KEYPOINTS (OF 90 DEFINED) SELECTED FROM
129 SELECTED LINES BY KSLL COMMAND.

INVERT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1
29 KEYPOINTS (OF 90 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

129 LINES (OF 129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

61 KEYPOINTS (OF 61 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 104 TO 108 STEP 4

2 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 111 STEP 11

4 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

DRAG ALL SELECTED AREAS
ALONG LINES
50,

*** WARNING *** CP= 85.980 TIME= 17:54:46
Area 100 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 85.980 TIME= 17:54:46
Area 104 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 85.980 TIME= 17:54:46
Area 108 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 85.980 TIME= 17:54:46
Area 111 is not meshed. Volume will be generated without elements.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

PARTITION VOLUMES

INPUT VOLUMES =	1	2	3	4	5	6	7	8	9	10
INPUT VOLUMES =	11	12	13	14	15	16	17	18	21	22
INPUT VOLUMES =	23	24								
INPUT VOLUMES WILL BE DELETED										
OUTPUT VOLUMES =	1	5	7	8	9	11	13	14	19	20

OUTPUT VOLUMES = 22 23 25 26 27 28 29 30 31 32
OUTPUT VOLUMES = 33 34 35 36 37 38

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

109 AREAS (OF 109 DEFINED) SELECTED FROM
26 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

0 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 0 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT LINES ASSOCIATED WITH SELECTED AREAS

147 LINES (OF 147 DEFINED) SELECTED FROM
109 SELECTED AREAS BY LSLA COMMAND.

INVERT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

0 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM 1 TO 190 BY 1

DELETED 0 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT ALL KEYPOINTS ON ANY LINE IN LINE SET.

64 KEYPOINTS (OF 64 DEFINED) SELECTED FROM
147 SELECTED LINES BY KSLI COMMAND.

INVERT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

0 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 34 TO 42 STEP 4

3 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = CPA ENTITY=AREA

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

GENERATE 2 TOTAL SETS OF AREAS

SET IS ALL SELECTED AREAS

DX,DY,DZ= 0.000E+00 0.000E+00 -0.239 CSYS= 11

DEFINITION OF COMPONENT = CPA1 ENTITY=AREA

3 AREAS (OF 112 DEFINED) SELECTED BY ASEL COMMAND.

GENERATE 2 TOTAL SETS OF AREAS

SET IS ALL SELECTED AREAS

DX,DY,DZ= 0.000E+00 0.000E+00 -0.621 CSYS= 11

The following may require modification
if optimization required

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 49 73 5 10

*** WARNING *** CP= 224.630 TIME= 17:59:20

Lines 116, 82, 9, and 83 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 12

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 49 73 45 64

*** WARNING *** CP= 224.650 TIME= 17:59:20

Lines 116, 84, 18, and 85 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 13

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 78 50 72 71

*** WARNING *** CP= 224.680 TIME= 17:59:20

Lines 119, 95, 49, and 97 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 16

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 78 50 68 65

*** WARNING *** CP= 224.710 TIME= 17:59:20

Lines 119, 154, 32, and 165 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 17

DEFINITION OF COMPONENT = CPA2 ENTITY=AREA

13 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

10 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = ALLCP ENTITY=AREA

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1
3 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 35 TO 38 STEP 1
7 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 27 TO 28 STEP 1
9 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 1 STEP 1
10 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = VOLS ENTITY=VOLU

CUT VOLUMES BY AREAS
INPUT CUTTING AREAS = 2 3 4 6 7 10 12 13 16 17
INPUT VOLUMES TO BE CUT = 1 7 8 9 27 28 35 36 37 38
INPUT VOLUMES TO BE CUT WILL BE DELETED
THE RESULT OF CUTTING VOLUMES 1 :
THE 1ST HALF:
OUTPUT VOLUMES = 2
THE 2ND HALF:
OUTPUT VOLUMES = 3
THE RESULT OF CUTTING VOLUMES 7 :
THE 1ST HALF:
OUTPUT VOLUMES = 4
THE 2ND HALF:
OUTPUT VOLUMES = 6
THE RESULT OF CUTTING VOLUMES 8 :
THE 1ST HALF:
OUTPUT VOLUMES = 10
THE 2ND HALF:
OUTPUT VOLUMES = 12
THE RESULT OF CUTTING VOLUMES 9 :
THE 1ST HALF:
OUTPUT VOLUMES = 15
THE 2ND HALF:
OUTPUT VOLUMES = 16
THE RESULT OF CUTTING VOLUMES 27 :
THE 1ST HALF:
OUTPUT VOLUMES = 17
THE 2ND HALF:
OUTPUT VOLUMES = 18
THE RESULT OF CUTTING VOLUMES 28 :
THE 1ST HALF:
OUTPUT VOLUMES = 21
THE 2ND HALF:
OUTPUT VOLUMES = 24
THE RESULT OF CUTTING VOLUMES 35 :
THE 1ST HALF:
OUTPUT VOLUMES = 39
THE 2ND HALF:
OUTPUT VOLUMES = 40
THE RESULT OF CUTTING VOLUMES 36 :
THE 1ST HALF:
OUTPUT VOLUMES = 41
THE 2ND HALF:
OUTPUT VOLUMES = 42
THE RESULT OF CUTTING VOLUMES 37 :
THE 1ST HALF:
OUTPUT VOLUMES = 43
THE 2ND HALF:

OUTPUT VOLUMES = 44
 THE RESULT OF CUTTING VOLUMES 38 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 45
 THE 2ND HALF:
 OUTPUT VOLUMES = 46

*** WARNING *** CP= 257.010 TIME= 18:00:12
 Assembly TUBE is deleted.

*** WARNING *** CP= 257.080 TIME= 18:00:13
 Assembly VOLS is deleted.
 Combine two lines

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

COMBINE LINES 138 AND 139
 LINE NO.= 138 KP1= 74 TAN1= 1.0000 0.0000 0.0000
 KP2= 79 TAN2= 0.0000 -0.5000 -0.8660

COMBINE LINES 144 AND 145
 LINE NO.= 144 KP1= 73 TAN1= -1.0000 0.0000 0.0000
 KP2= 76 TAN2= 0.0000 -0.5000 -0.8660

Define pier

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 175 STEP 1

0 AREAS (OF 147 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 62

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.282000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 63

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.305000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 81

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430950 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 82

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 83

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.282000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 84

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.305000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 85

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430950 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 86

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 87

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.750000 IN CSYS= 0

```

KEYPOINT NUMBER =      88
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.282000      0.938071      IN CSYS=  0
KEYPOINT NUMBER =      89
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.305000      0.953410      IN CSYS=  0
KEYPOINT NUMBER =      90
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.430950      1.03741      IN CSYS=  0
KEYPOINT NUMBER =      91
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.450000      1.05011      IN CSYS=  0
KEYPOINT NUMBER =      92
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.000000E+00  0.529887      IN CSYS=  0
KEYPOINT NUMBER =      93
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.282000      0.717958      IN CSYS=  0
KEYPOINT NUMBER =      94
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.305000      0.733297      IN CSYS=  0
KEYPOINT NUMBER =      95
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.430950      0.817295      IN CSYS=  0
KEYPOINT NUMBER =      96
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.450000      0.830000      IN CSYS=  0
KEYPOINT NUMBER =      97
KEYPOINT      0  X,Y,Z= -0.158000      0.000000E+00  0.000000E+00  IN CSYS=  0
KEYPOINT NUMBER =      98
KEYPOINT      0  X,Y,Z=  0.158000      0.000000E+00  0.000000E+00  IN CSYS=  0
KEYPOINT NUMBER =      99
LINE CONNECTS KEYPOINTS      62      98
LINE NO.=    20  KP1=      62  TAN1=    1.0000    0.0000    0.0000
                KP2=      98  TAN2=   -1.0000    0.0000    0.0000
LINE CONNECTS KEYPOINTS      62      99
LINE NO.=    37  KP1=      62  TAN1=   -1.0000    0.0000    0.0000
                KP2=      99  TAN2=    1.0000    0.0000    0.0000
MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF  0.10000E-03
NONE SELECT  FOR ITEM=AREA COMPONENT=
IN RANGE      1 TO      175 STEP      1
      0 AREAS (OF      147 DEFINED) SELECTED BY ASEL  COMMAND.
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      62      83      84      63
      AREA NUMBER =      1
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      63      84      85      81
      AREA NUMBER =      8

```

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 81 85 86 82

AREA NUMBER = 11

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 82 86 87 2

AREA NUMBER = 15

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 83 93 94 84

AREA NUMBER = 27

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 84 94 95 85

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 85 95 96 86

AREA NUMBER = 32

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 86 96 97 87

AREA NUMBER = 33

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 93 88 89 94

AREA NUMBER = 35

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 94 89 90 95

AREA NUMBER = 36

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 95 90 91 96

AREA NUMBER = 37

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 96 91 92 97

AREA NUMBER = 39

DEFINITION OF COMPONENT = PDRG1 ENTITY=AREA

DRAG ALL SELECTED AREAS

ALONG LINES

20,

*** WARNING *** CP= 257.810 TIME= 18:00:14
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.810 TIME= 18:00:14
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.810 TIME= 18:00:14
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.810 TIME= 18:00:14
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.810 TIME= 18:00:14

Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.820 TIME= 18:00:14
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.820 TIME= 18:00:14
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.820 TIME= 18:00:14
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.820 TIME= 18:00:14
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.820 TIME= 18:00:14
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.820 TIME= 18:00:14
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 257.820 TIME= 18:00:14
Area 39 is not meshed. Volume will be generated without elements.

12 AREAS (OF 202 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
37,

*** WARNING *** CP= 258.430 TIME= 18:00:14
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.430 TIME= 18:00:14
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.430 TIME= 18:00:14
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 258.440 TIME= 18:00:14
Area 39 is not meshed. Volume will be generated without elements.

Intersection of the volumes between
pier and pipe
This section may require modification
if optimization required

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 60 STEP 1
60 VOLUMES (OF 60 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 245 STEP 1
245 AREAS (OF 245 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 324 STEP 1
324 LINES (OF 324 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 139 STEP 1
139 KEYPOINTS (OF 139 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1
0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

PARTITION VOLUMES
INPUT VOLUMES = 32 35 36
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 269.800 TIME= 18:00:30
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 61 62 63 64 65 66 67

PARTITION VOLUMES
INPUT VOLUMES = 31 55 56
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 281.340 TIME= 18:00:47
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 32 35 36 68 69 70 71

PARTITION VOLUMES
INPUT VOLUMES = 22 51 52
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 293.110 TIME= 18:01:04
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 31 55 56 72 73 74 75

PARTITION VOLUMES
INPUT VOLUMES = 23 8 9
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 303.780 TIME= 18:01:19
 Entity numbers from the Boolean operation were assigned based on geometry. If you are planning to do optimization, (or input looping), do not rely on the entity numbers for loads, etc. To suppress this warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 22 51 52 76 77 78 79

PARTITION VOLUMES

INPUT VOLUMES = 13 7
 INPUT VOLUMES WILL BE DELETED
 OUTPUT VOLUMES = 8 9 23

PARTITION VOLUMES

INPUT VOLUMES = 14 28
 INPUT VOLUMES WILL BE DELETED
 OUTPUT VOLUMES = 7 13 14

PARTITION VOLUMES

INPUT VOLUMES = 11 50
 INPUT VOLUMES WILL BE DELETED
 OUTPUT VOLUMES = 11 28 80

PARTITION VOLUMES

INPUT VOLUMES = 5 54
 INPUT VOLUMES WILL BE DELETED
 OUTPUT VOLUMES = 5 50 81

DELETE SELECTED VOLUMES FROM 22 TO 22 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 31 TO 35 BY 4

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 61 TO 61 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 32 TO 62 BY 30

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 51 TO 55 BY 4

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 7 TO 9 BY 1

DELETED 3 VOLUMES

DELETE SELECTED VOLUMES FROM 5 TO 5 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 11 TO 14 BY 3

*** WARNING *** CP= 326.710 TIME= 18:01:53
 Assembly PIPE is deleted.

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 28 TO 50 BY 22

DELETED 2 VOLUMES

Define areas in the pier to cut volumes

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 97 128 121 93

*** WARNING *** CP= 326.730 TIME= 18:01:53
 Lines 59, 209, 283, and 438 do not lie on a common
 coordinate value in the currently active coordinate system
 (CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 97 108 101 93

*** WARNING *** CP= 326.760 TIME= 18:01:53
 Lines 439, 440, 441, and 438 do not lie on a common
 coordinate value in the currently active coordinate system
 (CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 208

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 128 2 62 121

AREA NUMBER = 225

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 108 2 62 101

AREA NUMBER = 343

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 208
 INPUT VOLUMES TO BE CUT = 27 13 66 67
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 27 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 5
 THE 2ND HALF:
 OUTPUT VOLUMES = 7
 THE RESULT OF CUTTING VOLUMES 13 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 8
 THE 2ND HALF:
 OUTPUT VOLUMES = 9
 THE RESULT OF CUTTING VOLUMES 66 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 11
 THE 2ND HALF:
 OUTPUT VOLUMES = 14
 THE RESULT OF CUTTING VOLUMES 67 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 22
 THE 2ND HALF:
 OUTPUT VOLUMES = 28

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 31
 INPUT VOLUMES TO BE CUT = 53 81 70 71
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 53 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 13
 THE 2ND HALF:
 OUTPUT VOLUMES = 27
 THE RESULT OF CUTTING VOLUMES 81 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 31
 THE 2ND HALF:
 OUTPUT VOLUMES = 32
 THE RESULT OF CUTTING VOLUMES 70 :
 THE 1ST HALF:

OUTPUT VOLUMES = 35
 THE 2ND HALF:
 OUTPUT VOLUMES = 50
 THE RESULT OF CUTTING VOLUMES 71 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 51
 THE 2ND HALF:
 OUTPUT VOLUMES = 54

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 225
 INPUT VOLUMES TO BE CUT = 49 80 74 75
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 49 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 53
 THE 2ND HALF:
 OUTPUT VOLUMES = 55
 THE RESULT OF CUTTING VOLUMES 80 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 61
 THE 2ND HALF:
 OUTPUT VOLUMES = 62
 THE RESULT OF CUTTING VOLUMES 74 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 66
 THE 2ND HALF:
 OUTPUT VOLUMES = 67
 THE RESULT OF CUTTING VOLUMES 75 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 70
 THE 2ND HALF:
 OUTPUT VOLUMES = 71

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 343
 INPUT VOLUMES TO BE CUT = 1 23 78 79
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 1 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 49
 THE 2ND HALF:
 OUTPUT VOLUMES = 74
 THE RESULT OF CUTTING VOLUMES 23 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 75
 THE 2ND HALF:
 OUTPUT VOLUMES = 80
 THE RESULT OF CUTTING VOLUMES 78 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 81
 THE 2ND HALF:
 OUTPUT VOLUMES = 82
 THE RESULT OF CUTTING VOLUMES 79 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 83
 THE 2ND HALF:
 OUTPUT VOLUMES = 84

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

KEYPOINT	98 USED FOR KEYPOINT(S)	100
KEYPOINT	99 USED FOR KEYPOINT(S)	120
KEYPOINT	146 USED FOR KEYPOINT(S)	154
KEYPOINT	142 USED FOR KEYPOINT(S)	150
KEYPOINT	143 USED FOR KEYPOINT(S)	167
KEYPOINT	147 USED FOR KEYPOINT(S)	169
KEYPOINT	145 USED FOR KEYPOINT(S)	171
KEYPOINT	141 USED FOR KEYPOINT(S)	165
KEYPOINT	144 USED FOR KEYPOINT(S)	152
KEYPOINT	140 USED FOR KEYPOINT(S)	148

KEYPOINT	151	USED FOR KEYPOINT(S)	159
KEYPOINT	155	USED FOR KEYPOINT(S)	162
KEYPOINT	149	USED FOR KEYPOINT(S)	157
KEYPOINT	153	USED FOR KEYPOINT(S)	160
KEYPOINT	158	USED FOR KEYPOINT(S)	166
KEYPOINT	163	USED FOR KEYPOINT(S)	168
KEYPOINT	156	USED FOR KEYPOINT(S)	164
KEYPOINT	161	USED FOR KEYPOINT(S)	170
LINE	20	USED FOR LINE(S)	224
LINE	37	USED FOR LINE(S)	275
LINE	74	USED FOR LINE(S)	155
LINE	110	USED FOR LINE(S)	426
LINE	404	USED FOR LINE(S)	421
LINE	396	USED FOR LINE(S)	427
LINE	379	USED FOR LINE(S)	401
LINE	339	USED FOR LINE(S)	429
LINE	354	USED FOR LINE(S)	435
LINE	345	USED FOR LINE(S)	377
LINE	347	USED FOR LINE(S)	424
LINE	346	USED FOR LINE(S)	423
LINE	344	USED FOR LINE(S)	373
LINE	342	USED FOR LINE(S)	376
LINE	343	USED FOR LINE(S)	422
LINE	340	USED FOR LINE(S)	431
LINE	336	USED FOR LINE(S)	418
LINE	338	USED FOR LINE(S)	369
LINE	335	USED FOR LINE(S)	361
LINE	337	USED FOR LINE(S)	368
LINE	325	USED FOR LINE(S)	358
LINE	152	USED FOR LINE(S)	326
LINE	352	USED FOR LINE(S)	382
LINE	349	USED FOR LINE(S)	432
LINE	350	USED FOR LINE(S)	380
LINE	332	USED FOR LINE(S)	366
LINE	331	USED FOR LINE(S)	415
LINE	355	USED FOR LINE(S)	385
LINE	356	USED FOR LINE(S)	437
LINE	329	USED FOR LINE(S)	413
LINE	328	USED FOR LINE(S)	363
LINE	378	USED FOR LINE(S)	399
LINE	374	USED FOR LINE(S)	400
LINE	371	USED FOR LINE(S)	395
LINE	370	USED FOR LINE(S)	394
LINE	362	USED FOR LINE(S)	393
LINE	384	USED FOR LINE(S)	410
LINE	148	USED FOR LINE(S)	359
LINE	381	USED FOR LINE(S)	406
LINE	367	USED FOR LINE(S)	389
LINE	386	USED FOR LINE(S)	412
LINE	364	USED FOR LINE(S)	387
LINE	402	USED FOR LINE(S)	419
LINE	403	USED FOR LINE(S)	420
LINE	397	USED FOR LINE(S)	428
LINE	392	USED FOR LINE(S)	417
LINE	147	USED FOR LINE(S)	150
LINE	409	USED FOR LINE(S)	434
LINE	390	USED FOR LINE(S)	416
LINE	407	USED FOR LINE(S)	433
LINE	213	USED FOR LINE(S)	293
LINE	411	USED FOR LINE(S)	436
AREA	286	USED FOR AREA(S)	304
AREA	61	USED FOR AREA(S)	106
AREA	65	USED FOR AREA(S)	107
AREA	268	USED FOR AREA(S)	335
AREA	306	USED FOR AREA(S)	321
AREA	260	USED FOR AREA(S)	284
AREA	312	USED FOR AREA(S)	334
AREA	253	USED FOR AREA(S)	319
AREA	261	USED FOR AREA(S)	323
AREA	256	USED FOR AREA(S)	330

AREA 255 USED FOR AREA(S) 279
 AREA 185 USED FOR AREA(S) 252
 AREA 267 USED FOR AREA(S) 291
 AREA 265 USED FOR AREA(S) 288
 AREA 264 USED FOR AREA(S) 331
 AREA 272 USED FOR AREA(S) 339
 AREA 271 USED FOR AREA(S) 295
 AREA 103 USED FOR AREA(S) 248
 AREA 249 USED FOR AREA(S) 276
 AREA 280 USED FOR AREA(S) 300
 AREA 292 USED FOR AREA(S) 313
 AREA 188 USED FOR AREA(S) 298
 AREA 289 USED FOR AREA(S) 309
 AREA 296 USED FOR AREA(S) 317
 AREA 96 USED FOR AREA(S) 277
 AREA 301 USED FOR AREA(S) 327
 AREA 217 USED FOR AREA(S) 231
 AREA 310 USED FOR AREA(S) 332
 AREA 97 USED FOR AREA(S) 212
 AREA 316 USED FOR AREA(S) 338

Name the volumes

SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 2 TO 4 STEP 1

3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 6 TO 10 STEP 4

5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 12 TO 12 STEP 1

6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 15 TO 21 STEP 1

13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 24 TO 26 STEP 1

16 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 29 TO 30 STEP 1

18 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 33 TO 34 STEP 1

20 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 39 TO 46 STEP 1

28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 36 TO 36 STEP 1

1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=

IN RANGE 52 TO 56 STEP 4

3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 63 TO 65 STEP 1

6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 68 TO 69 STEP 1

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 72 TO 73 STEP 1

10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 76 TO 77 STEP 1

12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PIPE ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 5 TO 5 STEP 1

1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1

4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 11 TO 11 STEP 1

5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 13 TO 14 STEP 1

7 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 27 TO 27 STEP 1

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 31 TO 32 STEP 1

10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 35 TO 35 STEP 1

11 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 37 TO 38 STEP 1

13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 47 TO 50 STEP 1

17 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 53 TO 55 STEP 2

19 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 57 TO 62 STEP 1

25 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 66 TO 67 STEP 1

27 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 74 TO 75 STEP 1

29 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 80 TO 82 STEP 1

32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PIER ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 22 TO 28 STEP 6

2 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 51 TO 54 STEP 3

4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 70 TO 71 STEP 1

6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 83 TO 84 STEP 1

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PLATE ENTITY=VOLU

DEFAULT ELEMENT DIVISIONS PER LINE = 6
Elements for the tube

ELEMENT TYPE SET TO 1

MATERIAL NUMBER SET TO 1

28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 372.700 TIME= 18:03:02
Volume 2 area 58 has a corner angle of 41 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 373.150 TIME= 18:03:02
Meshing of volume 2 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 2 WITH EXCESSIVE DISTORTION ***
73 78 79 84 85 90 91 96

97	102	103	108	109	114	115	120
121	126	127	132	133	138	139	144
145	150	151	156	157	162	163	168
169	174	175	180	181	186	187	192
193	198	199	204	205	210	211	216

*** WARNING *** CP= 376.850 TIME= 18:03:08
Volume 17 area 116 has a corner angle of 41 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 377.310 TIME= 18:03:09
Meshing of volume 17 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 17 WITH EXCESSIVE DISTORTION ***

1801	1802	1803	1804	1805	1806	1831	1832
1833	1834	1835	1836	1837	1838	1839	1840
1841	1842	1867	1868	1869	1870	1871	1872
1873	1874	1875	1876	1877	1878	1903	1904
1905	1906	1907	1908	1909	1910	1911	1912
1913	1914	1939	1940	1941	1942	1943	1944

*** WARNING *** CP= 382.970 TIME= 18:03:17
Volume 39 area 161 has a corner angle of 35 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.010 TIME= 18:03:17
Volume 39 area 160 has a corner angle of 31 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.460 TIME= 18:03:18
Meshing of volume 39 produced 126 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 39 WITH EXCESSIVE DISTORTION ***

4129	4130	4131	4132	4133	4134	4135	4136
4137	4138	4139	4140	4163	4164	4165	4166
4167	4168	4169	4170	4171	4172	4173	4174
4175	4176	4194	4196	4197	4198	4199	4200
4201	4202	4203	4204	4205	4206	4207	4208
4209	4210	4211	4212	4223	4224	4227	4228
4229	4230	4231	4232	4233	4234	4235	4236
4237	4238	4239	4240	4241	4242	4243	4244
4245	4246	4247	4248	4252	4253	4254	4256
4257	4258	4259	4260	4261	4262	4263	4264
4265	4266	4267	4268	4269	4270	4271	4272
4273	4274	4275	4276	4277	4278	4279	4280
4281	4282	4283	4284	4287	4288	4289	4290
4293	4294	4295	4296	4299	4300	4301	4302
4305	4306	4307	4308	4310	4311	4312	4313
4314	4316	4317	4318	4319	4320		

*** WARNING *** CP= 383.540 TIME= 18:03:18
Volume 40 area 163 has a corner angle of 31 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.580 TIME= 18:03:18
Volume 40 area 162 has a corner angle of 145 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.980 TIME= 18:03:18
Meshing of volume 40 produced 102 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 40 WITH EXCESSIVE DISTORTION ***

4321	4322	4323	4324	4325	4326	4327	4328
4329	4330	4331	4332	4333	4334	4335	4336
4337	4338	4339	4340	4341	4342	4343	4344
4345	4346	4347	4348	4349	4350	4351	4352
4353	4354	4355	4356	4357	4358	4359	4360

4361	4362	4363	4364	4365	4366	4367	4368
4369	4370	4371	4372	4373	4374	4375	4376
4377	4378	4379	4380	4381	4382	4383	4384
4385	4386	4387	4388	4389	4390	4391	4392
4417	4418	4419	4420	4421	4422	4423	4424
4425	4426	4427	4428	4434	4440	4446	4452
4458	4464	4470	4476	4482	4488	4494	4500
4506	4512	4518	4524	4530	4536		

*** WARNING *** CP= 384.030 TIME= 18:03:18
Volume 41 area 164 has a corner angle of 35 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.120 TIME= 18:03:19
Volume 41 area 165 has a corner angle of 149 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.530 TIME= 18:03:19
Meshing of volume 41 produced 102 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 41 WITH EXCESSIVE DISTORTION ***

4537	4538	4539	4540	4541	4542	4543	4544
4545	4546	4547	4548	4549	4550	4551	4552
4553	4554	4555	4556	4557	4558	4559	4560
4561	4562	4563	4564	4565	4566	4567	4568
4569	4570	4571	4572	4573	4574	4575	4576
4577	4578	4579	4580	4581	4582	4583	4584
4585	4586	4587	4588	4589	4590	4591	4592
4593	4594	4595	4596	4597	4598	4599	4600
4601	4602	4603	4604	4605	4606	4607	4608
4613	4614	4619	4620	4625	4626	4631	4632
4637	4638	4643	4644	4675	4676	4677	4678
4679	4680	4711	4712	4713	4714	4715	4716
4747	4748	4749	4750	4751	4752		

*** WARNING *** CP= 384.610 TIME= 18:03:19
Volume 42 area 167 has a corner angle of 35 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.650 TIME= 18:03:19
Volume 42 area 166 has a corner angle of 31 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 385.070 TIME= 18:03:20
Meshing of volume 42 produced 126 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 42 WITH EXCESSIVE DISTORTION ***

4765	4771	4772	4777	4778	4783	4784	4796
4801	4802	4807	4808	4813	4814	4815	4819
4820	4821	4826	4832	4837	4838	4839	4843
4844	4845	4849	4850	4851	4855	4856	4857
4858	4862	4863	4868	4869	4870	4873	4874
4875	4876	4879	4880	4881	4882	4885	4886
4887	4888	4889	4891	4892	4893	4894	4895
4898	4899	4900	4901	4902	4903	4904	4905
4906	4907	4908	4909	4910	4911	4912	4913
4914	4915	4916	4917	4918	4919	4920	4921
4922	4923	4924	4925	4926	4927	4928	4929
4930	4931	4932	4934	4935	4936	4937	4938
4939	4940	4941	4942	4943	4944	4945	4946
4947	4948	4949	4950	4951	4952	4953	4954
4955	4956	4957	4958	4959	4960	4961	4962
4963	4964	4965	4966	4967	4968		

*** WARNING *** CP= 385.120 TIME= 18:03:20
Volume 43 area 169 has a corner angle of 27 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 385.150 TIME= 18:03:20
Volume 43 area 168 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 385.590 TIME= 18:03:21
Meshing of volume 43 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
4969 4970 4971 4972 4973 4974 4975 4976
4977 4978 4979 4980 5005 5006 5007 5008
5009 5010

*** WARNING *** CP= 386.700 TIME= 18:03:22
Volume 46 area 174 has a corner angle of 27 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 386.720 TIME= 18:03:22
Volume 46 area 175 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 387.170 TIME= 18:03:23
Meshing of volume 46 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
5617 5618 5623 5624 5629 5630 5635 5636
5641 5642 5647 5648 5653 5659 5665 5671
5677 5683

NUMBER OF VOLUMES MESHED = 28
MAXIMUM NODE NUMBER = 7014
MAXIMUM ELEMENT NUMBER = 5832
Elements for the pipe

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

NUMBER OF VOLUMES MESHED = 12
MAXIMUM NODE NUMBER = 10038
MAXIMUM ELEMENT NUMBER = 8424
Elements for the pier

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 396.170 TIME= 18:03:36
Volume 5 area 345 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 396.210 TIME= 18:03:36
Volume 5 area 344 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 396.540 TIME= 18:03:37
Meshing of volume 5 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 5 WITH EXCESSIVE DISTORTION ***
8428 8429 8431 8432 8440 8441 8461 8462

8463	8470	8471	8472	8473	8474	8500	8503
8506	8507	8508	8509	8510	8511	8512	8513
8514	8515	8516	8517	8518	8519	8520	8521
8522	8523	8524	8525	8526	8527	8528	8529
8530	8531	8532	8535	8544	8553	8562	8571
8574	8577	8580	8582	8583	8585	8586	

*** WARNING *** CP= 396.550 TIME= 18:03:37
Volume 7 area 347 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 396.600 TIME= 18:03:37
Volume 7 area 348 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 396.940 TIME= 18:03:37
Meshing of volume 7 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 7 WITH EXCESSIVE DISTORTION ***

8587	8588	8589	8590	8591	8596	8597	8598
8607	8616	8625	8634	8641	8642	8643	8644
8645	8646	8647	8648	8649	8650	8651	8652
8653	8654	8655	8656	8657	8658	8659	8660
8661	8662	8663	8664	8665	8666	8667	8674
8675	8697	8699	8700	8702	8703	8706	8709
8712	8734	8737	8743	8744	8746	8747	

*** WARNING *** CP= 397.000 TIME= 18:03:38
Volume 8 area 349 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 397.380 TIME= 18:03:38
Meshing of volume 8 produced 38 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 8 WITH EXCESSIVE DISTORTION ***

8751	8752	8753	8754	8755	8756	8757	8760
8761	8762	8763	8764	8765	8766	8769	8770
8771	8773	8774	8778	8779	8780	8782	8783
8788	8789	8791	8792	8797	8798	8800	8801
8859	8868	8877	8886	8895	8904		

*** WARNING *** CP= 397.490 TIME= 18:03:38
Volume 9 area 352 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 397.510 TIME= 18:03:38
Volume 9 area 351 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 397.960 TIME= 18:03:39
Meshing of volume 9 produced 43 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 9 WITH EXCESSIVE DISTORTION ***

9020	9021	9022	9023	9024	9026	9027	9028
9029	9030	9055	9056	9057	9058	9059	9060
9061	9062	9063	9064	9065	9066	9070	9071
9072	9091	9092	9093	9094	9095	9096	9097
9098	9099	9100	9101	9102	9103	9104	9105
9106	9107	9108					

*** WARNING *** CP= 398.010 TIME= 18:03:39
Volume 11 area 353 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 398.360 TIME= 18:03:40
Meshing of volume 11 produced 64 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 11 WITH EXCESSIVE DISTORTION ***

9127	9128	9129	9130	9131	9132	9133	9134
9135	9136	9137	9138	9139	9140	9141	9142
9143	9144	9145	9146	9147	9148	9149	9150
9151	9152	9153	9154	9155	9156	9157	9158
9159	9160	9161	9162	9164	9165	9166	9167
9168	9169	9170	9171	9174	9175	9176	9177
9178	9179	9180	9183	9192	9201	9235	9236
9237	9245	9246	9254	9255	9264	9273	9282

*** WARNING *** CP= 398.410 TIME= 18:03:40
Volume 13 area 177 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 398.460 TIME= 18:03:40
Volume 13 area 147 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 398.790 TIME= 18:03:40
Meshing of volume 13 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 13 WITH EXCESSIVE DISTORTION ***

9292	9293	9295	9296	9301	9304	9327	9330
9333	9336	9338	9339	9341	9342	9345	9354
9363	9372	9379	9380	9381	9388	9389	9390
9391	9392	9421	9422	9424	9425	9426	9427
9428	9429	9430	9431	9432	9433	9434	9435
9436	9437	9438	9439	9440	9441	9442	9443
9444	9445	9446	9447	9448	9449	9450	

*** WARNING *** CP= 398.830 TIME= 18:03:40
Volume 14 area 355 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 399.310 TIME= 18:03:41
Meshing of volume 14 produced 83 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 14 WITH EXCESSIVE DISTORTION ***

9503	9504	9509	9510	9526	9527	9528	9530
9531	9532	9533	9534	9536	9537	9538	9539
9540	9545	9546	9559	9560	9561	9562	9563
9564	9565	9566	9567	9568	9569	9570	9571
9572	9573	9574	9575	9576	9580	9581	9582
9595	9596	9597	9598	9599	9600	9601	9602
9603	9604	9605	9606	9607	9608	9609	9610
9611	9612	9616	9617	9618	9631	9632	9633
9634	9635	9636	9637	9638	9639	9640	9641
9642	9643	9644	9645	9646	9647	9648	9651
9652	9653	9654					

*** WARNING *** CP= 399.340 TIME= 18:03:41
Volume 27 area 269 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 399.390 TIME= 18:03:41
Volume 27 area 270 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 399.720 TIME= 18:03:42
Meshing of volume 27 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 27 WITH EXCESSIVE DISTORTION ***

9667	9668	9669	9670	9671	9672	9673	9674
9675	9676	9677	9678	9679	9680	9681	9682
9683	9684	9685	9686	9687	9688	9689	9690
9691	9692	9693	9697	9700	9723	9725	9726

9728	9729	9732	9735	9738	9741	9750	9759
9768	9775	9776	9777	9778	9779	9784	9785
9786	9817	9818	9823	9824	9826	9827	

*** WARNING *** CP= 399.780 TIME= 18:03:42
Volume 31 area 359 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 399.920 TIME= 18:03:42
Volume 31 area 273 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 400.310 TIME= 18:03:42
Meshing of volume 31 produced 43 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 31 WITH EXCESSIVE DISTORTION ***

9847	9848	9849	9850	9851	9852	9853	9854
9855	9856	9857	9858	9859	9860	9861	9862
9863	9864	9883	9884	9885	9889	9890	9891
9892	9893	9894	9895	9896	9897	9898	9899
9900	9925	9926	9927	9928	9929	9931	9932
9933	9934	9935					

*** WARNING *** CP= 400.350 TIME= 18:03:42
Volume 32 area 361 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 400.710 TIME= 18:03:43
Meshing of volume 32 produced 38 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 32 WITH EXCESSIVE DISTORTION ***

10045	10046	10047	10048	10049	10051	10052	10054
10055	10056	10057	10058	10060	10061	10065	10066
10067	10069	10070	10074	10075	10076	10078	10079
10084	10085	10087	10088	10093	10094	10096	10097
10101	10110	10119	10128	10137	10146		

*** WARNING *** CP= 400.760 TIME= 18:03:43
Volume 35 area 363 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 401.240 TIME= 18:03:44
Meshing of volume 35 produced 83 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 35 WITH EXCESSIVE DISTORTION ***

10219	10220	10221	10222	10225	10226	10227	10228
10229	10230	10231	10232	10233	10234	10235	10236
10237	10238	10239	10240	10241	10242	10255	10256
10257	10261	10262	10263	10264	10265	10266	10267
10268	10269	10270	10271	10272	10273	10274	10275
10276	10277	10278	10291	10292	10293	10297	10298
10299	10300	10301	10302	10303	10304	10305	10306
10307	10308	10309	10310	10311	10312	10313	10314
10327	10328	10333	10334	10335	10336	10337	10339
10340	10341	10342	10343	10345	10346	10347	10363
10364	10369	10370					

*** WARNING *** CP= 403.330 TIME= 18:03:47
Volume 49 area 205 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 403.400 TIME= 18:03:47
Volume 49 area 203 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 403.690 TIME= 18:03:47

Meshing of volume 49 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 49 WITH EXCESSIVE DISTORTION ***
11287 11288 11289 11296 11297 11298 11305 11306
11307 11314 11315 11316 11323 11324 11325 11332
11333 11334 11341 11342 11343 11344 11345 11346
11347 11348 11349 11350 11351 11352 11353 11354
11355 11356 11357 11358 11359 11360 11361 11362
11363 11364 11365 11366 11367 11368 11369 11370
11371 11372 11373 11374 11375 11376 11377 11378
11379 11380 11381 11382 11383 11384 11385 11386
11387 11388 11389 11390 11391 11392 11393 11394
11397 11400 11403 11406 11409 11412 11415 11418
11421 11424 11427 11430 11433 11436 11439 11442
11445 11448

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*** WARNING *** CP= 403.770 TIME= 18:03:48
Volume 50 area 364 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 404.080 TIME= 18:03:48
Meshing of volume 50 produced 64 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 50 WITH EXCESSIVE DISTORTION ***
11451 11452 11453 11454 11455 11456 11457 11459
11460 11461 11462 11463 11464 11465 11466 11467
11468 11469 11470 11471 11472 11473 11474 11475
11476 11477 11478 11479 11480 11481 11482 11483
11484 11485 11486 11487 11488 11489 11490 11491
11492 11493 11494 11495 11496 11497 11498 11499
11500 11501 11502 11532 11541 11550 11559 11568
11577 11585 11586 11594 11595 11602 11603 11604

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*** WARNING *** CP= 404.110 TIME= 18:03:48
Volume 53 area 220 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 404.150 TIME= 18:03:48
Volume 53 area 209 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 404.480 TIME= 18:03:49
Meshing of volume 53 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 53 WITH EXCESSIVE DISTORTION ***
11611 11612 11613 11620 11621 11622 11629 11630
11631 11638 11639 11640 11647 11648 11649 11656
11657 11658 11665 11666 11667 11668 11669 11670
11671 11672 11673 11674 11675 11676 11677 11678
11679 11680 11681 11682 11683 11684 11685 11686
11687 11688 11689 11690 11691 11692 11693 11694
11695 11696 11697 11698 11699 11700 11701 11702
11703 11704 11705 11706 11707 11708 11709 11710
11711 11712 11713 11714 11715 11716 11717 11718
11721 11724 11727 11730 11733 11736 11739 11742
11745 11748 11751 11754 11757 11760 11763 11766
11769 11772

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*** WARNING *** CP= 404.510 TIME= 18:03:49
Volume 55 area 293 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 404.550 TIME= 18:03:49
Volume 55 area 294 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 404.890 TIME= 18:03:49

Meshing of volume 55 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 55 WITH EXCESSIVE DISTORTION ***
11773 11774 11775 11776 11777 11778 11779 11780
11781 11782 11783 11784 11785 11786 11787 11788
11789 11790 11791 11792 11793 11794 11795 11796
11797 11798 11799 11800 11801 11802 11803 11804
11805 11806 11807 11808 11809 11810 11811 11812
11813 11814 11815 11816 11817 11818 11819 11820
11821 11822 11823 11824 11825 11826 11829 11832
11835 11838 11841 11844 11847 11850 11853 11856
11859 11862 11865 11868 11871 11874 11877 11880
11881 11882 11883 11890 11891 11892 11899 11900
11901 11908 11909 11910 11917 11918 11919 11926
11927 11928
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*** WARNING *** CP= 407.050 TIME= 18:03:52
Volume 61 area 369 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 407.180 TIME= 18:03:52
Volume 61 area 368 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 407.600 TIME= 18:03:53
Meshing of volume 61 produced 168 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 61 WITH EXCESSIVE DISTORTION ***
12799 12800 12801 12802 12803 12804 12805 12806
12807 12808 12809 12810 12811 12812 12813 12814
12815 12816 12817 12818 12819 12820 12821 12822
12823 12824 12825 12826 12827 12828 12835 12836
12837 12838 12839 12840 12841 12842 12843 12844
12845 12846 12847 12848 12849 12850 12851 12852
12853 12854 12855 12856 12857 12858 12859 12860
12861 12862 12863 12864 12871 12872 12873 12874
12875 12876 12877 12878 12879 12880 12881 12882
12883 12884 12885 12886 12887 12888 12889 12890
12891 12892 12893 12894 12895 12896 12897 12898
12899 12900 12907 12908 12909 12910 12911 12912
12913 12914 12915 12916 12917 12918 12919 12920
12921 12922 12923 12924 12925 12926 12927 12928
12929 12930 12931 12932 12933 12934 12935 12936
12943 12944 12945 12946 12947 12948 12949 12950
12951 12952 12953 12954 12955 12956 12957 12958
12959 12960 12961 12962 12963 12964 12965 12966
12967 12968 12969 12970 12971 12972 12991 12992
12993 12994 12995 12996 12997 12998 12999 13000
13001 13002 13003 13004 13005 13006 13007 13008
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*** WARNING *** CP= 407.640 TIME= 18:03:53
Volume 62 area 370 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 408.000 TIME= 18:03:54
Meshing of volume 62 produced 90 elements with excessive distortion.

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*** LIST OF ELEMENTS IN VOLUME 62 WITH EXCESSIVE DISTORTION ***
13017 13020 13023 13026 13029 13032 13035 13038
13041 13044 13047 13050 13053 13056 13059 13062
13065 13068 13069 13070 13071 13078 13079 13080
13087 13088 13089 13096 13097 13098 13105 13106
13107 13114 13115 13116 13123 13124 13125 13126
13127 13128 13129 13130 13131 13132 13133 13134
13135 13136 13137 13138 13139 13140 13141 13142
13143 13144 13145 13146 13147 13148 13149 13150
13151 13152 13153 13154 13155 13156 13157 13158
13159 13160 13161 13162 13163 13164 13165 13166
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13167	13168	13169	13170	13171	13172	13173	13174
13175	13176						

*** WARNING *** CP= 408.050 TIME= 18:03:54
Volume 66 area 372 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 408.540 TIME= 18:03:54
Meshing of volume 66 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 66 WITH EXCESSIVE DISTORTION ***

13177	13178	13179	13180	13181	13182	13183	13184
13185	13186	13187	13188	13189	13190	13191	13192
13193	13194	13195	13196	13197	13198	13199	13200
13201	13202	13203	13204	13205	13206	13213	13214
13215	13216	13217	13218	13219	13220	13221	13222
13223	13224	13225	13226	13227	13228	13229	13230
13231	13232	13233	13234	13235	13236	13237	13238
13239	13240	13241	13242	13249	13250	13251	13252
13253	13254	13255	13256	13257	13258	13259	13260
13261	13262	13263	13264	13265	13266	13267	13268
13269	13270	13271	13272	13273	13274	13275	13276
13277	13278	13285	13286	13287	13288	13289	13290
13291	13292	13293	13294	13295	13296	13297	13298
13299	13300	13301	13302	13303	13304	13305	13306
13307	13308	13309	13310	13311	13312	13313	13314
13321	13322	13323	13324	13325	13326	13327	13328
13329	13330	13331	13332	13333	13334	13335	13336
13337	13338	13339	13340	13341	13342	13343	13344
13345	13346	13347	13348	13349	13350	13369	13370
13371	13372	13373	13374	13375	13376	13377	13378
13379	13380	13381	13382	13383	13384	13385	13386

*** WARNING *** CP= 408.580 TIME= 18:03:55
Volume 67 area 373 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 408.940 TIME= 18:03:55
Meshing of volume 67 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 67 WITH EXCESSIVE DISTORTION ***

13395	13398	13401	13404	13407	13410	13413	13416
13419	13422	13425	13428	13431	13434	13437	13440
13443	13446	13447	13448	13449	13456	13457	13458
13465	13466	13467	13474	13475	13476	13483	13484
13485	13492	13493	13494	13501	13502	13503	13504
13505	13506	13507	13508	13509	13510	13511	13512
13513	13514	13515	13516	13517	13518	13519	13520
13521	13522	13523	13524	13525	13526	13527	13528
13529	13530	13531	13532	13533	13534	13535	13536
13537	13538	13539	13540	13541	13542	13543	13544
13545	13546	13547	13548	13549	13550	13551	13552
13553	13554						

*** WARNING *** CP= 408.960 TIME= 18:03:55
Volume 74 area 315 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 409.020 TIME= 18:03:55
Volume 74 area 318 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 409.360 TIME= 18:03:56
Meshing of volume 74 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 74 WITH EXCESSIVE DISTORTION ***

13555	13556	13557	13558	13559	13560	13561	13562
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13563	13564	13565	13566	13567	13568	13569	13570
13571	13572	13573	13574	13575	13576	13577	13578
13579	13580	13581	13582	13583	13584	13585	13586
13587	13588	13589	13590	13591	13592	13593	13594
13595	13596	13597	13598	13599	13600	13601	13602
13603	13604	13605	13606	13607	13608	13611	13614
13617	13620	13623	13626	13629	13632	13635	13638
13641	13644	13647	13650	13653	13656	13659	13662
13663	13664	13665	13672	13673	13674	13681	13682
13683	13690	13691	13692	13699	13700	13701	13708
13709	13710						

*** WARNING *** CP= 409.400 TIME= 18:03:56
Volume 75 area 342 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 409.760 TIME= 18:03:56
Meshing of volume 75 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***

13717	13718	13719	13726	13727	13728	13735	13736
13737	13744	13745	13746	13753	13754	13755	13762
13763	13764	13771	13772	13773	13774	13775	13776
13777	13778	13779	13780	13781	13782	13783	13784
13785	13786	13787	13788	13789	13790	13791	13792
13793	13794	13795	13796	13797	13798	13799	13800
13801	13802	13803	13804	13805	13806	13807	13808
13809	13810	13811	13812	13813	13814	13815	13816
13817	13818	13819	13820	13821	13822	13823	13824
13827	13830	13833	13836	13839	13842	13845	13848
13851	13854	13857	13860	13863	13866	13869	13872
13875	13878						

*** WARNING *** CP= 409.870 TIME= 18:03:56
Volume 80 area 378 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 409.910 TIME= 18:03:57
Volume 80 area 379 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 410.350 TIME= 18:03:57
Meshing of volume 80 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 80 WITH EXCESSIVE DISTORTION ***

13885	13886	13887	13888	13889	13890	13891	13892
13893	13894	13895	13896	13897	13898	13899	13900
13901	13902	13921	13922	13923	13924	13925	13926
13927	13928	13929	13930	13931	13932	13933	13934
13935	13936	13937	13938	13939	13940	13941	13942
13943	13944	13945	13946	13947	13948	13949	13950
13957	13958	13959	13960	13961	13962	13963	13964
13965	13966	13967	13968	13969	13970	13971	13972
13973	13974	13975	13976	13977	13978	13979	13980
13981	13982	13983	13984	13985	13986	13993	13994
13995	13996	13997	13998	13999	14000	14001	14002
14003	14004	14005	14006	14007	14008	14009	14010
14011	14012	14013	14014	14015	14016	14017	14018
14019	14020	14021	14022	14029	14030	14031	14032
14033	14034	14035	14036	14037	14038	14039	14040
14041	14042	14043	14044	14045	14046	14047	14048
14049	14050	14051	14052	14053	14054	14055	14056
14057	14058	14065	14066	14067	14068	14069	14070
14071	14072	14073	14074	14075	14076	14077	14078
14079	14080	14081	14082	14083	14084	14085	14086
14087	14088	14089	14090	14091	14092	14093	14094

*** WARNING *** CP= 410.410 TIME= 18:03:57
Volume 81 area 380 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 410.770 TIME= 18:03:58
Meshing of volume 81 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 81 WITH EXCESSIVE DISTORTION ***

14095	14096	14097	14104	14105	14106	14113	14114
14115	14122	14123	14124	14131	14132	14133	14140
14141	14142	14149	14150	14151	14152	14153	14154
14155	14156	14157	14158	14159	14160	14161	14162
14163	14164	14165	14166	14167	14168	14169	14170
14171	14172	14173	14174	14175	14176	14177	14178
14179	14180	14181	14182	14183	14184	14185	14186
14187	14188	14189	14190	14191	14192	14193	14194
14195	14196	14197	14198	14199	14200	14201	14202
14205	14208	14211	14214	14217	14220	14223	14226
14229	14232	14235	14238	14241	14244	14247	14250
14253	14256						

*** WARNING *** CP= 410.850 TIME= 18:03:58
Volume 82 area 382 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 411.280 TIME= 18:03:59
Meshing of volume 82 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 82 WITH EXCESSIVE DISTORTION ***

14263	14264	14265	14266	14267	14268	14269	14270
14271	14272	14273	14274	14275	14276	14277	14278
14279	14280	14299	14300	14301	14302	14303	14304
14305	14306	14307	14308	14309	14310	14311	14312
14313	14314	14315	14316	14317	14318	14319	14320
14321	14322	14323	14324	14325	14326	14327	14328
14335	14336	14337	14338	14339	14340	14341	14342
14343	14344	14345	14346	14347	14348	14349	14350
14351	14352	14353	14354	14355	14356	14357	14358
14359	14360	14361	14362	14363	14364	14371	14372
14373	14374	14375	14376	14377	14378	14379	14380
14381	14382	14383	14384	14385	14386	14387	14388
14389	14390	14391	14392	14393	14394	14395	14396
14397	14398	14399	14400	14407	14408	14409	14410
14411	14412	14413	14414	14415	14416	14417	14418
14419	14420	14421	14422	14423	14424	14425	14426
14427	14428	14429	14430	14431	14432	14433	14434
14435	14436	14443	14444	14445	14446	14447	14448
14449	14450	14451	14452	14453	14454	14455	14456
14457	14458	14459	14460	14461	14462	14463	14464
14465	14466	14467	14468	14469	14470	14471	14472

NUMBER OF VOLUMES MESHED = 32
MAXIMUM NODE NUMBER = 17185
MAXIMUM ELEMENT NUMBER = 14472
Elements for the plate

ELEMENT TYPE SET TO 4

MATERIAL NUMBER SET TO 4

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 411.560 TIME= 18:03:59
Volume 22 area 356 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 411.870 TIME= 18:04:00
 Meshing of volume 22 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 22 WITH EXCESSIVE DISTORTION ***

14473	14474	14475	14476	14477	14478	14479	14480
14481	14482	14483	14484	14485	14486	14487	14488
14489	14490	14491	14492	14493	14494	14495	14496
14497	14498	14499	14500	14501	14502	14503	14504
14505	14506	14507	14508	14509	14510	14511	14512
14513	14514	14515	14516	14517	14518	14519	14520
14521	14522	14523	14524	14525	14526	14529	14532
14535	14538	14541	14544	14547	14550	14553	14556
14559	14562	14565	14568	14571	14574	14577	14580
14583	14592	14601	14610	14619	14628		

*** WARNING *** CP= 411.940 TIME= 18:04:00
 Volume 28 area 358 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 412.390 TIME= 18:04:00
 Meshing of volume 28 produced 110 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 28 WITH EXCESSIVE DISTORTION ***

14635	14636	14637	14638	14641	14642	14643	14644
14647	14648	14649	14650	14651	14653	14654	14655
14656	14657	14671	14672	14673	14674	14677	14678
14679	14680	14683	14684	14685	14686	14687	14689
14690	14691	14692	14693	14707	14708	14709	14710
14713	14714	14715	14716	14719	14720	14721	14722
14723	14725	14726	14727	14728	14729	14743	14744
14745	14746	14749	14750	14751	14752	14755	14756
14757	14758	14759	14761	14762	14763	14764	14765
14779	14780	14781	14782	14785	14786	14787	14788
14791	14792	14793	14794	14795	14797	14798	14799
14800	14801	14802	14815	14816	14817	14818	14821
14822	14823	14824	14827	14828	14829	14830	14831
14833	14834	14835	14836	14837	14838		

*** WARNING *** CP= 412.520 TIME= 18:04:01
 Volume 51 area 366 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 412.940 TIME= 18:04:01
 Meshing of volume 51 produced 110 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 51 WITH EXCESSIVE DISTORTION ***

14851	14852	14853	14854	14857	14858	14859	14860
14863	14864	14865	14866	14869	14870	14871	14872
14875	14876	14877	14878	14881	14882	14883	14884
14887	14888	14889	14890	14893	14894	14895	14896
14899	14900	14901	14902	14905	14906	14907	14908
14911	14912	14913	14914	14917	14918	14919	14920
14923	14924	14925	14926	14929	14930	14931	14932
14935	14936	14937	14938	14941	14942	14943	14944
14947	14948	14949	14950	14953	14954	14955	14956
14959	14960	14961	14962	14965	14966	14967	14968
14971	14972	14973	14974	14977	14978	14979	14980
14983	14984	14985	14986	14989	14990	14991	14992
14997	14998	15003	15004	15009	15010	15015	15016
15021	15022	15027	15028	15034	15040		

*** WARNING *** CP= 413.020 TIME= 18:04:01
 Volume 54 area 367 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 413.380 TIME= 18:04:02
 Meshing of volume 54 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 54 WITH EXCESSIVE DISTORTION ***

15067	15068	15069	15070	15071	15072	15073	15074
15075	15076	15077	15078	15079	15080	15081	15082
15083	15084	15085	15086	15087	15088	15089	15090
15091	15092	15093	15094	15095	15096	15097	15098
15099	15100	15101	15102	15103	15104	15105	15106
15107	15108	15109	15110	15111	15112	15113	15114
15115	15116	15117	15118	15119	15120	15123	15132
15141	15150	15159	15168	15175	15176	15177	15184
15185	15186	15193	15194	15195	15202	15203	15204
15211	15212	15213	15220	15221	15222		

*** WARNING *** CP= 413.500 TIME= 18:04:02
 Volume 70 area 375 has a corner angle of 18 degrees. This is not
 recommended for hexahedral elements.

*** WARNING *** CP= 413.900 TIME= 18:04:03
 Meshing of volume 70 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 70 WITH EXCESSIVE DISTORTION ***

15230	15231	15232	15233	15234	15236	15237	15238
15239	15240	15242	15243	15244	15245	15246	15248
15249	15250	15251	15252	15254	15255	15256	15257
15258	15260	15261	15262	15263	15264	15266	15267
15268	15269	15270	15272	15273	15274	15275	15276
15278	15279	15280	15281	15282	15284	15285	15286
15287	15288	15290	15291	15292	15293	15294	15296
15297	15298	15299	15300	15302	15303	15304	15305
15306	15308	15309	15310	15311	15312	15314	15315
15316	15317	15318	15320	15321	15322	15323	15324
15326	15327	15328	15329	15330	15332	15333	15334
15335	15336	15338	15339	15340	15341	15342	15344
15345	15346	15347	15348	15350	15351	15352	15353
15354	15356	15357	15358	15359	15360	15362	15363
15364	15365	15366	15368	15369	15370	15371	15372
15374	15375	15376	15377	15378	15380	15381	15382
15383	15384	15386	15387	15388	15389	15390	15392
15393	15394	15395	15396	15398	15399	15400	15401
15402	15404	15405	15406	15407	15408	15410	15411
15412	15416	15417	15418	15422	15423	15424	15428
15429	15430	15434	15435	15436	15440	15441	15442

*** WARNING *** CP= 413.940 TIME= 18:04:03
 Volume 71 area 376 has a corner angle of 18 degrees. This is not
 recommended for hexahedral elements.

*** WARNING *** CP= 414.310 TIME= 18:04:03
 Meshing of volume 71 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 71 WITH EXCESSIVE DISTORTION ***

15447	15450	15453	15456	15459	15462	15465	15468
15471	15474	15477	15480	15483	15486	15489	15492
15495	15498	15499	15500	15501	15508	15509	15510
15517	15518	15519	15526	15527	15528	15535	15536
15537	15544	15545	15546	15553	15554	15555	15556
15557	15558	15559	15560	15561	15562	15563	15564
15565	15566	15567	15568	15569	15570	15571	15572
15573	15574	15575	15576	15577	15578	15579	15580
15581	15582	15583	15584	15585	15586	15587	15588
15589	15590	15591	15592	15593	15594	15595	15596
15597	15598	15599	15600	15601	15602	15603	15604
15605	15606						

*** WARNING *** CP= 414.390 TIME= 18:04:03
 Volume 83 area 383 has a corner angle of 18 degrees. This is not
 recommended for hexahedral elements.

*** WARNING *** CP= 414.700 TIME= 18:04:04
 Meshing of volume 83 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 83 WITH EXCESSIVE DISTORTION ***

15607	15608	15609	15616	15617	15618	15625	15626
15627	15634	15635	15636	15643	15644	15645	15652
15653	15654	15661	15662	15663	15664	15665	15666
15667	15668	15669	15670	15671	15672	15673	15674
15675	15676	15677	15678	15679	15680	15681	15682
15683	15684	15685	15686	15687	15688	15689	15690
15691	15692	15693	15694	15695	15696	15697	15698
15699	15700	15701	15702	15703	15704	15705	15706
15707	15708	15709	15710	15711	15712	15713	15714
15717	15720	15723	15726	15729	15732	15735	15738
15741	15744	15747	15750	15753	15756	15759	15762
15765	15768						

*** WARNING *** CP= 414.790 TIME= 18:04:04
 Volume 84 area 385 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 415.230 TIME= 18:04:05
 Meshing of volume 84 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 84 WITH EXCESSIVE DISTORTION ***

15771	15772	15773	15777	15778	15779	15783	15784
15785	15789	15790	15791	15795	15796	15797	15801
15802	15803	15805	15806	15807	15808	15809	15811
15812	15813	15814	15815	15817	15818	15819	15820
15821	15823	15824	15825	15826	15827	15829	15830
15831	15832	15833	15835	15836	15837	15838	15839
15841	15842	15843	15844	15845	15847	15848	15849
15850	15851	15853	15854	15855	15856	15857	15859
15860	15861	15862	15863	15865	15866	15867	15868
15869	15871	15872	15873	15874	15875	15877	15878
15879	15880	15881	15883	15884	15885	15886	15887
15889	15890	15891	15892	15893	15895	15896	15897
15898	15899	15901	15902	15903	15904	15905	15907
15908	15909	15910	15911	15913	15914	15915	15916
15917	15919	15920	15921	15922	15923	15925	15926
15927	15928	15929	15931	15932	15933	15934	15935
15937	15938	15939	15940	15941	15943	15944	15945
15946	15947	15949	15950	15951	15952	15953	15955
15956	15957	15958	15959	15961	15962	15963	15964
15965	15967	15968	15969	15970	15971	15973	15974
15975	15976	15977	15979	15980	15981	15982	15983

NUMBER OF VOLUMES MESHED = 8
 MAXIMUM NODE NUMBER = 18690
 MAXIMUM ELEMENT NUMBER = 15984
 Contact Elements Generation

MERGE COINCIDENT NODES WITHIN TOLERANCE OF 0.10000E-03

*** NOTE *** CP= 441.360 TIME= 18:04:43
 Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

ELEMENT TYPE SET TO 5

REAL CONSTANT NUMBER= 5

MATERIAL NUMBER SET TO 5

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

```
SELECT      FOR ITEM=NODE COMPONENT=
IN RANGE   18151 TO   18156 STEP      1

      6 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE   5426 TO   5426 STEP      1

      7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18397 TO   18401 STEP      1

     12 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18361 TO   18366 STEP      5

     14 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18439 TO   18441 STEP      2

     16 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18428 TO   18428 STEP      1

     17 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18434 TO   18435 STEP      1

     19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18335 TO   18335 STEP      1

     20 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18561 TO   18561 STEP      1

     21 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  17971 TO   17971 STEP      1

     22 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18021 TO   18021 STEP      1

     23 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  17940 TO   17940 STEP      1

     24 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18169 TO   18170 STEP      1

     26 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE  18161 TO   18163 STEP      2

     28 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
```

```
ALSO SELECT  FOR ITEM=NODE COMPONENT=
IN RANGE  18174 TO  18176 STEP      2

    30 NODES (OF  18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFA      ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL  AND BELOW

ALL SELECT  FOR ITEM=VOLU COMPONENT=
IN RANGE    1 TO      84 STEP      1

    80 VOLUMES (OF    80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT  FOR ITEM=AREA COMPONENT=
IN RANGE    1 TO    385 STEP      1

   349 AREAS (OF  349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT  FOR ITEM=LINE COMPONENT=
IN RANGE    1 TO    458 STEP      1

   406 LINES (OF  406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT  FOR ITEM=KP   COMPONENT=
IN RANGE    1 TO    171 STEP      1

   153 KEYPOINTS (OF  153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT  FOR ITEM=ELEM COMPONENT=
IN RANGE    1 TO  15984 STEP      1

  15984 ELEMENTS (OF  15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT  FOR ITEM=NODE COMPONENT=
IN RANGE    1 TO  18690 STEP      1

  18690 NODES (OF  18690 DEFINED) SELECTED BY NSEL COMMAND.

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

   5832 ELEMENTS (OF  15984 DEFINED) SELECTED BY ESEL COMMAND.

SELECT      ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

   7014 NODES (OF  18690 DEFINED) SELECTED FROM
   5832 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT    FOR ITEM=LOC COMPONENT=Z    BETWEEN-0.10000E-02 AND  0.10000E-02
KABS=  0.  TOLERANCE= 0.000000E+00

   210 NODES (OF  18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT    FOR ITEM=LOC COMPONENT=X    BETWEEN-0.15900    AND  0.15900
KABS=  0.  TOLERANCE= 0.000000E+00

   210 NODES (OF  18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT    FOR ITEM=LOC COMPONENT=Y    BETWEEN 0.44900    AND  0.45100
KABS=  0.  TOLERANCE= 0.000000E+00

   13 NODES (OF  18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFB      ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL  AND BELOW

ALL SELECT  FOR ITEM=VOLU COMPONENT=
IN RANGE    1 TO      84 STEP      1
```

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 15984 STEP 1

15984 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

GENERATE ELEMENTS BETWEEN CONTACT (SURFB) AND TARGET (SURFA) SURFACES.
TARGET SURFACE OF PLATE OR BEAM ELEMENTS IS TOP.
ELEMENT TYPE TO BE GENERATED = CONTAC49.

*** WARNING *** CP= 445.880 TIME= 18:04:49
Contact elements are not generated between contact nodes and target
faces which include those nodes.

NUMBER OF CONTACT ELEMENTS GENERATED = 178

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

16162 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DESTROY ASSOCIATIVITY OF FINITE ELEMENT MODEL AND SOLID MODEL

*** WARNING *** CP= 446.190 TIME= 18:04:49
CLEAR, SELECT, and MESH boundary condition commands are not possible
after MODMSH.

NUMBER OF MESH ITEMS DISCONNECTED FROM NODES AND ELEMENTS = 756

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1

2592 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

3100 ELEMENTS (OF 16162 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3832 NODES (OF 18690 DEFINED) SELECTED FROM
3100 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 3 TO 3 STEP 1

168 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= ingp2.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 456.700

***** ANSYS SOLUTION ROUTINE *****

PERFORM A STATIC ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS
Define constraints

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

534 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

319 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

1164 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12547 TO 12547 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12553 TO 12558 STEP 1

7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12589 TO 12630 STEP 1

49 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12841 TO 12882 STEP 1

91 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13093 TO 13134 STEP 1

133 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13345 TO 13386 STEP 1

175 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14484 TO 14489 STEP 1

181 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14520 TO 14555 STEP 1

217 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14736 TO 14771 STEP 1

253 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14952 TO 14987 STEP 1

289 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 15168 TO 15203 STEP 1

325 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

COORDINATE SYSTEM 15 DEFINITION. TYPE= 0 (CARTESIAN)
ORIGIN NODE= 12553 XNODE= 12558 YNODE= 12601 PARAMETERS= 1.000 1.000
ORIENTATION= 1.00 0.00 0.00 0.00 0.83 0.55 0.00 -0.55 0.83
THXY,THYZ,THZX= 0.000 33.700 0.000

ACTIVE COORDINATE SYSTEM SET TO 15 (CARTESIAN)

*** WARNING *** CP= 459.300 TIME= 18:05:04
NROTAT is not a recognized SOLUTION command, abbreviation, or macro.
This command will be ignored.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 344 TO 344 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1340 TO 1344 STEP 4

3 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1304 TO 1304 STEP 1

4 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
Vertical force divided over four nodes

SPECIFIED NODAL LOAD FY FOR SELECTED NODES 1 TO 18690 BY 1
REAL= -42305.6250 IMAG= 0.000000000E+00

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ACEL= 0.00000E+00 9.8100 0.00000E+00

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 461.680 TIME= 18:05:07
Element 73 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.680 TIME= 18:05:07
Element 78 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.680 TIME= 18:05:07
Element 79 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.690 TIME= 18:05:07
Element 84 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.690 TIME= 18:05:07
Element 85 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.690 TIME= 18:05:07
Element 90 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.700 TIME= 18:05:07
Element 91 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.700 TIME= 18:05:07
Element 96 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.700 TIME= 18:05:07
Element 97 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.710 TIME= 18:05:07
Element 102 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.710 TIME= 18:05:07
Element 103 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.710 TIME= 18:05:07
Element 108 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.720 TIME= 18:05:07
Element 109 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.720 TIME= 18:05:07
Element 109 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.720 TIME= 18:05:07
Element 114 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.730 TIME= 18:05:07
Element 114 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.730 TIME= 18:05:07
Element 115 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.740 TIME= 18:05:07
Element 115 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.740 TIME= 18:05:07
Element 120 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.740 TIME= 18:05:07
Element 120 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.750 TIME= 18:05:07
Element 121 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.750 TIME= 18:05:07
Element 121 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.750 TIME= 18:05:07
Element 126 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.750 TIME= 18:05:07
Element 126 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.760 TIME= 18:05:07
Element 127 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.760 TIME= 18:05:07
Element 127 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.760 TIME= 18:05:07
Element 132 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.760 TIME= 18:05:07

Element 132 has an angle between adjacent edges of 136.977286 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.770 TIME= 18:05:07
Element 133 has an angle between adjacent edges of 136.146221 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.770 TIME= 18:05:07
Element 133 has an angle between adjacent edges of 136.977286 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.770 TIME= 18:05:07
Element 138 has an angle between adjacent edges of 136.146221 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.770 TIME= 18:05:07
Element 138 has an angle between adjacent edges of 136.977286 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.770 TIME= 18:05:07
Element 139 has an angle between adjacent edges of 136.146221 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.780 TIME= 18:05:07
Element 139 has an angle between adjacent edges of 136.977286 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.780 TIME= 18:05:07
Element 144 has an angle between adjacent edges of 136.146221 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.780 TIME= 18:05:07
Element 144 has an angle between adjacent edges of 136.977286 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.780 TIME= 18:05:07
Element 145 has an angle between adjacent edges of 136.977286 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.790 TIME= 18:05:07
Element 145 has an angle between adjacent edges of 137.977129 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.790 TIME= 18:05:07
Element 150 has an angle between adjacent edges of 136.977286 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.790 TIME= 18:05:07
Element 150 has an angle between adjacent edges of 137.977129 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.800 TIME= 18:05:07
Element 151 has an angle between adjacent edges of 136.977286 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.800 TIME= 18:05:07
Element 151 has an angle between adjacent edges of 137.977129 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.800 TIME= 18:05:07
Element 156 has an angle between adjacent edges of 136.977286 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.800 TIME= 18:05:07
Element 156 has an angle between adjacent edges of 137.977129 on face 6 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.800 TIME= 18:05:07
Element 157 has an angle between adjacent edges of 136.977286 on face 1 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.810 TIME= 18:05:07
Element 157 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.810 TIME= 18:05:07
Element 162 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.810 TIME= 18:05:07
Element 162 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.810 TIME= 18:05:07
Element 163 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.820 TIME= 18:05:07
Element 163 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.820 TIME= 18:05:07
Element 168 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.820 TIME= 18:05:07
Element 168 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.820 TIME= 18:05:07
Element 169 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.830 TIME= 18:05:07
Element 169 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.830 TIME= 18:05:07
Element 174 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.830 TIME= 18:05:07
Element 174 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.830 TIME= 18:05:07
Element 175 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.840 TIME= 18:05:07
Element 175 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.840 TIME= 18:05:07
Element 180 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.840 TIME= 18:05:07
Element 180 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.840 TIME= 18:05:07
Element 181 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.840 TIME= 18:05:07
Element 181 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.850 TIME= 18:05:07

Element 186 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.850 TIME= 18:05:07
Element 186 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.850 TIME= 18:05:07
Element 187 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.860 TIME= 18:05:07
Element 187 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.860 TIME= 18:05:07
Element 192 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.860 TIME= 18:05:07
Element 192 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.860 TIME= 18:05:07
Element 193 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.870 TIME= 18:05:07
Element 193 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.880 TIME= 18:05:07
Element 198 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.880 TIME= 18:05:07
Element 198 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.880 TIME= 18:05:07
Element 199 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.880 TIME= 18:05:07
Element 199 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.890 TIME= 18:05:07
Element 204 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.890 TIME= 18:05:07
Element 204 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.890 TIME= 18:05:07
Element 205 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.900 TIME= 18:05:07
Element 205 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.900 TIME= 18:05:07
Element 210 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.900 TIME= 18:05:07
Element 210 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.900 TIME= 18:05:07
Element 211 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.900 TIME= 18:05:07
Element 211 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.910 TIME= 18:05:07
Element 216 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 461.910 TIME= 18:05:07
Element 216 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 462.980 TIME= 18:05:08
Element 1801 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 462.990 TIME= 18:05:08
Element 1802 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 462.990 TIME= 18:05:08
Element 1803 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 462.990 TIME= 18:05:08
Element 1804 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 462.990 TIME= 18:05:08
Element 1805 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 462.990 TIME= 18:05:08
Element 1806 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.010 TIME= 18:05:08
Element 1831 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.020 TIME= 18:05:08
Element 1832 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.020 TIME= 18:05:08
Element 1833 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.020 TIME= 18:05:08
Element 1834 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.020 TIME= 18:05:08
Element 1835 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 463.020 TIME= 18:05:08
Element 1836 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.030 TIME= 18:05:08
Element 1837 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.030 TIME= 18:05:08
Element 1837 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.030 TIME= 18:05:08
Element 1838 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.030 TIME= 18:05:08
Element 1838 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.030 TIME= 18:05:08
Element 1839 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.030 TIME= 18:05:08
Element 1839 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.040 TIME= 18:05:08
Element 1840 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.040 TIME= 18:05:08
Element 1840 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.040 TIME= 18:05:08
Element 1841 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.040 TIME= 18:05:08
Element 1841 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.040 TIME= 18:05:08
Element 1842 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.050 TIME= 18:05:08
Element 1842 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.070 TIME= 18:05:08
Element 1867 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 463.070 TIME= 18:05:08
Element 1867 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.080 TIME= 18:05:08
Element 1868 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.080 TIME= 18:05:08
Element 1868 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.080 TIME= 18:05:08
Element 1869 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.080 TIME= 18:05:08
Element 1869 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.090 TIME= 18:05:08
Element 1870 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.090 TIME= 18:05:08
Element 1870 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.090 TIME= 18:05:08
Element 1871 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.090 TIME= 18:05:08
Element 1871 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.090 TIME= 18:05:08
Element 1872 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.090 TIME= 18:05:08
Element 1872 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.100 TIME= 18:05:08
Element 1873 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.100 TIME= 18:05:08
Element 1873 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.100 TIME= 18:05:08
Element 1874 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 463.100 TIME= 18:05:08
Element 1874 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.100 TIME= 18:05:08
Element 1875 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.110 TIME= 18:05:08
Element 1875 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.110 TIME= 18:05:08
Element 1876 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.110 TIME= 18:05:08
Element 1876 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.110 TIME= 18:05:08
Element 1877 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.110 TIME= 18:05:08
Element 1877 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.120 TIME= 18:05:08
Element 1878 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.120 TIME= 18:05:08
Element 1878 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.130 TIME= 18:05:08
Element 1903 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.140 TIME= 18:05:08
Element 1903 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.140 TIME= 18:05:08
Element 1904 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.140 TIME= 18:05:08
Element 1904 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.140 TIME= 18:05:08
Element 1905 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 463.140 TIME= 18:05:08
Element 1905 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.150 TIME= 18:05:08
Element 1906 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.150 TIME= 18:05:08
Element 1906 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.150 TIME= 18:05:08
Element 1907 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.150 TIME= 18:05:08
Element 1907 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.160 TIME= 18:05:08
Element 1908 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.160 TIME= 18:05:08
Element 1908 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.160 TIME= 18:05:08
Element 1909 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.160 TIME= 18:05:08
Element 1909 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.160 TIME= 18:05:08
Element 1910 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.170 TIME= 18:05:08
Element 1910 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.170 TIME= 18:05:08
Element 1911 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.170 TIME= 18:05:08
Element 1911 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.170 TIME= 18:05:08
Element 1912 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 463.170 TIME= 18:05:08
Element 1912 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.180 TIME= 18:05:08
Element 1913 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.180 TIME= 18:05:08
Element 1913 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.180 TIME= 18:05:08
Element 1914 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.180 TIME= 18:05:08
Element 1914 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.200 TIME= 18:05:08
Element 1939 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.200 TIME= 18:05:08
Element 1939 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.200 TIME= 18:05:08
Element 1940 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.200 TIME= 18:05:08
Element 1940 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.210 TIME= 18:05:08
Element 1941 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.210 TIME= 18:05:08
Element 1941 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.210 TIME= 18:05:08
Element 1942 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.210 TIME= 18:05:08
Element 1942 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.210 TIME= 18:05:08
Element 1943 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 463.210 TIME= 18:05:08
Element 1943 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.220 TIME= 18:05:08
Element 1944 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 463.220 TIME= 18:05:08
Element 1944 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.690 TIME= 18:05:10
Element 4129 has an angle between adjacent edges of 138.05647 on face 3
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.700 TIME= 18:05:10
Element 4129 has an angle between adjacent edges of 137.215309 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.710 TIME= 18:05:10
Element 4130 has an angle between adjacent edges of 138.915558 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.710 TIME= 18:05:10
Element 4130 has an angle between adjacent edges of 138.05647 on face 5
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.710 TIME= 18:05:10
Element 4131 has an angle between adjacent edges of 139.792753 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.710 TIME= 18:05:10
Element 4131 has an angle between adjacent edges of 138.915558 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.710 TIME= 18:05:10
Element 4132 has an angle between adjacent edges of 140.68821 on face 3
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.720 TIME= 18:05:10
Element 4132 has an angle between adjacent edges of 139.792753 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.720 TIME= 18:05:10
Element 4133 has an angle between adjacent edges of 141.602054 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.720 TIME= 18:05:10
Element 4133 has an angle between adjacent edges of 140.68821 on face 5
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.720 TIME= 18:05:10
Element 4134 has an angle between adjacent edges of 142.534377 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.720 TIME= 18:05:10
Element 4134 has an angle between adjacent edges of 141.602054 on face

5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.730 TIME= 18:05:10
Element 4135 has an angle between adjacent edges of 144.597141 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.730 TIME= 18:05:10
Element 4135 has an angle between adjacent edges of 42.7847445 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.730 TIME= 18:05:10
Element 4136 has an angle between adjacent edges of 145.456341 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.730 TIME= 18:05:10
Element 4136 has an angle between adjacent edges of 41.9434752 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.730 TIME= 18:05:10
Element 4137 has an angle between adjacent edges of 146.333654 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.730 TIME= 18:05:10
Element 4137 has an angle between adjacent edges of 41.0842746 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.740 TIME= 18:05:10
Element 4138 has an angle between adjacent edges of 147.229233 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.740 TIME= 18:05:10
Element 4138 has an angle between adjacent edges of 40.2069619 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.740 TIME= 18:05:10
Element 4139 has an angle between adjacent edges of 148.143203 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.740 TIME= 18:05:10
Element 4139 has an angle between adjacent edges of 39.311383 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.740 TIME= 18:05:10
Element 4140 has an angle between adjacent edges of 149.075658 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.750 TIME= 18:05:10
Element 4140 has an angle between adjacent edges of 38.3974127 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.760 TIME= 18:05:10
Element 4163 has an angle between adjacent edges of 136.666419 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 464.770 TIME= 18:05:10
Element 4164 has an angle between adjacent edges of 137.997417 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

degrees.

*** WARNING *** CP= 464.770 TIME= 18:05:10
Element 4164 has an angle between adjacent edges of 136.666419 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.770 TIME= 18:05:10
Element 4165 has an angle between adjacent edges of 139.042371 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.770 TIME= 18:05:10
Element 4165 has an angle between adjacent edges of 137.884609 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.770 TIME= 18:05:10
Element 4166 has an angle between adjacent edges of 140.234172 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.770 TIME= 18:05:10
Element 4166 has an angle between adjacent edges of 139.042371 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 464.780 TIME= 18:05:10
Element 4167 has an angle between adjacent edges of 141.460458 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

Error messages discontinued after 200 messages were displayed.
More may exist. See (ingp2.err) for suppressed messages.

*** NOTE *** CP= 481.800 TIME= 18:05:29
The model data was checked and warning messages were found.
Please review output or errors file (ingp2.err) for these warning
messages.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 18:05:29 FEB 11, 1997 CP= 481.800
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM. UX UY UZ
ANALYSIS TYPESTATIC (STEADY-STATE)
NONLINEAR GEOMETRIC EFFECTSON
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 483.750 TIME= 18:05:31
Present time 0 is less than or equal to the previous time.
Time will default to 1.

*** NOTE *** CP= 483.760 TIME= 18:05:31
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. 1.0000

```

NUMBER OF SUBSTEPS. . . . . 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
INERTIA LOADS
    ACEL . . . . . 0.00000E+00 9.8100 0.00000E+00
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS
    ITEM FREQUENCY COMPONENT
    ALL ALL

```

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 398.96

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -0.36338E-09	IXX = 172.6	IXX = 46.02
YC = 0.34325	IYY = 108.4	IYY = 28.79
ZC = 0.44670	IZZ = 70.25	IZZ = 23.24
	IXY = 0.6850E-07	IXY = 0.1873E-07
	IYZ = -63.59	IYZ = -2.417
	IZX = 0.6588E-07	IZX = 0.1120E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
1	57.6774
2	33.9922
3	271.614
4	35.6748

Range of element maximum matrix coefficients in global coordinates
Maximum= 1.79897763E+10 at element 15766.
Minimum= 150000000 at element 16090.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	55.300	0.009
2	2592	SOLID45	25.200	0.010
3	5880	SOLID45	57.200	0.010
4	1512	SOLID45	14.210	0.009
5	178	CONTAC49	0.220	0.001

Time at end of element matrix formulation CP= 654.08.

FORCE CONVERGENCE VALUE = 0.8461E+05 CRITERION= 84.61

Estimated number of active DOF= 54873.

Maximum wavefront= 2098.

Time at end of matrix triangularization CP= 2530.3.

Equation solver maximum pivot= 6.445518197E+10 at node 17941 UY.

Equation solver minimum pivot= 31061384.9 at node 1526 UX.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.2241E-03

FORCE CONVERGENCE VALUE = 0.1543E+05 CRITERION= 86.63

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.1324E-04

FORCE CONVERGENCE VALUE = 91.44 CRITERION= 86.52

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.3013E-07

FORCE CONVERGENCE VALUE = 2.896 CRITERION= 86.52 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** NOTE ***
Page file used.

CP= 7032.060 TIME= 21:51:12

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	50.130	0.009
2	2592	SOLID45	21.540	0.008
3	5880	SOLID45	48.350	0.008
4	1512	SOLID45	12.530	0.008
5	178	CONTAC49	0.280	0.002

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	1.320	0.000
2	2592	SOLID45	0.800	0.000
3	5880	SOLID45	1.730	0.000
4	1512	SOLID45	0.410	0.000
5	178	CONTAC49	0.060	0.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 3
*** TIME = 1.00000 TIME INC = 1.00000

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 54873
R.M.S. WAVEFRONT SIZE = 1363.7

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
82.000 MB WRITTEN ON ELEMENT MATRIX FILE: ingp2.emat
82.297 MB WRITTEN ON ELEMENT SAVED DATA FILE: ingp2.esav
552.250 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: ingp2.tri
33.422 MB WRITTEN ON RESULTS FILE: ingp2.rst

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 7136.190

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= ingp2.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 6956
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 2858
MAXIMUM RECORD NUMBER = 1054
RECORD SIZE (I*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 65.875

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|                                     |
|               REV. 5.1  24               HP 9000/7XX               |
|                                     |
| CP TIME      (sec) =      7150.090      TIME = 21:56:52           |
| ELAPSED TIME (sec) =     14693.000      DATE  = 02/11/97           |
|                                     |
|-----|
*-----*
```

|

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CONTACT YOUR LOCAL ANSYS DISTRIBUTOR FOR DETAILS.

AFTER YOU HAVE READ AND UNDERSTAND THE PREVIOUS DISCLAIMER,
PRESS <CR> OR <ENTER> TO CONTINUE

***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = ingp3
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.180 TIME= 13:33:36
There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=ingp3 13:33:36 FEB 11, 1997 CP= 0.180

```

1 /config,nvpag,512
2 /units,si
3 /prep7
4 /title, 3-D static support and pier analysis with a seismic load factor
5 /vcon,,0
6 /nerr,,1000000
7 /com, Define Parameters
8 *afun,deg
9 /com, Tube
10 teow=.2032 ! Tube outer width
11 tets=.0143 ! Tube thickness
12 teiw=teow-2*tets ! Tube inner width
13 teht=.1016 ! Tube height
14 telh=.9584 ! Tube length
15 teang=60 ! Tube angle from vertical
16 /com, Pier
17 prht=.45 ! Pier height
18 pbwh=.75 ! Pier bottom width (half)
19 prlh=.316 ! Pier top legth along the repository
20 prang=33.7 ! Pier angle from vertical
21 /com, Pipe
22 pecr=.5 ! Pipe center from the symmetry plane
23 peor=.0841375 ! Pipe outer radius
24 pets=.0219456 ! Pipe thickness
25 gap=.023 ! Gap height below the pipe
26 hebm=.282 ! Hole bottom from global origin
27 term1=(pecr+peor)*tan(90-teang)
28 term2=tets/cos(90-teang)
29 peht=prht-hebm+term1+term2 ! Pipe height
30 /com, Support plate
31 pltts=.01905 ! Support plate thickness
32 pltwh=.83 ! Support plate width (half)
33 rec=pbwh+(prht)*tan(prang)-pltwh
34 drag1=pecr/cos(90-teang) ! Tube length used for vdrag1
35 argen1=.5*(telh-(pecr+peor)/cos(90-teang))
36 argen2=.5*(2*telh-(pecr+peor)/cos(90-teang))
37 /com, Define Element Properties
38 et,1,solid45 ! tube
39 et,2,solid45 ! pipe
40 et,3,solid45 ! pier
41 et,4,solid45 ! plate
42 et,5,contac49,,0,1,,,1 ! 3D Contact
43 r,5,1.5e8,,,1.5,15 ! Real Constant Set for Contact, kn=1.5E8
44 /com, ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%
45 mp,ex,1,203.4e9 ! A500 Grade B Cold Formed Steel
46 mp,ex,2,203.4e9 ! A500 Grade B Cold Formed Steel
47 mp,ex,3,24.8e9 ! concrete

```

```

48 mp,ex,4,203.4e9      ! A36 Carbon Steel
49 mp,nuxy,1,0.28       ! A500 Grade B Cold Formed Steel
50 mp,nuxy,2,0.28       ! A500 Grade B Cold Formed Steel
51 mp,nuxy,3,0.17       ! concrete
52 mp,nuxy,4,0.28       ! A36 Carbon Steel
53 mp,dens,1,7859.0      ! A500 Grade B Cold Formed Steel
54 mp,dens,2,7859.0      ! A500 Grade B Cold Formed Steel
55 mp,dens,3,2300.0      ! concrete
56 mp,dens,4,7859.0      ! A36 Carbon Steel
57 mp,mu,5,0.4          ! Kinetic Coefficient of Friction (Steel on Steel)
58 /com, Define keypoints in the support tube
59 local,11,0,0,prht,0,0,teang-90
60 k,1,-teow/2,0
61 k,2,0,0
62 k,3,teow/2,0
63 k,4,teow/2,teht
64 k,5,-teow/2,teht
65 k,6,-teiw/2,tets
66 k,7,0,tets
67 k,8,teiw/2,tets
68 k,9,teiw/2,teht-tets
69 k,10,-teiw/2,teht-tets
70 k,11,0,0,telh
71 k,12,0,0,drag1
72 l,2,12
73 l,12,11
74 a,2,1,6,7
75 a,1,5,10,6
76 a,10,5,4,9
77 a,9,4,3,8
78 a,7,8,3,2
79 vdrag,all,,,,,1
80 asel,s,loc,z,drag1-.0001,drag1+.0001
81 vdrag,all,,,,,2
82 asel,none
83 csys,0
84 k,,teow/2,1.5*teht+prht
85 k,, -teow/2,1.5*teht+prht
86 k,, -teow/2,prht,-1.5*teht
87 l,1,35
88 a,1,34,33,3
89 vdrag,all,,,,,68
90 vsbv,1,11,,delete,keep
91 vsbv,2,11,,delete,keep
92 vsbv,3,11,,delete,keep
93 vsbv,4,11,,delete,keep
94 vsbv,5,11,,delete,delete
95 asel,none
96 cm,tube,volu
97 vsel,none
98 /com, Define pipe volume
99 csys,0
100 local,12,1,0,hebm,pecr,-90,0,-90
101 k,,peor,0
102 k,,peor,90
103 k,,peor,180
104 k,,peor,270
105 k,,peor-pets,0
106 k,,peor-pets,90
107 k,,peor-pets,180
108 k,,peor-pets,270
109 k,,0,0,0
110 k,,0,0,gap
111 k,,0,0,peht
112 l,49,50
113 l,50,51
114 a,7,36,37,8
115 a,8,37,38,33
116 a,33,38,39,34
117 a,34,39,36,7

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118 vdrag,all,,,,,6
119 asel,s,loc,z,gap-.0001,gap+.0001
120 vdrag,all,,,,,14
121 cm,pipe,volu
122 allsel
123 vsbv,pipe,tube,,delete,keep
124 vdele,19,20
125 vdele,25,26
126 aslv
127 asel,inve
128 adel,all
129 allsel
130 lsle
131 lsel,inve
132 ldel,all
133 allsel
134 ksl
135 ksel,inve
136 kdel,all
137 allsel
138 asel,s,,,104,108,4
139 asel,a,,,100,111,11
140 csys,11
141 vdrag,all,,,,,50
142 csys,0
143 vptn,all
144 aslv
145 asel,inve
146 adel,all
147 allsel
148 lsle
149 lsel,inve
150 ldel,all
151 allsel
152 ksl
153 ksel,inve
154 kdel,all
155 allsel
156 asel,s,,,34,42,4
157 cm,cpa,area
158 csys,11
159 agen,2,all,,,0,0,-argen1
160 cm,cpa1,area
161 asel,s,,,cpa
162 agen,2,all,,,0,0,-argen2
163 /com, The following may require modification
164 /com, if optimization required
165 a,49,73,5,10
166 a,49,73,45,64
167 a,78,50,72,71
168 a,78,50,68,65
169 cm,cpa2,area
170 asel,a,,,cpa1
171 asel,u,,,cpa
172 cm,allcp,area
173 vset,s,,,7,9
174 vset,a,,,35,38
175 vset,a,,,27,28
176 vset,a,,,1
177 cm,vols,volu
178 vcta,allcp,vols
179 /com, Combine two lines
180 nummrg,kp
181 lcomb,138,139,0
182 lcomb,144,145,0
183 /com, Define pier
184 asel,none
185 csys,0
186 k,,0,0,0
187 k,,0,hebm

```

```

188 k,,0,hebm+gap
189 k,,0,prht-pltts
190 k,,0,0,pecr
191 k,,0,hebm,pecr
192 k,,0,hebm+gap,pecr
193 k,,0,prht-pltts,pecr
194 k,,0,prht,pecr
195 k,,0,0,pbwh
196 k,,0,hebm,pbwh+hebm*tan(prang)
197 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)
198 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)
199 k,,0,prht,pbwh+(prht)*tan(prang)
200 k,,0,0,pbwh-rec
201 k,,0,hebm,pbwh+hebm*tan(prang)-rec
202 k,,0,hebm+gap,pbwh+(hebm+gap)*tan(prang)-rec
203 k,,0,prht-pltts,pbwh+(prht-pltts)*tan(prang)-rec
204 k,,0,prht,pbwh+(prht)*tan(prang)-rec
205 k,,prth/2,0,0
206 k,,prth/2,0,0
207 l,62,98
208 l,62,99
209 nummrg,kp
210 asel,none
211 a,62,83,84,63
212 a,63,84,85,81
213 a,81,85,86,82
214 a,82,86,87,2
215 a,83,93,94,84
216 a,84,94,95,85
217 a,85,95,96,86
218 a,86,96,97,87
219 a,93,88,89,94
220 a,94,89,90,95
221 a,95,90,91,96
222 a,96,91,92,97
223 cm,pdrg1,area
224 vdrag,all,,,,,20
225 asel,s,,,pdrg1
226 vdrag,all,,,,,37
227 /com, Intersection of the volumes between
228 /com, pier and pipe
229 /com, This section may require modification
230 /com, if optimization required
231 allsel
232 vptn,32,35,36
233 vptn,31,55,56
234 vptn,22,51,52
235 vptn,23,8,9
236 vptn,13,7
237 vptn,14,28
238 vptn,11,50
239 vptn,5,54
240 vdel,22
241 vdel,31,35,4
242 vdel,61
243 vdel,32,62,30
244 vdel,51,55,4
245 vdel,7,9
246 vdel,5
247 vdel,11,14,3
248 vdel,28,50,22
249 /com, Define areas in the pier to cut volumes
250 a,97,128,121,93
251 a,97,108,101,93
252 a,128,2,62,121
253 a,108,2,62,101
254 vcta,208,27,13,66,67
255 vcta,31,53,81,70,71
256 vcta,225,49,80,74,75
257 vcta,343,1,23,78,79

```

```

258 nummrg,kp
259 /com, Name the volumes
260 vset,s,,,2,4
261 vset,a,,,6,10,4
262 vset,a,,,12
263 vset,a,,,15,21
264 vset,a,,,24,26
265 vset,a,,,29,30
266 vset,a,,,33,34
267 vset,a,,,39,46
268 cm,tube,volu
269 vset,s,,,36
270 vset,a,,,52,56,4
271 vset,a,,,63,65
272 vset,a,,,68,69
273 vset,a,,,72,73
274 vset,a,,,76,77
275 cm,pipe,volu
276 vset,s,,,5
277 vset,a,,,7,9
278 vset,a,,,11
279 vset,a,,,13,14
280 vset,a,,,27
281 vset,a,,,31,32
282 vset,a,,,35
283 vset,a,,,37,38
284 vset,a,,,47,50
285 vset,a,,,53,55,2
286 vset,a,,,57,62
287 vset,a,,,66,67
288 vset,a,,,74,75
289 vset,a,,,80,82
290 cm,pier,volu
291 vset,s,,,22,28,6
292 vset,a,,,51,54,3
293 vset,a,,,70,71
294 vset,a,,,83,84
295 cm,plate,volu
296 esize,,6
297 /com, Elements for the tube
298 type,1 ! SOLID45
299 mat,1 ! Carbon Steel
300 vset,s,,,tube
301 vmesh,all
302 /com, Elements for the pipe
303 type,2 ! SOLID45
304 mat,2 ! Carbon Steel
305 vset,s,,,pipe
306 vmesh,all
307 /com, Elements for the pier
308 type,3 ! SOLID45
309 mat,3 ! Concrete
310 vset,s,,,pier
311 vmesh,all
312 /com, Elements for the plate
313 type,4 ! SOLID45
314 mat,4 ! Carbon Steel
315 vset,s,,,plate
316 vmesh,all
317 /com, Contact Elements Generation
318 nummrg,node
319 nummrg,kp
320 type,5
321 real,5
322 mat,5
323 csys,0
324 nsel,s,,,18151,18156
325 nsel,a,,,5426
326 nsel,a,,,18397,18401
327 nsel,a,,,18361,18366,5

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328 nsel,a,,,18439,18441,2
329 nsel,a,,,18428
330 nsel,a,,,18434,18435
331 nsel,a,,,18335
332 nsel,a,,,18561
333 nsel,a,,,17971
334 nsel,a,,,18021
335 nsel,a,,,17940
336 nsel,a,,,18169,18170
337 nsel,a,,,18161,18163,2
338 nsel,a,,,18174,18176,2
339 cm,surfa,node
340 allsel
341 esel,s,type,,1
342 nsle
343 nsel,r,loc,z,-.001,.001
344 nsel,r,loc,x,-prlh/2-.001,prlh/2+.001
345 nsel,r,loc,y,prht-.001,prht+.001
346 cm,surfb,node
347 allsel
348 gcgen,surfb,surfa
349 allsel
350 modmsh,detach
351 esel,s,type,,2
352 nsle
353 esln
354 nsle
355 esel,r,type,,3
356 edele,all
357 allsel
358 save
359 fini
360 /solu
361 antype,static
362 nlgeom,on
363 /com, Define constraints
364 nsel,s,loc,z,-.001,.001
365 d,all,uz,0
366 nsel,s,loc,y,-.001,.001
367 d,all,uy,0
368 nsel,s,loc,x,-.001,.001
369 nsel,r,loc,y,-.001,.001
370 d,all,ux,0
371 nsel,s,,,12547
372 nsel,a,,,12553,12558
373 nsel,a,,,12589,12630
374 nsel,a,,,12841,12882
375 nsel,a,,,13093,13134
376 nsel,a,,,13345,13386
377 nsel,a,,,14484,14489
378 nsel,a,,,14520,14555
379 nsel,a,,,14736,14771
380 nsel,a,,,14952,14987
381 nsel,a,,,15168,15203
382 cs,15,0,12553,12558,12601
383 nrotat,all
384 d,all,uz
385 csys,0
386 nsel,s,,,344
387 nsel,a,,,1340,1344,4
388 nsel,a,,,1304
389 /com, Vertical force divided over four nodes
390 f,all,fy,-70227.34
391 allsel
392 acel,,16.28
393 outres,all,1
394 solve
395 finish
396 /exit,
397 /eof

```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REPlot /REPlot

PARAMETER PI = 3.141593

 ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,

ABBREVIATION= RAS /show,,0,

ABBREVIATION= INP /input,,inp,

ABBREVIATION= ESC /exit,nosav,

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= PR1 /psf,pres,norm,1,

ABBREVIATION= PR0 /psf,pres,norm,0,

ABBREVIATION= U1 /pbc,u,1,

ABBREVIATION= U0 /pbc,u,0,

ABBREVIATION= X3D /show,3d,

ABBREVIATION= X11 /show,x11,
ABBREVIATION= X11C /show,x11c,
ABBREVIATION= ON /menu,on,
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 color
x11c for X-term color contour

type: on

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

SI UNITS SPECIFIED FOR INTERNAL

LENGTH (L) = METER(M)
MASS (M) = KILOGRAM(KG)
TIME (t) = SECOND(SEC)
TEMPERATURE (T) = KELVIN(K)
TOFFSET = 0.0 KELVIN
CHARGE (Q) = COULOMB
CURRENT (i) = AMPERE (COULOMBS/SEC)
FORCE (f) = NEWTON(N) (KG-M/SEC²)
PRESSURE = PASCAL (NEWTON/M**2)
ENERGY (W) = JOULE (N-M)
POWER (P) = WATT (N-M/SEC)
CAPACITANCE (C) = FARAD
INDUCTANCE (L) = HENRY
MAGNETIC FLUX = WEBER
RESISTANCE (R) = OHM
ELECTRIC POTENTIAL = VOLT

INPUT UNITS ARE ALSO SET TO SI

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 13:33:36 FEB 11, 1997 CP= 0.320
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=
3-D static support and pier analysis with a seismic load factor

VIEW CONE ANGLE FOR WINDOW 1 0.00

NUMBER OF DISPLAYED ERRORS ALLOWED PER COMMAND= 200
NUMBER OF ERRORS ALLOWED PER COMMAND BEFORE ANSYS ABORT= *****
Define Parameters

ANGULAR FUNCTION UNITS SET TO DEGREES
Tube

PARAMETER TEOW = 0.2032000

PARAMETER TETS = 0.1430000E-01
 PARAMETER TEIW = 0.1746000
 PARAMETER TEHT = 0.1016000
 PARAMETER TELH = 0.9584000
 PARAMETER TEANG = 60.00000
 Pier
 PARAMETER PRHT = 0.4500000
 PARAMETER PBWH = 0.7500000
 PARAMETER PRLH = 0.3160000
 PARAMETER PRANG = 33.70000
 Pipe
 PARAMETER PECR = 0.5000000
 PARAMETER PEOR = 0.8413750E-01
 PARAMETER PETS = 0.2194560E-01
 PARAMETER GAP = 0.2300000E-01
 PARAMETER HEBM = 0.2820000
 PARAMETER TERM1 = 0.3372519
 PARAMETER TERM2 = 0.1651222E-01
 PARAMETER PEHT = 0.5217642
 Support plate
 PARAMETER PLTTS = 0.1905000E-01
 PARAMETER PLTWH = 0.8300000
 PARAMETER REC = 0.2201127
 PARAMETER DRAG1 = 0.5773503
 PARAMETER ARGEN1 = 0.2391017
 PARAMETER ARGEN2 = 0.6211481
 Define Element Properties

ELEMENT TYPE 1 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 3 IS SOLID45 3-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
 THREE-DIMENSIONAL MODEL

ELEMENT TYPE 4 IS SOLID45 3-D STRUCTURAL SOLID

KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY UZ
THREE-DIMENSIONAL MODEL

ELEMENT TYPE 5 IS CONTAC49 3D GENERAL CONTACT ELEMENT
KEYOPT(1-12)= 0 0 1 0 0 0 0 0 0 0 0 0
INOPR = 1

CURRENT NODAL DOF SET IS UX UY UZ
THREE-DIMENSIONAL MODEL

REAL CONSTANT SET 5 ITEMS 1 TO 6
0.15000E+09 0.00000E+00 0.00000E+00 1.5000 15.000 0.00000E+00
ratio of static to kinetic coeff. of friction fact=1.5, Area Tol.=15%

MATERIAL 1 EX = 0.2034000E+12

MATERIAL 2 EX = 0.2034000E+12

MATERIAL 3 EX = 0.2480000E+11

MATERIAL 4 EX = 0.2034000E+12

MATERIAL 1 NUXY = 0.2800000

MATERIAL 2 NUXY = 0.2800000

MATERIAL 3 NUXY = 0.1700000

MATERIAL 4 NUXY = 0.2800000

MATERIAL 1 DENS = 7859.000

MATERIAL 2 DENS = 7859.000

MATERIAL 3 DENS = 2300.000

MATERIAL 4 DENS = 7859.000

MATERIAL 5 MU = 0.4000000

Define keypoints in the support tube

COORDINATE SYSTEM 11 DEFINITION. TYPE= 0 (CARTESIAN)
XC,YC,ZC= 0.00000E+00 0.45000 0.00000E+00
ANGLES= 0.00 -30.00 0.00 PARAMETERS= 1.000 1.000
ORIENTATION= 1.00 0.00 0.00 0.00 0.87 -0.50 0.00 0.50 0.87

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT 1 X,Y,Z= -0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11
-0.101600 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 2 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 11
0.000000E+00 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 3 X,Y,Z= 0.101600 0.000000E+00 0.000000E+00 IN CSYS= 11
0.101600 0.450000 0.000000E+00 IN CSYS= 0

KEYPOINT 4 X,Y,Z= 0.101600 0.101600 0.000000E+00 IN CSYS= 11
0.101600 0.537988 -0.508000E-01 IN CSYS= 0

KEYPOINT 5 X,Y,Z= -0.101600 0.101600 0.000000E+00 IN CSYS= 11
-0.101600 0.537988 -0.508000E-01 IN CSYS= 0

KEYPOINT 6 X,Y,Z= -0.873000E-01 0.143000E-01 0.000000E+00 IN CSYS= 11
-0.873000E-01 0.462384 -0.715000E-02 IN CSYS= 0

KEYPOINT 7 X,Y,Z= 0.000000E+00 0.143000E-01 0.000000E+00 IN CSYS= 11
0.000000E+00 0.462384 -0.715000E-02 IN CSYS= 0

KEYPOINT 8 X,Y,Z= 0.873000E-01 0.143000E-01 0.000000E+00 IN CSYS= 11
0.873000E-01 0.462384 -0.715000E-02 IN CSYS= 0

KEYPOINT 9 X,Y,Z= 0.873000E-01 0.873000E-01 0.000000E+00 IN CSYS= 11
0.873000E-01 0.525604 -0.436500E-01 IN CSYS= 0

KEYPOINT 10 X,Y,Z= -0.873000E-01 0.873000E-01 0.000000E+00 IN CSYS= 11
-0.873000E-01 0.525604 -0.436500E-01 IN CSYS= 0

KEYPOINT 11 X,Y,Z= 0.000000E+00 0.000000E+00 0.958400 IN CSYS= 11
0.000000E+00 0.929200 0.829999 IN CSYS= 0

KEYPOINT 12 X,Y,Z= 0.000000E+00 0.000000E+00 0.577350 IN CSYS= 11
0.000000E+00 0.738675 0.500000 IN CSYS= 0

LINE CONNECTS KEYPOINTS 2 12
LINE NO.= 1 KP1= 2 TAN1= 0.0000 -0.5000 -0.8660
KP2= 12 TAN2= 0.0000 0.5000 0.8660

LINE CONNECTS KEYPOINTS 12 11
LINE NO.= 2 KP1= 12 TAN1= 0.0000 -0.5000 -0.8660
KP2= 11 TAN2= 0.0000 0.5000 0.8660

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 2 1 6 7
AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 1 5 10 6
AREA NUMBER = 2

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 10 5 4 9
AREA NUMBER = 3

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 9 4 3 8
AREA NUMBER = 4

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 7 8 3 2
AREA NUMBER = 5

DRAG ALL SELECTED AREAS
ALONG LINES
1,

*** WARNING *** CP= 0.430 TIME= 13:33:36
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.430 TIME= 13:33:36
Area 2 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.430 TIME= 13:33:36
Area 3 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.440 TIME= 13:33:36
Area 4 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.440 TIME= 13:33:36
Area 5 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.57725 AND 0.57745
KABS= 0. TOLERANCE= 0.000000E+00

5 AREAS (OF 25 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
2,

*** WARNING *** CP= 0.610 TIME= 13:33:37
Area 10 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.610 TIME= 13:33:37
Area 14 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.610 TIME= 13:33:37
Area 18 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.610 TIME= 13:33:37
Area 22 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 0.610 TIME= 13:33:37
Area 25 is not meshed. Volume will be generated without elements.

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 45 STEP 1

0 AREAS (OF 45 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 33

KEYPOINT 0 X,Y,Z= -0.101600 0.602400 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 34

KEYPOINT 0 X,Y,Z= -0.101600 0.450000 -0.152400 IN CSYS= 0

KEYPOINT NUMBER = 35

LINE CONNECTS KEYPOINTS 1 35
LINE NO.= 68 KP1= 1 TAN1= 0.0000 0.0000 1.0000
KP2= 35 TAN2= 0.0000 0.0000 -1.0000

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 1 34 33 3

AREA NUMBER = 46

DRAG ALL SELECTED AREAS
ALONG LINES
68,

*** WARNING *** CP= 0.790 TIME= 13:33:37
Area 46 is not meshed. Volume will be generated without elements.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 1
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 12

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 2
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 1

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 3
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 2

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 4
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 OUTPUT VOLUMES = 3

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5
 VOLUMES OPERATED ON WILL BE DELETED
 VOLUME NUMBERS TO BE SUBTRACTED = 11
 VOLUMES SUBTRACTED WILL BE DELETED
 OUTPUT VOLUMES = 4

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 60 STEP 1

0 AREAS (OF 50 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

NONE SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 12 STEP 1

0 VOLUMES (OF 10 DEFINED) SELECTED BY VSEL COMMAND.
 Define pipe volume

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

COORDINATE SYSTEM 12 DEFINITION. TYPE= 1 (CYLINDRICAL)
 XC,YC,ZC= 0.00000E+00 0.28200 0.50000
 ANGLES= -90.00 0.00 -90.00 PARAMETERS= 1.000 1.000
 ORIENTATION= 0.00 0.00 1.00 1.00 0.00 0.00 1.00 0.00

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

KEYPOINT 0 X,Y,Z= 0.841375E-01 0.000000E+00 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 7

0.315465E-33 0.282000 0.584138 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.841375E-01 90.0000 0.000000E+00 IN CSYS= 12

KEYPOINT NUMBER = 8

0.841375E-01 0.282000 0.500000 IN CSYS= 0

KEYPOINT 0 X,Y,Z= 0.841375E-01 180.000 0.000000E+00 IN CSYS= 12


```

KEYPOINT NUMBER =      33
                        0.146848E-10  0.282000      0.415863      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.841375E-01  270.000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      34
                        -0.841375E-01  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  0.000000E+00  0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      36
                        0.233182E-33  0.282000      0.562192      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  90.0000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      37
                        0.621919E-01  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  180.000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      38
                        0.108545E-10  0.282000      0.437808      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.621919E-01  270.000      0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      39
                        -0.621919E-01  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.000000E+00  0.000000E+00  0.000000E+00  IN CSYS= 12
KEYPOINT NUMBER =      49
                        0.000000E+00  0.282000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.000000E+00  0.000000E+00  0.230000E-01  IN CSYS= 12
KEYPOINT NUMBER =      50
                        -0.140834E-17  0.305000      0.500000      IN CSYS=  0
KEYPOINT      0  X,Y,Z=  0.000000E+00  0.000000E+00  0.521764      IN CSYS= 12
KEYPOINT NUMBER =      51
                        -0.319488E-16  0.803764      0.500000      IN CSYS=  0

LINE CONNECTS KEYPOINTS      49      50
LINE NO.=      6  KP1=      49  TAN1=  0.0000  -1.0000  0.0000
                  KP2=      50  TAN2=  0.0000  1.0000  0.0000

LINE CONNECTS KEYPOINTS      50      51
LINE NO.=     14  KP1=      50  TAN1=  0.0000  -1.0000  0.0000
                  KP2=      51  TAN2=  0.0000  1.0000  0.0000

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      7      36      37      8

AREA NUMBER =      5

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      8      37      38      33

AREA NUMBER =      9

```

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 33 38 39 34

AREA NUMBER = 20

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 34 39 36 7

AREA NUMBER = 23

DRAG ALL SELECTED AREAS

ALONG LINES

6,

*** WARNING *** CP= 19.440 TIME= 13:34:16
Area 5 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 19.450 TIME= 13:34:16
Area 9 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 19.450 TIME= 13:34:16
Area 20 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 19.450 TIME= 13:34:16
Area 23 is not meshed. Volume will be generated without elements.

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 0.22900E-01 AND 0.23100E-01
KABS= 0. TOLERANCE= 0.000000E+00

4 AREAS (OF 70 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS

ALONG LINES

14,

*** WARNING *** CP= 19.910 TIME= 13:34:17
Area 50 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 19.910 TIME= 13:34:17
Area 63 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 19.920 TIME= 13:34:17
Area 67 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 19.920 TIME= 13:34:17
Area 70 is not meshed. Volume will be generated without elements.

DEFINITION OF COMPONENT = PIPE ENTITY=VOLU

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 18 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 134 STEP 1

134 LINES (OF 134 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 67 STEP 1

67 KEYPOINTS (OF 67 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SUBTRACT VOLUMES

VOLUME NUMBERS TO BE OPERATED ON = 5 11 13 14 15

VOLUME NUMBERS TO BE OPERATED ON = 16 17 18

VOLUMES OPERATED ON WILL BE DELETED

VOLUME NUMBERS TO BE SUBTRACTED = 1 2 3 4 6

VOLUME NUMBERS TO BE SUBTRACTED = 7 8 9 10 12

*** WARNING *** CP= 74.340 TIME= 13:36:06
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 5 11 13 14 19 20 21 22 23 24

OUTPUT VOLUMES = 25 26

DELETE SELECTED VOLUMES FROM 19 TO 20 BY 1

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 25 TO 26 BY 1

DELETED 2 VOLUMES

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

86 AREAS (OF 110 DEFINED) SELECTED FROM
18 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 124 STEP 1

24 AREAS (OF 110 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 24 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

177 LINES (OF 177 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=

IN RANGE 1 TO 92 STEP 1
 90 KEYPOINTS (OF 90 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 0 TO 0 STEP 1
 0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
 IN RANGE 0 TO 0 STEP 1
 0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT LINES ASSOCIATED WITH SELECTED AREAS

129 LINES (OF 177 DEFINED) SELECTED FROM
 86 SELECTED AREAS BY LSLA COMMAND.

INVERT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 190 STEP 1
 48 LINES (OF 177 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM 1 TO 190 BY 1

DELETED 48 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 26 STEP 1
 18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 124 STEP 1
 86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 190 STEP 1
 129 LINES (OF 129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 92 STEP 1
 90 KEYPOINTS (OF 90 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 0 TO 0 STEP 1
 0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
 IN RANGE 0 TO 0 STEP 1
 0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT ALL KEYPOINTS ON ANY LINE IN LINE SET.

61 KEYPOINTS (OF 90 DEFINED) SELECTED FROM
 129 SELECTED LINES BY KSLL COMMAND.

INVERT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 92 STEP 1
 29 KEYPOINTS (OF 90 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 26 STEP 1

18 VOLUMES (OF 18 DEFINED) SELECTED BY VSEL COMMAND.

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

86 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

129 LINES (OF 129 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

61 KEYPOINTS (OF 61 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 104 TO 108 STEP 4

2 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ALSO SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 100 TO 111 STEP 11

4 AREAS (OF 86 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

DRAW ALL SELECTED AREAS
ALONG LINES
50,

*** WARNING *** CP= 75.410 TIME= 13:36:08
Area 100 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 75.410 TIME= 13:36:08
Area 104 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 75.410 TIME= 13:36:08
Area 108 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 75.410 TIME= 13:36:08
Area 111 is not meshed. Volume will be generated without elements.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

PARTITION VOLUMES

INPUT VOLUMES =	1	2	3	4	5	6	7	8	9	10
INPUT VOLUMES =	11	12	13	14	15	16	17	18	21	22
INPUT VOLUMES =	23	24								
INPUT VOLUMES WILL BE DELETED										
OUTPUT VOLUMES =	1	5	7	8	9	11	13	14	19	20

OUTPUT VOLUMES = 22 23 25 26 27 28 29 30 31 32
OUTPUT VOLUMES = 33 34 35 36 37 38

SELECT ALL AREAS HAVING ANY VOLUMES IN SELECTED VOLUME SET.

109 AREAS (OF 109 DEFINED) SELECTED FROM
26 SELECTED VOLUMES BY ASLV COMMAND.

INVERT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

0 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DELETE ALL SELECTED AREAS.

DELETED 0 AREAS

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT LINES ASSOCIATED WITH SELECTED AREAS

147 LINES (OF 147 DEFINED) SELECTED FROM
109 SELECTED AREAS BY LSLA COMMAND.

INVERT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

0 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

DELETE SELECTED LINES FROM 1 TO 190 BY 1

DELETED 0 LINES

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT ALL KEYPOINTS ON ANY LINE IN LINE SET.

64 KEYPOINTS (OF 64 DEFINED) SELECTED FROM
147 SELECTED LINES BY KSLL COMMAND.

INVERT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

0 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

DELETE ALL SELECTED KEYPOINTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 38 STEP 1

26 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 148 STEP 1

109 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 190 STEP 1

147 LINES (OF 147 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 92 STEP 1

64 KEYPOINTS (OF 64 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=AREA COMPONENT=

IN RANGE 34 TO 42 STEP 4

3 AREAS (OF 109 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = CPA ENTITY=AREA

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

GENERATE 2 TOTAL SETS OF AREAS

SET IS ALL SELECTED AREAS

DX,DY,DZ= 0.000E+00 0.000E+00 -0.239 CSYS= 11

DEFINITION OF COMPONENT = CPA1 ENTITY=AREA

3 AREAS (OF 112 DEFINED) SELECTED BY ASEL COMMAND.

GENERATE 2 TOTAL SETS OF AREAS

SET IS ALL SELECTED AREAS

DX,DY,DZ= 0.000E+00 0.000E+00 -0.621 CSYS= 11

The following may require modification
if optimization required

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 49 73 5 10

*** WARNING *** CP= 198.260 TIME= 13:39:44

Lines 116, 82, 9, and 83 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 12

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 49 73 45 64

*** WARNING *** CP= 198.300 TIME= 13:39:44

Lines 116, 84, 18, and 85 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 13

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 78 50 72 71

*** WARNING *** CP= 198.320 TIME= 13:39:44

Lines 119, 95, 49, and 97 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 16

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 78 50 68 65

*** WARNING *** CP= 198.350 TIME= 13:39:44

Lines 119, 154, 32, and 165 do not lie on a common
coordinate value in the currently active coordinate system
(CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 17

DEFINITION OF COMPONENT = CPA2 ENTITY=AREA

13 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

10 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

DEFINITION OF COMPONENT = ALLCP ENTITY=AREA

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1
3 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 35 TO 38 STEP 1
7 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 27 TO 28 STEP 1
9 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 1 STEP 1
10 VOLUMES (OF 26 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = VOLS ENTITY=VOLU

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS =	2	3	4	6	7	10	12	13	16	17
INPUT VOLUMES TO BE CUT =	1	7	8	9	27	28	35	36	37	38
INPUT VOLUMES TO BE CUT WILL BE DELETED										
THE RESULT OF CUTTING VOLUMES	1 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	2									
THE 2ND HALF:										
OUTPUT VOLUMES =	3									
THE RESULT OF CUTTING VOLUMES	7 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	4									
THE 2ND HALF:										
OUTPUT VOLUMES =	6									
THE RESULT OF CUTTING VOLUMES	8 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	10									
THE 2ND HALF:										
OUTPUT VOLUMES =	12									
THE RESULT OF CUTTING VOLUMES	9 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	15									
THE 2ND HALF:										
OUTPUT VOLUMES =	16									
THE RESULT OF CUTTING VOLUMES	27 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	17									
THE 2ND HALF:										
OUTPUT VOLUMES =	18									
THE RESULT OF CUTTING VOLUMES	28 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	21									
THE 2ND HALF:										
OUTPUT VOLUMES =	24									
THE RESULT OF CUTTING VOLUMES	35 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	39									
THE 2ND HALF:										
OUTPUT VOLUMES =	40									
THE RESULT OF CUTTING VOLUMES	36 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	41									
THE 2ND HALF:										
OUTPUT VOLUMES =	42									
THE RESULT OF CUTTING VOLUMES	37 :									
THE 1ST HALF:										
OUTPUT VOLUMES =	43									
THE 2ND HALF:										

OUTPUT VOLUMES = 44
 THE RESULT OF CUTTING VOLUMES 38 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 45
 THE 2ND HALF:
 OUTPUT VOLUMES = 46

*** WARNING *** CP= 226.350 TIME= 13:40:35
 Assembly TUBE is deleted.

*** WARNING *** CP= 226.430 TIME= 13:40:35
 Assembly VOLS is deleted.
 Combine two lines

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

COMBINE LINES 138 AND 139
 LINE NO.= 138 KP1= 74 TAN1= 1.0000 0.0000 0.0000
 KP2= 79 TAN2= 0.0000 -0.5000 -0.8660

COMBINE LINES 144 AND 145
 LINE NO.= 144 KP1= 73 TAN1= -1.0000 0.0000 0.0000
 KP2= 76 TAN2= 0.0000 -0.5000 -0.8660

Define pier

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 175 STEP 1

0 AREAS (OF 147 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 62

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.282000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 63

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.305000 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 81

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430950 0.000000E+00 IN CSYS= 0

KEYPOINT NUMBER = 82

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 83

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.282000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 84

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.305000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 85

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.430950 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 86

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.450000 0.500000 IN CSYS= 0

KEYPOINT NUMBER = 87

KEYPOINT 0 X,Y,Z= 0.000000E+00 0.000000E+00 0.750000 IN CSYS= 0

```

KEYPOINT NUMBER =      88
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.282000      0.938071      IN CSYS=  0
KEYPOINT NUMBER =      89
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.305000      0.953410      IN CSYS=  0
KEYPOINT NUMBER =      90
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.430950      1.03741      IN CSYS=  0
KEYPOINT NUMBER =      91
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.450000      1.05011      IN CSYS=  0
KEYPOINT NUMBER =      92
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.000000E+00  0.529887      IN CSYS=  0
KEYPOINT NUMBER =      93
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.282000      0.717958      IN CSYS=  0
KEYPOINT NUMBER =      94
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.305000      0.733297      IN CSYS=  0
KEYPOINT NUMBER =      95
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.430950      0.817295      IN CSYS=  0
KEYPOINT NUMBER =      96
KEYPOINT      0  X,Y,Z= 0.000000E+00  0.450000      0.830000      IN CSYS=  0
KEYPOINT NUMBER =      97
KEYPOINT      0  X,Y,Z= -0.158000      0.000000E+00  0.000000E+00  IN CSYS=  0
KEYPOINT NUMBER =      98
KEYPOINT      0  X,Y,Z=  0.158000      0.000000E+00  0.000000E+00  IN CSYS=  0
KEYPOINT NUMBER =      99
LINE CONNECTS KEYPOINTS      62      98
LINE NO.=    20  KP1=      62  TAN1=    1.0000    0.0000    0.0000
                KP2=      98  TAN2=   -1.0000    0.0000    0.0000
LINE CONNECTS KEYPOINTS      62      99
LINE NO.=    37  KP1=      62  TAN1=   -1.0000    0.0000    0.0000
                KP2=      99  TAN2=    1.0000    0.0000    0.0000
MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF  0.10000E-03
NONE SELECT  FOR ITEM=AREA COMPONENT=
IN RANGE      1 TO      175 STEP      1
      0 AREAS (OF      147  DEFINED) SELECTED BY ASEL  COMMAND.
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      62      83      84      63
      AREA NUMBER =      1
DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST =      63      84      85      81
      AREA NUMBER =      8

```

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 81 85 86 82

AREA NUMBER = 11

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 82 86 87 2

AREA NUMBER = 15

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 83 93 94 84

AREA NUMBER = 27

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 84 94 95 85

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 85 95 96 86

AREA NUMBER = 32

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 86 96 97 87

AREA NUMBER = 33

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 93 88 89 94

AREA NUMBER = 35

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 94 89 90 95

AREA NUMBER = 36

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 95 90 91 96

AREA NUMBER = 37

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 96 91 92 97

AREA NUMBER = 39

DEFINITION OF COMPONENT = PDRG1 ENTITY=AREA

DRAG ALL SELECTED AREAS

ALONG LINES

20,

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36

Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.260 TIME= 13:40:36
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.270 TIME= 13:40:36
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.270 TIME= 13:40:36
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.270 TIME= 13:40:36
Area 39 is not meshed. Volume will be generated without elements.

12 AREAS (OF 202 DEFINED) SELECTED BY ASEL COMMAND.

DRAG ALL SELECTED AREAS
ALONG LINES
37,

*** WARNING *** CP= 227.990 TIME= 13:40:37
Area 1 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.990 TIME= 13:40:37
Area 8 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.990 TIME= 13:40:37
Area 11 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 227.990 TIME= 13:40:37
Area 15 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.000 TIME= 13:40:37
Area 27 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.000 TIME= 13:40:37
Area 31 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.000 TIME= 13:40:37
Area 32 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.000 TIME= 13:40:37
Area 33 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.000 TIME= 13:40:37
Area 35 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.000 TIME= 13:40:37
Area 36 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.000 TIME= 13:40:37
Area 37 is not meshed. Volume will be generated without elements.

*** WARNING *** CP= 228.010 TIME= 13:40:37
Area 39 is not meshed. Volume will be generated without elements.

Intersection of the volumes between
pier and pipe
This section may require modification
if optimization required.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 60 STEP 1

60 VOLUMES (OF 60 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 245 STEP 1

245 AREAS (OF 245 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 324 STEP 1

324 LINES (OF 324 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 139 STEP 1

139 KEYPOINTS (OF 139 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 ELEMENTS (OF 0 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 0 TO 0 STEP 1

0 NODES (OF 0 DEFINED) SELECTED BY NSEL COMMAND.

PARTITION VOLUMES

INPUT VOLUMES = 32 35 36
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 240.780 TIME= 13:40:51
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 61 62 63 64 65 66 67

PARTITION VOLUMES

INPUT VOLUMES = 31 55 56
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 252.850 TIME= 13:41:11
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 32 35 36 68 69 70 71

PARTITION VOLUMES

INPUT VOLUMES = 22 51 52
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 263.620 TIME= 13:41:31
Entity numbers from the Boolean operation were assigned based on
geometry. If you are planning to do optimization, (or input looping),
do not rely on the entity numbers for loads, etc. To suppress this
warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 31 55 56 72 73 74 75

PARTITION VOLUMES

INPUT VOLUMES = 23 8 9
INPUT VOLUMES WILL BE DELETED

*** WARNING *** CP= 275.830 TIME= 13:41:46
Entity numbers from the Boolean operation were assigned based on geometry. If you are planning to do optimization, (or input looping), do not rely on the entity numbers for loads, etc. To suppress this warning, issue "BOPT,NUMB,OFF".

OUTPUT VOLUMES = 22 51 52 76 77 78 79

PARTITION VOLUMES

INPUT VOLUMES = 13 7
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 8 9 23

PARTITION VOLUMES

INPUT VOLUMES = 14 28
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 7 13 14

PARTITION VOLUMES

INPUT VOLUMES = 11 50
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 11 28 80

PARTITION VOLUMES

INPUT VOLUMES = 5 54
INPUT VOLUMES WILL BE DELETED
OUTPUT VOLUMES = 5 50 81

DELETE SELECTED VOLUMES FROM 22 TO 22 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 31 TO 35 BY 4

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 61 TO 61 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 32 TO 62 BY 30

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 51 TO 55 BY 4

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 7 TO 9 BY 1

DELETED 3 VOLUMES

DELETE SELECTED VOLUMES FROM 5 TO 5 BY 1

DELETED 1 VOLUMES

DELETE SELECTED VOLUMES FROM 11 TO 14 BY 3

*** WARNING *** CP= 300.900 TIME= 13:42:35
Assembly PIPE is deleted.

DELETED 2 VOLUMES

DELETE SELECTED VOLUMES FROM 28 TO 50 BY 22

DELETED 2 VOLUMES
Define areas in the pier to cut volumes

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 97 128 121 93

*** WARNING *** CP= 300.930 TIME= 13:42:36
 Lines 59, 209, 283, and 438 do not lie on a common
 coordinate value in the currently active coordinate system
 (CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 97 108 101 93

*** WARNING *** CP= 300.970 TIME= 13:42:36
 Lines 439, 440, 441, and 438 do not lie on a common
 coordinate value in the currently active coordinate system
 (CSYS). A non-planar area (Coons patch) will be fitted.

AREA NUMBER = 208

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 128 2 62 121

AREA NUMBER = 225

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 108 2 62 101

AREA NUMBER = 343

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 208
 INPUT VOLUMES TO BE CUT = 27 13 66 67
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 27 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 5
 THE 2ND HALF:
 OUTPUT VOLUMES = 7
 THE RESULT OF CUTTING VOLUMES 13 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 8
 THE 2ND HALF:
 OUTPUT VOLUMES = 9
 THE RESULT OF CUTTING VOLUMES 66 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 11
 THE 2ND HALF:
 OUTPUT VOLUMES = 14
 THE RESULT OF CUTTING VOLUMES 67 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 22
 THE 2ND HALF:
 OUTPUT VOLUMES = 28

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 31
 INPUT VOLUMES TO BE CUT = 53 81 70 71
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 53 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 13
 THE 2ND HALF:
 OUTPUT VOLUMES = 27
 THE RESULT OF CUTTING VOLUMES 81 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 31
 THE 2ND HALF:
 OUTPUT VOLUMES = 32
 THE RESULT OF CUTTING VOLUMES 70 :
 THE 1ST HALF:

OUTPUT VOLUMES = 35
 THE 2ND HALF:
 OUTPUT VOLUMES = 50
 THE RESULT OF CUTTING VOLUMES 71 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 51
 THE 2ND HALF:
 OUTPUT VOLUMES = 54

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 225
 INPUT VOLUMES TO BE CUT = 49 80 74 75
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 49 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 53
 THE 2ND HALF:
 OUTPUT VOLUMES = 55
 THE RESULT OF CUTTING VOLUMES 80 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 61
 THE 2ND HALF:
 OUTPUT VOLUMES = 62
 THE RESULT OF CUTTING VOLUMES 74 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 66
 THE 2ND HALF:
 OUTPUT VOLUMES = 67
 THE RESULT OF CUTTING VOLUMES 75 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 70
 THE 2ND HALF:
 OUTPUT VOLUMES = 71

CUT VOLUMES BY AREAS

INPUT CUTTING AREAS = 343
 INPUT VOLUMES TO BE CUT = 1 23 78 79
 INPUT VOLUMES TO BE CUT WILL BE DELETED
 THE RESULT OF CUTTING VOLUMES 1 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 49
 THE 2ND HALF:
 OUTPUT VOLUMES = 74
 THE RESULT OF CUTTING VOLUMES 23 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 75
 THE 2ND HALF:
 OUTPUT VOLUMES = 80
 THE RESULT OF CUTTING VOLUMES 78 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 81
 THE 2ND HALF:
 OUTPUT VOLUMES = 82
 THE RESULT OF CUTTING VOLUMES 79 :
 THE 1ST HALF:
 OUTPUT VOLUMES = 83
 THE 2ND HALF:
 OUTPUT VOLUMES = 84

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

KEYPOINT 98 USED FOR KEYPOINT(S) 100
 KEYPOINT 99 USED FOR KEYPOINT(S) 120
 KEYPOINT 146 USED FOR KEYPOINT(S) 154
 KEYPOINT 142 USED FOR KEYPOINT(S) 150
 KEYPOINT 143 USED FOR KEYPOINT(S) 167
 KEYPOINT 147 USED FOR KEYPOINT(S) 169
 KEYPOINT 145 USED FOR KEYPOINT(S) 171
 KEYPOINT 141 USED FOR KEYPOINT(S) 165
 KEYPOINT 144 USED FOR KEYPOINT(S) 152
 KEYPOINT 140 USED FOR KEYPOINT(S) 148

KEYPOINT	151	USED FOR KEYPOINT(S)	159
KEYPOINT	155	USED FOR KEYPOINT(S)	162
KEYPOINT	149	USED FOR KEYPOINT(S)	157
KEYPOINT	153	USED FOR KEYPOINT(S)	160
KEYPOINT	158	USED FOR KEYPOINT(S)	166
KEYPOINT	163	USED FOR KEYPOINT(S)	168
KEYPOINT	156	USED FOR KEYPOINT(S)	164
KEYPOINT	161	USED FOR KEYPOINT(S)	170
LINE	20	USED FOR LINE(S)	224
LINE	37	USED FOR LINE(S)	275
LINE	74	USED FOR LINE(S)	155
LINE	110	USED FOR LINE(S)	426
LINE	404	USED FOR LINE(S)	421
LINE	396	USED FOR LINE(S)	427
LINE	379	USED FOR LINE(S)	401
LINE	339	USED FOR LINE(S)	429
LINE	354	USED FOR LINE(S)	435
LINE	345	USED FOR LINE(S)	377
LINE	347	USED FOR LINE(S)	424
LINE	346	USED FOR LINE(S)	423
LINE	344	USED FOR LINE(S)	373
LINE	342	USED FOR LINE(S)	376
LINE	343	USED FOR LINE(S)	422
LINE	340	USED FOR LINE(S)	431
LINE	336	USED FOR LINE(S)	418
LINE	338	USED FOR LINE(S)	369
LINE	335	USED FOR LINE(S)	361
LINE	337	USED FOR LINE(S)	368
LINE	325	USED FOR LINE(S)	358
LINE	152	USED FOR LINE(S)	326
LINE	352	USED FOR LINE(S)	382
LINE	349	USED FOR LINE(S)	432
LINE	350	USED FOR LINE(S)	380
LINE	332	USED FOR LINE(S)	366
LINE	331	USED FOR LINE(S)	415
LINE	355	USED FOR LINE(S)	385
LINE	356	USED FOR LINE(S)	437
LINE	329	USED FOR LINE(S)	413
LINE	328	USED FOR LINE(S)	363
LINE	378	USED FOR LINE(S)	399
LINE	374	USED FOR LINE(S)	400
LINE	371	USED FOR LINE(S)	395
LINE	370	USED FOR LINE(S)	394
LINE	362	USED FOR LINE(S)	393
LINE	384	USED FOR LINE(S)	410
LINE	148	USED FOR LINE(S)	359
LINE	381	USED FOR LINE(S)	406
LINE	367	USED FOR LINE(S)	389
LINE	386	USED FOR LINE(S)	412
LINE	364	USED FOR LINE(S)	387
LINE	402	USED FOR LINE(S)	419
LINE	403	USED FOR LINE(S)	420
LINE	397	USED FOR LINE(S)	428
LINE	392	USED FOR LINE(S)	417
LINE	147	USED FOR LINE(S)	150
LINE	409	USED FOR LINE(S)	434
LINE	390	USED FOR LINE(S)	416
LINE	407	USED FOR LINE(S)	433
LINE	213	USED FOR LINE(S)	293
LINE	411	USED FOR LINE(S)	436
AREA	286	USED FOR AREA(S)	304
AREA	61	USED FOR AREA(S)	106
AREA	65	USED FOR AREA(S)	107
AREA	268	USED FOR AREA(S)	335
AREA	306	USED FOR AREA(S)	321
AREA	260	USED FOR AREA(S)	284
AREA	312	USED FOR AREA(S)	334
AREA	253	USED FOR AREA(S)	319
AREA	261	USED FOR AREA(S)	323
AREA	256	USED FOR AREA(S)	330

AREA 255 USED FOR AREA(S) 279
 AREA 185 USED FOR AREA(S) 252
 AREA 267 USED FOR AREA(S) 291
 AREA 265 USED FOR AREA(S) 288
 AREA 264 USED FOR AREA(S) 331
 AREA 272 USED FOR AREA(S) 339
 AREA 271 USED FOR AREA(S) 295
 AREA 103 USED FOR AREA(S) 248
 AREA 249 USED FOR AREA(S) 276
 AREA 280 USED FOR AREA(S) 300
 AREA 292 USED FOR AREA(S) 313
 AREA 188 USED FOR AREA(S) 298
 AREA 289 USED FOR AREA(S) 309
 AREA 296 USED FOR AREA(S) 317
 AREA 96 USED FOR AREA(S) 277
 AREA 301 USED FOR AREA(S) 327
 AREA 217 USED FOR AREA(S) 231
 AREA 310 USED FOR AREA(S) 332
 AREA 97 USED FOR AREA(S) 212
 AREA 316 USED FOR AREA(S) 338

Name the volumes

SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 2 TO 4 STEP 1
 3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 6 TO 10 STEP 4
 5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 12 TO 12 STEP 1
 6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 15 TO 21 STEP 1
 13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 24 TO 26 STEP 1
 16 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 29 TO 30 STEP 1
 18 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 33 TO 34 STEP 1
 20 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 39 TO 46 STEP 1
 28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = TUBE ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 36 TO 36 STEP 1
 1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=

IN RANGE 52 TO 56 STEP 4
3 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 63 TO 65 STEP 1
6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 68 TO 69 STEP 1
8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 72 TO 73 STEP 1
10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 76 TO 77 STEP 1
12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
DEFINITION OF COMPONENT = PIPE ENTITY=VOLU
SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 5 TO 5 STEP 1
1 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 7 TO 9 STEP 1
4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 11 TO 11 STEP 1
5 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 13 TO 14 STEP 1
7 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 27 TO 27 STEP 1
8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 31 TO 32 STEP 1
10 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 35 TO 35 STEP 1
11 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 37 TO 38 STEP 1
13 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.
ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 47 TO 50 STEP 1
17 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 53 TO 55 STEP 2
19 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 57 TO 62 STEP 1
25 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 66 TO 67 STEP 1
27 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 74 TO 75 STEP 1
29 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 80 TO 82 STEP 1
32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PIER ENTITY=VOLU

SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 22 TO 28 STEP 6
2 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 51 TO 54 STEP 3
4 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 70 TO 71 STEP 1
6 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALSO SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 83 TO 84 STEP 1
8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

DEFINITION OF COMPONENT = PLATE ENTITY=VOLU

DEFAULT ELEMENT DIVISIONS PER LINE = 6
Elements for the tube

ELEMENT TYPE SET TO 1

MATERIAL NUMBER SET TO 1

28 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 351.280 TIME= 13:44:34
Volume 2 area 58 has a corner angle of 41 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 351.790 TIME= 13:44:35
Meshing of volume 2 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 2 WITH EXCESSIVE DISTORTION ***
73 78 79 84 85 90 91 96

97	102	103	108	109	114	115	120
121	126	127	132	133	138	139	144
145	150	151	156	157	162	163	168
169	174	175	180	181	186	187	192
193	198	199	204	205	210	211	216

*** WARNING *** CP= 355.930 TIME= 13:44:46
Volume 17 area 116 has a corner angle of 41 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 356.430 TIME= 13:44:48
Meshing of volume 17 produced 48 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 17 WITH EXCESSIVE DISTORTION ***

1801	1802	1803	1804	1805	1806	1831	1832
1833	1834	1835	1836	1837	1838	1839	1840
1841	1842	1867	1868	1869	1870	1871	1872
1873	1874	1875	1876	1877	1878	1903	1904
1905	1906	1907	1908	1909	1910	1911	1912
1913	1914	1939	1940	1941	1942	1943	1944

*** WARNING *** CP= 361.980 TIME= 13:45:06
Volume 39 area 161 has a corner angle of 35 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.020 TIME= 13:45:06
Volume 39 area 160 has a corner angle of 31 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.390 TIME= 13:45:08
Meshing of volume 39 produced 126 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 39 WITH EXCESSIVE DISTORTION ***

4129	4130	4131	4132	4133	4134	4135	4136
4137	4138	4139	4140	4163	4164	4165	4166
4167	4168	4169	4170	4171	4172	4173	4174
4175	4176	4194	4196	4197	4198	4199	4200
4201	4202	4203	4204	4205	4206	4207	4208
4209	4210	4211	4212	4223	4224	4227	4228
4229	4230	4231	4232	4233	4234	4235	4236
4237	4238	4239	4240	4241	4242	4243	4244
4245	4246	4247	4248	4252	4253	4254	4256
4257	4258	4259	4260	4261	4262	4263	4264
4265	4266	4267	4268	4269	4270	4271	4272
4273	4274	4275	4276	4277	4278	4279	4280
4281	4282	4283	4284	4287	4288	4289	4290
4293	4294	4295	4296	4299	4300	4301	4302
4305	4306	4307	4308	4310	4311	4312	4313
4314	4316	4317	4318	4319	4320		

*** WARNING *** CP= 362.490 TIME= 13:45:09
Volume 40 area 163 has a corner angle of 31 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.530 TIME= 13:45:09
Volume 40 area 162 has a corner angle of 145 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 362.960 TIME= 13:45:10
Meshing of volume 40 produced 102 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 40 WITH EXCESSIVE DISTORTION ***

4321	4322	4323	4324	4325	4326	4327	4328
4329	4330	4331	4332	4333	4334	4335	4336
4337	4338	4339	4340	4341	4342	4343	4344
4345	4346	4347	4348	4349	4350	4351	4352
4353	4354	4355	4356	4357	4358	4359	4360

4361	4362	4363	4364	4365	4366	4367	4368
4369	4370	4371	4372	4373	4374	4375	4376
4377	4378	4379	4380	4381	4382	4383	4384
4385	4386	4387	4388	4389	4390	4391	4392
4417	4418	4419	4420	4421	4422	4423	4424
4425	4426	4427	4428	4434	4440	4446	4452
4458	4464	4470	4476	4482	4488	4494	4500
4506	4512	4518	4524	4530	4536		

*** WARNING *** CP= 363.010 TIME= 13:45:10
Volume 41 area 164 has a corner angle of 35 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.100 TIME= 13:45:10
Volume 41 area 165 has a corner angle of 149 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.490 TIME= 13:45:11
Meshing of volume 41 produced 102 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 41 WITH EXCESSIVE DISTORTION ***

4537	4538	4539	4540	4541	4542	4543	4544
4545	4546	4547	4548	4549	4550	4551	4552
4553	4554	4555	4556	4557	4558	4559	4560
4561	4562	4563	4564	4565	4566	4567	4568
4569	4570	4571	4572	4573	4574	4575	4576
4577	4578	4579	4580	4581	4582	4583	4584
4585	4586	4587	4588	4589	4590	4591	4592
4593	4594	4595	4596	4597	4598	4599	4600
4601	4602	4603	4604	4605	4606	4607	4608
4613	4614	4619	4620	4625	4626	4631	4632
4637	4638	4643	4644	4675	4676	4677	4678
4679	4680	4711	4712	4713	4714	4715	4716
4747	4748	4749	4750	4751	4752		

*** WARNING *** CP= 363.550 TIME= 13:45:11
Volume 42 area 167 has a corner angle of 35 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 363.610 TIME= 13:45:11
Volume 42 area 166 has a corner angle of 31 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.060 TIME= 13:45:12
Meshing of volume 42 produced 126 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 42 WITH EXCESSIVE DISTORTION ***

4765	4771	4772	4777	4778	4783	4784	4796
4801	4802	4807	4808	4813	4814	4815	4819
4820	4821	4826	4832	4837	4838	4839	4843
4844	4845	4849	4850	4851	4855	4856	4857
4858	4862	4863	4868	4869	4870	4873	4874
4875	4876	4879	4880	4881	4882	4885	4886
4887	4888	4889	4891	4892	4893	4894	4895
4898	4899	4900	4901	4902	4903	4904	4905
4906	4907	4908	4909	4910	4911	4912	4913
4914	4915	4916	4917	4918	4919	4920	4921
4922	4923	4924	4925	4926	4927	4928	4929
4930	4931	4932	4934	4935	4936	4937	4938
4939	4940	4941	4942	4943	4944	4945	4946
4947	4948	4949	4950	4951	4952	4953	4954
4955	4956	4957	4958	4959	4960	4961	4962
4963	4964	4965	4966	4967	4968		

*** WARNING *** CP= 364.110 TIME= 13:45:12
Volume 43 area 169 has a corner angle of 27 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.160 TIME= 13:45:12
Volume 43 area 168 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 364.620 TIME= 13:45:14
Meshing of volume 43 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 43 WITH EXCESSIVE DISTORTION ***
4969 4970 4971 4972 4973 4974 4975 4976
4977 4978 4979 4980 5005 5006 5007 5008
5009 5010

*** WARNING *** CP= 365.770 TIME= 13:45:16
Volume 46 area 174 has a corner angle of 27 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 365.790 TIME= 13:45:16
Volume 46 area 175 has a corner angle of 24 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 366.340 TIME= 13:45:18
Meshing of volume 46 produced 18 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 46 WITH EXCESSIVE DISTORTION ***
5617 5618 5623 5624 5629 5630 5635 5636
5641 5642 5647 5648 5653 5659 5665 5671
5677 5683

NUMBER OF VOLUMES MESHED = 28
MAXIMUM NODE NUMBER = 7014
MAXIMUM ELEMENT NUMBER = 5832
Elements for the pipe

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

12 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

NUMBER OF VOLUMES MESHED = 12
MAXIMUM NODE NUMBER = 10038
MAXIMUM ELEMENT NUMBER = 8424
Elements for the pier

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

32 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 375.660 TIME= 13:45:37
Volume 5 area 345 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 375.710 TIME= 13:45:37
Volume 5 area 344 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 376.010 TIME= 13:45:38
Meshing of volume 5 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 5 WITH EXCESSIVE DISTORTION ***
8428 8429 8431 8432 8440 8441 8461 8462

8463	8470	8471	8472	8473	8474	8500	8503
8506	8507	8508	8509	8510	8511	8512	8513
8514	8515	8516	8517	8518	8519	8520	8521
8522	8523	8524	8525	8526	8527	8528	8529
8530	8531	8532	8535	8544	8553	8562	8571
8574	8577	8580	8582	8583	8585	8586	

*** WARNING *** CP= 376.030 TIME= 13:45:38
Volume 7 area 347 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 376.090 TIME= 13:45:38
Volume 7 area 348 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 376.450 TIME= 13:45:39
Meshing of volume 7 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 7 WITH EXCESSIVE DISTORTION ***

8587	8588	8589	8590	8591	8596	8597	8598
8607	8616	8625	8634	8641	8642	8643	8644
8645	8646	8647	8648	8649	8650	8651	8652
8653	8654	8655	8656	8657	8658	8659	8660
8661	8662	8663	8664	8665	8666	8667	8674
8675	8697	8699	8700	8702	8703	8706	8709
8712	8734	8737	8743	8744	8746	8747	

*** WARNING *** CP= 376.490 TIME= 13:45:39
Volume 8 area 349 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 376.890 TIME= 13:45:40
Meshing of volume 8 produced 38 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 8 WITH EXCESSIVE DISTORTION ***

8751	8752	8753	8754	8755	8756	8757	8760
8761	8762	8763	8764	8765	8766	8769	8770
8771	8773	8774	8778	8779	8780	8782	8783
8788	8789	8791	8792	8797	8798	8800	8801
8859	8868	8877	8886	8895	8904		

*** WARNING *** CP= 377.010 TIME= 13:45:40
Volume 9 area 352 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 377.040 TIME= 13:45:40
Volume 9 area 351 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 377.530 TIME= 13:45:42
Meshing of volume 9 produced 43 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 9 WITH EXCESSIVE DISTORTION ***

9020	9021	9022	9023	9024	9026	9027	9028
9029	9030	9055	9056	9057	9058	9059	9060
9061	9062	9063	9064	9065	9066	9070	9071
9072	9091	9092	9093	9094	9095	9096	9097
9098	9099	9100	9101	9102	9103	9104	9105
9106	9107	9108					

*** WARNING *** CP= 377.580 TIME= 13:45:42
Volume 11 area 353 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 377.950 TIME= 13:45:42
Meshing of volume 11 produced 64 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 11 WITH EXCESSIVE DISTORTION ***

9127	9128	9129	9130	9131	9132	9133	9134
9135	9136	9137	9138	9139	9140	9141	9142
9143	9144	9145	9146	9147	9148	9149	9150
9151	9152	9153	9154	9155	9156	9157	9158
9159	9160	9161	9162	9164	9165	9166	9167
9168	9169	9170	9171	9174	9175	9176	9177
9178	9179	9180	9183	9192	9201	9235	9236
9237	9245	9246	9254	9255	9264	9273	9282

*** WARNING *** CP= 378.000 TIME= 13:45:42
Volume 13 area 177 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.040 TIME= 13:45:42
Volume 13 area 147 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.370 TIME= 13:45:43
Meshing of volume 13 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 13 WITH EXCESSIVE DISTORTION ***

9292	9293	9295	9296	9301	9304	9327	9330
9333	9336	9338	9339	9341	9342	9345	9354
9363	9372	9379	9380	9381	9388	9389	9390
9391	9392	9421	9422	9424	9425	9426	9427
9428	9429	9430	9431	9432	9433	9434	9435
9436	9437	9438	9439	9440	9441	9442	9443
9444	9445	9446	9447	9448	9449	9450	

*** WARNING *** CP= 378.430 TIME= 13:45:43
Volume 14 area 355 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.900 TIME= 13:45:44
Meshing of volume 14 produced 83 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 14 WITH EXCESSIVE DISTORTION ***

9503	9504	9509	9510	9526	9527	9528	9530
9531	9532	9533	9534	9536	9537	9538	9539
9540	9545	9546	9559	9560	9561	9562	9563
9564	9565	9566	9567	9568	9569	9570	9571
9572	9573	9574	9575	9576	9580	9581	9582
9595	9596	9597	9598	9599	9600	9601	9602
9603	9604	9605	9606	9607	9608	9609	9610
9611	9612	9616	9617	9618	9631	9632	9633
9634	9635	9636	9637	9638	9639	9640	9641
9642	9643	9644	9645	9646	9647	9648	9651
9652	9653	9654					

*** WARNING *** CP= 378.930 TIME= 13:45:44
Volume 27 area 269 has a corner angle of 11 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 378.990 TIME= 13:45:44
Volume 27 area 270 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 379.310 TIME= 13:45:45
Meshing of volume 27 produced 55 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 27 WITH EXCESSIVE DISTORTION ***

9667	9668	9669	9670	9671	9672	9673	9674
9675	9676	9677	9678	9679	9680	9681	9682
9683	9684	9685	9686	9687	9688	9689	9690
9691	9692	9693	9697	9700	9723	9725	9726

9728	9729	9732	9735	9738	9741	9750	9759
9768	9775	9776	9777	9778	9779	9784	9785
9786	9817	9818	9823	9824	9826	9827	

*** WARNING *** CP= 379.350 TIME= 13:45:45
Volume 31 area 359 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 379.510 TIME= 13:45:45
Volume 31 area 273 has a corner angle of 36 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 379.880 TIME= 13:45:46
Meshing of volume 31 produced 43 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 31 WITH EXCESSIVE DISTORTION ***

9847	9848	9849	9850	9851	9852	9853	9854
9855	9856	9857	9858	9859	9860	9861	9862
9863	9864	9883	9884	9885	9889	9890	9891
9892	9893	9894	9895	9896	9897	9898	9899
9900	9925	9926	9927	9928	9929	9931	9932
9933	9934	9935					

*** WARNING *** CP= 379.920 TIME= 13:45:46
Volume 32 area 361 has a corner angle of 34 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 380.300 TIME= 13:45:47
Meshing of volume 32 produced 38 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 32 WITH EXCESSIVE DISTORTION ***

10045	10046	10047	10048	10049	10051	10052	10054
10055	10056	10057	10058	10060	10061	10065	10066
10067	10069	10070	10074	10075	10076	10078	10079
10084	10085	10087	10088	10093	10094	10096	10097
10101	10110	10119	10128	10137	10146		

*** WARNING *** CP= 380.360 TIME= 13:45:47
Volume 35 area 363 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 380.870 TIME= 13:45:48
Meshing of volume 35 produced 83 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 35 WITH EXCESSIVE DISTORTION ***

10219	10220	10221	10222	10225	10226	10227	10228
10229	10230	10231	10232	10233	10234	10235	10236
10237	10238	10239	10240	10241	10242	10255	10256
10257	10261	10262	10263	10264	10265	10266	10267
10268	10269	10270	10271	10272	10273	10274	10275
10276	10277	10278	10291	10292	10293	10297	10298
10299	10300	10301	10302	10303	10304	10305	10306
10307	10308	10309	10310	10311	10312	10313	10314
10327	10328	10333	10334	10335	10336	10337	10339
10340	10341	10342	10343	10345	10346	10347	10363
10364	10369	10370					

*** WARNING *** CP= 383.160 TIME= 13:45:53
Volume 49 area 205 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.250 TIME= 13:45:54
Volume 49 area 203 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 383.590 TIME= 13:45:54

Meshing of volume 49 produced 90 elements with excessive distortion.

```
*** LIST OF ELEMENTS IN VOLUME 49 WITH EXCESSIVE DISTORTION ***
11287 11288 11289 11296 11297 11298 11305 11306
11307 11314 11315 11316 11323 11324 11325 11332
11333 11334 11341 11342 11343 11344 11345 11346
11347 11348 11349 11350 11351 11352 11353 11354
11355 11356 11357 11358 11359 11360 11361 11362
11363 11364 11365 11366 11367 11368 11369 11370
11371 11372 11373 11374 11375 11376 11377 11378
11379 11380 11381 11382 11383 11384 11385 11386
11387 11388 11389 11390 11391 11392 11393 11394
11397 11400 11403 11406 11409 11412 11415 11418
11421 11424 11427 11430 11433 11436 11439 11442
11445 11448
```

*** WARNING *** CP= 383.670 TIME= 13:45:54
Volume 50 area 364 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.040 TIME= 13:45:55
Meshing of volume 50 produced 64 elements with excessive distortion.

```
*** LIST OF ELEMENTS IN VOLUME 50 WITH EXCESSIVE DISTORTION ***
11451 11452 11453 11454 11455 11456 11457 11459
11460 11461 11462 11463 11464 11465 11466 11467
11468 11469 11470 11471 11472 11473 11474 11475
11476 11477 11478 11479 11480 11481 11482 11483
11484 11485 11486 11487 11488 11489 11490 11491
11492 11493 11494 11495 11496 11497 11498 11499
11500 11501 11502 11532 11541 11550 11559 11568
11577 11585 11586 11594 11595 11602 11603 11604
```

*** WARNING *** CP= 384.100 TIME= 13:45:55
Volume 53 area 220 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.140 TIME= 13:45:55
Volume 53 area 209 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.520 TIME= 13:45:56
Meshing of volume 53 produced 90 elements with excessive distortion.

```
*** LIST OF ELEMENTS IN VOLUME 53 WITH EXCESSIVE DISTORTION ***
11611 11612 11613 11620 11621 11622 11629 11630
11631 11638 11639 11640 11647 11648 11649 11656
11657 11658 11665 11666 11667 11668 11669 11670
11671 11672 11673 11674 11675 11676 11677 11678
11679 11680 11681 11682 11683 11684 11685 11686
11687 11688 11689 11690 11691 11692 11693 11694
11695 11696 11697 11698 11699 11700 11701 11702
11703 11704 11705 11706 11707 11708 11709 11710
11711 11712 11713 11714 11715 11716 11717 11718
11721 11724 11727 11730 11733 11736 11739 11742
11745 11748 11751 11754 11757 11760 11763 11766
11769 11772
```

*** WARNING *** CP= 384.540 TIME= 13:45:56
Volume 55 area 293 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.580 TIME= 13:45:56
Volume 55 area 294 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 384.980 TIME= 13:45:57

Meshing of volume 55 produced 90 elements with excessive distortion.

```
*** LIST OF ELEMENTS IN VOLUME 55 WITH EXCESSIVE DISTORTION ***
11773 11774 11775 11776 11777 11778 11779 11780
11781 11782 11783 11784 11785 11786 11787 11788
11789 11790 11791 11792 11793 11794 11795 11796
11797 11798 11799 11800 11801 11802 11803 11804
11805 11806 11807 11808 11809 11810 11811 11812
11813 11814 11815 11816 11817 11818 11819 11820
11821 11822 11823 11824 11825 11826 11829 11832
11835 11838 11841 11844 11847 11850 11853 11856
11859 11862 11865 11868 11871 11874 11877 11880
11881 11882 11883 11890 11891 11892 11899 11900
11901 11908 11909 11910 11917 11918 11919 11926
11927 11928
```

*** WARNING *** CP= 387.300 TIME= 13:46:02
Volume 61 area 369 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 387.470 TIME= 13:46:03
Volume 61 area 368 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 387.870 TIME= 13:46:04
Meshing of volume 61 produced 168 elements with excessive distortion.

```
*** LIST OF ELEMENTS IN VOLUME 61 WITH EXCESSIVE DISTORTION ***
12799 12800 12801 12802 12803 12804 12805 12806
12807 12808 12809 12810 12811 12812 12813 12814
12815 12816 12817 12818 12819 12820 12821 12822
12823 12824 12825 12826 12827 12828 12835 12836
12837 12838 12839 12840 12841 12842 12843 12844
12845 12846 12847 12848 12849 12850 12851 12852
12853 12854 12855 12856 12857 12858 12859 12860
12861 12862 12863 12864 12871 12872 12873 12874
12875 12876 12877 12878 12879 12880 12881 12882
12883 12884 12885 12886 12887 12888 12889 12890
12891 12892 12893 12894 12895 12896 12897 12898
12899 12900 12901 12902 12903 12904 12905 12906
12907 12908 12909 12910 12911 12912 12913 12914
12915 12916 12917 12918 12919 12920 12921 12922
12923 12924 12925 12926 12927 12928 12929 12930
12931 12932 12933 12934 12935 12936 12937 12938
12939 12940 12941 12942 12943 12944 12945 12946
12947 12948 12949 12950 12951 12952 12953 12954
12955 12956 12957 12958 12959 12960 12961 12962
12963 12964 12965 12966 12967 12968 12969 12970
12971 12972 12973 12974 12975 12976 12977 12978
12979 12980 12981 12982 12983 12984 12985 12986
12987 12988 12989 12990 12991 12992 12993 12994
12995 12996 12997 12998 12999 13000 13001 13002
13003 13004 13005 13006 13007 13008
```

*** WARNING *** CP= 387.910 TIME= 13:46:04
Volume 62 area 370 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 388.280 TIME= 13:46:05
Meshing of volume 62 produced 90 elements with excessive distortion.

```
*** LIST OF ELEMENTS IN VOLUME 62 WITH EXCESSIVE DISTORTION ***
13017 13020 13023 13026 13029 13032 13035 13038
13041 13044 13047 13050 13053 13056 13059 13062
13065 13068 13069 13070 13071 13078 13079 13080
13087 13088 13089 13096 13097 13098 13105 13106
13107 13114 13115 13116 13123 13124 13125 13126
13127 13128 13129 13130 13131 13132 13133 13134
13135 13136 13137 13138 13139 13140 13141 13142
13143 13144 13145 13146 13147 13148 13149 13150
13151 13152 13153 13154 13155 13156 13157 13158
13159 13160 13161 13162 13163 13164 13165 13166
```

13167	13168	13169	13170	13171	13172	13173	13174
13175	13176						

*** WARNING *** CP= 388.320 TIME= 13:46:05
Volume 66 area 372 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 388.840 TIME= 13:46:06
Meshing of volume 66 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 66 WITH EXCESSIVE DISTORTION ***

13177	13178	13179	13180	13181	13182	13183	13184
13185	13186	13187	13188	13189	13190	13191	13192
13193	13194	13195	13196	13197	13198	13199	13200
13201	13202	13203	13204	13205	13206	13213	13214
13215	13216	13217	13218	13219	13220	13221	13222
13223	13224	13225	13226	13227	13228	13229	13230
13231	13232	13233	13234	13235	13236	13237	13238
13239	13240	13241	13242	13249	13250	13251	13252
13253	13254	13255	13256	13257	13258	13259	13260
13261	13262	13263	13264	13265	13266	13267	13268
13269	13270	13271	13272	13273	13274	13275	13276
13277	13278	13285	13286	13287	13288	13289	13290
13291	13292	13293	13294	13295	13296	13297	13298
13299	13300	13301	13302	13303	13304	13305	13306
13307	13308	13309	13310	13311	13312	13313	13314
13321	13322	13323	13324	13325	13326	13327	13328
13329	13330	13331	13332	13333	13334	13335	13336
13337	13338	13339	13340	13341	13342	13343	13344
13345	13346	13347	13348	13349	13350	13369	13370
13371	13372	13373	13374	13375	13376	13377	13378
13379	13380	13381	13382	13383	13384	13385	13386

*** WARNING *** CP= 388.890 TIME= 13:46:06
Volume 67 area 373 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 389.240 TIME= 13:46:07
Meshing of volume 67 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 67 WITH EXCESSIVE DISTORTION ***

13395	13398	13401	13404	13407	13410	13413	13416
13419	13422	13425	13428	13431	13434	13437	13440
13443	13446	13447	13448	13449	13456	13457	13458
13465	13466	13467	13474	13475	13476	13483	13484
13485	13492	13493	13494	13501	13502	13503	13504
13505	13506	13507	13508	13509	13510	13511	13512
13513	13514	13515	13516	13517	13518	13519	13520
13521	13522	13523	13524	13525	13526	13527	13528
13529	13530	13531	13532	13533	13534	13535	13536
13537	13538	13539	13540	13541	13542	13543	13544
13545	13546	13547	13548	13549	13550	13551	13552
13553	13554						

*** WARNING *** CP= 389.250 TIME= 13:46:07
Volume 74 area 315 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 389.320 TIME= 13:46:07
Volume 74 area 318 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 389.650 TIME= 13:46:08
Meshing of volume 74 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 74 WITH EXCESSIVE DISTORTION ***

13555	13556	13557	13558	13559	13560	13561	13562
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13563	13564	13565	13566	13567	13568	13569	13570
13571	13572	13573	13574	13575	13576	13577	13578
13579	13580	13581	13582	13583	13584	13585	13586
13587	13588	13589	13590	13591	13592	13593	13594
13595	13596	13597	13598	13599	13600	13601	13602
13603	13604	13605	13606	13607	13608	13611	13614
13617	13620	13623	13626	13629	13632	13635	13638
13641	13644	13647	13650	13653	13656	13659	13662
13663	13664	13665	13672	13673	13674	13681	13682
13683	13690	13691	13692	13699	13700	13701	13708
13709	13710						

*** WARNING *** CP= 389.690 TIME= 13:46:08
Volume 75 area 342 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 390.090 TIME= 13:46:09
Meshing of volume 75 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 75 WITH EXCESSIVE DISTORTION ***

13717	13718	13719	13726	13727	13728	13735	13736
13737	13744	13745	13746	13753	13754	13755	13762
13763	13764	13771	13772	13773	13774	13775	13776
13777	13778	13779	13780	13781	13782	13783	13784
13785	13786	13787	13788	13789	13790	13791	13792
13793	13794	13795	13796	13797	13798	13799	13800
13801	13802	13803	13804	13805	13806	13807	13808
13809	13810	13811	13812	13813	13814	13815	13816
13817	13818	13819	13820	13821	13822	13823	13824
13827	13830	13833	13836	13839	13842	13845	13848
13851	13854	13857	13860	13863	13866	13869	13872
13875	13878						

*** WARNING *** CP= 390.200 TIME= 13:46:09
Volume 80 area 378 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 390.240 TIME= 13:46:10
Volume 80 area 379 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 390.690 TIME= 13:46:11
Meshing of volume 80 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 80 WITH EXCESSIVE DISTORTION ***

13885	13886	13887	13888	13889	13890	13891	13892
13893	13894	13895	13896	13897	13898	13899	13900
13901	13902	13921	13922	13923	13924	13925	13926
13927	13928	13929	13930	13931	13932	13933	13934
13935	13936	13937	13938	13939	13940	13941	13942
13943	13944	13945	13946	13947	13948	13949	13950
13957	13958	13959	13960	13961	13962	13963	13964
13965	13966	13967	13968	13969	13970	13971	13972
13973	13974	13975	13976	13977	13978	13979	13980
13981	13982	13983	13984	13985	13986	13993	13994
13995	13996	13997	13998	13999	14000	14001	14002
14003	14004	14005	14006	14007	14008	14009	14010
14011	14012	14013	14014	14015	14016	14017	14018
14019	14020	14021	14022	14029	14030	14031	14032
14033	14034	14035	14036	14037	14038	14039	14040
14041	14042	14043	14044	14045	14046	14047	14048
14049	14050	14051	14052	14053	14054	14055	14056
14057	14058	14065	14066	14067	14068	14069	14070
14071	14072	14073	14074	14075	14076	14077	14078
14079	14080	14081	14082	14083	14084	14085	14086
14087	14088	14089	14090	14091	14092	14093	14094

*** WARNING *** CP= 390.740 TIME= 13:46:11
Volume 81 area 380 has a corner angle of 18 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 391.120 TIME= 13:46:12
Meshing of volume 81 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 81 WITH EXCESSIVE DISTORTION ***

14095	14096	14097	14104	14105	14106	14113	14114
14115	14122	14123	14124	14131	14132	14133	14140
14141	14142	14149	14150	14151	14152	14153	14154
14155	14156	14157	14158	14159	14160	14161	14162
14163	14164	14165	14166	14167	14168	14169	14170
14171	14172	14173	14174	14175	14176	14177	14178
14179	14180	14181	14182	14183	14184	14185	14186
14187	14188	14189	14190	14191	14192	14193	14194
14195	14196	14197	14198	14199	14200	14201	14202
14205	14208	14211	14214	14217	14220	14223	14226
14229	14232	14235	14238	14241	14244	14247	14250
14253	14256						

*** WARNING *** CP= 391.210 TIME= 13:46:12
Volume 82 area 382 has a corner angle of 18 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 391.680 TIME= 13:46:13
Meshing of volume 82 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 82 WITH EXCESSIVE DISTORTION ***

14263	14264	14265	14266	14267	14268	14269	14270
14271	14272	14273	14274	14275	14276	14277	14278
14279	14280	14299	14300	14301	14302	14303	14304
14305	14306	14307	14308	14309	14310	14311	14312
14313	14314	14315	14316	14317	14318	14319	14320
14321	14322	14323	14324	14325	14326	14327	14328
14335	14336	14337	14338	14339	14340	14341	14342
14343	14344	14345	14346	14347	14348	14349	14350
14351	14352	14353	14354	14355	14356	14357	14358
14359	14360	14361	14362	14363	14364	14371	14372
14373	14374	14375	14376	14377	14378	14379	14380
14381	14382	14383	14384	14385	14386	14387	14388
14389	14390	14391	14392	14393	14394	14395	14396
14397	14398	14399	14400	14407	14408	14409	14410
14411	14412	14413	14414	14415	14416	14417	14418
14419	14420	14421	14422	14423	14424	14425	14426
14427	14428	14429	14430	14431	14432	14433	14434
14435	14436	14443	14444	14445	14446	14447	14448
14449	14450	14451	14452	14453	14454	14455	14456
14457	14458	14459	14460	14461	14462	14463	14464
14465	14466	14467	14468	14469	14470	14471	14472

NUMBER OF VOLUMES MESHED = 32
MAXIMUM NODE NUMBER = 17185
MAXIMUM ELEMENT NUMBER = 14472
Elements for the plate

ELEMENT TYPE SET TO 4

MATERIAL NUMBER SET TO 4

8 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 391.980 TIME= 13:46:14
Volume 22 area 356 has a corner angle of 26 degrees. This is not
recommended for hexahedral elements.

*** WARNING *** CP= 392.300 TIME= 13:46:15
 Meshing of volume 22 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 22 WITH EXCESSIVE DISTORTION ***

14473	14474	14475	14476	14477	14478	14479	14480
14481	14482	14483	14484	14485	14486	14487	14488
14489	14490	14491	14492	14493	14494	14495	14496
14497	14498	14499	14500	14501	14502	14503	14504
14505	14506	14507	14508	14509	14510	14511	14512
14513	14514	14515	14516	14517	14518	14519	14520
14521	14522	14523	14524	14525	14526	14529	14532
14535	14538	14541	14544	14547	14550	14553	14556
14559	14562	14565	14568	14571	14574	14577	14580
14583	14592	14601	14610	14619	14628		

*** WARNING *** CP= 392.360 TIME= 13:46:15
 Volume 28 area 358 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 392.830 TIME= 13:46:16
 Meshing of volume 28 produced 110 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 28 WITH EXCESSIVE DISTORTION ***

14635	14636	14637	14638	14641	14642	14643	14644
14647	14648	14649	14650	14651	14653	14654	14655
14656	14657	14671	14672	14673	14674	14677	14678
14679	14680	14683	14684	14685	14686	14687	14689
14690	14691	14692	14693	14707	14708	14709	14710
14713	14714	14715	14716	14719	14720	14721	14722
14723	14725	14726	14727	14728	14729	14743	14744
14745	14746	14749	14750	14751	14752	14755	14756
14757	14758	14759	14761	14762	14763	14764	14765
14779	14780	14781	14782	14785	14786	14787	14788
14791	14792	14793	14794	14795	14797	14798	14799
14800	14801	14802	14815	14816	14817	14818	14821
14822	14823	14824	14827	14828	14829	14830	14831
14833	14834	14835	14836	14837	14838		

*** WARNING *** CP= 392.980 TIME= 13:46:16
 Volume 51 area 366 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 393.390 TIME= 13:46:17
 Meshing of volume 51 produced 110 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 51 WITH EXCESSIVE DISTORTION ***

14851	14852	14853	14854	14857	14858	14859	14860
14863	14864	14865	14866	14869	14870	14871	14872
14875	14876	14877	14878	14881	14882	14883	14884
14887	14888	14889	14890	14893	14894	14895	14896
14899	14900	14901	14902	14905	14906	14907	14908
14911	14912	14913	14914	14917	14918	14919	14920
14923	14924	14925	14926	14929	14930	14931	14932
14935	14936	14937	14938	14941	14942	14943	14944
14947	14948	14949	14950	14953	14954	14955	14956
14959	14960	14961	14962	14965	14966	14967	14968
14971	14972	14973	14974	14977	14978	14979	14980
14983	14984	14985	14986	14989	14990	14991	14992
14997	14998	15003	15004	15009	15010	15015	15016
15021	15022	15027	15028	15034	15040		

*** WARNING *** CP= 393.470 TIME= 13:46:17
 Volume 54 area 367 has a corner angle of 26 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 393.820 TIME= 13:46:18
 Meshing of volume 54 produced 78 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 54 WITH EXCESSIVE DISTORTION ***

15067	15068	15069	15070	15071	15072	15073	15074
15075	15076	15077	15078	15079	15080	15081	15082
15083	15084	15085	15086	15087	15088	15089	15090
15091	15092	15093	15094	15095	15096	15097	15098
15099	15100	15101	15102	15103	15104	15105	15106
15107	15108	15109	15110	15111	15112	15113	15114
15115	15116	15117	15118	15119	15120	15123	15132
15141	15150	15159	15168	15175	15176	15177	15184
15185	15186	15193	15194	15195	15202	15203	15204
15211	15212	15213	15220	15221	15222		

*** WARNING *** CP= 393.930 TIME= 13:46:19
 Volume 70 area 375 has a corner angle of 18 degrees. This is not
 recommended for hexahedral elements.

*** WARNING *** CP= 394.350 TIME= 13:46:19
 Meshing of volume 70 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 70 WITH EXCESSIVE DISTORTION ***

15230	15231	15232	15233	15234	15236	15237	15238
15239	15240	15242	15243	15244	15245	15246	15248
15249	15250	15251	15252	15254	15255	15256	15257
15258	15260	15261	15262	15263	15264	15266	15267
15268	15269	15270	15272	15273	15274	15275	15276
15278	15279	15280	15281	15282	15284	15285	15286
15287	15288	15290	15291	15292	15293	15294	15296
15297	15298	15299	15300	15302	15303	15304	15305
15306	15308	15309	15310	15311	15312	15314	15315
15316	15317	15318	15320	15321	15322	15323	15324
15326	15327	15328	15329	15330	15332	15333	15334
15335	15336	15338	15339	15340	15341	15342	15344
15345	15346	15347	15348	15350	15351	15352	15353
15354	15356	15357	15358	15359	15360	15362	15363
15364	15365	15366	15368	15369	15370	15371	15372
15374	15375	15376	15377	15378	15380	15381	15382
15383	15384	15386	15387	15388	15389	15390	15392
15393	15394	15395	15396	15398	15399	15400	15401
15402	15404	15405	15406	15407	15408	15410	15411
15412	15416	15417	15418	15422	15423	15424	15428
15429	15430	15434	15435	15436	15440	15441	15442

*** WARNING *** CP= 394.400 TIME= 13:46:20
 Volume 71 area 376 has a corner angle of 18 degrees. This is not
 recommended for hexahedral elements.

*** WARNING *** CP= 394.770 TIME= 13:46:21
 Meshing of volume 71 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 71 WITH EXCESSIVE DISTORTION ***

15447	15450	15453	15456	15459	15462	15465	15468
15471	15474	15477	15480	15483	15486	15489	15492
15495	15498	15499	15500	15501	15508	15509	15510
15517	15518	15519	15526	15527	15528	15535	15536
15537	15544	15545	15546	15553	15554	15555	15556
15557	15558	15559	15560	15561	15562	15563	15564
15565	15566	15567	15568	15569	15570	15571	15572
15573	15574	15575	15576	15577	15578	15579	15580
15581	15582	15583	15584	15585	15586	15587	15588
15589	15590	15591	15592	15593	15594	15595	15596
15597	15598	15599	15600	15601	15602	15603	15604
15605	15606						

*** WARNING *** CP= 394.850 TIME= 13:46:21
 Volume 83 area 383 has a corner angle of 18 degrees. This is not
 recommended for hexahedral elements.

*** WARNING *** CP= 395.200 TIME= 13:46:21
Meshing of volume 83 produced 90 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 83 WITH EXCESSIVE DISTORTION ***

15607	15608	15609	15616	15617	15618	15625	15626
15627	15634	15635	15636	15643	15644	15645	15652
15653	15654	15661	15662	15663	15664	15665	15666
15667	15668	15669	15670	15671	15672	15673	15674
15675	15676	15677	15678	15679	15680	15681	15682
15683	15684	15685	15686	15687	15688	15689	15690
15691	15692	15693	15694	15695	15696	15697	15698
15699	15700	15701	15702	15703	15704	15705	15706
15707	15708	15709	15710	15711	15712	15713	15714
15717	15720	15723	15726	15729	15732	15735	15738
15741	15744	15747	15750	15753	15756	15759	15762
15765	15768						

*** WARNING *** CP= 395.320 TIME= 13:46:22
Volume 84 area 385 has a corner angle of 18 degrees. This is not recommended for hexahedral elements.

*** WARNING *** CP= 395.760 TIME= 13:46:23
Meshing of volume 84 produced 168 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 84 WITH EXCESSIVE DISTORTION ***

15771	15772	15773	15777	15778	15779	15783	15784
15785	15789	15790	15791	15795	15796	15797	15801
15802	15803	15805	15806	15807	15808	15809	15811
15812	15813	15814	15815	15817	15818	15819	15820
15821	15823	15824	15825	15826	15827	15829	15830
15831	15832	15833	15835	15836	15837	15838	15839
15841	15842	15843	15844	15845	15847	15848	15849
15850	15851	15853	15854	15855	15856	15857	15859
15860	15861	15862	15863	15865	15866	15867	15868
15869	15871	15872	15873	15874	15875	15877	15878
15879	15880	15881	15883	15884	15885	15886	15887
15889	15890	15891	15892	15893	15895	15896	15897
15898	15899	15901	15902	15903	15904	15905	15907
15908	15909	15910	15911	15913	15914	15915	15916
15917	15919	15920	15921	15922	15923	15925	15926
15927	15928	15929	15931	15932	15933	15934	15935
15937	15938	15939	15940	15941	15943	15944	15945
15946	15947	15949	15950	15951	15952	15953	15955
15956	15957	15958	15959	15961	15962	15963	15964
15965	15967	15968	15969	15970	15971	15973	15974
15975	15976	15977	15979	15980	15981	15982	15983

NUMBER OF VOLUMES MESHED = 8
MAXIMUM NODE NUMBER = 18690
MAXIMUM ELEMENT NUMBER = 15984
Contact Elements Generation

MERGE COINCIDENT NODES WITHIN TOLERANCE OF 0.10000E-03

*** NOTE *** CP= 422.210 TIME= 13:47:26
Zero nodes were merged.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF 0.10000E-03

ELEMENT TYPE SET TO 5

REAL CONSTANT NUMBER= 5

MATERIAL NUMBER SET TO 5

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

```
SELECT      FOR ITEM=NODE COMPONENT=
IN RANGE 18151 TO 18156 STEP      1

      6 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 5426 TO 5426 STEP      1

      7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18397 TO 18401 STEP      1

     12 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18361 TO 18366 STEP      5

     14 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18439 TO 18441 STEP      2

     16 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18428 TO 18428 STEP      1

     17 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18434 TO 18435 STEP      1

     19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18335 TO 18335 STEP      1

     20 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18561 TO 18561 STEP      1

     21 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 17971 TO 17971 STEP      1

     22 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18021 TO 18021 STEP      1

     23 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 17940 TO 17940 STEP      1

     24 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18169 TO 18170 STEP      1

     26 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18161 TO 18163 STEP      2

     28 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
```

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 18174 TO 18176 STEP 2

30 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFA ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 15984 STEP 1

15984 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

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

5832 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

7014 NODES (OF 18690 DEFINED) SELECTED FROM
5832 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

210 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN-0.15900 AND 0.15900
KABS= 0. TOLERANCE= 0.000000E+00

210 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 0.44900 AND 0.45100
KABS= 0. TOLERANCE= 0.000000E+00

13 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFB ENTITY=NODE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 15984 STEP 1

15984 ELEMENTS (OF 15984 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

GENERATE ELEMENTS BETWEEN CONTACT (SURFB) AND TARGET (SURFA) SURFACES.
TARGET SURFACE OF PLATE OR BEAM ELEMENTS IS TOP.
ELEMENT TYPE TO BE GENERATED = CONTAC49.

*** WARNING *** CP= 427.040 TIME= 13:47:37
Contact elements are not generated between contact nodes and target
faces which include those nodes.

NUMBER OF CONTACT ELEMENTS GENERATED = 178

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

16162 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

DESTROY ASSOCIATIVITY OF FINITE ELEMENT MODEL AND SOLID MODEL

*** WARNING *** CP= 427.360 TIME= 13:47:38
CLEAR, SELECT, and MESH boundary condition commands are not possible
after MODMSH.

NUMBER OF MESH ITEMS DISCONNECTED FROM NODES AND ELEMENTS = 756

SELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 2 TO 2 STEP 1

2592 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3192 NODES (OF 18690 DEFINED) SELECTED FROM
2592 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

3100 ELEMENTS (OF 16162 DEFINED) SELECTED FROM
3192 SELECTED NODES BY ESLN COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

3832 NODES (OF 18690 DEFINED) SELECTED FROM
3100 SELECTED ELEMENTS BY NSLE COMMAND.

RESELECT FOR ITEM=TYPE COMPONENT=
IN RANGE 3 TO 3 STEP 1

168 ELEMENTS (OF 16162 DEFINED) SELECTED BY ESEL COMMAND.

DELETE ALL SELECTED ELEMENTS.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 171 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= ingp3.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 438.210

***** ANSYS SOLUTION ROUTINE *****

PERFORM A STATIC ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS
Define constraints

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

534 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

319 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

1164 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN-0.10000E-02 AND 0.10000E-02
KABS= 0. TOLERANCE= 0.000000E+00

19 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12547 TO 12547 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12553 TO 12558 STEP 1

7 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12589 TO 12630 STEP 1

49 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 12841 TO 12882 STEP 1

91 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13093 TO 13134 STEP 1

133 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 13345 TO 13386 STEP 1


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175 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14484 TO 14489 STEP 1

181 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14520 TO 14555 STEP 1

217 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14736 TO 14771 STEP 1

253 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 14952 TO 14987 STEP 1

289 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 15168 TO 15203 STEP 1

325 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

COORDINATE SYSTEM 15 DEFINITION. TYPE= 0 (CARTESIAN)
ORIGIN NODE= 12553 XNODE= 12558 YNODE= 12601 PARAMETERS= 1.000 1.000
ORIENTATION= 1.00 0.00 0.00 0.00 0.83 0.55 0.00 -0.55 0.83
THXY,THYZ,THZX= 0.000 33.700 0.000

ACTIVE COORDINATE SYSTEM SET TO 15 (CARTESIAN)

*** WARNING *** CP= 440.720 TIME= 13:48:09
NROTAT is not a recognized SOLUTION command, abbreviation, or macro.
This command will be ignored.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 18690 BY 1
REAL= 0.000000000E+00 IMAG= 0.000000000E+00

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 344 TO 344 STEP 1

1 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1340 TO 1344 STEP 4

3 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1304 TO 1304 STEP 1

4 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.
Vertical force divided over four nodes

SPECIFIED NODAL LOAD FY FOR SELECTED NODES 1 TO 18690 BY 1
REAL= -70227.3400 IMAG= 0.000000000E+00

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=

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IN RANGE      1 TO      385 STEP      1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT    FOR ITEM=LINE COMPONENT=
IN RANGE      1 TO      458 STEP      1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT    FOR ITEM=KP   COMPONENT=
IN RANGE      1 TO      171 STEP      1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT    FOR ITEM=ELEM COMPONENT=
IN RANGE      1 TO     16162 STEP      1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT    FOR ITEM=NODE COMPONENT=
IN RANGE      1 TO     18690 STEP      1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

ACEL= 0.00000E+00 16.280 0.00000E+00

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 443.120 TIME= 13:48:16
Element 73 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.130 TIME= 13:48:16
Element 78 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.130 TIME= 13:48:16
Element 79 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.140 TIME= 13:48:16
Element 84 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.140 TIME= 13:48:16
Element 85 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.150 TIME= 13:48:16
Element 90 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.150 TIME= 13:48:16
Element 91 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.150 TIME= 13:48:16
Element 96 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.160 TIME= 13:48:16
Element 97 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.160 TIME= 13:48:16
Element 102 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

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*** WARNING *** CP= 443.160 TIME= 13:48:16
Element 103 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.170 TIME= 13:48:16
Element 108 has an angle between adjacent edges of 136.146221 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.170 TIME= 13:48:16
Element 109 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.170 TIME= 13:48:16
Element 109 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.180 TIME= 13:48:16
Element 114 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.180 TIME= 13:48:16
Element 114 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.180 TIME= 13:48:16
Element 115 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.180 TIME= 13:48:16
Element 115 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.190 TIME= 13:48:16
Element 120 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.190 TIME= 13:48:16
Element 120 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.190 TIME= 13:48:16
Element 121 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.190 TIME= 13:48:16
Element 121 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.200 TIME= 13:48:16
Element 126 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.200 TIME= 13:48:16
Element 126 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.200 TIME= 13:48:16
Element 127 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.200 TIME= 13:48:16
Element 127 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.210 TIME= 13:48:16
Element 132 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.210 TIME= 13:48:16

Element 132 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.210 TIME= 13:48:16
Element 133 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.210 TIME= 13:48:16
Element 133 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.220 TIME= 13:48:16
Element 138 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.220 TIME= 13:48:16
Element 138 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.220 TIME= 13:48:16
Element 139 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.220 TIME= 13:48:16
Element 139 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.230 TIME= 13:48:16
Element 144 has an angle between adjacent edges of 136.146221 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.230 TIME= 13:48:16
Element 144 has an angle between adjacent edges of 136.977286 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.230 TIME= 13:48:16
Element 145 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.230 TIME= 13:48:16
Element 145 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.240 TIME= 13:48:16
Element 150 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.240 TIME= 13:48:16
Element 150 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.240 TIME= 13:48:16
Element 151 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.240 TIME= 13:48:16
Element 151 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.250 TIME= 13:48:16
Element 156 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.250 TIME= 13:48:16
Element 156 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.250 TIME= 13:48:16
Element 157 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.250 TIME= 13:48:16
Element 157 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.260 TIME= 13:48:16
Element 162 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.260 TIME= 13:48:16
Element 162 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.260 TIME= 13:48:16
Element 163 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.260 TIME= 13:48:16
Element 163 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.260 TIME= 13:48:16
Element 168 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.270 TIME= 13:48:16
Element 168 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.270 TIME= 13:48:16
Element 169 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.270 TIME= 13:48:16
Element 169 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.270 TIME= 13:48:16
Element 174 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16
Element 174 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16
Element 175 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16
Element 175 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16
Element 180 has an angle between adjacent edges of 136.977286 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16
Element 180 has an angle between adjacent edges of 137.977129 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16
Element 181 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16
Element 181 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.280 TIME= 13:48:16

Element 186 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.290 TIME= 13:48:16
Element 186 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.290 TIME= 13:48:16
Element 187 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.290 TIME= 13:48:16
Element 187 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.290 TIME= 13:48:16
Element 192 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.300 TIME= 13:48:16
Element 192 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.300 TIME= 13:48:16
Element 193 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.300 TIME= 13:48:16
Element 193 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.300 TIME= 13:48:16
Element 198 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.310 TIME= 13:48:16
Element 198 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.310 TIME= 13:48:16
Element 199 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.310 TIME= 13:48:16
Element 199 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.320 TIME= 13:48:16
Element 204 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.320 TIME= 13:48:16
Element 204 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.320 TIME= 13:48:16
Element 205 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.320 TIME= 13:48:16
Element 205 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.330 TIME= 13:48:16
Element 210 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.330 TIME= 13:48:16
Element 210 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.330 TIME= 13:48:16
Element 211 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.330 TIME= 13:48:16
Element 211 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.330 TIME= 13:48:16
Element 216 has an angle between adjacent edges of 137.977129 on face 1
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 443.330 TIME= 13:48:16
Element 216 has an angle between adjacent edges of 139.106605 on face 6
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 444.450 TIME= 13:48:19
Element 1801 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.450 TIME= 13:48:19
Element 1802 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.460 TIME= 13:48:19
Element 1803 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.460 TIME= 13:48:19
Element 1804 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.460 TIME= 13:48:19
Element 1805 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.460 TIME= 13:48:19
Element 1806 has an angle between adjacent edges of 136.146221 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.480 TIME= 13:48:19
Element 1831 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.480 TIME= 13:48:19
Element 1832 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.480 TIME= 13:48:19
Element 1833 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.480 TIME= 13:48:19
Element 1834 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.480 TIME= 13:48:19
Element 1835 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 444.490 TIME= 13:48:19
Element 1836 has an angle between adjacent edges of 43.8537786 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.490 TIME= 13:48:19
Element 1837 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.490 TIME= 13:48:19
Element 1837 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.490 TIME= 13:48:19
Element 1838 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.490 TIME= 13:48:19
Element 1838 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.490 TIME= 13:48:19
Element 1839 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.500 TIME= 13:48:19
Element 1839 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.500 TIME= 13:48:19
Element 1840 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.500 TIME= 13:48:19
Element 1840 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.500 TIME= 13:48:19
Element 1841 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.500 TIME= 13:48:19
Element 1841 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.510 TIME= 13:48:19
Element 1842 has an angle between adjacent edges of 43.8537786 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.510 TIME= 13:48:19
Element 1842 has an angle between adjacent edges of 136.977286 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.520 TIME= 13:48:19
Element 1867 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 444.520 TIME= 13:48:19
Element 1867 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.520 TIME= 13:48:19
Element 1868 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.530 TIME= 13:48:19
Element 1868 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.530 TIME= 13:48:19
Element 1869 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.530 TIME= 13:48:19
Element 1869 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.530 TIME= 13:48:19
Element 1870 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.530 TIME= 13:48:19
Element 1870 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.530 TIME= 13:48:19
Element 1871 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.540 TIME= 13:48:19
Element 1871 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.540 TIME= 13:48:19
Element 1872 has an angle between adjacent edges of 136.146221 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.540 TIME= 13:48:19
Element 1872 has an angle between adjacent edges of 43.0227139 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.540 TIME= 13:48:19
Element 1873 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.540 TIME= 13:48:19
Element 1873 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.540 TIME= 13:48:19
Element 1874 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 444.550 TIME= 13:48:19
Element 1874 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.550 TIME= 13:48:19
Element 1875 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.550 TIME= 13:48:19
Element 1875 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.550 TIME= 13:48:19
Element 1876 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.550 TIME= 13:48:19
Element 1876 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.550 TIME= 13:48:19
Element 1877 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.560 TIME= 13:48:19
Element 1877 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.560 TIME= 13:48:19
Element 1878 has an angle between adjacent edges of 43.0227139 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.560 TIME= 13:48:19
Element 1878 has an angle between adjacent edges of 137.977129 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.570 TIME= 13:48:19
Element 1903 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.570 TIME= 13:48:19
Element 1903 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.580 TIME= 13:48:19
Element 1904 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.580 TIME= 13:48:19
Element 1904 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.580 TIME= 13:48:19
Element 1905 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 444.580 TIME= 13:48:19
Element 1905 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.580 TIME= 13:48:19
Element 1906 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.600 TIME= 13:48:19
Element 1906 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.600 TIME= 13:48:19
Element 1907 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.600 TIME= 13:48:19
Element 1907 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.600 TIME= 13:48:19
Element 1908 has an angle between adjacent edges of 136.977286 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.600 TIME= 13:48:19
Element 1908 has an angle between adjacent edges of 42.0228714 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.610 TIME= 13:48:19
Element 1909 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.610 TIME= 13:48:19
Element 1909 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.610 TIME= 13:48:19
Element 1910 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.610 TIME= 13:48:19
Element 1910 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.610 TIME= 13:48:19
Element 1911 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.620 TIME= 13:48:19
Element 1911 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.620 TIME= 13:48:19
Element 1912 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 444.620 TIME= 13:48:19
Element 1912 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.620 TIME= 13:48:19
Element 1913 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.620 TIME= 13:48:19
Element 1913 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.620 TIME= 13:48:19
Element 1914 has an angle between adjacent edges of 42.0228714 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.630 TIME= 13:48:19
Element 1914 has an angle between adjacent edges of 139.106605 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.650 TIME= 13:48:19
Element 1939 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.650 TIME= 13:48:19
Element 1939 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.660 TIME= 13:48:19
Element 1940 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.660 TIME= 13:48:19
Element 1940 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.660 TIME= 13:48:19
Element 1941 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.660 TIME= 13:48:19
Element 1941 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.660 TIME= 13:48:19
Element 1942 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.660 TIME= 13:48:19
Element 1942 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.670 TIME= 13:48:19
Element 1943 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 444.670 TIME= 13:48:19
Element 1943 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.670 TIME= 13:48:19
Element 1944 has an angle between adjacent edges of 137.977129 on face
1 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 444.670 TIME= 13:48:19
Element 1944 has an angle between adjacent edges of 40.8933946 on face
6 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.110 TIME= 13:48:23
Element 4129 has an angle between adjacent edges of 138.05647 on face 3
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.110 TIME= 13:48:23
Element 4129 has an angle between adjacent edges of 137.215309 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.110 TIME= 13:48:23
Element 4130 has an angle between adjacent edges of 138.915558 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.110 TIME= 13:48:23
Element 4130 has an angle between adjacent edges of 138.05647 on face 5
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.110 TIME= 13:48:23
Element 4131 has an angle between adjacent edges of 139.792753 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.110 TIME= 13:48:23
Element 4131 has an angle between adjacent edges of 138.915558 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.110 TIME= 13:48:23
Element 4132 has an angle between adjacent edges of 140.68821 on face 3
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.120 TIME= 13:48:23
Element 4132 has an angle between adjacent edges of 139.792753 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.120 TIME= 13:48:23
Element 4133 has an angle between adjacent edges of 141.602054 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.120 TIME= 13:48:23
Element 4133 has an angle between adjacent edges of 140.68821 on face 5
which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.120 TIME= 13:48:23
Element 4134 has an angle between adjacent edges of 142.534377 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.120 TIME= 13:48:23
Element 4134 has an angle between adjacent edges of 141.602054 on face

5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.130 TIME= 13:48:23
Element 4135 has an angle between adjacent edges of 144.597141 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.130 TIME= 13:48:23
Element 4135 has an angle between adjacent edges of 42.7847445 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.130 TIME= 13:48:23
Element 4136 has an angle between adjacent edges of 145.456341 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.130 TIME= 13:48:23
Element 4136 has an angle between adjacent edges of 41.9434752 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.130 TIME= 13:48:23
Element 4137 has an angle between adjacent edges of 146.333654 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.140 TIME= 13:48:23
Element 4137 has an angle between adjacent edges of 41.0842746 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.140 TIME= 13:48:23
Element 4138 has an angle between adjacent edges of 147.229233 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.140 TIME= 13:48:23
Element 4138 has an angle between adjacent edges of 40.2069619 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.140 TIME= 13:48:23
Element 4139 has an angle between adjacent edges of 148.143203 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.140 TIME= 13:48:23
Element 4139 has an angle between adjacent edges of 39.311383 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.140 TIME= 13:48:23
Element 4140 has an angle between adjacent edges of 149.075658 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.150 TIME= 13:48:23
Element 4140 has an angle between adjacent edges of 38.3974127 on face 5 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.160 TIME= 13:48:23
Element 4163 has an angle between adjacent edges of 136.666419 on face 3 which is outside the recommended range of 90 plus or minus 45 degrees.

*** WARNING *** CP= 446.160 TIME= 13:48:23
Element 4164 has an angle between adjacent edges of 137.997417 on face 3 which is outside the recommended range of 90 plus or minus 45

degrees.

*** WARNING *** CP= 446.170 TIME= 13:48:23
Element 4164 has an angle between adjacent edges of 136.666419 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.170 TIME= 13:48:23
Element 4165 has an angle between adjacent edges of 139.042371 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.170 TIME= 13:48:23
Element 4165 has an angle between adjacent edges of 137.884609 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.170 TIME= 13:48:23
Element 4166 has an angle between adjacent edges of 140.234172 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.170 TIME= 13:48:23
Element 4166 has an angle between adjacent edges of 139.042371 on face
5 which is outside the recommended range of 90 plus or minus 45
degrees.

*** WARNING *** CP= 446.180 TIME= 13:48:23
Element 4167 has an angle between adjacent edges of 141.460458 on face
3 which is outside the recommended range of 90 plus or minus 45
degrees.

Error messages discontinued after 200 messages were displayed.
More may exist. See (ingp3.err) for suppressed messages.

*** NOTE *** CP= 463.590 TIME= 13:49:01
The model data was checked and warning messages were found.
Please review output or errors file (ingp3.err) for these warning
messages.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 13:49:01 FEB 11, 1997 CP= 463.590
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM. UX UY UZ
ANALYSIS TYPESTATIC (STEADY-STATE)
NONLINEAR GEOMETRIC EFFECTSON
NEWTON-RAPHSON OPTIONPROGRAM CHOSEN

*** NOTE *** CP= 465.630 TIME= 13:49:06
Present time 0 is less than or equal to the previous time.
Time will default to 1.

*** NOTE *** CP= 465.630 TIME= 13:49:06
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.1.0000

```

NUMBER OF SUBSTEPS. . . . . 1
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
INERTIA LOADS . . . . . X Y Z
  ACEL . . . . . 0.00000E+00 16.280 0.00000E+00
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS
  ITEM FREQUENCY COMPONENT
  ALL ALL

```

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 398.96

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -0.36338E-09	IXX = 172.6	IXX = 46.02
YC = 0.34325	IYY = 108.4	IYY = 28.79
ZC = 0.44670	IZZ = 70.25	IZZ = 23.24
	IXY = 0.6850E-07	IXY = 0.1873E-07
	IYZ = -63.59	IYZ = -2.417
	IZX = 0.6588E-07	IZX = 0.1120E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
1	57.6774
2	33.9922
3	271.614
4	35.6748

Range of element maximum matrix coefficients in global coordinates
Maximum= 1.79897763E+10 at element 15766.
Minimum= 150000000 at element 16090.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	56.820	0.010
2	2592	SOLID45	25.580	0.010
3	5880	SOLID45	58.870	0.010
4	1512	SOLID45	14.170	0.009
5	178	CONTAC49	0.170	0.001

Time at end of element matrix formulation CP= 640.02.

FORCE CONVERGENCE VALUE = 0.1405E+06 CRITERION= 140.5

Estimated number of active DOF= 54873.

Maximum wavefront= 2098.

Time at end of matrix triangularization CP= 2509.54.

Equation solver maximum pivot= 6.445518197E+10 at node 17941 UY.

Equation solver minimum pivot= 31061384.9 at node 1526 UX.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.3720E-03

FORCE CONVERGENCE VALUE = 0.2624E+05 CRITERION= 143.8

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.2199E-04

FORCE CONVERGENCE VALUE = 151.4 CRITERION= 143.6

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.5247E-07

FORCE CONVERGENCE VALUE = 4.802 CRITERION= 143.6 <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** NOTE ***
Page file used.

CP= 7015.290 TIME= 17:39:23

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	48.950	0.008
2	2592	SOLID45	21.720	0.008
3	5880	SOLID45	47.870	0.008
4	1512	SOLID45	12.640	0.008
5	178	CONTAC49	0.320	0.002

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	5832	SOLID45	1.580	0.000
2	2592	SOLID45	0.770	0.000
3	5880	SOLID45	1.630	0.000
4	1512	SOLID45	0.340	0.000
5	178	CONTAC49	0.040	0.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 3
*** TIME = 1.00000 TIME INC = 1.00000

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 54873
R.M.S. WAVEFRONT SIZE = 1363.7

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096
82.000 MB WRITTEN ON ELEMENT MATRIX FILE: ingp3.emat
82.297 MB WRITTEN ON ELEMENT SAVED DATA FILE: ingp3.esav
552.250 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: ingp3.tri
34.031 MB WRITTEN ON RESULTS FILE: ingp3.rst

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 7117.770

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= ingp3.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 6956
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***

NUMBER OF R/W OPERATIONS= 2858
MAXIMUM RECORD NUMBER = 1054
RECORD SIZE (1*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 65.875

```

*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|                                     |
|               REV. 5.1  24               HP 9000/7XX               |
|                                     |
| CP TIME      (sec) =      7131.740      TIME = 17:45:09           |
| ELAPSED TIME (sec) =     15094.000      DATE  = 02/11/97           |
|                                     |
|-----|
|                                     |
|
```

|-----|

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CONTACT YOUR LOCAL ANSYS DISTRIBUTOR FOR DETAILS.

AFTER YOU HAVE READ AND UNDERSTAND THE PREVIOUS DISCLAIMER,
PRESS <CR> OR <ENTER> TO CONTINUE

***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = post2
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.190 TIME= 10:15:41
There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=post2 10:15:41 FEB 12, 1997 CP= 0.200

```
1 resume,ingp2,db
2 /filnam,ingp2
3 /post1
4 /out,eqvstrs,res
5 /com,
6 /com,
7 /com, MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE
8 /com,
9 /com,
10 allsel
11 set,1,1
12 nsort,s,eqv,0,0,1
13 prns,s,prin
14 /com,
15 /com,
16 /com, MAXIMUM EQUIVALENT STRESS IN THE TUBE
17 /com,
18 /com,
19 esel,s,type,,1
20 nsort,s,eqv,0,0,1
21 prns,s,prin
22 /com,
23 /com,
24 /com, MAXIMUM EQUIVALENT STRESS IN THE PIPE
25 /com,
26 /com,
27 allsel
28 esel,s,type,,2
29 nsle
30 esln
31 nsort,s,eqv,0,0,1
32 prns,s,prin
33 /com,
34 /com,
35 /com, MAXIMUM EQUIVALENT STRESS IN THE PLATE
36 /com,
37 /com,
38 allsel
39 esel,s,type,,4
40 nsle
41 esln
42 nsort,s,eqv,0,0,1
43 prns,s,prin
44 /out
45 fini
46 /exit
47 /eof
```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REPLOT /REPLOT

PARAMETER PI = 3.141593

 ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,
 ABBREVIATION= RAS /show,,0,
 ABBREVIATION= INP /input,,inp,
 ABBREVIATION= ESC /exit,nosav,
 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= PR1 /psf,pres,norm,1,
 ABBREVIATION= PRO /psf,pres,norm,0,
 ABBREVIATION= U1 /pbc,u,1,
 ABBREVIATION= U0 /pbc,u,0,
 ABBREVIATION= X3D /show,3d,

ABBREVIATION= X11 /show,x11,
ABBREVIATION= X11C /show,x11c,
ABBREVIATION= ON /menu,on,
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 color
x11c for X-term color contour

type: on

RESUME ANSYS DATA FROM FILE NAME=ingp2.db

*** ANSYS GLOBAL STATUS ***

TITLE = 3-D static support and pier analysis
ANALYSIS TYPE = STATIC (STEADY-STATE)
NUMBER OF ELEMENT TYPES = 5
6202 ELEMENTS CURRENTLY SELECTED. MAX ELEMENT NUMBER = 16162
7147 NODES CURRENTLY SELECTED. MAX NODE NUMBER = 18690
153 KEYPOINTS CURRENTLY SELECTED. MAX KEYPOINT NUMBER = 163
406 LINES CURRENTLY SELECTED. MAX LINE NUMBER = 458
349 AREAS CURRENTLY SELECTED. MAX AREA NUMBER = 385
80 VOLUMES CURRENTLY SELECTED. MAX VOL. NUMBER = 84
11 COMPONENTS CURRENTLY DEFINED
MAXIMUM LINEAR PROPERTY NUMBER = 5
MAXIMUM REAL CONSTANT SET NUMBER = 5
ACTIVE COORDINATE SYSTEM = 0 (CARTESIAN)
NUMBER OF SPECIFIED CONSTRAINTS = 1197
NUMBER OF NODAL LOADS = 4

INITIAL JOBNAME = post2
CURRENT JOBNAME = post2

CURRENT JOBNAME REDEFINED AS ingp2

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 10:15:53 FEB 12, 1997 CP= 5.780
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis

***** ANSYS RESULTS INTERPRETATION (POST1) *****

/OUTPUT FILE= eqvstrs.res

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 50.500

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= ingp2.db

FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 0
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 6865
MAXIMUM RECORD NUMBER = 978
RECORD SIZE (1*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 61.125

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED |
|                                     |
|-----|
|               REV. 5.1  24               HP 9000/7XX               |
|               CP TIME    (sec) =      66.290      TIME = 10:23:52   |
|               ELAPSED TIME (sec) =    492.000      DATE  = 02/12/97   |
|                                     |
|-----|
*-----*
```


| W E L C O M E T O T H E A N S Y S P R O G R A M |

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PRESS <CR> OR <ENTER> TO CONTINUE

***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = post2
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.230 TIME= 10:16:53

There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=post2 10:16:53 FEB 12, 1997 CP= 0.230

```
1 resume,ingp3,db
2 /filnam,ingp3
3 /post1
4 /out,eqvstrs,res
5 /com,
6 /com,
7 /com, MAXIMUM EQUIVALENT STRESS IN THE WASTE PACKAGE SUPPORT STRUCTURE
8 /com,
9 /com,
10 allsel
11 set,1,1
12 nsort,s,eqv,0,0,1
13 prns,s,prin
14 /com,
15 /com,
16 /com, MAXIMUM EQUIVALENT STRESS IN THE TUBE
17 /com,
18 /com,
19 esel,s,type,,1
20 nsort,s,eqv,0,0,1
21 prns,s,prin
22 /com,
23 /com,
24 /com, MAXIMUM EQUIVALENT STRESS IN THE PIPE
25 /com,
26 /com,
27 allsel
28 esel,s,type,,2
29 nsle
30 esln
31 nsort,s,eqv,0,0,1
32 prns,s,prin
33 /com,
34 /com,
35 /com, MAXIMUM EQUIVALENT STRESS IN THE PLATE
36 /com,
37 /com,
38 allsel
39 esel,s,type,,4
40 nsle
41 esln
42 nsort,s,eqv,0,0,1
43 prns,s,prin
44 /out
45 fini
46 /exit
47 /eof
```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REPLOT /REPLOT

PARAMETER PI = 3.141593

 ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,
 ABBREVIATION= RAS /show,,0,
 ABBREVIATION= INP /input,,inp,
 ABBREVIATION= ESC /exit,nosav,
 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= PR1 /psf,pres,norm,1,
 ABBREVIATION= PR0 /psf,pres,norm,0,
 ABBREVIATION= U1 /pbc,u,1,
 ABBREVIATION= U0 /pbc,u,0,
 ABBREVIATION= X3D /show,3d,

ABBREVIATION= X11 /show,x11,

ABBREVIATION= X11C /show,x11c,

ABBREVIATION= ON /menu,on,
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 color
x11c for X-term color contour

type: on

RESUME ANSYS DATA FROM FILE NAME=ingp3.db

*** ANSYS GLOBAL STATUS ***

TITLE = 3-D static support and pier analysis with a seismic load factor

ANALYSIS TYPE = STATIC (STEADY-STATE)

NUMBER OF ELEMENT TYPES = 5

15994 ELEMENTS CURRENTLY SELECTED. MAX ELEMENT NUMBER = 16162

18690 NODES CURRENTLY SELECTED. MAX NODE NUMBER = 18690

153 KEYPOINTS CURRENTLY SELECTED. MAX KEYPOINT NUMBER = 163

406 LINES CURRENTLY SELECTED. MAX LINE NUMBER = 458

349 AREAS CURRENTLY SELECTED. MAX AREA NUMBER = 385

80 VOLUMES CURRENTLY SELECTED. MAX VOL. NUMBER = 84

11 COMPONENTS CURRENTLY DEFINED

MAXIMUM LINEAR PROPERTY NUMBER = 5

MAXIMUM REAL CONSTANT SET NUMBER = 5

ACTIVE COORDINATE SYSTEM = 0 (CARTESIAN).

NUMBER OF SPECIFIED CONSTRAINTS = 1197

NUMBER OF NODAL LOADS = 4

INITIAL JOBNAME = post2

CURRENT JOBNAME = post2

CURRENT JOBNAME REDEFINED AS ingp3

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****

38303 VERSION=HP 9000/7XX 10:17:18 FEB 12, 1997 CP= 5.520

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** ANSYS RESULTS INTERPRETATION (POST1) *****

/OUTPUT FILE= eqvstrs.res

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 49.610

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= ingp3.db

FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 0
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 6875
MAXIMUM RECORD NUMBER = 978
RECORD SIZE (I*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 61.125

```
*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|               REV. 5.1  24               HP 9000/7XX               |
|               CP TIME    (sec) =    66.070    TIME = 10:25:29      |
|               ELAPSED TIME (sec) =   517.000    DATE  = 02/12/97      |
|-----|
*-----*
```

MAXIMUM DISPLACEMENT IN THE WASTE PACKAGE SUPPORT AND PIER STRUCTURE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 84 STEP 1

80 VOLUMES (OF 80 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 385 STEP 1

349 AREAS (OF 349 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 458 STEP 1

406 LINES (OF 406 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 163 STEP 1

153 KEYPOINTS (OF 153 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 16162 STEP 1

15994 ELEMENTS (OF 15994 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 18690 STEP 1

18690 NODES (OF 18690 DEFINED) SELECTED BY NSEL COMMAND.

USE LOAD STEP 1 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 8.290 TIME= 18:28:55
Page file used.

SET COMMAND GOT LOAD STEP= 1 SUBSTEP= 1 CUMULATIVE ITERATION= 3
TIME/FREQUENCY= 1.0000

TITLE= 3-D static support and pier analysis with a seismic load factor

SORT ON ITEM=U COMPONENT=SUM ORDER= 0 KABS= 0 NMAX= 1

SORT COMPLETED FOR 1 VALUES.

PRINT U NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 18:30:07 FEB 11, 1997 CP= 24.120
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** POST1 NODAL DEGREE OF FREEDOM LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

THE FOLLOWING DEGREE OF FREEDOM RESULTS ARE IN GLOBAL COORDINATES

NODE	UX	UY	UZ	USUM
------	----	----	----	------

1342 0.25834E-09-0.37048E-03 0.16000E-03 0.40356E-03

MAXIMUM ABSOLUTE VALUES

NODE	1342	1342	1342	1342
VALUE	0.25834E-09-0.37048E-03	0.16000E-03	0.40356E-03	

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

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***** ANSYS COMMAND LINE ARGUMENTS *****

INITIAL JOBNAME = post3
MEMORY REQUESTED (MB) = 96.0
BATCH MODE REQUESTED = LIST
START-UP FILE MODE = READ

*** NOTE *** CP= 0.180 TIME= 18:28:29

There are no parameters and no abbreviations defined.

38303 VERSION=HP 9000/7XX REVISION= 5.1 24
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844
CURRENT JOBNAME=post3 18:28:29 FEB 11, 1997 CP= 0.180

```
1 resume,ingp3,db
2 /filnam,ingp3
3 /post1
4 /out,displ,res
5 /com,
6 /com,
7 /com, MAXIMUM DISPLACEMENT IN THE WASTE PACKAGE SUPPORT AND PIER STRUCTURE
8 /com,
9 /com,
10 allsel
11 set,1,1
12 nsort,u,sum,0,0,1
13 prns,u,comp
14 /out
15 fini
16 /exit
17 /eof
```

RUN SETUP PROCEDURE FROM FILE= /ansys51/docu/start.ans

/INPUT FILE= /ansys51/docu/start.ans LINE= 0

ABBREVIATION= REplot /REplot

PARAMETER PI = 3.141593

ANSYS STARTUP FILE start.ans

ABBREVIATION= VEC /show,,1,
ABBREVIATION= RAS /show,,0,
ABBREVIATION= INP /input,,inp,
ABBREVIATION= ESC /exit,nosav,
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= PR1 /psf,pres,norm,1,
 ABBREVIATION= PRO /psf,pres,norm,0,
 ABBREVIATION= U1 /pbc,u,1,
 ABBREVIATION= U0 /pbc,u,0,
 ABBREVIATION= X3D /show,3d,
 ABBREVIATION= X11 /show,x11,
 ABBREVIATION= X11C /show,x11c,
 ABBREVIATION= ON /menu,on,
 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 color
 x11c for X-term color contour

type: on

RESUME ANSYS DATA FROM FILE NAME=ingp3.db

*** ANSYS GLOBAL STATUS ***

TITLE = 3-D static support and pier analysis with a seismic load factor
 ANALYSIS TYPE = STATIC (STEADY-STATE)
 NUMBER OF ELEMENT TYPES = 5
 6202 ELEMENTS CURRENTLY SELECTED. MAX ELEMENT NUMBER = 16162

7147 NODES CURRENTLY SELECTED. MAX NODE NUMBER = 18690
153 KEYPOINTS CURRENTLY SELECTED. MAX KEYPOINT NUMBER = 163
406 LINES CURRENTLY SELECTED. MAX LINE NUMBER = 458
349 AREAS CURRENTLY SELECTED. MAX AREA NUMBER = 385
80 VOLUMES CURRENTLY SELECTED. MAX VOL. NUMBER = 84
11 COMPONENTS CURRENTLY DEFINED
MAXIMUM LINEAR PROPERTY NUMBER = 5
MAXIMUM REAL CONSTANT SET NUMBER = 5
ACTIVE COORDINATE SYSTEM = 0 (CARTESIAN)
NUMBER OF SPECIFIED CONSTRAINTS = 1197
NUMBER OF NODAL LOADS = 4

INITIAL JOBNAME = post3
CURRENT JOBNAME = post3

CURRENT JOBNAME REDEFINED AS ingp3

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.1 24 *****
38303 VERSION=HP 9000/7XX 18:28:46 FEB 11, 1997 CP= 5.850
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

3-D static support and pier analysis with a seismic load factor

***** ANSYS RESULTS INTERPRETATION (POST1) *****

/OUTPUT FILE= displ.res

EXIT THE ANSYS POST1 DATABASE PROCESSOR

***** ROUTINE COMPLETED ***** CP = 24.200

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= ingp3.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 0
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 3554
MAXIMUM RECORD NUMBER = 943
RECORD SIZE (1*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 58.938

```
*****
|                                     |
|               ANSYS RUN COMPLETED               |
|                                     |
|-----|
|               REV. 5.1  24               |               HP 9000/7XX
|               CP TIME   (sec) = 39.640    |               TIME = 18:31:36
|               ELAPSED TIME (sec) = 188.000 |               DATE  = 02/11/97
|               |
|-----|
|                                     |
|*****|
```