MASTER

LOFT TECHNICAL REPORT LTR 136-7

RE & C INTERNAL REPORT RE-A-78-137

SEPTEMBER 12, 1978

LOFT CIS ANALYSIS 2"-IA-299-AB
INSIDE CONTAINMENT PENETRATION S-5B

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DEPARTMENT OF ENERGY

IDAHO OPERATIONS OFFICE UNDER CONTRACT EY-76-C-07-1570

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LOFT TECHNICAL REPORT
LOFT PROGRAM

FORM EG&G-229
(Rev. 12-76)

TITLE LOFT CIS ANALYSIS 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B		REPORT NO. LTR 136-7
		RE-A-78-137
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PERFORMING ORGANIZATION Applied Mechanics <i>6-28-78</i>	DATE September 12, 1978	
LOFT APPROVAL <i>7/17/78</i> <i>PSB Mgr.</i>		

PSB
PSB Mgr.

P&CSB Mgr.

PSB Mgr.

RSB Mgr.

ABSTRACT

A stress analysis was performed on the 2"-IA-299-AB pipe system inside containment penetration S-5B. Deadweight, thermal expansion, and seismic loads were considered. The results indicate that this piping will meet ASME Section III, Class 2 requirements.

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I. SCOPE

This document constitutes the stress report required by Subarticle NCA-3350 of the ASME Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components", 1977 through Winter 1977 Addenda*. The piping system analyzed, to be installed as part of the "Loss-of-Fluid-Test" (LOFT) Reactor, was the 2"-IA-299-AB inside containment penetration S-5B.

*Hereafter referred to as the Code^[1].

II. INTRODUCTION

The piping system was analyzed according to the procedures specified in Subsection NC-3600 of the Code and found acceptable. The governing conditions, engineering assumptions, and analytical techniques used in completing the analysis are described in the following pages. All loading conditions and design data used in performing the analysis were obtained from the cognizant engineer^[2]. The design specification is to be issued at a later date.

III. PIPING SYSTEM DESCRIPTION

The Instrument Air (IA) System provides air for the actuation of remote controlled valves, for power tool useage and for routine clean up procedures.

The purposes of this analysis were to (1) determine the loads imposed on the containment penetration and (2) assure containment isolation integrity. As a result, not all of the main pipe system or branch piping may have been analyzed due to its negligible effect on the two primary purposes of this analysis.

1. STRUCTURAL DESCRIPTION

Figure 1 is a computer plot of the Class 2 piping system analyzed in this report. The data points and elements are identified on the plot and a listing of the geometric data used in performing the system's structural analysis appears in Appendix A.

2. MATERIAL AND GEOMETRIC DATA

The piping has the following design parameters:

O.D. (inches)	2.375	1.900	1.315	1.050
Thickness (inches)	0.154	0.143	0.133	0.113
Weight (lbs/inch)	0.304	0.226	0.140	0.094
Material	SA-106 GR. B	SA-106 GR. B	SA-106 GR. B	SA-106 GR. B
E_{cold} (10^6 psi)	27.9	27.9	27.9	27.9
S (365°F) (psi)	15000	15000	15000	15000
S_y (psi)	35000	35000	35000	35000
α (10^{-6} in./in.°F)	6.13	6.13	6.13	6.13

**LOFT C15 ANALYSIS - 2, -1A-200-ND INSIDE
NUPIPE MATHEMATICAL MODEL**

LEGEND

- / - NODE LOCATION
- - HANGPOINT LOCATION
- ⚡ - SPRING HANGER
- ⌊ - SLIDER
- ⌋ - RIGID SUPPORT
- ⌋ - ANCHOR
- ⌋ - ELASTO JOINT
- ⌋ - FLEXIBLE ANCHOR
- ⌋ - VALVE

ROTATION ABOUT Y-AXIS = 45 DEG.
X-Z PLANE TILT = 45 DEG.

SEE REFERENCE 3.

Figure 1. Piping System Computer Model Plot

The expansion coefficients and thermal conductivities of SA-106, GR-B steel are defined in Tables I-4.0 and I-5.0 of the Code.

IV. DESIGN AND SERVICE CONDITIONS

Listed in the following sections are the various design and service conditions used in analyzing the piping. This information was obtained from the Cognizant Engineer.

1. DESIGN CONDITIONS

Class 2 - All Piping

Design Pressure: 150 psi*

Design Temperature: 365°F

2. LEVEL A SERVICE CONDITIONS

Level A service conditions, dealing mainly with the stress range due to thermal expansion, are based on the operating temperature(s) given below:

Class 2 - All Piping

Operating Pressure: 190 psi

Operating Temperature: 100°F

3. LEVEL B SERVICE CONDITIONS

Two Level B service conditions result in significant dynamic loads for this piping system. One condition is the Operating Basis Earthquake (OBE) and the other is the Loss-of-Coolant Experiment (LOCE).

* 190 psi was used as design pressure in analysis.

4. LEVEL C SERVICE CONDITIONS

The only significant Level C service condition which affects the piping system is the Safe Shutdown Earthquake (SSE).

5. LEVEL D SERVICE CONDITIONS

The SSE plus Loss-of-Coolant Accident (LOCA) response envelopes all other Level D service responses for LOFT and will be used as the basis for Level D service conditions analysis.

6. TEST CONDITIONS

Cold Hydrostatic Test - Design Pressure x 1.25

Cold Leakage Test - Design Pressure Only

Hot Leakage Test - Design Pressure and Level A Service Temperature(s).

V. PIPING SYSTEM STRUCTURAL ANALYSIS

The piping system was analyzed for the various structural loads described in Section IV using the computer code NUPIPE-II, developed by Nuclear Services Corporation. This computer program is described in Appendix B. All limiting assumptions made in performing the analysis are listed in the following subsections.

1. WEIGHT ANALYSIS

An analysis for normal weight loading was performed for the system; the piping uniform weights used are listed in Section III.2 of this report. The weights and C.G.'s of the valves and operators are given in Table I. The results of the weight analysis are contained in Appendix C of this report.

2. THERMAL EXPANSION ANALYSIS

The piping system addressed in this report was analyzed for the steady-state temperature conditions as outlined in Section IV.2. The results of this analysis are contained in Appendix D.

3. SEISMIC ANALYSES

The piping system was analyzed for the effects of the Operating Basis Earthquake (OBE) and the Safe Shutdown Earthquake (SSE). For this analysis, OBE is to be considered one-half the magnitude of the SSE. A static equivalent analysis was made using the global X, Y and Z peaks of the SSE response spectrum for the Mobile Test Assembly (MTA) base. This response spectrum was developed from the results of the analysis reported in LTR 1110-20⁽⁴⁾. Utilizing the method set forth in RDT F9-2T⁽⁵⁾, the resulting imposed uniform accelerations were:

<u>X</u>	<u>Y</u>	<u>Z</u>
3.01 g	6.60 g	3.01 g

The results of the seismic analyses are contained in Appendix E.

4. LOCE/LOCA ANALYSES

The piping system was also analyzed for the effects of the Loss-of-Coolant Experiment (LOCE) and the Loss-of-Coolant Accident (LOCA). For this analysis, LOCA is to be considered equal to LOCE. A static equivalent analysis was made using the global X, Y and Z peaks of the LOCE response spectrum for the MTA base. This response spectrum was developed from the results of the analysis reported in LTR 1110-20. Utilizing the method set forth in RDT F9-2T, the resulting imposed uniform accelerations were:

<u>X</u>	<u>Y</u>	<u>Z</u>
1.11 g	4.35 g	0.11 g

The results of the LOCE/LOCA analysis are contained in Appendix F.

5. SSE PLUS LOCA ANALYSIS

The piping was analyzed for the effects of SSE plus LOCA. The results of the SSE plus LOCA analysis are contained in Appendix G.

TABLE IPIPING SYSTEM VALVE DESIGN WEIGHTS
AND CENTERS OF GRAVITY

<u>Valve</u>	<u>Flooded Weight</u>	<u>(Distance from C.G. axis of Pipe)</u>
V-6472-CY	50 lb _f	_____
V-6473-CY	40 lb _f	_____
V-1330-CAB	10 lb _f	_____
V-5984-LS	25 lb _f	_____

VI. ASME BOILER AND PRESSURE VESSEL CODE, SECTION III, STRESS ANALYSIS

A stress analysis of the Class 2 piping addressed in this report, per rules of Subsection NC-3600 of the Code, was performed using the results obtained from the analyses described in Section V of this report.

1. MINIMUM THICKNESS CHECK

The Code requires verification that the piping minimum wall thickness is satisfactory. The thickness was checked against Equation (1) of NC-3641.1:

$$t_M = \frac{P D_o}{2 (S + P_y)} + A$$

where t_M = Minimum required wall thickness

P = Internal design pressure

D_o = Outside diameter

S = Allowable stress

$y = .4$ or $\frac{d}{d + D_o}$ if $D_o/t_M < 6$ (per Code)

A = Corrosion allowance (.08).

Results of this calculation are contained in Table II.

TABLE II

MINIMUM THICKNESS PARAMETERS

<u>Pressure (psi)</u>	<u>O.D. (inches)</u>	<u>S (psi)</u>	<u>t_M (inches)</u>	<u>t_{actual} (inches)</u>
190	2.375	15000	0.095	0.154
190	1.900	15000	0.092	0.143
190	1.315	15000	0.088	0.133
190	1.050	15000	0.087	0.113

Since the actual thicknesses are all greater than the t_M calculated, the system meets the requirements of NC-3641.1.

2. DESIGN, LEVEL A, AND LEVEL B SERVICE CONDITIONS STRESS ANALYSIS

The loading conditions, defined as Design, Level A, and Level B in Section IV.1, 2, and 3, were used in performing a stress analysis of the piping system per the rules given in Subsection NC-3650 of the Code. The computer program NUPIPE-II was used for this analysis. The results of Equations (8), (9), (10), and (11) are detailed in Appendix H. Test conditions are encompassed by this stress analysis.

3. LEVEL C SERVICE CONDITIONS STRESS ANALYSIS

The only loading which was postulated as a Level C service condition is the SSE. NC-3611.2 (c) requires that Equation (9) of NC-3652.2 be satisfied with an allowable of $1.8 S_h$. These results, as calculated using NUPIPE-II, are contained in Appendix I.

4. LEVEL D SERVICE CONDITIONS STRESS ANALYSIS

SSE and LOCA is the worst postulated Level D service condition that this piping will experience. NC-3611.2 (c) requires that Equation (9) of NC-3652.2 be satisfied with an allowable of $2.4 S_h$. These results are contained in Appendix J.

VII. COMPONENT SUPPORT ANALYSIS

Any component supports designed and built by EG&G Idaho, Inc. have been analyzed in accordance with the AISC Manual of Steel Construction^[6]. The analysis of these component supports would be contained in Appendix K. All component supports which have been supplied by a commercial manufacturer carry loads which are less than the manufacturer's stated load capacity. A summary of sustained loads on all piping supports is contained in Table III.

TABLE III

LOADS ON PIPING SUPPORTS

<u>Support Type</u>	<u>Support No.</u>	<u>Deadweight</u>	<u>Thermal</u>	<u>OBE</u>	<u>LOCE</u>	<u>SSE</u>	<u>LOCA & SSE</u>	<u>Rated Load</u>
Clamp	S1-Y	29	4	-97	-126	-193	-319	400
	S1-Z	0	31	-75	- 6	-151	-157	
Clamp	S2-Y	23	53	-55	-105	-111	-216	300
	S2-Z	1	1	-31	- 4	- 63	- 67	
Clamp	S3-X	1	-144	2	- 11	5	- 7	300
	S3-Y	13	- 48	-45	- 55	- 90	-145	
Clamp	S4-X	0	10	-70	- 49	-140	-189	300
	S4-Y	6	19	-18	- 28	- 36	- 64	
Clamp	S5-Y	13	- 3	-48	- 57	- 85	-142	300
	S5-Z	0	- 18	-63	- 8	-126	-134	
Clamp	S6-Y	14	- 9	-47	- 63	- 94	-157	300
	S6-Z	0	- 3	-23	4	- 47	- 43	
Clamp	S7-Y	8	- 4	-26	- 35	- 53	- 88	300
	S7-Z	0	- 2	-12	2	- 24	- 21	
Clamp	S8-Y	0	2	- 1	- 1	- 2	- 3	300
	S8-Z	0	0	1	0	2	2	
Clamp	S9-X	0	- 4	-21	- 14	- 42	- 56	300
	S9-Y	13	1	-42	- 55	- 83	-138	
Clamp	S10-X	0	- 3	- 5	- 4	- 9	- 13	300
	S10-Y	0	- 1	- 8	2	- 15	- 13	
Clamp	S11-X	1	- 11	- 9	- 9	- 18	- 27	300
	S11-Y	9	- 15	-45	- 35	- 90	-125	
Clamp	S12-X	1	7	-57	- 41	-115	-155	300
	S12-Y	16	2	-55	- 72	-111	-183	

TABLE III (Cont)

Support Type	Support No.	Deadweight	Thermal	OBE	LOCE	SSE	LOCA & SSE	Rated Load
Clamp	S13-Y	14	4	-39	- 53	- 78	-130	300
	S13-Z	-1	14	-57	- 5	-114	-119	
Clamp	S14-Y	11	- 4	-42	- 55	- 85	-140	300
	S14-Z	0	- 5	- 1	- 2	- 2	- 4	
Clamp	S15-X	-1	- 4	-11	- 11	- 22	- 33	300
	S15-Y	1	0	- 8	- 3	- 15	- 18	
Clamp	S16-X	0	0	- 9	- 9	- 18	- 27	300
	S16-Y	4	- 2	-37	- 20	- 74	- 94	
Clamp	S17-X	-1	0	10	- 2	20	18	300
	S17-Y	12	1	-52	- 54	-103	-158	
Clamp	S18-Y	1	- 1	- 4	0	- 7	- 7	300
	S18-INC.	0	0	-10	- 6	- 21	- 27	
Clamp	S19-X	1	0	-23	- 15	- 47	- 61	300
	S19-Y	7	- 1	-12	- 32	- 25	- 57	
Clamp	S20-X	0	0	- 2	- 1	- 4	- 5	300
	S20-Y	2	0	- 8	- 9	- 15	- 24	

Loads are in lb_f.

INC. - Inclined to global axis.

VIII. SPECIAL CONSIDERATIONS

The piping system modeled has both "A" and "AB" pipe material specifications. A sufficient amount of piping with the "A" material specification was modeled in only to assure correct loadings on the pipe with the "AB" material specification. A Class 2 analysis was then performed which showed the "AB" piping adequate. Any stress results pertaining to the "A" piping should be disregarded. The "A" piping has screwed fittings which would require additional analysis not required at this time.

IX. CONCLUSIONS

The piping system addressed in this report was analyzed for the stated loads and operating conditions using the techniques described herein. All stresses have been found to be within limits established by Section III of the ASME Boiler and Pressure Vessel Code.

X. REFERENCES

1. American Society of Mechanical Engineers, ASME Boiler & Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components", Subsection NC, 1977 Edition, Winter 1977 Addenda.
2. Telephone conversation with E. R. White of LOFT TS, April 10, 1978.
3. Computer plot based on sketches made at LOFT by Applied Mechanics personnel, May 24, 1978 and EG&G Idaho, Inc. Drawing 157138.
4. R. G. Rahl, "Stress Analysis of the LOFT Mobile Test Assembly (MTA)", LOFT Technical Report LTR 1110-20, February 20, 1974.
5. "Seismic Requirements for Design of Nuclear Power Plants and Test Facilities", RDT F9-2T, Division of Reactor Research and Development, United States Atomic Energy Commission, January, 1974.
6. American Institute of Steel Construction, Manual of Steel Construction, Seventh Edition, pp 5-6 to 5-24, 1973.

APPENDIX A
BASIC DATA, INPUT PARAMETERS

LOFT TECHNICAL REPORT LTR 136-7

RE&C Report # RE-A-78-137

DATE September 12, 1978

WORK REQUEST NO. 52162-700-540

RESEARCH, ENGINEERING AND CONSTRUCTION REPORT ENGINEERING ANALYSIS DIVISION

APPLIED MECHANICS BRANCH

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LOFT CIS ANALYSIS 2"-IA-299-AB
INSIDE CONTAINMENT PENETRATION S-5B

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LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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PROGRAM CONTROL CARD

CARDTYPE	NCHECK	DAMP	CODE	GLOB	DYN	THEATA	INTOUT	STORE
CONTROL	0	0	2.	0.	0.	0.0000	0.	0.

FLEXIBILITY ANALYSIS CONTROL CARDS

CARDTYPE	NCASE	MODE	TLOAD	CMODE	CFREQ	SPEC	SAVE	CYCLE	TITLE
FLEXAN	1	1	3.	0.	0.	0.00	1.	0.	DEADWEIGHT
FLEXAN	2	1	2.	0.	0.	0.00	1.	0.	THERMAL EXPANSION PLUS ANCHOR MOVEMENTS
FLEXAN	3	1	4.	0.	0.	0.00	1.	0.	SSE RESPONSE

CASE COMBINATION CONTROL CARDS

CARDTYPE	NCASE	CASES-COMD	AMULT	BMULT	CCODE	SAVE	CYCLE	TITLE
MODFLEX	4	3 AND 1	.5	0.0	0.0	1.0	0.0	DBE RESPONSE - ONE-HALF SSE

UNIFORM ACCELERATION (G)--SEISMIC RESTRAINTS ACTIVE

CARDTYPE	AX	AY	AZ
ACCEL	3.010	6.600	3.010

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CARDTYPE	I1	I2	DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
XSECTN	0	1	.238E+01	.154E+00	.365E+01	.279E+02	.190E+03	0.
XSECTN	0	2	.190E+01	.143E+00	.272E+01	.279E+02	.190E+03	0.
XSECTN	0	3	.132E+01	.133E+00	.168E+01	.279E+02	.190E+03	0.
XSECTN	0	4	.105E+01	.113E+00	.113E+01	.279E+02	.190E+03	0.
XSECTN	0	5	.238E+01	.154E+00	.100E+03	.279E+02	.190E+03	0.
XSECTN	0	6	.238E+01	.154E+00	.800E+02	.279E+02	.190E+03	0.
XSECTN	0	7	.190E+01	.143E+00	.500E+02	.279E+02	.190E+03	0.
OPVAL	1	1	.278E+02	.230E-02	0.	0.	.190E+03	0.
CHECK MAGNITUDE OF ENTRIES ON ABOVE OPVAL CARD ****								
ANCHOR	0	5	0.	0.	0.	0.	0.	0.
FGRUN	5	10	.125E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	10	.100E+01	.100E+01	.100E+01	0.	0.	0.
SRUN	10	11	.125E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	11	.100E+01	.100E+01	.100E+01	0.	0.	0.
VALVE	11	15	.500E+00	0.	0.	.500E+01	.100E+01	0.
MASSPT	0	15	.100E+01	.100E+01	.100E+01	0.	0.	0.
SRUN	15	20	.500E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	20	.100E+01	.100E+01	.100E+01	0.	0.	0.
VALVE	20	25	.500E+00	0.	0.	.600E+01	.100E+01	0.
MASSPT	0	25	.100E+01	.100E+01	.100E+01	0.	0.	0.
SRUN	25	31	.750E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	31	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	31	30	.500E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	30	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	30	35	.250E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	35	.100E+01	.100E+01	.100E+01	0.	0.	0.

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*** INPUT DATA ***								
CARDTYPE	I1	I2	DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
ELBOW	35	40	.100E+02	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	40	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	40	45	.960E+00	0.	-.290E+03	.100E+01	.100E+01	0.
MASSPT	0	45	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	45	50	.960E+00	0.	-.290E+03	.100E+01	.100E+01	0.
MASSPT	0	50	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	50	55	.100E+02	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	55	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	55	0.	.200E+05	.200E+05	0.	0.	0.
RUN	55	60	.142E+01	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	60	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	60	65	.100E+02	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	65	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	65	70	.590E+00	0.	.590E+00	.100E+01	.100E+01	0.
MASSPT	0	70	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	70	75	.100E+02	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	75	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	75	80	.133E+01	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	80	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	80	85	.420E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	85	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	85	0.	.200E+05	.200E+05	0.	0.	0.
FGRUN	85	90	.420E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	90	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	90	95	.125E+01	0.	0.	.100E+01	.100E+01	0.

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			*** INPUT DATA ***					
CARDTYPE	I1	I2	DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
MASSPT	0	95	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	95	100	.100E+01	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	100	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	100	105	.300E+01	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	105	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	105	110	0.	.830E+00	0.	.100E+01	.100E+01	0.
MASSPT	0	110	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	110	115	.300E+01	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	115	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	115	120	0.	0.	.500E+00	.100E+01	.100E+01	0.
MASSPT	0	120	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	120	.200E+05	.200E+05	0.	0.	0.	0.
RUN	120	125	0.	0.	.133E+01	.100E+01	.100E+01	0.
MASSPT	0	125	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	125	130	0.	0.	.217E+01	.100E+01	.100E+01	0.
MASSPT	0	130	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	130	.200E+05	.200E+05	0.	0.	0.	0.
ELBOW	130	135	.100E+02	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	135	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	135	0.	.200E+05	.200E+05	0.	0.	0.
RUN	135	140	.150E+01	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	140	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	140	145	.920E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	145	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	145	150	.500E+00	0.	0.	.100E+01	.100E+01	0.

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CARDTYPE	I1	I2	*** INPUT DATA ***					
			DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
MASSPT	0	150	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	150	0.	.200E+05	.200E+05	0.	0.	0.
RUN	150	155	.670E+00	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	155	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	155	0.	.200E+05	.200E+05	0.	0.	0.
RUN	155	160	.100E+01	0.	0.	.100E+01	.100E+01	0.
MASSPT	0	160	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	160	0.	.200E+05	.200E+05	0.	0.	0.
FGRUN	145	165	0.	0.	.920E+00	.200E+01	.100E+01	0.
TEE	145	165	0.	0.	0.	0.	0.	0.
MASSPT	0	165	.100E+01	.100E+01	.100E+01	0.	0.	0.
VALVE	165	170	0.	0.	.500E+00	.700E+01	.100E+01	0.
MASSPT	0	170	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	170	175	0.	0.	.125E+01	.200E+01	.100E+01	0.
MASSPT	0	175	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	175	.200E+05	.200E+05	0.	0.	0.	0.
FGRUN	90	180	0.	.150E+01	0.	.300E+01	.100E+01	0.
TEE	90	180	0.	0.	0.	0.	0.	0.
MASSPT	0	180	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	180	185	0.	.150E+01	0.	.300E+01	.100E+01	0.
MASSPT	0	185	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	185	.200E+05	0.	.200E+05	0.	0.	0.
RUN	185	190	0.	.670E+00	0.	.300E+01	.100E+01	0.
MASSPT	0	190	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	80	195	0.	.133E+01	0.	.200E+01	.100E+01	0.

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CARDTYPE	*** INPUT DATA ***							
	I1	I2	DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
TEE	80	195	0.	0.	0.	0.	0.	0.
MASSPT	0	195	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	195	200	0.	.133E+01	0.	.200E+01	.100E+01	0.
MASSPT	0	200	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	200	205	.225E+01	0.	0.	.200E+01	.100E+01	0.
MASSPT	0	205	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	205	210	0.	0.	-.150E+01	.200E+01	.100E+01	0.
MASSPT	0	210	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	210	.200E+05	.200E+05	0.	0.	0.	0.
RUN	210	215	0.	0.	-.167E+01	.200E+01	.100E+01	0.
MASSPT	0	215	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	215	220	0.	0.	-.167E+01	.200E+01	.100E+01	0.
MASSPT	0	220	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	220	225	0.	0.	-.167E+01	.200E+01	.100E+01	0.
MASSPT	0	225	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	225	.200E+05	.200E+05	0.	0.	0.	0.
RUN	225	230	0.	0.	-.200E+01	.200E+01	.100E+01	0.
MASSPT	0	230	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	230	235	0.	0.	-.150E+01	.200E+01	.100E+01	0.
MASSPT	0	235	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	235	240	.750E+01	0.	0.	.200E+01	.100E+01	0.
MASSPT	0	240	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	240	245	.150E+01	0.	0.	.200E+01	.100E+01	0.
MASSPT	0	245	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	245	250	.133E+01	0.	0.	.200E+01	.100E+01	0.

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*** INPUT DATA ***

CARDTYPE	I1	I2	DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
MASSPT	0	250	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	250	0.	.200E+05	.200E+05	0.	0.	0.
RUN	250	255	.138E+01	0.	0.	.200E+01	.100E+01	0.
MASSPT	0	255	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	255	260	.138E+01	0.	0.	.200E+01	.100E+01	0.
MASSPT	0	260	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	260	0.	.200E+05	.200E+05	0.	0.	0.
FGRUN	260	265	.750E+00	0.	0.	.200E+01	.100E+01	0.
MASSPT	0	265	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	265	270	.225E+01	0.	0.	.200E+01	.100E+01	0.
MASSPT	0	270	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	270	275	0.	.100E+01	0.	.200E+01	.100E+01	0.
MASSPT	0	275	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	275	280	0.	.167E+01	0.	.200E+01	.100E+01	0.
MASSPT	0	280	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	280	.200E+05	0.	.200E+05	0.	0.	0.
FGRUN	30	285	0.	.500E+00	0.	.400E+01	.100E+01	0.
TEE	30	285	0.	0.	0.	0.	0.	0.
MASSPT	0	285	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	285	290	0.	0.	.420E+00	.400E+01	.100E+01	0.
TEE	285	290	0.	0.	0.	0.	0.	0.
MASSPT	0	290	.100E+02	.100E+02	.100E+02	0.	0.	0.
CWEIGHT	0	290	0.	.100E+02	0.	0.	0.	0.
RUN	290	295	0.	0.	.420E+00	.400E+01	.100E+01	0.
MASSPT	0	295	.100E+01	.100E+01	.100E+01	0.	0.	0.

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CARDTYPE	*** INPUT DATA ***							
	I1	I2	DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
FGRUN	285	300	0.	.100E+01	0.	.400E+01	.100E+01	0.
MASSPT	0	300	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	300	305	0.	.100E+01	0.	.400E+01	.100E+01	0.
MASSPT	0	305	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	305	310	.113E+01	0.	0.	.400E+01	.100E+01	0.
MASSPT	0	310	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	310	315	-.707E+00	.707E+00	0.	.400E+01	.100E+01	0.
MASSPT	0	315	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	315	320	.113E+01	0.	0.	.400E+01	.100E+01	0.
MASSPT	0	320	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	320	325	0.	0.	-.150E+01	.400E+01	.100E+01	0.
MASSPT	0	325	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	325	.200E+05	.200E+05	0.	0.	0.	0.
RUN	325	330	0.	0.	-.150E+01	.400E+01	.100E+01	0.
MASSPT	0	330	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	330	335	0.	0.	-.150E+01	.400E+01	.100E+01	0.
MASSPT	0	335	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	335	340	0.	0.	-.100E+01	.400E+01	.100E+01	0.
MASSPT	0	340	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	340	345	0.	0.	-.330E+00	.400E+01	.100E+01	0.
MASSPT	0	345	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	345	.200E+05	.200E+05	0.	0.	0.	0.
FGRUN	345	350	0.	0.	-.500E+00	.400E+01	.100E+01	0.
MASSPT	0	350	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	350	355	.113E+01	0.	0.	.400E+01	.100E+01	0.

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CARDTYPE	*** INPUT DATA ***							
	I1	I2	DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)
MASSPT	0	355	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	355	360	0.	.100E+01	0.	.400E+01	.100E+01	0.
MASSPT	0	360	.100E+01	.100E+01	.100E+01	0.	0.	0.
RUN	360	365	0.	.200E+01	0.	.400E+01	.100E+01	0.
MASSPT	0	365	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	365	370	0.	.100E+01	0.	.400E+01	.100E+01	0.
MASSPT	0	370	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	370	375	.113E+01	0.	0.	.400E+01	.100E+01	0.
MASSPT	0	375	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	375	380	-.100E+01	0.	0.	.400E+01	.100E+01	0.
MASSPT	0	380	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	380	385	.113E+01	0.	0.	.400E+01	.100E+01	0.
MASSPT	0	385	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	385	390	0.	-.500E+00	0.	.400E+01	.100E+01	0.
MASSPT	0	390	.100E+01	.100E+01	.100E+01	0.	0.	0.
ELBOW	390	395	.113E+01	0.	0.	.400E+01	.100E+01	0.
MASSPT	0	395	.100E+01	.100E+01	.100E+01	0.	0.	0.
FGRUN	395	400	.106E+01	0.	-.106E+01	.400E+01	.100E+01	0.
MASSPT	0	400	.100E+01	.100E+01	.100E+01	0.	0.	0.
RESTRAINT	0	400	0.	.200E+05	0.	0.	0.	0.
RSKEW	0	400	.100E+01	.200E+01	.100E+01	0.	.100E+01	.200E+05
RESTRAINT	0	400	0.	0.	0.	0.	0.	0.
FGRUN	340	405	-.106E+01	.106E+01	0.	.400E+01	.100E+01	0.
TEE	340	405	0.	0.	0.	0.	0.	0.
MASSPT	0	405	.100E+01	.100E+01	.100E+01	0.	0.	0.

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CARDTYPE	I1	I2	*** INPUT DATA ***						
			DELTA(1)	DELTA(2)	DELTA(3)	DELTA(4)	DELTA(5)	DELTA(6)	
FGRUN	405	410	-.106E+01	.106E+01	0.	.400E+01	.100E+01	0.	
MASSPT	0	410	.100E+01	.100E+01	.100E+01	0.	0.	0.	
ELBOW	410	415	.113E+01	0.	0.	.400E+01	.100E+01	0.	
MASSPT	0	415	.100E+01	.100E+01	.100E+01	0.	0.	0.	
FGRUN	415	420	0.	0.	.100E+01	.400E+01	.100E+01	0.	
MASSPT	0	420	.100E+01	.100E+01	.100E+01	0.	0.	0.	
RUN	420	425	0.	0.	.100E+01	.400E+01	.100E+01	0.	
MASSPT	0	425	.100E+01	.100E+01	.100E+01	0.	0.	0.	
RESTRAINT	0	425	.200E+05	.200E+05	0.	0.	0.	0.	
RUN	425	430	0.	0.	.167E+01	.400E+01	.100E+01	0.	
MASSPT	0	430	.100E+01	.100E+01	.100E+01	0.	0.	0.	
RUN	430	435	0.	0.	.167E+01	.400E+01	.100E+01	0.	
MASSPT	0	435	.100E+01	.100E+01	.100E+01	0.	0.	0.	
RUN	435	440	0.	0.	.167E+01	.400E+01	.100E+01	0.	
MASSPT	0	440	.100E+01	.100E+01	.100E+01	0.	0.	0.	
RESTRAINT	0	440	.200E+05	.200E+05	0.	0.	0.	0.	
STRESS7	0	0	0.	0.	0.	0.	0.	0.	
9CASES		1	0	3	0	0	0	0	0
10CASES		0	0	0	0	0	0	0	0
CKNODES		0	0	0	0	0	0	0	0
ALLDONE		0	0	0	0	0	0	0	0

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APPENDIX B
COMPUTER PROGRAM DESCRIPTION

The NUPIPE-II computer program performs linear elastic analysis of three-dimensional piping systems subject to thermal, deadweight, seismic, and other static and dynamic loads. The NUPIPE-II program is also designed to perform stress and fatigue analyses in accordance with the ASME Boiler and Pressure Vessel Code, Section III, Nuclear Power Plant Components, 1974 Edition through the Summer 1975 Addenda; and the ANSI B31.1 Code, 1967 and Summer 1973 versions. Piping systems of more than one classification can be analyzed.

NUPIPE-II utilizes the finite element method of analysis with special features incorporated to accommodate specific requirements of piping system analysis. In accordance with the finite element method, the continuous piping is mathematically idealized as an assembly of elastic structural members connecting discrete nodal points. Nodal points are placed in such a manner as to isolate particular types of piping elements, such as straight runs of pipe, elbows, valves, etc., for which force-deformation characteristics can be categorized. Nodal points are also placed at all discontinuities, such as piping supports, concentrated weights, branch lines, and changes in cross-section. System loads such as weights, equivalent thermal forces, and earthquake inertia forces are applied at the nodal points. For the deadweight and dynamic time-history and response spectra analyses, distributed weight properties of the piping as well as concentrated weights, such as valves, pumps, or snubbers, can be considered. A lumped mass model of the piping system is used for all dynamic analyses. Both translational and rotational degrees-of-freedom may be considered.

For further information concerning NUPIPE-II capabilities or analytical procedures, contact Applied Mechanics Branch.

APPENDIX C
WEIGHT ANALYSIS RESULTS

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 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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SUPPORT REACTIONS FOR LOAD CASE NO. 1

DEADWEIGHT

NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
5	FORCE	-2.	X COORD
5	FORCE	101.	Y COORD
5	FORCE	-0.	Z COORD
5	MOMENT	-126.	X COORD
5	MOMENT	-2.	Y COORD
5	MOMENT	1026.	Z COORD
55	FORCE	29.	Y COORD
55	FORCE	-0.	Z COORD
85	FORCE	23.	Y COORD
85	FORCE	1.	Z COORD
120	FORCE	1.	X COORD
120	FORCE	13.	Y COORD
130	FORCE	-0.	X COORD
130	FORCE	6.	Y COORD
135	FORCE	13.	Y COORD
135	FORCE	-0.	Z COORD
150	FORCE	14.	Y COORD
150	FORCE	-0.	Z COORD
155	FORCE	8.	Y COORD
155	FORCE	00.	Z COORD
160	FORCE	00.	Y COORD
160	FORCE	-0.	Z COORD
175	FORCE	-0.	X COORD
175	FORCE	13.	Y COORD
185	FORCE	-0.	X COORD
185	FORCE	-0.	Z COORD
210	FORCE	1.	X COORD
210	FORCE	9.	Y COORD
225	FORCE	1.	X COORD
225	FORCE	6.	Y COORD
250	FORCE	4.	Y COORD
250	FORCE	-1.	Z COORD
260	FORCE	11.	Y COORD
260	FORCE	-0.	Z COORD
280	FORCE	-1.	X COORD
280	FORCE	1.	Z COORD
325	FORCE	0.	X COORD
325	FORCE	4.	Y COORD
345	FORCE	-1.	X COORD
345	FORCE	12.	Y COORD
400	FORCE	1.	Y COORD
400	FORCE	0.	INCLINED
425	FORCE	1.	X COORD

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
425	FORCE	7.	Y COORD
440	FORCE	-0.	X COORD
440	FORCE	2.	Y COORD

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 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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INTERNAL FORCES AND DEFLECTIONS FOR LOAD CASE NO. 1

DEADWEIGHT

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	5	-2.	101.	-0.	-126.	2.	1026.	.000	-.000	.000	.0000	-.0000	-.0000
	10	2.	-101.	0.	126.	-2.	-875.	.000	-.000	.000	.0000	-.0000	-.0001
SRUN	10	-2.	101.	-0.	-126.	2.	875.	.000	-.000	.000	.0000	-.0000	-.0001
	11	2.	-100.	0.	126.	-2.	-724.	.000	-.000	.000	.0000	-.0000	-.0001
VALVE	11	-2.	100.	-0.	-126.	2.	724.	.000	-.000	.000	.0000	-.0000	-.0001
	15	2.	-50.	0.	126.	-1.	-274.	.000	-.001	.000	.0000	-.0000	-.0002
SRUN	15	-2.	50.	-0.	-126.	1.	274.	.000	-.001	.000	.0000	-.0000	-.0002
	20	2.	-48.	0.	126.	-1.	21.	.000	-.003	.000	.0001	-.0000	-.0002
VALVE	20	-2.	48.	-0.	-126.	1.	-21.	.000	-.003	.000	.0001	-.0000	-.0002
	25	2.	-8.	0.	126.	-0.	190.	.000	-.004	.000	.0001	-.0000	-.0002
SRUN	25	-2.	8.	-0.	-126.	0.	-190.	.000	-.004	.000	.0001	-.0000	-.0002
	31	2.	-6.	0.	126.	1.	252.	.000	-.006	.000	.0002	-.0000	-.0001
FGRUN	31	-2.	6.	-0.	-126.	-1.	-252.	.000	-.006	.000	.0002	-.0000	-.0001
	30	2.	-4.	0.	126.	1.	280.	.000	-.006	.000	.0002	-.0000	-.0000
FGRUN	30	-1.	11.	0.	-64.	-1.	-280.	.000	-.006	.000	.0002	-.0000	-.0000
	35	1.	-11.	-0.	64.	0.	263.	.000	-.006	.000	.0003	-.0000	-.0000
ELBOW	35	-1.	11.	0.	-64.	-0.	-263.	.000	-.006	.000	.0003	-.0000	-.0000
	40	1.	-12.	-0.	59.	0.	228.	.000	-.006	.000	.0003	-.0000	-.0000
FGRUN	40	-1.	12.	0.	-59.	-0.	-228.	.000	-.006	.000	.0003	-.0000	-.0000
	45	1.	-16.	-0.	17.	1.	88.	.000	-.004	.000	.0003	-.0000	.0001
RUN	45	-1.	16.	0.	-17.	-1.	-88.	.000	-.004	.000	.0003	.0000	.0001
	50	1.	-19.	-0.	35.	3.	-85.	.000	-.002	.000	.0003	.0000	.0001
ELBOW	50	-1.	19.	0.	-35.	-3.	85.	.000	-.002	.000	.0003	.0000	.0001
	55	1.	-20.	-0.	44.	3.	-141.	.000	-.001	.000	.0003	.0000	.0001
RUN	55	-1.	10.	-0.	-44.	-3.	141.	.000	-.001	.000	.0003	.0000	.0001
	60	1.	-8.	0.	44.	3.	-51.	.000	-.001	-.000	.0002	.0000	.0001
ELBOW	60	-1.	6.	-0.	-44.	-3.	51.	.000	-.001	-.000	.0002	.0000	.0001
	65	1.	-4.	0.	58.	-1.	-17.	.000	-.001	-.000	.0002	.0000	.0000

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	65	-1.	4.	-0.	-58.	-1.	-17.	.000	-.001	-.000	.0002	.0000	.0000
	70	1.	-3.	0.	-62.	-2.	-13.	.000	-.001	-.000	.0002	.0000	.0000
ELBOW	70	-1.	3.	-0.	62.	2.	13.	.000	-.001	-.000	.0002	.0000	.0000
	75	1.	-1.	0.	-68.	-6.	1.	.000	-.002	-.000	.0002	.0000	.0000
FGRUN	75	-1.	1.	-0.	68.	6.	-1.	.000	-.002	-.000	.0002	.0000	.0000
	80	1.	3.	0.	-68.	-6.	-11.	.000	-.001	-.000	.0001	-.0000	.0000
FGRUN	80	-1.	-10.	-1.	44.	-2.	3.	.000	-.001	-.000	.0001	-.0000	.0000
	85	1.	11.	1.	-44.	5.	-56.	.000	-.001	-.000	.0001	-.0000	.0000
FGRUN	85	-1.	11.	-1.	44.	-5.	56.	.000	-.001	-.000	.0001	-.0000	.0000
	90	1.	-10.	-1.	-44.	2.	-3.	.000	-.001	-.000	.0001	-.0000	.0000
FGRUN	90	-1.	4.	0.	28.	-2.	1.	.000	-.001	-.000	.0001	.0000	.0000
	95	1.	1.	-0.	-28.	-0.	20.	.000	-.001	-.000	.0001	.0000	.0000
FGRUN	95	-1.	-1.	0.	28.	0.	-20.	.000	-.001	-.000	.0001	.0000	.0000
	100	1.	4.	-0.	-28.	-2.	-0.	.000	-.001	-.000	.0000	.0000	.0000
ELBOW	100	-1.	-4.	0.	28.	2.	0.	.000	-.001	-.000	.0000	.0000	.0000
	105	1.	5.	-0.	-28.	-2.	-11.	-.000	-.001	-.000	.0000	.0000	.0000
FGRUN	105	-1.	-3.	0.	28.	2.	11.	-.000	-.001	-.000	.0000	.0000	.0000
	110	1.	6.	-0.	-27.	-2.	-9.	-.000	-.001	-.000	.0000	.0000	.0000
ELBOW	110	-1.	-6.	0.	27.	2.	9.	-.000	-.001	.000	-.0000	.0000	.0000
	115	1.	8.	-0.	-6.	-4.	-7.	-.000	-.001	.000	-.0000	.0000	.0000
FGRUN	115	-1.	-8.	0.	6.	4.	7.	-.000	-.001	.000	-.0000	.0000	.0000
	120	1.	9.	-0.	18.	-6.	-7.	-.000	-.001	.000	-.0000	.0000	.0000
RUN	120	-0.	4.	0.	-18.	6.	7.	-.000	-.001	.000	-.0000	.0000	-.0000
	125	0.	0.	-0.	-14.	-2.	-7.	.000	-.000	.000	-.0000	.0000	-.0000
RUN	125	-0.	-0.	0.	14.	2.	7.	.000	-.000	.000	-.0000	.0000	-.0000
	130	0.	5.	-0.	32.	1.	-7.	.000	-.000	.000	-.0000	.0000	-.0000
ELBOW	130	0.	1.	0.	-32.	-1.	7.	.000	-.000	.000	-.0000	.0000	-.0000
	135	-0.	4.	-0.	45.	-1.	-20.	.000	-.001	.000	.0000	.0000	-.0000
RUN	135	-0.	9.	-0.	-45.	1.	20.	.000	-.001	.000	.0000	.0000	-.0000
	140	0.	-7.	0.	45.	-1.	45.	.000	-.001	.000	.0001	.0000	-.0000
FGRUN	140	-0.	7.	-0.	-45.	1.	-45.	.000	-.001	.000	.0001	.0000	-.0000
	145	0.	-4.	0.	45.	-1.	103.	.000	-.001	.000	.0001	.0000	-.0000

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 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	145	-0.	-15.	-0.	0.	0.	-103.	.000	-.001	.000	.0001	.0000	.0000
	150	0.	17.	0.	-0.	-0.	8.	.000	-.001	.000	.0001	.0000	.0000
RUN	150	-0.	-2.	-0.	-0.	0.	-8.	.000	-.001	.000	.0001	.0000	.0000
	155	0.	5.	0.	0.	-0.	-19.	.000	-.000	-.000	.0001	.0000	.0000
RUN	155	0.	3.	-0.	-0.	0.	19.	.000	-.000	-.000	.0001	.0000	.0000
	160	0.	0.	0.	0.	-0.	0.	.000	-.000	-.000	.0001	.0000	.0000
FGRUN	145	-0.	-18.	-0.	-45.	0.	-0.	.000	-.001	.000	.0001	.0000	.0000
	165	-0.	-16.	0.	-144.	-0.	0.	.000	-.002	.000	.0000	-.0000	.0000
VALVE	165	0.	16.	-0.	144.	0.	0.	.000	-.002	.000	.0000	-.0000	.0000
	170	-0.	9.	0.	-163.	-0.	0.	.000	-.002	.000	.0000	-.0000	.0000
FGRUN	170	0.	-9.	-0.	163.	0.	0.	.000	-.002	.000	-.0000	-.0000	.0000
	175	-0.	13.	0.	-0.	-0.	0.	.000	-.001	.000	-.0001	-.0000	.0000
FGRUN	90	-0.	6.	0.	16.	0.	1.	.000	-.001	-.000	.0001	.0000	.0000
	180	0.	-4.	-0.	-8.	-0.	-1.	-.000	-.001	.001	-.0000	.0000	.0000
RUN	180	-0.	4.	0.	8.	0.	1.	-.000	-.001	.001	-.0000	.0000	.0000
	185	0.	-1.	-0.	-0.	-0.	0.	-.000	-.001	.000	-.0000	.0000	-.0000
RUN	185	0.	1.	-0.	0.	0.	0.	-.000	-.001	-.000	-.0000	.0000	-.0000
	190	-0.	-0.	0.	-0.	-0.	-0.	.000	-.001	-.000	-.0000	.0000	-.0000
FGRUN	80	-1.	7.	1.	24.	7.	8.	.000	-.001	-.000	.0001	-.0000	.0000
	195	1.	-3.	-1.	-14.	-7.	4.	-.000	-.001	.001	.0001	-.0000	.0000
RUN	195	-1.	3.	1.	14.	7.	-4.	-.000	-.001	.001	.0001	-.0000	.0000
	200	1.	-0.	-1.	-5.	-7.	14.	-.001	-.001	.002	.0001	-.0000	.0000
ELBOW	200	-1.	0.	1.	5.	7.	-14.	-.001	-.001	.002	.0001	-.0000	.0000
	205	1.	0.	-1.	-4.	-6.	16.	-.001	-.001	.002	.0001	-.0000	.0000
FGRUN	205	-1.	-0.	1.	4.	6.	-16.	-.001	-.001	.002	.0001	-.0000	.0000
	210	1.	4.	-1.	-39.	6.	16.	-.000	-.000	.002	.0000	-.0000	.0001
RUN	210	-0.	5.	1.	39.	-6.	-16.	-.000	-.000	.002	-.0000	-.0000	.0001
	215	0.	-1.	-1.	24.	11.	16.	.001	-.001	.002	-.0000	-.0000	.0001
RUN	215	-0.	1.	1.	-24.	-11.	-16.	.001	-.001	.002	-.0000	-.0000	.0001
	220	0.	4.	-1.	-3.	15.	16.	.001	-.000	.002	-.0000	-.0000	.0002
RUN	220	-0.	-4.	1.	3.	-15.	-16.	.001	-.000	.002	-.0000	.0000	.0002
	225	0.	8.	-1.	-122.	19.	16.	-.000	-.001	.002	-.0001	.0001	.0002

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	225	1.	8.	1.	122.	-19.	-16.	-.000	-.001	.002	-.0001	.0001	.0002
	230	-1.	-3.	-1.	9.	6.	16.	-.002	-.006	.002	-.0003	.0001	.0003
RUN	230	1.	3.	1.	-9.	-6.	-16.	-.002	-.006	.002	-.0003	.0001	.0003
	235	-1.	-0.	-1.	25.	1.	16.	-.003	-.009	.002	-.0003	.0001	.0003
ELBOW	235	1.	0.	1.	-25.	-1.	-16.	-.003	-.009	.002	-.0003	.0001	.0003
	240	-1.	2.	-1.	18.	8.	9.	-.003	-.009	.002	-.0002	.0001	.0003
RUN	240	1.	-2.	1.	-18.	8.	-9.	-.003	-.009	.002	-.0002	.0001	.0003
	245	-1.	5.	-1.	18.	-14.	-28.	-.003	-.005	.001	-.0002	.0001	.0003
RUN	245	1.	-5.	1.	-18.	14.	28.	-.003	-.005	.001	-.0002	.0001	.0003
	250	-1.	8.	-1.	18.	-24.	-132.	-.003	-.001	.000	-.0002	.0000	.0002
RUN	250	1.	6.	1.	-18.	24.	132.	-.003	-.001	.000	-.0002	.0000	.0002
	255	-1.	-2.	1.	18.	-15.	-62.	-.003	.001	-.000	-.0001	-.0000	-.0000
RUN	255	1.	2.	-1.	-18.	15.	62.	-.003	.001	-.000	-.0001	-.0000	-.0000
	260	-1.	1.	1.	18.	-5.	-55.	-.003	-.001	-.000	-.0001	-.0000	-.0001
FGRUN	260	1.	9.	-1.	-18.	5.	55.	-.003	-.001	-.000	-.0001	-.0000	-.0001
	265	-1.	-8.	1.	18.	-1.	1.	-.003	-.001	.000	-.0000	-.0000	-.0001
ELBOW	265	1.	8.	-1.	-18.	1.	-1.	-.003	-.001	.000	-.0000	-.0000	-.0001
	270	-1.	-7.	1.	17.	0.	16.	-.003	-.002	.000	-.0000	-.0000	-.0001
FGRUN	270	1.	7.	-1.	-17.	0.	-16.	-.003	-.002	-.000	-.0000	-.0000	-.0001
	275	-1.	-5.	1.	11.	-0.	11.	-.002	-.002	-.000	-.0000	-.0000	-.0001
RUN	275	1.	5.	-1.	-11.	0.	-11.	-.002	-.002	-.000	-.0000	-.0000	-.0001
	280	-1.	0.	1.	-0.	-0.	-0.	.000	-.002	-.000	-.0000	-.0000	-.0001
FGRUN	30	-0.	15.	-0.	-62.	-0.	0.	.000	-.006	.000	.0002	-.0000	-.0000
	285	0.	-14.	0.	59.	0.	1.	.000	-.006	.003	.0006	.0000	-.0000
FGRUN	285	-0.	11.	-0.	-55.	0.	0.	.000	-.006	.003	.0006	.0000	-.0000
	290	0.	-10.	0.	1.	0.	-0.	.000	-.010	.003	.0007	.0000	-.0000
RUN	290	-0.	0.	-0.	-1.	-0.	0.	.000	-.010	.003	.0007	.0000	-.0000
	295	0.	-0.	0.	-0.	-0.	-0.	.000	-.013	.003	.0007	.0000	-.0000
FGRUN	285	-0.	3.	-0.	-4.	-0.	-1.	.000	-.006	.003	.0006	.0000	-.0000
	300	0.	-2.	0.	-0.	0.	3.	.000	-.006	.010	.0006	.0000	-.0000
FGRUN	300	-0.	2.	-0.	4.	-0.	-3.	.000	-.006	.010	.0006	.0000	-.0000
	305	0.	-1.	0.	-4.	0.	5.	.000	-.006	.017	.0006	.0000	-.0000

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
ELBOW	305	-0.	1.	-0.	4.	-0.	-5.	.000	-.006	.017	.0006	.0000	.0000
	310	-0.	-1.	0.	-5.	0.	5.	.000	-.006	.017	.0006	.0000	.0001
FGRUN	310	-0.	1.	-0.	5.	-0.	-5.	.000	-.006	.017	.0006	.0000	.0001
	315	0.	0.	0.	-7.	-3.	4.	-.000	-.007	.022	.0005	.0000	.0001
ELBOW	315	-0.	-0.	-0.	7.	3.	-4.	-.000	-.007	.022	.0005	.0000	.0001
	320	0.	0.	0.	-8.	-3.	4.	-.000	-.006	.022	.0005	-.0000	.0001
FGRUN	320	-0.	-0.	-0.	8.	3.	-4.	-.000	-.006	.022	.0005	-.0000	.0001
	325	0.	2.	0.	-27.	0.	4.	-.000	-.000	.022	.0002	-.0000	.0002
RUN	325	-0.	2.	-0.	27.	-0.	-4.	-.000	-.000	.022	-.0002	-.0000	.0002
	330	0.	-1.	0.	2.	1.	4.	.000	.001	.022	-.0000	-.0000	.0003
RUN	330	-0.	1.	-0.	-2.	-1.	-4.	.000	.001	.022	-.0000	-.0000	.0003
	335	0.	1.	0.	1.	2.	4.	.000	.000	.022	-.0000	.0000	.0004
FGRUN	335	-0.	-1.	-0.	-1.	-2.	-4.	.000	-.000	.022	-.0000	.0000	.0004
	340	0.	2.	0.	-17.	3.	4.	.000	-.000	.022	-.0001	.0000	.0005
FGRUN	340	-1.	-4.	-0.	10.	4.	-7.	.000	-.000	.022	-.0001	.0000	.0005
	345	-1.	5.	0.	-29.	-7.	7.	.000	-.001	.022	-.0002	.0000	.0005
FGRUN	345	-0.	8.	-0.	29.	7.	-7.	.000	-.001	.022	-.0002	-.0000	.0005
	350	0.	-7.	0.	7.	-5.	7.	.000	-.002	.022	-.0002	-.0000	.0005
ELBOW	350	-0.	7.	-0.	-7.	5.	-7.	.000	-.002	.022	-.0002	-.0000	.0005
	355	0.	-7.	0.	14.	-5.	8.	-.001	-.002	.022	-.0002	-.0000	.0006
FGRUN	355	-0.	7.	-0.	-14.	5.	-8.	-.001	-.002	.022	-.0002	-.0000	.0006
	360	0.	-6.	0.	10.	-5.	12.	-.007	-.002	.021	-.0000	-.0001	.0007
RUN	360	-0.	6.	-0.	-10.	5.	-12.	-.007	-.002	.021	-.0000	-.0001	.0007
	365	0.	-4.	0.	1.	-5.	20.	-.027	-.002	.022	.0001	-.0002	.0010
FGRUN	365	-0.	4.	-0.	-1.	-5.	-20.	-.027	-.002	.022	.0001	-.0002	.0010
	370	0.	-3.	0.	-3.	-5.	24.	-.040	-.002	.023	.0001	-.0003	.0013
ELBOW	370	-0.	3.	-0.	3.	5.	-24.	-.040	-.002	.023	.0001	-.0003	.0013
	375	0.	-2.	0.	-3.	-5.	22.	-.041	-.003	.022	.0001	-.0003	.0014
FGRUN	375	-0.	2.	-0.	3.	5.	-22.	-.041	-.003	.022	.0001	-.0003	.0014
	380	0.	-1.	0.	-3.	-5.	3.	-.041	-.018	.019	.0000	-.0004	.0015
ELBOW	380	-0.	1.	-0.	3.	5.	-3.	-.041	-.018	.019	.0000	-.0004	.0015
	385	0.	-1.	0.	-3.	-5.	1.	-.040	-.019	.018	.0000	-.0004	.0015

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	385	-0.	1.	-0.	3.	9.	-1.	-.040	-.019	.018	.0000	-.0004	.0015
	390	0.	-1.	0.	-1.	-9.	-1.	-.034	-.019	.018	.0000	-.0005	.0015
ELBOW	390	-0.	1.	-0.	1.	9.	-1.	-.034	-.019	.018	.0000	-.0005	.0015
	395	0.	-1.	0.	-0.	-9.	-0.	-.032	-.018	.019	.0000	-.0005	.0015
FGRUN	395	-0.	1.	-0.	0.	9.	0.	-.032	-.018	.019	.0000	-.0005	.0015
	400	0.	1.	0.	0.	0.	0.	-.025	-.000	.025	.0000	-.0006	.0015
FGRUN	340	-1.	2.	-0.	7.	-7.	3.	.000	-.000	.022	-.0001	.0000	.0005
	405	1.	-1.	0.	-7.	7.	-12.	-.005	-.005	.021	-.0003	.0002	.0003
FGRUN	405	-1.	1.	-0.	7.	-7.	12.	-.005	-.005	.021	-.0003	.0002	.0003
	410	1.	1.	0.	-7.	7.	-1.	-.008	-.009	.020	-.0004	.0003	.0002
ELBOW	410	-1.	-1.	-0.	7.	-7.	1.	-.008	-.009	.020	-.0004	.0003	.0002
	415	1.	1.	0.	-6.	6.	-0.	-.008	-.008	.020	-.0004	.0004	.0002
FGRUN	415	-1.	-1.	-0.	6.	-6.	-0.	-.008	-.008	.020	-.0004	.0004	.0002
	420	1.	2.	0.	11.	-4.	0.	-.004	-.004	.020	-.0004	.0004	.0002
RUN	420	-1.	-2.	-0.	-11.	4.	-0.	-.004	-.004	.020	-.0004	.0004	.0002
	425	1.	3.	0.	42.	-14.	0.	-.000	-.000	.020	-.0001	.0003	.0002
RUN	425	0.	4.	-0.	-42.	14.	-0.	-.000	-.000	.020	-.0001	.0003	.0002
	430	-0.	-2.	0.	-10.	-9.	0.	.003	-.003	.020	.0002	.0000	.0002
RUN	430	0.	2.	-0.	10.	9.	-0.	.003	-.003	.020	.0002	.0000	.0002
	435	-0.	0.	0.	-24.	-5.	0.	.002	-.005	.020	-.0001	-.0001	.0002
RUN	435	0.	-0.	-0.	24.	5.	0.	.002	-.005	.020	-.0001	-.0001	.0002
	440	-0.	2.	0.	-0.	-0.	0.	.000	-.000	.020	-.0003	-.0001	.0002

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APPENDIX D
THERMAL EXPANSION ANALYSIS RESULTS

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NUPIPE-IIH - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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SUPPORT REACTIONS FOR LOAD CASE NJ. 2
THERMAL EXPANSION PLUS ANCHOR MOVEMENTS

NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
5	FORCE	150.	X COORD
5	FORCE	1.	Y COORD
5	FORCE	-19.	Z COORD
5	MOMENT	-36.	X COORD
5	MOMENT	377.	Y COORD
5	MOMENT	19.	Z COORD
55	FORCE	4.	Y COORD
55	FORCE	31.	Z COORD
55	FORCE	53.	Y COORD
85	FORCE	1.	Z COORD
120	FORCE	-144.	X COORD
120	FORCE	-48.	Y COORD
130	FORCE	10.	X COORD
130	FORCE	19.	Y COORD
135	FORCE	-3.	Y COORD
135	FORCE	-18.	Z COORD
150	FORCE	-9.	Y COORD
150	FORCE	-3.	Z COORD
155	FORCE	-4.	Y COORD
155	FORCE	-2.	Z COORD
160	FORCE	2.	Y COORD
160	FORCE	0.	Z COORD
175	FORCE	-4.	X COORD
175	FORCE	1.	Y COORD
185	FORCE	-3.	X COORD
185	FORCE	-1.	Z COORD
210	FORCE	-11.	X COORD
210	FORCE	-15.	Y COORD
225	FORCE	7.	X COORD
225	FORCE	2.	Y COORD
250	FORCE	4.	Y COORD
250	FORCE	14.	Z COORD
260	FORCE	-4.	Y COORD
260	FORCE	-5.	Z COORD
280	FORCE	-4.	X COORD
280	FORCE	0.	Z COORD
325	FORCE	-0.	X COORD
325	FORCE	-2.	Y COORD
345	FORCE	-0.	X COORD
345	FORCE	1.	Y COORD
400	FORCE	-1.	Y COORD
400	FORCE	0.	INCLINED
425	FORCE	0.	X COORD

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NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
425	FORCE	-1.	Y COORD
440	FORCE	-0.	X COORD
440	FORCE	0.	Y COORD

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LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

INTERNAL FORCES AND DEFLECTIONS FOR LOAD CASE NO. 2

THERMAL EXPANSION PLUS ANCHOR MOVEMENTS

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	5	-150.	1.	-19.	-36.	377.	19.	-.000	-.000	.000	.0000	-.0000	-.0000
	10	-150.	-1.	19.	36.	-349.	-18.	.000	-.000	.000	.0000	-.0000	-.0000
SRUN	10	-150.	1.	-19.	-36.	349.	18.	.000	-.000	.000	.0000	-.0000	-.0000
	11	-150.	-1.	19.	36.	-321.	-17.	.001	-.000	.000	.0000	-.0001	-.0000
VALVE	11	-150.	1.	-19.	-36.	321.	17.	.001	-.000	.000	.0000	-.0001	-.0000
	15	-150.	-1.	19.	36.	-208.	-14.	.002	-.000	.001	.0000	-.0001	-.0000
SRUN	15	-150.	1.	-19.	-36.	208.	14.	.002	-.000	.001	.0000	-.0001	-.0000
	20	-150.	-1.	19.	36.	-96.	-10.	.003	-.000	.001	.0000	-.0001	-.0000
VALVE	20	-150.	1.	-19.	-36.	96.	10.	.003	-.000	.001	.0000	-.0001	-.0000
	25	-150.	-1.	19.	36.	17.	-7.	.004	-.000	.002	.0000	-.0001	-.0000
SRUN	25	-150.	1.	-19.	-36.	-17.	7.	.004	-.000	.002	.0000	-.0001	-.0000
	31	-150.	-1.	19.	36.	185.	-2.	.006	-.000	.003	.0001	-.0001	-.0000
FGRUN	31	-150.	1.	-19.	-36.	-185.	2.	.006	-.000	.003	.0001	-.0001	-.0000
	30	-150.	-1.	19.	36.	298.	1.	.007	-.000	.004	.0001	-.0000	-.0000
FGRUN	30	-150.	-1.	-19.	-40.	-297.	6.	.007	-.000	.004	.0001	-.0000	-.0000
	35	-150.	1.	19.	40.	325.	-7.	.007	-.000	.004	.0001	-.0000	-.0000
ELBOW	35	-150.	-1.	-19.	-40.	-325.	7.	.007	-.000	.004	.0001	.0000	-.0000
	40	-150.	1.	19.	39.	315.	-10.	.008	-.000	.003	.0001	.0001	-.0000
FGRUN	40	-150.	-1.	-19.	-39.	-315.	10.	.008	-.000	.003	.0001	.0001	-.0000
	45	-150.	1.	19.	37.	46.	-17.	.009	-.000	.001	.0001	.0002	-.0000
RUN	45	-150.	-1.	-19.	-37.	-46.	17.	.009	-.000	.001	.0001	.0002	-.0000
	50	-150.	1.	19.	35.	-224.	-24.	.010	-.000	-.001	.0001	.0001	-.0000
ELBOW	50	-150.	-1.	-19.	-35.	224.	24.	.010	-.000	-.001	.0001	.0001	-.0000
	55	-150.	1.	19.	35.	-234.	-27.	.011	-.000	-.002	.0001	.0001	-.0000
RUN	55	-150.	-3.	13.	-35.	234.	27.	.011	-.000	-.002	.0001	-.0001	-.0000
	60	-150.	-3.	-13.	35.	-377.	5.	.013	-.001	-.002	.0002	-.0001	-.0000
ELBOW	60	-150.	-3.	13.	-35.	377.	-5.	.013	-.001	-.002	.0002	-.0001	-.0000
	65	-150.	-3.	-13.	26.	-27.	24.	.014	-.002	.000	.0002	-.0003	-.0000

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	65	-150.	-3.	-13.	-26.	27.	-24.	.014	-.002	.000	.0002	-.0003	-.0000
	70	-150.	-3.	-13.	-23.	141.	-28.	.013	-.002	.001	.0002	-.0003	-.0000
ELBOW	70	-150.	-3.	-13.	-23.	-141.	-28.	.013	-.002	.001	.0002	-.0003	-.0000
	75	-150.	-3.	-13.	-15.	491.	47.	.014	-.003	.003	.0002	-.0000	-.0000
FGRUN	75	-150.	-3.	-13.	-15.	-491.	-47.	.014	-.003	.003	.0002	-.0000	-.0000
	80	-150.	-3.	-13.	-15.	343.	80.	.016	-.003	.001	.0002	-.0002	-.0000
FGRUN	80	-142.	-11.	-22.	-104.	-316.	-157.	.016	-.003	-.001	.0002	.0002	-.0000
	85	-142.	11.	-22.	-104.	207.	-212.	.017	-.003	-.000	.0002	.0003	-.0000
FGRUN	85	-142.	-42.	-22.	-104.	-207.	212.	.017	-.003	-.000	.0002	.0003	-.0000
	90	-142.	-42.	-22.	-104.	94.	-2.	.018	-.003	-.002	.0001	.0003	-.0001
FGRUN	90	-139.	-42.	-22.	-85.	-94.	115.	.018	-.003	-.002	.0001	.0003	-.0001
	95	-139.	-42.	-22.	-85.	-236.	511.	.021	-.003	-.007	.0001	.0003	-.0001
FGRUN	95	-139.	-42.	-22.	-85.	236.	-511.	.021	-.003	-.007	-.0001	.0003	.0001
	100	-139.	-42.	-22.	-85.	-433.	886.	.023	-.001	-.009	-.0000	.0001	.0004
ELBOW	100	-139.	-42.	-22.	-19.	433.	-886.	.023	-.001	-.009	-.0000	.0001	.0004
	105	-139.	-42.	-22.	-19.	-499.	595.	.020	.002	-.009	.0001	-.0002	.0014
FGRUN	105	-139.	-42.	-22.	19.	499.	-595.	.020	.002	-.009	.0001	-.0002	.0014
	110	-139.	-42.	-22.	68.	-499.	46.	.014	.003	-.008	.0001	-.0003	.0014
ELBOW	110	-139.	-42.	-22.	-68.	499.	-46.	.014	.003	-.008	.0001	-.0003	.0014
	115	-139.	-42.	-22.	9.	-84.	-369.	.009	.003	-.007	.0002	-.0005	.0014
FGRUN	115	-139.	-42.	-22.	-9.	84.	369.	.009	.003	-.007	.0002	-.0005	.0014
	120	-139.	-42.	-22.	-116.	332.	-369.	.007	.002	-.007	.0001	-.0005	.0013
RUN	120	-5.	-6.	-22.	116.	-332.	369.	.007	.002	-.007	.0001	-.0005	.0013
	125	5.	6.	-22.	-17.	245.	-369.	.002	.001	-.004	.0001	-.0002	.0009
RUN	125	-5.	-6.	-22.	17.	-245.	369.	.002	.001	-.004	.0001	-.0002	.0009
	130	5.	6.	-22.	82.	157.	-369.	-.000	-.001	-.001	.0001	-.0001	.0005
ELBOW	130	-4.	-12.	-22.	-82.	-157.	369.	-.000	-.001	-.001	.0001	-.0001	.0005
	135	-4.	-12.	-22.	-42.	-20.	-245.	.001	.000	.001	.0001	.0001	.0001
RUN	135	-4.	-10.	-4.	-42.	20.	245.	.001	.000	.001	.0001	.0001	.0001
	140	-4.	-10.	-4.	-42.	-54.	-166.	.003	.001	.000	.0001	.0000	.0000
FGRUN	140	-4.	-10.	-4.	-42.	54.	166.	.003	.001	.000	.0001	.0000	.0000
	145	-4.	-10.	-4.	-42.	-102.	-57.	.003	.001	.000	.0001	-.0000	-.0000

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NUPIPE-IIB - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	145	-0.	11.	4.	-0.	-36.	57.	.005	.001	.000	.0001	-.0000	-.0000
	150	0.	-11.	-4.	0.	10.	10.	.006	.000	.000	.0001	.0000	-.0000
RUN	150	-0.	2.	1.	-0.	-10.	-10.	.006	.000	.000	.0001	.0000	-.0000
	155	0.	-2.	-1.	0.	-2.	24.	.008	.000	.000	.0001	.0000	-.0000
RUN	155	0.	-2.	-0.	-0.	2.	-24.	.008	.000	.000	.0001	.0000	-.0000
	160	-0.	2.	0.	0.	-0.	-0.	.010	-.000	-.000	.0001	.0000	-.0000
FGRUN	145	4.	-1.	-0.	42.	137.	0.	.005	.001	.000	.0001	-.0000	-.0000
	165	-4.	1.	0.	-27.	-90.	-0.	.004	.000	.002	.0001	-.0001	-.0000
VALVE	165	4.	-1.	-0.	27.	90.	0.	.004	.000	.002	.0000	-.0001	-.0000
	170	-4.	1.	0.	-19.	-64.	-0.	.003	.000	.003	.0000	-.0002	-.0000
FGRUN	170	4.	-1.	0.	19.	64.	0.	.003	.000	.003	.0000	-.0002	-.0000
	175	-4.	1.	-0.	-0.	-0.	-0.	.000	-.000	.006	.0000	-.0002	-.0000
FGRUN	90	3.	-0.	1.	19.	0.	-113.	.018	-.003	-.002	.0001	.0003	-.0001
	180	-3.	0.	-1.	-9.	0.	57.	.013	.001	-.000	.0000	.0003	.0006
RUN	180	3.	-0.	1.	9.	-0.	-57.	.013	.001	-.000	.0000	.0003	.0006
	185	-3.	0.	-1.	0.	0.	0.	.000	.004	.000	.0000	.0003	.0008
RUN	185	0.	-0.	0.	-0.	0.	0.	-.006	.006	.000	.0000	.0003	.0008
	190	0.	-0.	0.	-0.	0.	0.	-.006	.006	.000	.0000	.0003	.0008
FGRUN	80	8.	-14.	-9.	-119.	-27.	-237.	.016	-.003	.001	.0002	.0002	.0000
	195	-8.	14.	9.	-28.	27.	107.	.013	.000	.006	.0003	.0003	.0003
RUN	195	8.	-14.	-9.	28.	-27.	-107.	.013	.000	.006	.0003	.0003	.0003
	200	-8.	14.	9.	-154.	27.	-5.	.008	.003	.009	.0002	.0004	.0004
ELBOW	200	8.	-14.	-9.	154.	-27.	5.	.008	.003	.009	-.0002	.0004	.0004
	205	-8.	14.	9.	-144.	8.	-23.	.006	.003	.009	-.0001	.0004	.0004
FGRUN	205	8.	-14.	-9.	144.	-8.	23.	.006	.003	.009	-.0001	.0004	.0004
	210	-8.	14.	9.	72.	-120.	-23.	.001	.001	.006	-.0002	.0003	.0004
RUN	210	-2.	-1.	-9.	-72.	120.	23.	.001	.001	.006	-.0002	.0003	.0004
	215	2.	1.	9.	43.	-70.	-23.	-.002	-.001	.002	-.0000	.0000	.0003
RUN	215	-2.	-1.	-9.	-43.	70.	23.	-.002	-.001	.002	-.0000	.0000	.0003
	220	2.	1.	9.	15.	-21.	-23.	-.002	-.001	-.002	.0000	-.0001	.0002
RUN	220	-2.	-1.	-9.	-15.	21.	23.	-.002	-.001	-.002	.0000	-.0001	.0002
	225	2.	1.	9.	-13.	28.	-23.	-.000	-.000	-.006	.0000	-.0001	.0002

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 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	225	4.	0.	-9.	13.	-28.	23.	-.000	-.000	-.006	.0000	-.0001	.0002
	230	-4.	-0.	9.	-5.	-89.	-23.	-.001	-.000	-.010	.0000	-.0001	.0001
RUN	230	4.	0.	-9.	5.	89.	23.	.001	.000	-.010	.0000	-.0001	.0001
	235	-4.	-0.	9.	-2.	-12.	-23.	.003	.001	-.012	.0000	-.0002	.0000
ELBOW	235	4.	0.	-9.	2.	12.	23.	.003	.001	-.012	.0000	-.0002	.0000
	240	-4.	-0.	9.	1.	-73.	-20.	.007	.001	-.011	.0000	-.0004	-.0000
RUN	240	4.	0.	-9.	-1.	73.	20.	.007	.001	-.011	.0000	-.0004	-.0000
	245	-4.	-0.	9.	1.	23.	-17.	.009	.000	-.007	.0000	-.0004	-.0000
RUN	245	4.	0.	-9.	-1.	-23.	17.	.009	-.000	-.007	.0000	-.0004	-.0000
	250	-4.	-0.	9.	1.	170.	-12.	.012	-.000	-.001	.0000	-.0003	-.0001
RUN	250	4.	4.	-5.	-1.	-170.	12.	.012	-.000	-.001	.0000	-.0003	-.0001
	255	-4.	-4.	5.	1.	85.	59.	.015	-.001	-.001	.0000	-.0000	-.0000
RUN	255	4.	4.	-5.	-1.	-85.	-59.	.015	-.001	.001	.0000	-.0000	-.0000
	260	-4.	-4.	5.	1.	-0.	130.	.018	-.000	.000	.0000	-.0001	.0002
FGRUN	260	4.	-0.	-0.	-1.	0.	-130.	.018	.000	.000	.0000	.0001	.0002
	265	-4.	0.	0.	1.	-0.	130.	.019	.002	-.000	.0000	.0001	.0003
ELBOW	265	4.	-0.	-0.	-1.	0.	-130.	.019	.002	-.000	.0000	.0001	.0003
	270	-4.	0.	0.	0.	0.	121.	.019	.003	-.000	.0000	.0001	.0005
FGRUN	270	4.	-0.	-0.	-0.	-3.	-121.	.019	.003	-.000	.0000	.0001	.0005
	275	-4.	0.	0.	0.	3.	81.	.013	.005	-.000	.0000	.0001	.0006
RUN	275	4.	0.	-0.	-0.	-0.	-81.	.013	.005	-.000	.0000	.0001	.0006
	280	-4.	-0.	0.	0.	0.	0.	.000	.009	-.000	.0000	.0001	.0007
FGRUN	30	0.	-1.	-0.	-4.	-1.	-8.	.007	-.000	.004	.0001	-.0000	-.0000
	285	-0.	1.	0.	5.	1.	8.	.007	.001	.004	.0000	-.0000	.0000
FGRUN	285	-0.	-0.	-0.	0.	-8.	-0.	.007	.001	.004	.0000	-.0000	.0000
	290	0.	0.	0.	-0.	8.	0.	.007	.001	.005	.0000	-.0000	.0000
RUN	290	-0.	-0.	0.	-0.	-0.	0.	.007	.001	.005	.0000	-.0000	.0000
	295	0.	0.	-0.	0.	-0.	-0.	.007	.000	.006	.0000	-.0000	.0000
FGRUN	285	0.	1.	-0.	5.	-1.	-8.	.007	.001	.004	.0000	-.0000	.0000
	300	-0.	-1.	0.	-7.	1.	7.	.006	.003	.004	-.0000	.0000	.0001
FGRUN	300	0.	-1.	-0.	7.	-1.	-7.	.006	.003	.004	-.0000	.0000	.0001
	305	-0.	1.	0.	-8.	1.	7.	.004	.005	.003	-.0001	.0000	.0002

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
ELBOW	305	0.	1.	-0.	8.	-1.	-7.	.004	.005	.003	-.0001	.0000	.0002
	310	-0.	-1.	0.	-9.	1.	7.	.004	.005	.003	-.0001	.0000	.0002
FGRUN	310	0.	1.	-0.	9.	-1.	-7.	.004	.005	.003	-.0001	.0000	.0002
	315	-0.	-1.	0.	-10.	1.	-3.	.000	.005	.002	-.0002	.0000	.0002
ELBOW	315	0.	1.	-0.	10.	-1.	-3.	.000	.005	.002	-.0002	.0000	.0002
	320	-0.	-1.	0.	-8.	1.	-4.	.000	.005	.002	-.0003	.0000	.0002
FGRUN	320	0.	1.	-0.	8.	-1.	-4.	.000	.005	-.002	-.0003	.0000	.0002
	325	-0.	-1.	0.	14.	1.	-4.	.000	.000	-.002	-.0002	-.0000	.0002
RUN	325	0.	0.	-0.	-14.	0.	-4.	.000	-.000	-.002	-.0002	-.0000	.0002
	330	-0.	0.	0.	9.	0.	-4.	.000	-.002	-.005	-.0000	-.0000	.0001
RUN	330	-0.	-0.	-0.	-9.	-0.	-4.	.000	-.002	-.005	-.0000	-.0000	-.0001
	335	0.	0.	0.	4.	1.	-4.	.000	-.002	-.009	.0001	.0000	-.0000
FGRUN	335	-0.	-0.	-0.	-4.	-1.	-4.	.000	-.002	-.009	.0001	.0000	-.0000
	340	0.	0.	0.	1.	2.	-4.	.000	-.000	-.011	.0001	.0000	-.0001
FGRUN	340	0.	1.	-0.	3.	-3.	-7.	.000	-.000	-.011	.0001	.0000	-.0001
	345	-0.	-1.	0.	-6.	-3.	-7.	.000	-.000	-.012	.0001	.0000	-.0001
FGRUN	345	-0.	1.	-0.	6.	3.	-7.	.000	-.000	-.012	.0001	-.0000	-.0001
	350	0.	-1.	0.	-3.	-2.	-7.	.000	.000	-.013	.0001	-.0000	-.0002
ELBOW	350	-0.	1.	-0.	3.	-2.	-7.	.000	.000	-.013	.0001	-.0000	-.0002
	355	0.	-1.	0.	-2.	-2.	-7.	.000	.001	-.013	.0001	-.0000	-.0002
FGRUN	355	-0.	1.	-0.	2.	-2.	-7.	.000	.001	-.013	.0001	-.0000	-.0002
	360	0.	-1.	0.	-4.	-2.	-5.	.003	.003	-.012	.0000	-.0000	-.0002
RUN	360	-0.	1.	-0.	4.	-2.	-5.	.003	.003	-.012	.0000	-.0000	-.0002
	365	0.	-1.	0.	-7.	-2.	-1.	.009	.007	-.013	-.0001	-.0001	-.0003
FGRUN	365	-0.	1.	-0.	7.	-2.	1.	.009	.007	-.013	-.0001	-.0001	-.0003
	370	0.	-1.	0.	-9.	-2.	0.	.013	.009	-.015	-.0002	-.0001	-.0003
ELBOW	370	-0.	1.	-0.	9.	-2.	-0.	.013	.009	-.015	-.0002	-.0001	-.0003
	375	0.	-1.	0.	-9.	-2.	-0.	.013	.010	-.015	-.0002	-.0001	-.0003
FGRUN	375	-0.	1.	-0.	9.	-2.	0.	.013	.010	-.015	-.0002	-.0001	-.0003
	380	0.	-1.	0.	-9.	-4.	-7.	.011	.013	-.016	-.0003	-.0002	-.0004
ELBOW	380	-0.	1.	-0.	9.	-4.	-7.	.011	.013	-.016	-.0003	-.0002	-.0004
	385	0.	-1.	0.	-9.	-4.	-8.	.011	.013	-.016	-.0004	-.0002	-.0004

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	385	-0.	1.	-0.	9.	4.	8.	.011	.013	-.016	-.0004	-.0002	-.0004
	390	0.	-1.	0.	-8.	-4.	-8.	.009	.013	-.015	-.0004	-.0002	-.0004
ELBOW	390	-0.	1.	-0.	8.	4.	8.	.009	.013	-.015	-.0004	-.0002	-.0004
	395	0.	-1.	0.	-8.	-4.	-8.	.009	.012	-.014	-.0004	-.0002	-.0005
FGRUN	395	-0.	1.	-0.	8.	4.	8.	.009	.012	-.014	-.0004	-.0002	-.0005
	400	0.	-1.	0.	-0.	-0.	-0.	.014	.000	-.014	-.0005	-.0002	-.0005
FGRUN	340	-0.	1.	-0.	-4.	-3.	-3.	.000	-.000	-.011	.0001	.0000	-.0001
	405	0.	-1.	0.	4.	3.	2.	-.002	.003	-.008	.0002	.0001	-.0000
FGRUN	405	-0.	1.	-0.	-4.	-3.	-2.	-.002	.003	-.008	.0002	.0001	-.0000
	410	0.	-1.	0.	4.	3.	0.	-.004	.005	-.005	.0002	.0001	-.0000
ELBOW	410	-0.	1.	-0.	-4.	-3.	-0.	-.004	.005	-.005	.0002	.0001	-.0000
	415	0.	-1.	0.	3.	3.	0.	-.004	.005	-.004	.0002	.0002	-.0000
FGRUN	415	-0.	1.	-0.	-3.	-3.	0.	-.004	.005	-.004	.0002	.0002	-.0000
	420	0.	-1.	0.	-3.	-1.	-0.	-.002	.003	-.002	.0002	.0002	-.0000
RUN	420	-0.	1.	-0.	3.	1.	0.	-.002	.003	-.002	.0002	.0002	-.0000
	425	0.	-1.	0.	-9.	-6.	-0.	-.000	.000	.000	.0002	.0001	-.0000
RUN	425	0.	-0.	-0.	9.	6.	0.	-.000	.000	.000	.0002	.0001	-.0000
	430	-0.	0.	0.	-6.	-4.	-0.	.001	-.002	.004	.0000	.0000	-.0000
RUN	430	0.	-0.	-0.	6.	4.	0.	.001	-.002	.004	.0000	.0000	-.0000
	435	-0.	0.	0.	-3.	-2.	-0.	.001	-.002	.008	-.0001	-.0000	-.0000
RUN	435	0.	-0.	-0.	3.	2.	-0.	.001	-.002	.008	-.0001	-.0000	-.0000
	440	-0.	0.	-0.	-0.	-0.	0.	.000	-.000	.012	-.0001	-.0001	-.0000

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APPENDIX E
SEISMIC ANALYSES RESULTS

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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SUPPORT REACTIONS FOR LOAD CASE NO. 3

SSE RESPONSE

NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
5	FORCE	-485.	X COORD
5	FORCE	-629.	Y COORD
5	FORCE	-322.	Z COORD
5	MOMENT	-724.	X COORD
5	MOMENT	-3338.	Y COORD
5	MOMENT	-5664.	Z COORD
5	FORCE	-193.	Y COORD
5	FORCE	-151.	Z COORD
85	FORCE	-111.	Y COORD
85	FORCE	-63.	Z COORD
120	FORCE	5.	X COORD
120	FORCE	-90.	Y COORD
130	FORCE	-140.	X COORD
130	FORCE	-36.	Y COORD
130	FORCE	-85.	Z COORD
130	FORCE	-126.	X COORD
130	FORCE	-94.	Y COORD
130	FORCE	-47.	Z COORD
130	FORCE	-53.	X COORD
130	FORCE	-24.	Y COORD
160	FORCE	-2.	Z COORD
160	FORCE	-4.	X COORD
175	FORCE	-83.	Y COORD
175	FORCE	-9.	Z COORD
185	FORCE	-15.	X COORD
210	FORCE	-18.	Y COORD
210	FORCE	-90.	Z COORD
225	FORCE	-115.	X COORD
225	FORCE	-111.	Y COORD
250	FORCE	-178.	Z COORD
250	FORCE	-114.	X COORD
250	FORCE	-85.	Y COORD
250	FORCE	-2.	Z COORD
280	FORCE	-22.	X COORD
280	FORCE	-15.	Y COORD
325	FORCE	-18.	Z COORD
325	FORCE	-74.	X COORD
345	FORCE	-20.	Y COORD
345	FORCE	-103.	Z COORD
400	FORCE	-7.	X COORD
400	FORCE	-21.	Y COORD
425	FORCE	-47.	INCLINED
425	FORCE		X COORD

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
425	FORCE	-25.	Y COORD
440	FORCE	-4.	X COORD
440	FORCE	-15.	Y COORD

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LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

INTERNAL FORCES AND DEFLECTIONS FOR LOAD CASE NO. 3

SSE RESPONSE

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	5	-485.	-628.	-321.	-724.	3338.	-5664.	.000	.000	.000	.0000	-.0000	.0000
	10	483.	628.	321.	724.	-2856.	4723.	.000	.000	.000	.0001	-.0003	.0004
SRUN	10	-483.	-625.	-320.	-724.	2856.	-4723.	.000	.000	.000	.0001	-.0003	.0004
	11	482.	625.	320.	724.	-2377.	3785.	.000	.002	.001	.0002	-.0005	.0008
VALVE	11	-482.	-458.	-244.	-724.	2377.	-3785.	.000	.002	.001	.0002	-.0005	.0008
	15	332.	458.	244.	724.	-915.	1036.	.000	.008	.005	.0003	-.0006	.0010
SRUN	15	-332.	-287.	-166.	-724.	915.	-1036.	.000	.008	.005	.0003	-.0006	.0010
	20	326.	287.	166.	724.	79.	-688.	.000	.014	.009	.0006	-.0008	.0011
VALVE	20	-326.	-149.	-103.	-724.	79.	688.	.000	.014	.009	.0006	-.0008	.0011
	25	206.	149.	103.	724.	695.	-1583.	.000	.021	.014	.0007	-.0007	.0010
SRUN	25	-206.	-8.	-38.	-724.	-695.	1583.	.000	.021	.014	.0007	-.0007	.0010
	31	197.	8.	38.	724.	1041.	-1657.	.000	.026	.019	.0011	-.0003	.0002
FGRUN	31	-197.	7.	-32.	-724.	-1041.	1657.	.000	.026	.019	.0011	-.0003	.0002
	30	192.	-7.	32.	724.	1230.	-1616.	.000	.025	.019	.0014	.0001	-.0004
FGRUN	30	-139.	60.	74.	651.	-930.	1203.	.000	.025	.019	.0014	.0001	-.0004
	35	137.	-60.	-74.	-651.	817.	-1112.	.000	.025	.019	.0013	.0001	-.0005
ELBOW	35	-137.	65.	76.	651.	-817.	1112.	.000	.025	.019	.0013	.0001	-.0005
	40	134.	-65.	-76.	-623.	654.	-925.	.000	.024	.019	.0012	.0003	-.0007
FGRUN	40	-134.	78.	83.	623.	-654.	925.	.000	.024	.019	.0012	.0003	-.0007
	45	125.	-78.	-83.	-385.	215.	-136.	-.001	.018	.014	.0009	.0005	-.0009
RUN	45	-125.	99.	92.	385.	-215.	136.	-.001	.018	.014	.0009	.0005	-.0009
	50	115.	-99.	-92.	-82.	352.	867.	-.003	.011	.009	.0007	.0005	-.0007
ELBOW	50	-115.	113.	98.	82.	352.	-867.	-.003	.011	.009	.0007	.0005	-.0007
	55	112.	-113.	-98.	-34.	-588.	1194.	-.003	.010	.008	.0007	.0004	-.0005
RUN	55	-112.	-66.	-46.	34.	588.	-1194.	-.003	.010	.008	.0007	.0004	-.0005
	60	102.	66.	46.	-34.	-65.	439.	-.003	.007	.005	.0007	.0002	-.0000
ELBOW	60	-102.	-47.	-37.	34.	65.	-439.	-.003	.007	.005	.0007	.0002	-.0000
	65	95.	47.	37.	103.	-92.	108.	-.002	.006	.003	.0007	.0002	.0001

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	65	-95.	-37.	-33.	-103.	92.	-108.	-.002	.006	.003	.0007	.0002	.0001
	70	93.	37.	33.	149.	-167.	63.	-.002	.005	.003	.0007	.0002	.0001
ELBOW	70	-93.	-28.	-28.	-149.	167.	-63.	-.002	.005	.003	.0007	.0002	.0001
	75	86.	28.	28.	229.	-231.	-132.	-.002	.004	.002	.0008	.0000	.0001
FGRUN	75	-86.	-8.	-19.	-229.	231.	132.	-.002	.004	.002	.0008	.0000	.0001
	80	75.	8.	19.	229.	-5.	-224.	-.002	.005	.003	.0010	-.0000	.0000
FGRUN	80	-56.	27.	31.	-268.	116.	-132.	-.002	.005	.003	.0010	-.0000	.0000
	85	51.	-27.	-31.	268.	-273.	270.	-.002	.006	.003	.0009	-.0001	.0001
FGRUN	85	-51.	-73.	-27.	-268.	273.	-270.	-.002	.006	.003	.0009	-.0001	.0001
	90	47.	73.	27.	268.	-138.	-99.	-.002	.006	.004	.0008	-.0002	.0001
FGRUN	90	-38.	-12.	-14.	136.	138.	24.	-.002	.006	.004	.0008	-.0002	.0001
	95	24.	12.	14.	-136.	74.	-209.	-.002	.007	.007	.0006	-.0002	.0000
FGRUN	95	-24.	12.	-3.	136.	-74.	209.	-.002	.007	.007	.0006	-.0002	.0000
	100	16.	-12.	3.	-136.	103.	-104.	-.002	.007	.008	.0006	-.0001	-.0001
ELBOW	100	-16.	-25.	-3.	136.	-103.	104.	-.002	.007	.008	.0006	-.0001	-.0001
	105	11.	-25.	-3.	-126.	93.	13.	-.001	.006	.010	.0004	-.0000	-.0001
FGRUN	105	-11.	34.	7.	126.	-93.	-13.	-.001	.006	.010	.0004	-.0000	-.0001
	110	8.	-34.	-7.	-98.	93.	50.	-.001	.006	.012	.0004	-.0000	-.0001
ELBOW	110	-8.	43.	11.	98.	-93.	-50.	-.001	.006	.012	.0004	-.0000	-.0001
	115	3.	-43.	-11.	-194.	77.	67.	-.000	.005	.013	.0003	.0000	-.0001
FGRUN	115	-3.	51.	15.	194.	-77.	-67.	-.000	.005	.013	.0003	.0000	-.0001
	120	1.	-51.	-15.	-346.	71.	67.	-.000	.005	.013	.0002	.0000	-.0001
RUN	120	4.	-20.	23.	346.	-71.	-67.	-.000	.005	.013	.0002	.0000	-.0001
	125	-19.	20.	-23.	-19.	251.	67.	-.001	.002	.013	.0001	.0002	-.0000
RUN	125	19.	12.	38.	19.	-251.	-67.	.001	.002	.013	-.0001	.0002	-.0000
	130	-33.	-12.	-38.	-206.	667.	67.	.007	.002	.013	-.0000	.0006	.0001
ELBOW	130	-106.	8.	52.	206.	-667.	-67.	.007	.002	.013	-.0000	.0006	.0001
	135	92.	-8.	-52.	-283.	-850.	143.	.014	.004	.006	-.0003	.0004	.0002
RUN	135	-92.	-54.	-62.	283.	850.	-143.	.014	.004	.006	-.0003	.0004	.0002
	140	85.	54.	62.	-283.	-350.	-288.	.014	.006	.004	-.0005	.0001	.0001
FGRUN	140	-85.	-35.	-54.	283.	350.	288.	.014	.006	.004	-.0005	.0001	.0001
	145	75.	35.	54.	-283.	243.	-673.	.014	.006	.003	-.0007	.0001	-.0001

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PAGE 49

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	145	-24.	103.	47.	0.	-250.	673.	.014	.006	.003	-.0007	.0001	-.0001
	150	18.	-103.	-47.	-0.	-33.	-57.	.014	.005	.002	-.0007	.0002	-.0003
RUN	150	-18.	22.	7.	0.	33.	57.	.014	.005	.002	-.0007	.0002	-.0003
	155	11.	-22.	-7.	-0.	-89.	124.	.014	.003	.001	-.0007	.0001	-.0002
RUN	155	-11.	-10.	-7.	0.	89.	-124.	.014	.003	.001	-.0007	.0001	-.0002
	160	-0.	10.	7.	-0.	-0.	-0.	.014	.000	-.000	-.0007	.0001	-.0002
FGRUN	145	-51.	-112.	-89.	283.	7.	0.	.014	.006	.003	-.0007	.0001	-.0001
	165	43.	112.	89.	956.	-525.	-0.	.014	.013	.003	-.0002	-.0002	-.0001
VALVE	165	-43.	-21.	-48.	-956.	525.	0.	.014	.013	.003	-.0002	-.0002	-.0001
	170	-32.	21.	48.	1084.	-558.	0.	.012	.014	.003	-.0000	-.0004	-.0001
FGRUN	170	32.	72.	-5.	-1084.	558.	0.	.012	.014	.003	-.0000	-.0004	-.0001
	175	-42.	-72.	5.	0.	-0.	-0.	.002	.004	.003	.0009	-.0008	-.0001
FGRUN	90	-9.	-32.	0.	132.	0.	75.	-.002	.006	.004	-.0008	-.0002	-.0001
	180	2.	32.	-0.	-128.	-0.	24.	-.000	.006	.009	-.0002	-.0002	-.0001
RUN	180	-2.	-16.	8.	128.	0.	-24.	-.000	.006	.009	-.0002	-.0002	-.0001
	185	-6.	16.	-8.	14.	-0.	-14.	-.000	.006	.001	-.0006	-.0002	-.0001
RUN	185	-3.	-4.	-2.	-14.	0.	14.	.000	.006	.001	-.0006	-.0002	-.0001
	190	-0.	4.	2.	-0.	0.	-0.	.001	.006	-.004	-.0006	-.0002	-.0001
FGRUN	80	-19.	-6.	-37.	-497.	-111.	-356.	-.002	.005	.003	.0010	-.0000	-.0000
	195	8.	6.	37.	-98.	111.	-138.	.002	.005	.023	.0013	-.0002	-.0004
RUN	195	-8.	16.	-27.	98.	-111.	138.	.002	.005	.023	.0013	.0002	-.0004
	200	-1.	-16.	27.	-471.	111.	-90.	.010	.005	.039	.0009	.0004	-.0006
ELBOW	200	1.	29.	-21.	471.	-111.	90.	.010	.005	.039	.0009	.0004	-.0006
	205	-4.	-29.	21.	-454.	105.	-95.	.010	.006	.040	.0001	.0005	-.0007
FGRUN	205	-4.	43.	-15.	454.	-105.	95.	.010	.006	.040	-.0001	.0005	-.0007
	210	-14.	-43.	15.	-227.	-35.	-95.	.001	.004	.040	-.0001	.0006	-.0009
RUN	210	-3.	-20.	-3.	-227.	35.	95.	.001	.004	.040	-.0001	.0006	-.0009
	215	-10.	20.	3.	-166.	-103.	-95.	-.010	.005	.040	-.0000	.0004	-.0012
RUN	215	10.	10.	11.	166.	103.	95.	-.010	.005	.040	-.0000	.0004	-.0012
	220	-24.	-10.	-11.	41.	-445.	-95.	-.014	.002	.040	-.0002	-.0002	-.0015
RUN	220	24.	40.	25.	-41.	445.	95.	-.014	.002	.040	-.0002	-.0002	-.0015
	225	-38.	-40.	-25.	849.	-1061.	-95.	.006	.006	.040	.0009	-.0020	-.0018

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LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	225	-77.	-37.	40.	-849.	1061.	95.	.006	.006	.040	.0009	-.0020	-.0018
	230	61.	37.	-40.	-48.	593.	-95.	.071	.045	.040	.0020	-.0026	-.0021
RUN	230	-61.	-12.	52.	48.	-593.	95.	.071	.045	.040	.0020	-.0026	-.0021
	235	54.	12.	-52.	-170.	1193.	-95.	.093	.065	.040	.0019	-.0015	-.0023
ELBOW	235	-54.	5.	59.	170.	-1193.	95.	.093	.065	.040	.0019	-.0015	-.0023
	240	46.	-5.	-59.	-132.	1122.	-57.	.099	.061	.042	.0016	-.0005	-.0024
RUN	240	-46.	22.	67.	132.	-1122.	57.	.099	.061	.042	.0016	.0005	-.0024
	245	38.	-22.	-67.	-132.	421.	170.	.099	.036	.030	.0014	.0015	-.0023
RUN	245	-38.	41.	76.	132.	-421.	-170.	.099	.036	.030	.0014	.0015	-.0023
	250	28.	-41.	-76.	-132.	-788.	832.	.099	.004	.006	.0011	.0012	-.0014
RUN	250	-28.	-12.	-27.	132.	788.	-832.	.099	-.004	-.006	.0011	.0012	-.0014
	255	16.	12.	27.	-132.	-341.	632.	.099	-.007	-.003	.0007	.0001	-.0000
RUN	255	-16.	13.	-16.	132.	341.	-632.	.099	-.007	-.003	.0007	-.0001	.0000
	260	5.	-13.	16.	-132.	-82.	842.	.099	.004	.000	.0004	-.0003	.0014
FGRUN	260	-5.	-55.	-10.	132.	82.	-842.	.099	.004	.000	.0004	-.0003	.0014
	265	0.	55.	10.	-132.	-14.	472.	.099	.016	.003	.0003	-.0004	.0020
ELBOW	265	-0.	-47.	-6.	132.	14.	-472.	.099	.016	.003	.0003	-.0004	.0020
	270	-2.	47.	6.	-147.	0.	364.	.094	.021	.004	.0001	-.0003	.0026
FGRUN	270	2.	-37.	-2.	147.	0.	-364.	.094	.021	.004	.0001	-.0003	.0026
	275	-9.	37.	2.	-165.	-0.	311.	.066	.021	.004	-.0000	-.0003	.0030
RUN	275	9.	-15.	8.	165.	0.	-311.	.066	.021	.004	-.0000	-.0003	.0030
	280	-22.	15.	-8.	-0.	-0.	0.	.001	.021	.001	-.0002	-.0003	.0034
FGRUN	30	-53.	-44.	-102.	-1375.	-299.	413.	.000	.025	.019	.0014	.0001	-.0004
	285	52.	44.	102.	765.	299.	-98.	.008	.025	.049	.0076	.0023	-.0018
FGRUN	285	-33.	-71.	-32.	364.	-166.	0.	.008	-.025	.049	.0076	.0023	-.0018
	290	32.	71.	32.	-8.	4.	-0.	.021	-.010	.049	.0067	.0027	-.0018
RUN	290	-1.	-2.	-1.	8.	-4.	0.	.021	-.010	.049	.0067	.0027	-.0018
	295	0.	2.	1.	0.	0.	-0.	.035	-.044	.049	.0067	.0027	-.0018
FGRUN	285	-19.	34.	-66.	-1129.	-133.	98.	.008	.025	.049	.0076	.0023	-.0018
	300	15.	-34.	66.	336.	133.	107.	.032	.025	.201	.0161	.0043	-.0018
FGRUN	300	-15.	41.	-63.	-336.	-133.	-107.	.032	.025	.201	.0161	.0043	-.0018
	305	12.	-41.	63.	-388.	133.	265.	.043	.025	.394	.0158	.0063	.0003

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 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
ELBOW	305	-12.	-45.	-61.	388.	-133.	-265.	.043	.025	.394	.0158	.0063	.0003
	310	12.	-45.	61.	-437.	113.	259.	.042	.025	.408	.0150	.0063	.0009
FGRUN	310	-12.	-49.	-59.	437.	-113.	-259.	.042	.025	.408	.0150	.0063	.0009
	315	9.	-49.	59.	-874.	-324.	-24.	.029	.012	.542	.0076	.0060	.0021
ELBOW	315	-9.	-53.	-58.	874.	324.	24.	.029	.012	.542	.0076	.0060	.0021
	320	8.	-53.	58.	-861.	-360.	-59.	.022	.016	.551	.0037	.0039	.0023
FGRUN	320	-8.	-58.	-55.	861.	360.	59.	.022	.016	.551	.0037	.0039	.0023
	325	4.	-58.	55.	-124.	-260.	-59.	.001	.004	.551	-.0024	-.0011	.0010
RUN	325	-22.	-5.	-50.	-124.	260.	59.	.001	.004	.551	-.0024	-.0011	.0010
	330	17.	5.	50.	35.	88.	-59.	.044	-.024	.551	-.0010	-.0026	-.0003
RUN	330	-17.	6.	-45.	-35.	-88.	59.	.044	-.024	.551	-.0010	-.0026	-.0003
	335	12.	-6.	45.	147.	344.	-59.	.064	-.030	.551	.0006	.0011	-.0016
FGRUN	335	-12.	-16.	-41.	-147.	-344.	59.	.064	-.030	.551	.0006	.0011	-.0016
	340	8.	-16.	41.	334.	464.	-59.	.024	-.008	.551	.0034	.0058	-.0025
FGRUN	340	-25.	55.	-5.	85.	-199.	33.	.024	-.008	.551	.0034	.0058	-.0025
	345	24.	-55.	5.	131.	296.	-33.	-.001	.005	.551	.0035	.0068	-.0027
FGRUN	345	-4.	-46.	-3.	-131.	-296.	33.	-.001	.005	.551	.0035	.0068	-.0027
	350	3.	46.	3.	-92.	312.	-33.	-.038	.023	.551	.0036	.0082	-.0029
ELBOW	350	-3.	-44.	-2.	92.	-312.	33.	-.038	.023	.551	.0036	.0082	-.0029
	355	2.	44.	2.	-144.	315.	-30.	-.044	.027	.555	.0030	.0093	-.0027
FGRUN	355	-2.	-40.	-1.	144.	-315.	30.	-.044	.027	.555	.0030	.0093	-.0027
	360	1.	40.	1.	-150.	315.	-24.	-.013	.027	.579	.0014	.0136	-.0030
RUN	360	-1.	-29.	-4.	150.	-315.	24.	-.013	.027	.579	.0014	.0136	-.0030
	365	8.	29.	4.	-46.	315.	-128.	.075	.027	.582	-.0008	.0231	-.0048
FGRUN	365	-8.	-18.	-9.	46.	-315.	128.	.075	.027	.582	-.0008	.0231	-.0048
	370	11.	18.	9.	55.	315.	-229.	.136	.027	.572	-.0008	.0274	-.0066
ELBOW	370	-11.	-14.	-11.	-55.	-315.	229.	.136	.027	.572	-.0008	.0274	-.0066
	375	11.	14.	11.	68.	328.	-225.	.144	.035	.603	-.0003	.0286	-.0078
FGRUN	375	-11.	-14.	-11.	-68.	-328.	225.	.144	.035	.603	-.0003	.0286	-.0078
	380	14.	11.	13.	-68.	452.	-122.	.144	.120	.899	.0005	.0323	-.0094
ELBOW	380	-14.	-7.	-14.	68.	-452.	122.	.144	.120	.899	.0005	.0323	-.0094
	385	15.	7.	14.	51.	468.	-98.	.133	.131	.936	.0004	.0339	-.0099

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S54B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	385	-15.	-5.	-15.	-51.	-468.	98.	.133	.131	.936	.0004	.0339	-.0099
	390	-16.	-5.	-15.	-5.	468.	-41.	.096	.131	.934	.0004	.0361	-.0102
ELBOW	390	-16.	-4.	-16.	5.	-468.	-41.	.096	.131	.934	.0004	.0361	-.0102
	395	-16.	4.	-16.	-26.	442.	-26.	.054	.123	.904	.0006	.0377	-.0106
FGRUN	395	-16.	2.	-19.	26.	-442.	26.	.054	.123	.904	.0006	.0377	-.0106
	400	-21.	-2.	-19.	-0.	0.	-0.	-.424	.000	.425	.0004	.0413	-.0108
FGRUN	340	-17.	-29.	-31.	-419.	-265.	26.	.024	-.008	.551	.0034	.0058	-.0025
	405	-22.	29.	31.	20.	-134.	91.	.054	.023	.716	.0076	.0066	-.0020
FGRUN	405	-22.	-18.	-26.	-20.	134.	-91.	.054	.023	.716	.0076	.0066	-.0020
	410	-27.	18.	26.	-295.	-449.	12.	.071	.040	.854	.0058	.0014	-.0011
ELBOW	410	-27.	-12.	-24.	295.	449.	-12.	.071	.040	.854	.0058	.0014	-.0011
	415	-27.	12.	24.	-300.	-438.	0.	.072	.035	.859	.0042	-.0007	-.0010
FGRUN	415	-27.	-8.	-22.	300.	438.	0.	.072	.035	.859	.0042	-.0007	-.0010
	420	-30.	8.	22.	-213.	-125.	-0.	.046	.005	.859	.0015	-.0036	-.0010
RUN	420	-30.	-1.	-19.	213.	125.	0.	.046	.005	.859	.0015	-.0036	-.0010
	425	-34.	1.	19.	-203.	259.	-0.	.002	.001	.859	-.0009	-.0028	-.0010
RUN	425	-13.	-16.	-14.	203.	-259.	0.	.002	.001	.859	-.0009	-.0028	-.0010
	430	7.	16.	14.	115.	59.	-0.	-.017	.038	.859	-.0018	.0002	-.0010
RUN	430	-7.	-3.	-9.	-115.	-59.	0.	-.017	.038	.859	-.0018	.0002	-.0010
	435	1.	3.	9.	182.	-28.	-0.	-.007	.047	.859	.0011	.0005	-.0010
RUN	435	-1.	-9.	-3.	-182.	28.	-0.	-.007	.047	.859	.0011	.0005	-.0010
	440	-4.	-9.	3.	0.	0.	0.	.000	.001	.859	.0029	.0003	-.0010

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LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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SUPPORT REACTIONS FOR LOAD COMBINATION CASE NO. 4
OBE RESPONSE - ONE-HALF SSE

NODE	TYPE	REACTIONS (LBS OR IN-LBS)	DIRECTION
5	FORCE	-242.	X COORD
5	FORCE	-315.	Y COORD
5	FORCE	-161.	Z COORD
5	MOMENT	-382.	X COORD
5	MOMENT	166.	Y COORD
5	MOMENT	-283.	Z COORD
5	FORCE	-97.	Y COORD
5	FORCE	-75.	Z COORD
5	FORCE	-55.	Y COORD
5	FORCE	-31.	Z COORD
120	FORCE	-2.	X COORD
120	FORCE	-45.	Y COORD
130	FORCE	-70.	X COORD
130	FORCE	-18.	Y COORD
130	FORCE	-43.	Y COORD
130	FORCE	-63.	Z COORD
130	FORCE	-47.	Y COORD
130	FORCE	-23.	Z COORD
130	FORCE	-20.	Y COORD
130	FORCE	-12.	Z COORD
160	FORCE	-1.	Y COORD
160	FORCE	-1.	Z COORD
175	FORCE	-21.	X COORD
175	FORCE	-42.	Y COORD
185	FORCE	-5.	X COORD
185	FORCE	-8.	Z COORD
210	FORCE	-9.	X COORD
210	FORCE	-45.	Y COORD
225	FORCE	-57.	X COORD
225	FORCE	-55.	Y COORD
235	FORCE	-39.	Y COORD
235	FORCE	-37.	Z COORD
235	FORCE	-42.	Y COORD
235	FORCE	-11.	Z COORD
235	FORCE	-11.	X COORD
235	FORCE	-8.	Z COORD
325	FORCE	-9.	X COORD
325	FORCE	-37.	Y COORD
325	FORCE	-10.	X COORD
325	FORCE	-52.	Y COORD
400	FORCE	-4.	Y COORD
400	FORCE	-10.	INCLINED
425	FORCE	-23.	X COORD
425	FORCE	-12.	Y COORD
440	FORCE	-2.	X COORD

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NODE	TYPE	REACTIONS (LBS OR IN-LBS)	DIRECTION
440	FORCE	-8.	Y COORD

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LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

INTERNAL FORCES AND DEFLECTIONS FOR LOAD CASE NO. 4

OBE RESPONSE - ONE-HALF SSE

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	5	-242.	-314.	-160.	-362.	1669.	-2832.	.000	.000	.000	.0000	-.0000	.0000
	10	242.	314.	160.	362.	-1428.	2361.	.000	.000	.000	.0000	-.0001	.0002
SRUN	10	-242.	-312.	-160.	-362.	1428.	-2361.	.000	.000	.000	.0000	-.0001	.0002
	11	241.	312.	160.	362.	-1188.	1893.	.000	.001	.000	.0001	-.0002	.0004
VALVE	11	-241.	-229.	-122.	-362.	1188.	-1893.	.000	.001	.000	.0001	-.0002	.0004
	15	166.	229.	122.	362.	-458.	518.	.000	.004	.002	.0001	-.0003	.0005
SRUN	15	-166.	-144.	-83.	-362.	458.	-518.	.000	.004	.002	.0001	-.0003	.0005
	20	163.	144.	83.	362.	-39.	344.	.000	.007	.005	.0003	-.0004	.0005
VALVE	20	-163.	-75.	-51.	-362.	-39.	344.	.000	.007	.005	.0003	-.0004	.0005
	25	103.	75.	51.	362.	348.	-792.	.000	.010	.007	.0003	-.0004	.0005
SRUN	25	-103.	-4.	-19.	-362.	-348.	792.	.000	.010	.007	.0003	-.0004	.0005
	31	99.	4.	19.	362.	520.	-829.	.000	.013	.009	.0006	-.0002	.0001
FGRUN	31	-99.	3.	-16.	-362.	-520.	829.	.000	.013	.009	.0006	-.0002	.0001
	30	96.	-3.	16.	362.	615.	-808.	.000	.013	.010	.0007	.0000	-.0002
FGRUN	30	-69.	30.	37.	326.	-465.	602.	.000	.013	.010	.0007	.0000	-.0002
	35	69.	-30.	-37.	-326.	409.	-556.	.000	.012	.010	.0007	.0001	-.0002
ELBOW	35	-69.	32.	38.	326.	-409.	556.	.000	.012	.010	.0007	.0001	-.0002
	40	67.	-32.	-38.	-312.	327.	-463.	.000	.012	.009	.0006	.0001	-.0003
FGRUN	40	-67.	39.	41.	312.	-327.	463.	.000	.012	.009	.0006	.0001	-.0003
	45	62.	-39.	-41.	-193.	107.	-68.	-.000	.009	.007	.0004	.0003	-.0005
RUN	45	-62.	50.	46.	193.	-107.	68.	-.000	.009	.007	.0004	.0003	-.0005
	50	58.	-50.	-46.	-41.	-176.	434.	-.001	.006	.004	.0003	.0002	-.0004
ELBOW	50	-58.	56.	49.	41.	176.	-434.	-.001	.006	.004	.0003	.0002	-.0004
	55	56.	-56.	-49.	-17.	-294.	597.	-.001	.005	.004	.0003	.0002	-.0003
RUN	55	-56.	-33.	-23.	17.	294.	-597.	-.001	.005	.004	.0003	.0002	-.0003
	60	51.	33.	23.	-17.	-33.	219.	-.001	.004	.002	.0003	.0001	-.0000
ELBOW	60	-51.	23.	-18.	17.	33.	-219.	-.001	.004	.002	.0003	.0001	-.0000
	65	47.	-23.	18.	52.	-46.	54.	-.001	.003	.002	.0003	.0001	-.0001
RUN	65	-47.	-19.	-16.	-52.	46.	-54.	-.001	.003	.002	.0003	.0001	.0001
	70	47.	19.	16.	74.	-84.	31.	-.001	.003	.002	.0003	.0001	.0001

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 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
ELBOW	70	-47.	-14.	-14.	-74.	84.	-31.	-.001	.003	.002	.0003	.0001	.0001
	75	43.	14.	14.	115.	-115.	-66.	-.001	.002	.001	.0004	.0000	.0001
FGRUN	75	-43.	-4.	-10.	-115.	115.	66.	-.001	.002	.001	.0004	.0000	.0001
	80	38.	4.	10.	115.	-2.	-112.	-.001	.003	.001	.0005	-.0000	.0000
FGRUN	80	-28.	14.	16.	134.	58.	-66.	-.001	.003	.001	.0005	-.0000	.0000
	85	26.	-14.	-16.	-134.	-137.	135.	-.001	.003	.002	.0004	-.0001	.0000
FGRUN	85	-26.	-37.	-13.	134.	137.	-135.	-.001	.003	.002	.0004	-.0001	.0000
	90	23.	37.	13.	-134.	-69.	-49.	-.001	.003	.002	.0004	-.0001	.0000
FGRUN	90	-19.	-6.	-7.	68.	69.	12.	-.001	.003	.002	.0004	-.0001	.0000
	95	12.	6.	7.	-68.	37.	-105.	-.001	.004	.003	.0003	-.0001	.0000
FGRUN	95	-12.	-6.	-2.	68.	-37.	105.	-.001	.004	.003	.0003	-.0001	.0000
	100	8.	6.	2.	-68.	51.	-52.	-.001	.003	.004	.0003	-.0001	-.0000
ELBOW	100	-8.	13.	-2.	68.	-51.	52.	-.001	.003	.004	.0003	-.0001	-.0000
	105	6.	-13.	-2.	-63.	47.	6.	-.001	.003	.005	.0002	-.0000	-.0001
FGRUN	105	-6.	17.	4.	63.	-47.	-6.	-.001	.003	.005	.0002	-.0000	-.0001
	110	4.	-17.	-4.	-49.	47.	25.	-.000	.003	.006	.0002	-.0000	-.0001
ELBOW	110	-4.	21.	6.	49.	-47.	-25.	-.000	.003	.006	.0002	-.0000	-.0001
	115	2.	-21.	-6.	-97.	38.	33.	-.000	.003	.006	.0001	.0000	-.0000
FGRUN	115	-2.	25.	7.	97.	-38.	-33.	-.000	.003	.006	.0001	.0000	-.0000
	120	0.	-25.	-7.	-173.	36.	33.	-.000	.002	.006	.0001	.0000	-.0000
RUN	120	2.	-10.	12.	173.	-36.	-33.	-.000	.002	.006	.0001	.0000	-.0000
	125	-9.	10.	-12.	-10.	125.	33.	-.001	.001	.006	.0000	.0001	-.0000
RUN	125	9.	6.	19.	10.	-125.	-33.	.001	.001	.006	-.0000	.0001	-.0000
	130	-17.	-6.	-19.	-103.	33.	33.	.003	.001	.006	-.0000	.0003	.0000
ELBOW	130	-53.	4.	26.	103.	-333.	-33.	.003	.001	.006	-.0000	.0003	.0000
	135	46.	-4.	-26.	-141.	-425.	72.	.007	.002	.003	-.0002	.0002	.0001
RUN	135	-46.	-27.	-31.	141.	425.	-72.	.007	.002	.003	-.0002	.0002	.0001
	140	42.	27.	31.	-141.	-175.	-144.	.007	.003	.002	-.0002	.0001	.0001
FGRUN	140	-42.	-17.	-27.	141.	175.	144.	.007	.003	.002	-.0002	.0001	-.0001
	145	37.	17.	27.	-141.	121.	-336.	.007	.003	.002	-.0003	.0001	-.0001
FGRUN	145	-12.	51.	24.	0.	-125.	336.	.007	.003	.002	-.0003	.0001	-.0001
	150	9.	-51.	-24.	-0.	-16.	-28.	.007	.002	.001	-.0003	.0001	-.0001

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	150	-9.	11.	3.	0.	16.	28.	.007	.002	.001	-.0003	.0001	-.0001
	155	5.	-11.	-3.	-0.	-44.	62.	.007	.001	.001	-.0003	.0001	-.0001
RUN	155	-5.	-5.	-4.	0.	44.	-62.	.007	.001	.001	-.0003	.0001	-.0001
	160	-0.	5.	4.	-0.	-0.	-0.	.007	.000	-.000	-.0003	.0000	-.0001
FGRUN	145	-25.	-56.	-45.	141.	3.	0.	.007	.003	.002	-.0003	.0001	-.0001
	165	22.	56.	45.	478.	-262.	-0.	.007	.006	.002	-.0001	-.0001	-.0001
VALVE	165	-22.	-11.	-24.	-478.	262.	0.	.007	.006	.002	-.0001	-.0001	-.0001
	170	-16.	11.	24.	542.	-279.	0.	.006	.007	.002	-.0000	-.0002	-.0001
FGRUN	170	16.	36.	-3.	-542.	279.	0.	.006	.007	.002	-.0000	-.0002	-.0001
	175	-21.	-36.	3.	0.	-0.	-0.	.001	.002	.002	-.0005	-.0004	-.0001
FGRUN	90	-5.	-16.	0.	66.	0.	38.	-.001	.003	.002	-.0004	-.0001	-.0000
	180	1.	16.	-0.	-64.	-0.	12.	-.000	.003	.005	-.0001	-.0001	-.0000
RUN	180	-1.	-8.	4.	64.	0.	-12.	-.000	.003	.005	-.0001	-.0001	-.0000
	185	-3.	8.	-4.	7.	-0.	-7.	.000	.003	.000	-.0003	-.0001	-.0000
RUN	185	-2.	-2.	-1.	-7.	0.	7.	.000	.003	.000	-.0003	-.0001	-.0000
	190	-0.	2.	1.	-0.	0.	-0.	.001	.003	-.002	-.0003	-.0001	-.0000
FGRUN	80	-10.	-3.	-19.	-249.	-55.	178.	-.001	.003	.001	.0005	-.0000	.0000
	195	4.	3.	19.	-49.	55.	-69.	.001	.003	.011	.0007	.0001	-.0002
RUN	195	-4.	8.	-14.	49.	-55.	69.	.001	.003	.011	.0007	.0001	-.0002
	200	-1.	-8.	14.	-235.	55.	-45.	.005	.003	.020	.0004	.0002	-.0003
ELBOW	200	1.	14.	-11.	235.	-55.	45.	.005	.003	.020	.0004	.0002	-.0003
	205	-2.	-14.	11.	-227.	53.	-48.	.005	.003	.020	.0001	.0003	-.0003
FGRUN	205	2.	22.	-7.	227.	-53.	48.	.005	.003	.020	.0001	.0003	-.0003
	210	-7.	-22.	7.	113.	-18.	-48.	.000	.002	.020	-.0000	.0003	-.0005
RUN	210	-2.	-10.	-1.	-113.	18.	48.	-.000	.002	.020	-.0000	.0003	-.0005
	215	-5.	10.	1.	-83.	-52.	-48.	-.005	.002	.020	-.0000	.0002	-.0006
RUN	215	5.	5.	6.	83.	52.	48.	-.005	.002	.020	-.0000	.0002	-.0006
	220	-12.	-5.	-6.	21.	-223.	-48.	-.007	.001	.020	-.0001	-.0001	-.0007
RUN	220	12.	20.	12.	-21.	223.	48.	-.007	.001	.020	-.0001	-.0001	-.0007
	225	-19.	-20.	-12.	425.	-530.	-48.	.003	.003	.020	.0004	-.0010	-.0009
RUN	225	-39.	-19.	20.	-425.	530.	48.	.003	.003	.020	.0004	-.0010	-.0009
	230	30.	19.	-20.	-24.	297.	-48.	.035	.023	.020	.0010	-.0013	-.0011

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CCNTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	230	-30.	-6.	26.	24.	-297.	48.	.035	.023	.020	.0010	-.0013	-.0011
	235	27.	6.	-26.	-85.	597.	-48.	.047	.033	.020	.0009	-.0008	-.0011
ELBOW	235	-27.	3.	30.	85.	-597.	48.	.047	.033	.020	.0009	-.0008	-.0011
	240	23.	-3.	-30.	-86.	561.	-29.	.049	.030	.021	.0008	.0003	-.0012
RUN	240	-23.	11.	33.	66.	-561.	29.	.049	.030	.021	.0008	.0003	-.0012
	245	19.	-11.	-33.	-66.	211.	85.	.049	.018	.015	.0007	.0007	-.0012
RUN	245	-19.	21.	38.	66.	-211.	-85.	.049	.018	.015	.0007	.0007	-.0012
	250	14.	-21.	-38.	-66.	394.	416.	.049	.002	.003	.0005	.0006	-.0007
RUN	250	-14.	-6.	13.	66.	-394.	-416.	.049	-.002	-.003	.0005	.0006	-.0007
	255	8.	6.	13.	-66.	171.	316.	.049	-.004	-.002	.0004	.0000	.0000
RUN	255	-8.	6.	-8.	66.	-171.	-316.	.049	-.004	-.002	.0004	-.0000	.0000
	260	2.	-6.	8.	-66.	41.	421.	.049	.002	.000	.0002	-.0002	.0007
FGRUN	260	-2.	-27.	-5.	66.	41.	-421.	.049	.002	.000	.0002	-.0002	.0007
	265	0.	27.	5.	-66.	-7.	236.	.049	.008	.001	.0001	-.0002	.0010
ELBOW	265	-0.	-24.	-3.	66.	7.	-236.	.049	.008	.001	.0001	-.0002	.0010
	270	-1.	24.	3.	-73.	0.	182.	.047	.010	.002	.0001	-.0002	.0013
FGRUN	270	1.	-19.	-1.	73.	0.	-182.	.047	.010	.002	-.0001	-.0002	.0013
	275	-4.	19.	1.	-83.	-0.	156.	.033	.010	.002	-.0000	-.0002	.0015
RUN	275	4.	-7.	4.	83.	0.	-156.	.033	.010	.002	-.0000	-.0002	.0015
	280	-11.	7.	-4.	-0.	-0.	0.	.001	.010	.000	-.0001	-.0002	.0017
FGRUN	30	-27.	-22.	-51.	-687.	-150.	206.	.000	.013	.010	.0007	.0000	-.0002
	285	26.	22.	51.	383.	150.	-49.	.004	.013	.024	.0038	.0012	-.0009
FGRUN	285	-16.	-35.	-16.	182.	-83.	0.	.004	.013	.024	.0038	.0012	-.0009
	290	16.	35.	16.	-4.	2.	-0.	.011	-.005	.024	.0034	.0014	-.0009
RUN	290	-1.	-1.	-0.	4.	-2.	0.	.011	-.005	.024	.0034	.0014	-.0009
	295	0.	1.	0.	0.	0.	-0.	.017	-.022	.024	.0034	.0014	-.0009
FGRUN	285	-9.	17.	-33.	-565.	-67.	49.	.004	.013	.024	.0038	.0012	-.0009
	300	8.	-17.	33.	168.	67.	53.	.016	.013	.101	.0081	.0022	-.0009
FGRUN	300	-8.	21.	-31.	-168.	-67.	-53.	.016	.013	.101	.0081	.0022	-.0009
	305	6.	-21.	31.	-194.	67.	132.	.021	.013	.197	.0079	.0031	-.0001
ELBOW	305	-6.	23.	-31.	194.	-67.	-132.	.021	.013	.197	.0079	.0031	-.0001
	310	6.	-23.	31.	-218.	57.	130.	.021	.012	.204	.0075	.0031	.0005

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-8

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	310	-6.	24.	-30.	218.	-57.	-130.	.021	.012	.204	.0075	.0031	.0005
	315	4.	-24.	30.	-437.	-162.	-12.	.015	.006	.271	.0038	.0030	.0011
ELBOW	315	-4.	26.	-29.	437.	162.	12.	.015	.006	.271	.0038	.0030	.0011
	320	4.	-26.	29.	-430.	-180.	-29.	.011	.008	.276	.0018	.0020	.0011
FGRUN	320	-4.	29.	-28.	430.	180.	29.	.011	.008	.276	.0018	.0020	.0011
	325	2.	-29.	28.	62.	-130.	-29.	.000	.002	.276	-.0012	-.0006	.0005
RUN	325	-11.	-2.	-25.	-62.	130.	29.	.000	.002	.276	-.0012	-.0006	.0005
	330	8.	2.	25.	18.	44.	-29.	.022	-.012	.276	-.0005	-.0013	-.0001
RUN	330	-8.	3.	-22.	-18.	-44.	29.	.022	-.012	.276	-.0005	-.0013	-.0001
	335	6.	-3.	22.	74.	172.	-29.	.032	-.015	.276	.0003	.0006	-.0008
FGRUN	335	-6.	8.	-20.	-74.	-172.	29.	.032	-.015	.276	.0003	.0006	-.0008
	340	4.	-8.	20.	167.	232.	-29.	.012	-.004	.276	.0017	.0029	.0013
FGRUN	340	-13.	27.	-2.	42.	-100.	16.	.012	-.004	.276	.0017	.0029	.0013
	345	12.	-27.	2.	66.	148.	-16.	-.000	.003	.276	.0018	.0034	-.0013
FGRUN	345	-2.	-23.	-2.	-66.	-148.	16.	-.000	.003	.276	.0018	.0034	-.0013
	350	1.	23.	2.	-46.	156.	-16.	-.019	.012	.276	.0018	.0041	-.0014
ELBOW	350	-1.	-22.	-1.	46.	-156.	16.	-.019	.012	.276	.0018	.0041	-.0014
	355	1.	22.	1.	-72.	158.	-15.	-.022	.013	.278	.0015	.0047	-.0014
FGRUN	355	-1.	-20.	-0.	72.	-158.	15.	-.022	.013	.278	.0015	.0047	-.0014
	360	-0.	20.	0.	-75.	158.	-12.	-.006	.013	.290	.0007	.0068	-.0015
RUN	360	0.	-14.	-2.	75.	-158.	12.	-.006	.013	.290	.0007	.0068	-.0015
	365	-4.	14.	2.	-23.	158.	-64.	.038	.013	.291	-.0004	.0116	-.0024
FGRUN	365	4.	-9.	-5.	23.	-158.	64.	.038	.013	.291	-.0004	.0116	-.0024
	370	-5.	9.	-5.	28.	158.	-114.	.068	.014	.286	-.0004	.0137	-.0033
ELBOW	370	-5.	-7.	-6.	-28.	-158.	114.	.068	.014	.286	-.0004	.0137	-.0033
	375	6.	7.	-6.	34.	164.	-113.	.072	.018	.301	-.0001	.0143	-.0039
FGRUN	375	-6.	-7.	-6.	-34.	-164.	113.	.072	.018	.301	-.0001	.0143	-.0039
	380	7.	5.	-6.	34.	226.	-61.	.072	.060	.450	.0003	.0162	-.0047
ELBOW	380	-7.	-4.	-7.	-34.	-226.	61.	.072	.060	.450	.0003	.0162	-.0047
	385	7.	-3.	-8.	-26.	-234.	49.	.067	.065	.468	.0002	.0169	-.0050
FGRUN	385	-7.	3.	-8.	26.	234.	-49.	.067	.065	.468	.0002	.0169	-.0050
	390	8.	-3.	-8.	-26.	-234.	49.	.067	.065	.468	.0002	.0169	-.0050

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 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
ELBOW	390	8.	-2.	8.	3.	-234.	21.	.048	.065	.467	.0002	.0180	-.0051
	395	-8.	2.	-8.	-13.	221.	-13.	.027	.061	.452	.0003	.0189	-.0053
FGRUN	395	8.	1.	-9.	13.	-221.	13.	.027	.061	.452	.0003	.0189	-.0053
	400	-10.	-1.	-9.	-0.	0.	-0.	-.212	.000	.213	.0002	.0207	-.0054
FGRUN	340	8.	-14.	-16.	-210.	-132.	13.	.012	-.004	.276	.0017	.0029	-.0013
	405	-11.	14.	16.	10.	-67.	45.	.027	.011	.358	.0038	.0033	-.0010
FGRUN	405	11.	-9.	-13.	-10.	67.	-45.	.027	.011	.358	.0038	.0033	-.0010
	410	-13.	9.	13.	-147.	-225.	6.	.036	.020	.427	.0029	.0007	-.0006
ELBOW	410	13.	-6.	-12.	147.	225.	-6.	.036	.020	.427	.0029	.0007	-.0006
	415	-14.	6.	12.	-150.	-219.	0.	.036	.018	.429	.0021	-.0003	-.0005
FGRUN	415	14.	-4.	-11.	150.	219.	0.	.036	.018	.429	.0021	-.0003	-.0005
	420	-15.	4.	11.	-107.	-63.	-0.	.023	.002	.429	.0008	-.0018	-.0005
RUN	420	15.	-0.	-9.	107.	63.	0.	.023	.002	.429	.0008	-.0018	-.0005
	425	-17.	0.	9.	-101.	129.	-0.	.001	.001	.429	-.0005	-.0014	-.0005
RUN	425	-6.	-8.	-7.	101.	-129.	0.	.001	.001	.429	-.0005	-.0014	-.0005
	430	4.	8.	7.	57.	29.	-0.	-.009	.019	.429	-.0009	.0001	-.0005
RUN	430	-4.	-2.	-4.	-57.	-29.	0.	-.009	.019	.429	-.0009	.0001	-.0005
	435	1.	2.	4.	91.	-14.	-0.	-.003	.023	.429	.0006	.0003	-.0005
RUN	435	-1.	-5.	-1.	-91.	14.	-0.	-.003	.023	.429	.0006	.0003	-.0005
	440	-2.	5.	1.	0.	0.	0.	.000	.000	.429	.0014	.0001	-.0005

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APPENDIX F
LOCE/LOCA ANALYSIS RESULTS.

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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SUPPORT REACTIONS FOR LOAD CASE NO. 3

LOCE RESPONSE

NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
5	FORCE	-159.	X COORD
5	FORCE	-441.	Y COORD
5	FORCE	-7.	Z COORD
5	MOMENT	583.	X COORD
5	MOMENT	11.	Y COORD
5	MOMENT	-4496.	Z COORD
55	FORCE	-126.	Y COORD
55	FORCE	-106.	Z COORD
85	FORCE	-105.	Y COORD
85	FORCE	-14.	Z COORD
120	FORCE	-111.	X COORD
120	FORCE	-55.	Y COORD
130	FORCE	-49.	X COORD
130	FORCE	-28.	Y COORD
135	FORCE	-57.	Y COORD
135	FORCE	-8.	Z COORD
150	FORCE	-63.	Y COORD
150	FORCE	-44.	Z COORD
155	FORCE	-35.	Y COORD
155	FORCE	-2.	Z COORD
160	FORCE	-1.	Y COORD
160	FORCE	-10.	Z COORD
175	FORCE	-14.	X COORD
175	FORCE	-55.	Y COORD
185	FORCE	-4.	X COORD
185	FORCE	-2.	Z COORD
210	FORCE	-10.	X COORD
210	FORCE	-35.	Y COORD
225	FORCE	-41.	X COORD
225	FORCE	-72.	Y COORD
250	FORCE	-53.	Y COORD
250	FORCE	-5.	Z COORD
260	FORCE	-55.	Y COORD
260	FORCE	-2.	Z COORD
280	FORCE	-11.	X COORD
280	FORCE	-3.	Z COORD
325	FORCE	-9.	X COORD
325	FORCE	-20.	Y COORD
345	FORCE	-2.	X COORD
345	FORCE	-54.	Y COORD
400	FORCE	0.	Y COORD
400	FORCE	-16.	INCLINED
425	FORCE	-15.	X COORD

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NODE	TYPE	REACTION (LBS OR IN-LBS)	DIRECTION
425	FORCE	-32.	Y COORD
440	FORCE	-1.	X COORD
440	FORCE	-9.	Y COORD

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LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

INTERNAL FORCES AND DEFLECTIONS FOR LOAD CASE NO. 3

LOCE RESPONSE

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	5	-159.	-440.	-7.	583.	11.	-4496.	.000	.000	.000	-.0000	-.0000	.0000
	10	159.	440.	7.	-583.	-1.	3836.	.000	.000	.000	-.0001	-.0000	.0003
SRUN	10	-159.	-438.	-7.	583.	1.	-3836.	.000	.000	.000	-.0001	-.0000	.0003
	11	158.	438.	7.	-583.	9.	3178.	.000	.001	.000	-.0001	-.0000	.0006
VALVE	11	-158.	-329.	-4.	583.	-9.	-3178.	.000	.001	.000	-.0001	-.0000	.0006
	15	103.	329.	4.	-583.	31.	1207.	.000	.006	.000	-.0002	.0000	.0009
SRUN	15	-103.	-216.	-1.	583.	-31.	-1207.	.000	.006	.000	-.0002	.0000	.0009
	20	101.	216.	1.	-583.	37.	-88.	.000	.012	-.000	-.0004	.0000	.0010
VALVE	20	-101.	-125.	1.	583.	-37.	88.	.000	.012	-.000	-.0004	.0000	.0010
	25	96.	125.	-1.	-583.	29.	-837.	.000	.018	-.000	-.0005	.0000	.0010
SRUN	25	-56.	-32.	4.	583.	-29.	837.	.000	.018	-.000	-.0005	.0000	.0010
	31	53.	32.	-4.	-583.	-5.	-1124.	.000	.025	-.000	-.0009	.0000	.0005
FGRUN	31	-53.	-22.	4.	583.	5.	1124.	.000	.025	-.000	-.0009	.0000	.0005
	30	51.	22.	-4.	-583.	-29.	-1255.	.000	.027	-.000	-.0011	.0000	.0001
FGRUN	30	-38.	46.	3.	299.	90.	1170.	.000	.027	-.000	-.0011	.0000	.0001
	35	37.	-46.	-3.	-299.	-95.	-1100.	.000	.027	-.000	-.0012	.0000	.0000
ELBOW	35	-37.	49.	3.	299.	95.	1100.	.000	.027	-.000	-.0012	-.0000	.0000
	40	36.	-49.	-3.	-278.	-88.	-957.	.000	.027	-.000	-.0012	-.0000	-.0002
FGRUN	40	-36.	58.	3.	278.	88.	957.	.000	.027	-.000	-.0012	-.0000	-.0002
	45	33.	-58.	-3.	-100.	-16.	-367.	.000	.019	-.000	-.0013	-.0000	-.0006
RUN	45	-33.	72.	4.	100.	16.	367.	.000	.019	-.000	-.0013	-.0000	-.0006
	50	29.	-72.	-4.	121.	42.	363.	.000	.008	.000	-.0013	-.0000	-.0006
ELBOW	50	-29.	81.	4.	-121.	-42.	-363.	.000	.008	.000	-.0013	-.0000	-.0006
	55	28.	-81.	-4.	155.	43.	598.	.000	.006	.000	-.0013	-.0000	-.0005
RUN	55	-28.	-35.	-2.	-155.	-43.	-598.	.000	.006	.000	-.0013	-.0000	-.0005
	60	25.	35.	2.	155.	67.	199.	.000	.003	.000	-.0012	.0000	-.0002
ELBOW	60	-25.	-22.	-2.	-155.	-67.	-199.	.000	.003	.000	-.0012	.0000	-.0002
	65	22.	22.	2.	221.	13.	41.	.000	.005	.000	-.0011	.0000	-.0001

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

PAGE 48

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	65	-22.	-16.	-2.	-221.	-13.	-41.	.000	.005	.000	-.0011	.0000	-.0001
	70	21.	16.	2.	240.	-12.	22.	.001	.006	.000	-.0011	.0000	-.0001
ELBOW	70	-21.	-10.	-2.	-240.	12.	-22.	.001	.006	.000	-.0011	.0000	-.0001
	75	19.	10.	2.	268.	-59.	-45.	.001	.008	-.000	-.0009	.0000	-.0001
FGRUN	75	-19.	3.	-1.	-268.	59.	45.	.001	.008	-.000	-.0009	.0000	-.0001
	80	15.	-3.	1.	268.	-59.	-45.	.001	.006	.000	-.0007	-.0000	-.0002
FGRUN	80	-12.	51.	-4.	-270.	124.	-36.	.001	.006	.000	-.0007	-.0000	-.0002
	85	10.	-51.	4.	270.	-102.	293.	.001	.005	.000	-.0006	-.0001	-.0001
FGRUN	85	-10.	-47.	-8.	-270.	102.	-293.	.001	.005	.000	-.0006	-.0001	-.0001
	90	8.	47.	8.	270.	-63.	55.	.001	.005	.001	-.0005	-.0001	-.0001
FGRUN	90	-5.	-7.	-5.	-170.	63.	-54.	.001	.005	.001	-.0005	-.0001	-.0001
	95	0.	7.	5.	170.	-5.	-55.	.001	.004	.002	-.0003	-.0001	-.0001
FGRUN	95	-0.	9.	-4.	-170.	-5.	55.	.001	.004	.002	-.0003	-.0001	-.0001
	100	-3.	-9.	4.	170.	42.	23.	.001	.003	.003	-.0002	-.0001	-.0001
ELBOW	100	3.	18.	-4.	-170.	-42.	-23.	.001	.003	.003	-.0002	-.0001	-.0001
	105	-4.	-18.	4.	159.	53.	66.	.001	.003	.002	-.0001	-.0001	-.0000
FGRUN	105	4.	23.	-4.	-159.	-53.	-66.	.001	.003	.002	-.0001	-.0001	-.0000
	110	-6.	-23.	4.	144.	53.	46.	.001	.003	.002	-.0001	-.0001	-.0000
ELBOW	110	6.	29.	-4.	-144.	-53.	-46.	.001	.003	.002	-.0001	-.0001	-.0000
	115	-7.	-29.	4.	46.	72.	27.	.001	.003	.002	.0000	-.0000	.0000
FGRUN	115	7.	34.	-3.	-46.	-72.	-27.	.001	.003	.002	.0000	-.0000	.0000
	120	-8.	-34.	3.	-57.	35.	27.	.001	.003	.002	.0000	-.0000	.0000
RUN	120	-3.	-8.	-3.	57.	-95.	-27.	.001	.003	.002	.0000	-.0000	.0000
	125	-2.	8.	3.	72.	92.	27.	.001	.002	.002	.0000	-.0001	.0000
RUN	125	2.	13.	-3.	-72.	-92.	-27.	.001	.002	.002	.0000	.0001	.0000
	130	-8.	-13.	3.	-138.	174.	27.	.002	.001	.002	.0000	.0002	.0001
ELBOW	130	-41.	6.	-2.	138.	-174.	-27.	.002	.001	.002	.0000	.0002	.0001
	135	36.	-6.	2.	-196.	-188.	85.	.004	.003	.000	-.0002	.0001	.0001
RUN	135	-36.	-35.	-10.	196.	188.	-85.	.004	.003	.000	-.0002	.0001	.0001
	140	33.	35.	10.	-196.	-187.	-197.	.004	.004	-.000	-.0003	.0000	.0001
FGRUN	140	-33.	-23.	-10.	196.	187.	197.	.004	.004	-.000	-.0003	.0000	-.0001
	145	29.	23.	10.	-196.	-1.	-447.	.004	.004	-.000	-.0004	.0000	-.0001

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	145	-9.	68.	-6.	-0.	53.	447.	.004	.004	-.000	-.0004	.0000	-.0001
	150	7.	-68.	6.	0.	-16.	-37.	.004	.003	-.000	-.0004	-.0000	-.0002
RUN	150	-7.	15.	-2.	0.	16.	37.	.004	.003	-.000	-.0004	-.0000	-.0002
	155	4.	-15.	2.	-0.	2.	83.	.004	.002	-.000	-.0004	-.0000	-.0002
RUN	155	-4.	-7.	0.	0.	-2.	-83.	.004	.002	-.000	-.0004	-.0000	-.0002
	160	0.	7.	-0.	-0.	-0.	-0.	.004	.000	.000	-.0004	-.0000	-.0001
FGRUN	145	-20.	-74.	-3.	196.	-54.	0.	.004	.004	-.000	-.0004	.0000	-.0001
	165	18.	74.	3.	624.	-156.	-0.	.004	.009	-.000	-.0002	-.0001	-.0001
VALVE	165	-18.	-14.	-2.	-624.	156.	0.	.004	.009	-.000	-.0002	-.0001	-.0001
	170	-10.	14.	2.	710.	-179.	0.	.004	.009	-.000	-.0002	-.0001	-.0001
FGRUN	170	-10.	47.	-0.	-710.	179.	0.	.004	.009	-.000	-.0002	-.0001	-.0001
	175	-14.	-47.	0.	0.	-0.	0.	.001	.003	-.000	.0006	-.0003	-.0001
FGRUN	90	-3.	-21.	-3.	-100.	0.	-1.	.001	.005	-.001	-.0005	-.0001	-.0001
	180	-0.	21.	3.	48.	-0.	23.	.001	.005	-.003	.0000	-.0001	-.0000
RUN	180	0.	-10.	-3.	-48.	0.	-23.	.001	.005	-.003	.0000	-.0001	.0000
	185	-3.	10.	3.	0.	-0.	-5.	.000	.005	-.000	.0002	-.0001	.0001
RUN	185	-1.	-2.	-0.	-0.	0.	5.	-.000	.005	-.000	.0002	-.0001	.0001
	190	0.	2.	0.	0.	0.	0.	-.000	.005	.002	.0002	-.0001	.0001
FGRUN	80	-3.	-29.	4.	2.	-78.	40.	.001	.006	-.000	-.0007	-.0000	-.0002
	195	-1.	29.	-4.	55.	78.	-22.	.004	.006	-.011	-.0006	.0002	-.0002
RUN	195	1.	-14.	-4.	-55.	-78.	22.	.004	.006	-.011	-.0006	.0002	-.0002
	200	-4.	14.	4.	108.	78.	-58.	.007	.006	-.019	-.0005	.0003	-.0003
ELBOW	200	4.	-5.	4.	-108.	-78.	58.	.007	.006	-.019	-.0005	.0003	-.0003
	205	-5.	5.	-4.	105.	68.	-69.	.007	.005	-.020	-.0003	.0004	-.0003
FGRUN	205	5.	4.	4.	-105.	-68.	69.	.007	.005	-.020	-.0003	.0004	-.0003
	210	-9.	-4.	-4.	169.	-46.	-69.	.000	.002	-.020	-.0001	.0004	-.0005
RUN	210	-0.	-13.	5.	-169.	46.	69.	.000	.002	-.020	-.0001	.0004	-.0005
	215	-5.	13.	-5.	-100.	-91.	-69.	-.006	.002	-.020	-.0000	.0003	-.0007
RUN	215	5.	6.	5.	100.	91.	69.	-.006	.002	-.020	.0000	.0003	-.0007
	220	-10.	-6.	-5.	26.	-237.	-69.	-.008	.001	-.020	-.0001	-.0001	-.0009
RUN	220	-10.	-26.	-6.	-26.	237.	69.	-.008	.001	-.020	-.0001	-.0001	-.0009
	225	-15.	-26.	-6.	548.	-485.	-69.	.002	.004	-.020	.0006	-.0010	-.0011

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	225	-26.	-24.	6.	-548.	485.	69.	.002	.004	-.020	.0006	-.0010	-.0011
	230	20.	24.	-6.	-35.	64.	-69.	.036	.030	-.020	.0013	-.0016	-.0014
RUN	230	-20.	-7.	7.	35.	-64.	69.	.036	.030	-.020	.0013	-.0016	-.0014
	235	17.	7.	-7.	-112.	258.	-69.	.052	.043	-.020	.0012	-.0014	-.0015
ELBOW	235	-17.	4.	7.	112.	-258.	69.	.052	.043	-.020	.0012	-.0014	-.0015
	240	14.	-4.	-7.	-112.	258.	-69.	.061	.040	-.012	.0011	-.0009	-.0016
RUN	240	-14.	15.	7.	84.	-123.	42.	.061	.040	-.012	.0011	-.0009	-.0016
	245	12.	-15.	-7.	-84.	245.	112.	.061	.024	-.005	.0009	-.0005	-.0015
RUN	245	-12.	28.	8.	84.	-245.	-112.	.061	.024	-.005	.0009	-.0005	-.0015
	250	8.	-28.	-8.	-84.	123.	554.	.061	.003	.000	.0007	-.0002	-.0009
RUN	250	-8.	-9.	3.	84.	-123.	-554.	.061	.003	.000	.0007	-.0002	-.0009
	255	3.	9.	-3.	-84.	74.	407.	.061	-.005	.001	.0005	-.0000	-.0000
RUN	255	-3.	7.	3.	84.	-74.	-407.	.061	-.005	.001	.0005	-.0000	-.0000
	260	1.	-7.	-3.	-84.	19.	531.	.061	.003	.000	.0003	.0001	.0009
FGRUN	260	1.	-36.	2.	84.	-19.	-531.	.061	.003	.000	.0003	.0001	.0009
	265	-2.	36.	-2.	-84.	5.	287.	.061	.010	-.001	.0002	.0001	.0012
ELBOW	265	2.	-31.	2.	84.	-5.	-287.	.061	.010	-.001	.0002	.0001	.0012
	270	-3.	31.	-2.	-79.	0.	211.	.057	.013	-.001	.0001	.0002	.0016
FGRUN	270	3.	-25.	2.	79.	-0.	-211.	.057	.013	-.001	.0001	.0002	.0016
	275	-6.	25.	-2.	-56.	0.	166.	.040	.013	.000	.0000	.0002	.0018
RUN	275	6.	-10.	3.	56.	-0.	-166.	.040	.013	.000	.0000	.0002	.0018
	280	-11.	10.	-3.	0.	0.	0.	.001	.013	.000	-.0000	.0002	.0020
FGRUN	30	-13.	-62.	1.	284.	-61.	85.	.000	.027	-.000	-.0011	.0000	.0001
	285	13.	62.	-1.	-277.	61.	-7.	.000	.027	-.012	-.0028	.0005	-.0001
FGRUN	285	-12.	-47.	-1.	240.	-61.	0.	.000	.027	-.012	-.0028	.0005	-.0001
	290	12.	47.	1.	-5.	1.	-0.	.003	.043	-.012	-.0034	.0006	-.0001
RUN	290	-1.	-1.	-0.	5.	-1.	0.	.003	.043	-.012	-.0034	.0006	-.0001
	295	0.	1.	0.	0.	0.	-0.	.007	.060	-.012	-.0034	.0006	-.0001
FGRUN	285	-1.	-11.	2.	37.	-0.	7.	.000	.027	-.012	-.0028	.0005	-.0001
	300	-1.	11.	-2.	-8.	0.	-9.	.003	.027	-.047	-.0030	.0005	-.0002
FGRUN	300	1.	-6.	3.	8.	-0.	9.	.003	.027	-.047	-.0030	.0005	-.0002
	305	-2.	6.	-3.	21.	0.	-24.	.006	.027	-.082	-.0030	.0005	-.0004

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
ELBOW	305												
	310	-2.	-4.	-3.	-21.	-0.	24.	.006	.027	-.082	-.0030	.0005	-.0004
FGRUN	310	-2.	-1.	-3.	-23.	-1.	25.	.006	.028	-.085	-.0029	.0005	-.0005
	315	-3.	1.	-3.	43.	20.	-35.	.011	.032	-.101	-.0026	.0006	-.0008
ELBOW	315												
	320	-3.	-1.	-3.	-43.	-20.	35.	.011	.032	-.101	-.0026	.0006	-.0008
FGRUN	320	-3.	-1.	-3.	46.	19.	-38.	.011	.030	-.103	-.0023	.0007	-.0009
	325	3.	5.	3.	-46.	-19.	38.	.011	.030	-.103	-.0023	.0007	-.0009
RUN	325	-5.	-5.	-3.	133.	-52.	-38.	.000	.001	-.103	-.0009	.0004	-.0017
	330	-4.	-8.	-3.	-133.	52.	38.	-.001	-.001	-.103	-.0002	-.0001	-.0026
RUN	330												
	335	-2.	-0.	-3.	8.	4.	38.	-.001	-.001	-.103	.0002	-.0001	-.0026
FGRUN	335	-0.	0.	-3.	-16.	11.	-38.	.001	.001	-.103	.0000	-.0000	-.0035
	340	-1.	-6.	-3.	16.	-11.	38.	.001	.001	-.103	.0000	-.0000	-.0035
FGRUN	340	-1.	-6.	-3.	53.	2.	-38.	.001	.002	-.103	.0002	.0000	-.0040
	345	-2.	17.	-5.	18.	-40.	141.	.001	.002	-.103	.0002	.0000	-.0040
FGRUN	345	1.	-17.	-5.	51.	46.	-141.	.000	.003	-.103	.0003	.0002	-.0048
	350	-4.	-35.	-5.	-51.	-46.	141.	-.001	.004	-.103	.0001	.0005	-.0056
ELBOW	350												
	355	-3.	-34.	-5.	121.	-62.	141.	-.001	.004	-.103	-.0001	.0005	-.0056
FGRUN	355	-3.	-34.	-5.	-154.	66.	-138.	.005	.004	-.103	-.0006	.0006	-.0061
	360	-3.	-31.	-5.	154.	-66.	138.	.005	.004	-.103	-.0006	.0006	-.0061
RUN	360	-2.	-24.	-5.	101.	-66.	113.	.078	.004	-.117	-.0019	.0015	-.0074
	365	-1.	24.	-5.	18.	66.	-100.	.285	.004	-.180	-.0029	.0034	-.0098
FGRUN	365	1.	-17.	-5.	-18.	-66.	100.	.285	.004	-.180	-.0029	.0034	-.0098
	370	-2.	17.	-5.	75.	66.	-114.	.398	.004	-.209	-.0024	.0043	-.0110
ELBOW	370												
	375	2.	-14.	-5.	-75.	-66.	114.	.398	.004	-.209	-.0024	.0043	-.0110
FGRUN	375	-2.	14.	-5.	81.	72.	-100.	.411	.017	-.207	-.0021	.0047	-.0115
	380	2.	-12.	-5.	-81.	-72.	100.	.411	.017	-.207	-.0021	.0047	-.0115
ELBOW	380												
	385	-3.	10.	-5.	81.	123.	17.	.411	.132	-.157	-.0011	.0056	-.0119
		-3.	10.	-5.	75.	129.	31.	.398	.145	-.150	-.0009	.0060	-.0118

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-8

PAGE 52

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	385	3.	-9.	5.	-75.	-129.	-31.	.398	.145	-.150	-.0009	.0060	-.0118
	390	-4.	9.	-5.	54.	129.	44.	.354	.145	-.147	-.0007	.0066	-.0116
ELBOW	390	4.	-7.	5.	-54.	-129.	-44.	.354	.145	-.147	-.0007	.0066	-.0116
	395	-4.	7.	-5.	42.	122.	42.	.335	.136	-.152	-.0004	.0070	-.0115
FGRUN	395	4.	-4.	6.	-42.	-122.	-42.	.335	.136	-.152	-.0004	.0070	-.0115
	400	-6.	4.	-6.	-0.	-0.	-0.	.244	-.000	-.243	-.0000	.0080	-.0112
FGRUN	340	3.	-5.	-1.	-71.	38.	-103.	.001	.002	-.103	.0002	-.0000	-.0040
	405	-5.	5.	1.	56.	-53.	110.	.040	.042	-.097	.0016	-.0010	-.0022
FGRUN	405	5.	-2.	-1.	-56.	53.	-110.	.040	.042	-.097	.0016	-.0010	-.0022
	410	-7.	2.	1.	45.	-64.	10.	.059	.060	-.090	.0027	-.0023	-.0012
ELBOW	410	7.	-6.	-1.	-45.	64.	-10.	.059	.060	-.090	.0027	-.0023	-.0012
	415	-7.	6.	1.	37.	-57.	0.	.057	.058	-.090	.0028	-.0025	-.0011
FGRUN	415	7.	-9.	-1.	-37.	57.	0.	.057	.058	-.090	.0028	-.0025	-.0011
	420	-8.	9.	1.	-59.	26.	-0.	.028	.027	-.090	.0027	-.0027	-.0011
RUN	420	8.	-14.	-1.	59.	-26.	0.	.028	.027	-.090	.0027	-.0027	-.0011
	425	-9.	14.	1.	-221.	131.	-0.	.001	.002	-.090	.0011	-.0017	-.0011
RUN	425	-5.	-12.	-1.	221.	-131.	0.	.001	.002	-.090	.0011	-.0017	-.0011
	430	3.	12.	1.	17.	45.	-0.	-.014	.007	-.090	-.0009	-.0000	-.0011
RUN	430	-3.	-4.	-0.	-17.	-45.	0.	-.014	.007	-.090	-.0009	-.0000	-.0011
	435	1.	4.	0.	91.	2.	-0.	-.009	.016	-.090	.0002	.0004	-.0011
RUN	435	-1.	-5.	-0.	-91.	-2.	-0.	-.009	.016	-.090	.0002	.0004	-.0011
	440	-1.	5.	0.	-0.	0.	0.	.000	.000	-.090	.0011	.0004	-.0011

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APPENDIX G
SSE PLUS LOCA ANALYSIS RESULTS

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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SUPPORT REACTIONS FOR LOAD COMBINATION CASE NO. 6

LOCA PLUS SSE RESPONSE

NODE	TYPE	REACTIONS (LBS OR IN-LBS)	DIRECTION
5	FORCE	-644.	X COORD
5	FORCE	-1071.	Y COORD
5	FORCE	-328.	Z COORD
5	MOMENT	-141.	X COORD
5	MOMENT	3349.	Y COORD
5	MOMENT	-10160.	Z COORD
5	FORCE	-319.	Y COORD
5	FORCE	-157.	Z COORD
85	FORCE	-216.	Y COORD
85	FORCE	-67.	Z COORD
120	FORCE	-7.	X COORD
120	FORCE	-145.	Y COORD
130	FORCE	-189.	X COORD
130	FORCE	-64.	Y COORD
130	FORCE	-142.	Z COORD
130	FORCE	-134.	X COORD
150	FORCE	-157.	Y COORD
150	FORCE	-43.	Z COORD
155	FORCE	-88.	Y COORD
155	FORCE	-21.	Z COORD
160	FORCE	-3.	Y COORD
160	FORCE	2.	Z COORD
175	FORCE	-56.	X COORD
175	FORCE	-138.	Y COORD
185	FORCE	-133.	X COORD
185	FORCE	-13.	Z COORD
210	FORCE	-27.	X COORD
210	FORCE	-125.	Y COORD
225	FORCE	-155.	X COORD
225	FORCE	-163.	Y COORD
250	FORCE	-130.	Y COORD
250	FORCE	-119.	Z COORD
250	FORCE	-140.	Y COORD
260	FORCE	-6.	Z COORD
280	FORCE	-33.	X COORD
280	FORCE	-18.	Z COORD
325	FORCE	-27.	X COORD
325	FORCE	-64.	Y COORD
345	FORCE	18.	X COORD
345	FORCE	-158.	Y COORD
400	FORCE	-7.	Y COORD
400	FORCE	-27.	INCLINED
425	FORCE	-61.	X COORD
425	FORCE	-57.	Y COORD
440	FORCE	-5.	X COORD

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LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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NODE	TYPE	REACTIONS (LBS OR IN-LBS)	DIRECTION
440	FORCE	-24.	Y COORD

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LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

INTERNAL FORCES AND DEFLECTIONS FOR LOAD CASE NO. 6

LOCA PLUS SSE RESPONSE

MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	5	-644.	-1068.	-328.	-141.	3349.	-10160.	.000	.000	.000	.0000	-.0000	.0000
	10	642.	1068.	328.	141.	-2857.	8558.	.000	.001	.000	.0000	-.0003	.0008
SRUN	10	-642.	-1063.	-326.	-141.	2857.	-8558.	.000	.001	.000	.0000	-.0003	.0008
	11	640.	1063.	326.	141.	-2368.	6964.	.000	.003	.001	.0000	-.0005	.0014
VALVE	11	-640.	-787.	-247.	-141.	2368.	-6964.	.000	.003	.001	.0000	-.0005	.0014
	15	434.	787.	247.	141.	-884.	2243.	.000	.014	.005	.0000	-.0006	.0019
SRUN	15	-434.	-503.	-167.	-141.	884.	-2243.	.000	.014	.005	.0000	-.0006	.0019
	20	427.	503.	167.	141.	116.	-776.	.000	.027	.009	.0001	-.0008	.0021
VALVE	20	-427.	-274.	-101.	-141.	116.	776.	.000	.027	.009	.0001	-.0008	.0021
	25	262.	274.	101.	141.	-724.	-2420.	.000	.039	.014	.0001	-.0007	.0019
SRUN	25	-262.	-40.	-35.	-141.	724.	2420.	.000	.039	.014	.0001	-.0007	.0019
	31	251.	40.	35.	141.	1035.	-2781.	.000	.051	.016	.0002	-.0003	.0007
FGRUN	31	-251.	-15.	-28.	-141.	-1035.	2781.	.000	.051	.016	.0002	-.0003	.0007
	30	243.	15.	28.	141.	1201.	-2871.	.000	.053	.019	.0003	.0001	-.0002
FGRUN	30	-177.	107.	77.	950.	-840.	2374.	.000	.053	.019	.0003	.0001	-.0002
	35	175.	-107.	-77.	-950.	722.	-2211.	.000	.052	.019	.0002	.0001	-.0004
ELBOW	35	-175.	114.	80.	950.	-722.	2211.	.000	.052	.019	.0002	.0001	-.0004
	40	171.	-114.	-80.	-901.	566.	-1882.	.000	.050	.018	-.0000	.0003	-.0008
FGRUN	40	-171.	136.	86.	901.	-566.	1882.	.000	.050	.018	-.0000	.0003	-.0008
	45	158.	-136.	-86.	-485.	199.	-503.	-.001	.037	.014	-.0005	.0005	-.0015
RUN	45	-158.	172.	96.	485.	-199.	503.	-.001	.037	.014	-.0005	.0005	-.0015
	50	144.	-172.	-96.	39.	310.	1231.	-.002	.020	.009	-.0006	.0005	-.0013
ELBOW	50	-144.	194.	102.	-39.	310.	-1231.	-.002	.020	.009	-.0006	.0005	-.0013
	55	141.	-194.	-102.	122.	-545.	1792.	-.002	.016	.008	-.0006	.0004	-.0010
RUN	55	-141.	-101.	-48.	-122.	545.	-1792.	-.002	.016	.008	-.0006	.0004	-.0010
	60	126.	101.	48.	122.	2.	637.	-.002	.010	.005	-.0005	.0002	-.0002
ELBOW	60	-126.	-69.	-39.	-122.	-2.	637.	-.002	.010	.005	-.0005	.0002	-.0002
	65	117.	69.	39.	324.	-60.	149.	-.002	.011	.004	-.0004	.0002	-.0000
RUN	65	-117.	-53.	-34.	-324.	80.	-149.	-.002	.011	.004	-.0004	.0002	-.0000
	70	114.	53.	34.	389.	-179.	85.	-.001	.011	.003	-.0004	.0002	-.0000

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2M-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
ELBOW	70	-114.	-37.	-30.	-389.	179.	-85.	-.001	.011	.003	-.0004	.0002	-.0000
	75	105.	37.	30.	497.	-290.	-177.	-.001	.012	.002	-.0001	.0000	-.0000
FGRUN	75	-105.	-4.	-20.	-497.	290.	177.	-.001	.012	.002	-.0001	.0000	-.0000
	80	90.	4.	20.	497.	-50.	-228.	-.001	.011	.003	.0003	-.0001	-.0001
FGRUN	80	-68.	78.	27.	-2.	239.	-168.	-.001	.011	.003	.0003	-.0001	-.0001
	85	61.	-78.	-27.	2.	-376.	563.	-.001	.011	.003	.0003	-.0002	-.0000
FGRUN	85	-61.	-120.	-35.	-2.	376.	-563.	-.001	.011	.003	.0003	-.0002	-.0000
	90	55.	120.	35.	2.	-201.	-44.	-.001	.011	.004	.0003	-.0002	-.0000
FGRUN	90	-43.	-20.	-19.	-35.	201.	-30.	-.001	.011	.004	.0003	-.0002	-.0000
	95	24.	20.	19.	35.	-79.	-264.	-.001	.011	.009	.0003	-.0003	-.0001
FGRUN	95	-24.	20.	-7.	-35.	-79.	264.	-.001	.011	.009	.0003	-.0003	-.0001
	100	13.	-20.	7.	35.	144.	-81.	-.001	.010	.011	.0003	-.0002	-.0002
ELBOW	100	-13.	43.	-1.	-35.	-144.	81.	-.001	.010	.011	.0003	-.0002	-.0002
	105	7.	-43.	1.	32.	147.	79.	-.000	.009	.012	.0003	-.0001	-.0001
FGRUN	105	-7.	58.	3.	-32.	-147.	-79.	-.000	.009	.012	.0003	-.0001	-.0001
	110	2.	-58.	-3.	46.	147.	97.	.000	.009	.014	.0003	-.0001	-.0001
ELBOW	110	-2.	72.	7.	-46.	-147.	-97.	.000	.009	.014	.0003	-.0001	-.0001
	115	-4.	-72.	-7.	-148.	149.	94.	.000	.003	.015	.0003	-.0000	-.0001
FGRUN	115	4.	85.	11.	143.	-149.	-94.	.000	.003	.015	.0003	-.0000	-.0001
	120	-8.	-85.	-11.	-403.	146.	94.	.000	.007	.015	.0003	-.0000	-.0001
RUN	120	1.	-29.	20.	403.	-166.	-94.	.000	.007	.015	.0003	.0000	-.0001
	125	-21.	29.	-20.	53.	343.	94.	.002	.005	.015	.0001	.0002	.0000
RUN	125	21.	25.	35.	-53.	-343.	-94.	.002	.005	.015	-.0000	.0007	.0000
	130	-41.	-25.	-35.	-345.	841.	94.	.009	.003	.015	-.0000	.0007	.0001
ELBOW	130	-147.	13.	50.	345.	-841.	-94.	.009	.003	.015	-.0000	.0007	.0001
	135	128.	-13.	-50.	-479.	1038.	228.	.018	.007	.007	-.0005	.0005	.0003
RUN	135	-128.	89.	-73.	479.	1038.	-228.	.018	.007	.007	-.0005	.0005	.0003
	140	118.	89.	73.	-479.	-457.	-485.	.018	.010	.004	-.0007	.0002	.0002
FGRUN	140	-118.	-57.	-64.	479.	457.	485.	.018	.010	.004	-.0007	.0002	.0002
	145	104.	57.	64.	-479.	244.	-1119.	.018	.010	.003	-.0011	.0001	-.0002
FGRUN	145	-33.	171.	41.	0.	-197.	1119.	.018	.010	.003	-.0011	.0001	-.0002
	150	25.	-171.	-41.	0.	-49.	-93.	.018	.009	.002	-.0011	.0001	-.0004

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 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	150	-25.	37.	5.	0.	49.	93.	.018	.008	.002	-.0011	.0001	-.0004
	155	15.	-37.	-5.	-0.	-87.	206.	.018	.004	.001	-.0011	.0001	-.0004
RUN	155	-15.	-17.	-7.	0.	87.	-206.	.018	.004	-.001	-.0011	.0001	-.0004
	160	-0.	17.	7.	-0.	-0.	-0.	.018	.000	-.000	-.0011	.0001	-.0003
FGRUN	145	-71.	-166.	-92.	479.	-48.	0.	.018	.010	.003	-.0011	.0001	-.0002
	165	61.	186.	92.	1579.	-681.	-0.	.018	.022	.003	-.0004	-.0003	-.0002
VALVE	165	-61.	-36.	-50.	-1579.	681.	0.	.018	.022	.003	-.0004	-.0003	-.0002
	170	-42.	36.	50.	1794.	-737.	0.	.018	.023	.003	-.0000	-.0005	-.0002
FGRUN	170	42.	120.	-5.	-1794.	737.	0.	.018	.023	.003	-.0000	-.0005	-.0002
	175	-56.	-120.	5.	0.	-0.	-0.	.003	.007	.003	-.0016	-.0011	-.0002
FGRUN	90	-12.	-54.	-3.	33.	0.	74.	-.001	.011	.004	.0003	-.0002	-.0000
	180	2.	54.	3.	-80.	-0.	47.	.001	.011	.006	-.0001	-.0002	-.0001
RUN	180	-2.	-26.	5.	80.	0.	-47.	.001	.011	.006	-.0001	-.0002	-.0001
	185	-9.	26.	-5.	14.	-0.	-19.	.001	.011	.001	-.0004	-.0002	-.0000
RUN	185	-5.	-6.	-2.	-14.	0.	19.	.001	.011	.001	-.0004	-.0002	-.0000
	190	0.	6.	2.	-0.	0.	0.	.001	.011	-.002	-.0004	-.0002	-.0000
FGRUN	80	-22.	-35.	-34.	-495.	-189.	396.	-.001	.011	.003	.0003	-.0001	-.0001
	195	7.	35.	34.	-43.	189.	-160.	.006	.011	.012	.0007	.0004	-.0007
RUN	195	-7.	2.	-23.	43.	-189.	160.	.006	.011	.012	.0007	.0004	-.0007
	200	-5.	-2.	23.	-362.	189.	-148.	.017	.011	.020	.0004	.0008	-.0009
ELBOW	200	5.	23.	-17.	362.	-189.	148.	.017	.011	.020	.0004	.0008	-.0009
	205	-9.	-23.	17.	-349.	173.	-164.	.017	.011	.021	-.0002	.0009	-.0010
FGRUN	205	9.	47.	-10.	349.	-173.	164.	.017	.011	.021	-.0002	.0009	-.0010
	210	-23.	-47.	10.	396.	-81.	-164.	.001	.006	.021	-.0002	.0010	-.0014
RUN	210	-4.	-33.	2.	-396.	81.	164.	.001	.006	.021	-.0002	.0010	-.0014
	215	-15.	33.	-2.	-266.	-194.	-164.	-.016	.007	.021	-.0000	.0007	-.0019
RUN	215	15.	17.	16.	266.	194.	164.	-.016	.007	.021	-.0000	.0007	-.0019
	220	-34.	-17.	-16.	68.	-683.	-164.	-.022	.003	.021	-.0003	-.0003	-.0024
RUN	220	34.	66.	31.	-68.	683.	164.	-.022	.003	.021	-.0003	-.0003	-.0024
	225	-52.	-66.	-31.	1377.	-1545.	-164.	.008	.009	.021	.0015	-.0029	-.0029
RUN	225	-103.	-62.	46.	-1397.	1545.	164.	.008	.009	.021	.0015	-.0029	-.0029
	230	81.	62.	-46.	-83.	657.	-164.	.106	.075	.020	.0033	-.0042	-.0035

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
RUN	230	-81.	-19.	-58.	-83.	-557.	-164.	.106	.075	.020	.0033	-.0042	-.0035
	235	71.	19.	-58.	-282.	1451.	-164.	.145	.109	.020	.0031	-.0029	-.0038
ELBOW	235	-71.	9.	66.	282.	-1451.	164.	.145	.109	.020	.0031	-.0029	-.0038
	240	60.	-9.	-66.	-217.	1444.	-99.	.160	.101	.030	.0027	-.0003	-.0040
RUN	240	-60.	36.	74.	217.	-1444.	99.	.160	.101	.030	.0027	-.0003	-.0040
	245	50.	-36.	-74.	-217.	666.	283.	.160	.059	.025	.0023	-.0010	-.0039
RUN	245	-50.	69.	83.	217.	-666.	-283.	.160	.059	.025	.0023	.0010	-.0039
	250	35.	-69.	-83.	-217.	665.	1386.	.160	.007	.006	.0018	.0010	-.0023
RUN	250	-35.	-21.	-24.	217.	665.	-1386.	.160	.007	.006	.0018	.0010	-.0023
	255	20.	21.	24.	-217.	-267.	1040.	.160	-.012	-.002	.0013	.0001	-.0000
RUN	255	-20.	20.	-12.	217.	267.	-1040.	.160	-.012	-.002	.0013	.0001	.0000
	260	4.	-20.	12.	-217.	-62.	1373.	.160	.007	.000	.0007	-.0002	.0024
FGRUN	260	-4.	-91.	-8.	217.	62.	-1373.	.160	.007	.000	.0007	-.0002	.0024
	265	-2.	91.	8.	-217.	-9.	758.	.160	.026	.002	.0005	-.0003	.0032
ELBOW	265	2.	-78.	-4.	217.	9.	-758.	.160	.026	.002	.0005	-.0003	.0032
	270	-5.	78.	4.	-226.	0.	575.	.151	.034	.003	.0003	-.0002	.0042
FGRUN	270	5.	-62.	1.	226.	0.	-575.	.151	.034	.003	.0003	-.0002	.0042
	275	-14.	62.	-1.	-221.	-0.	478.	.106	.034	.004	-.0000	-.0002	.0048
RUN	275	14.	-25.	11.	221.	0.	-478.	.106	.034	.004	-.0000	-.0002	.0048
	280	-33.	25.	-11.	-0.	-0.	0.	.002	.034	.001	-.0003	-.0002	.0054
FGRUN	30	-67.	-106.	-100.	-1091.	-361.	498.	.000	.053	.019	.0003	.0001	-.0002
	285	64.	106.	100.	488.	361.	-105.	.008	.053	.037	.0049	.0028	-.0020
FGRUN	285	-45.	-117.	-33.	604.	-227.	0.	.008	.053	.037	.0049	.0028	-.0020
	290	43.	117.	33.	-13.	5.	-0.	.025	.034	.037	.0034	.0034	-.0020
RUN	290	-2.	-3.	-1.	13.	-5.	0.	.025	.034	.037	.0034	.0034	-.0020
	295	0.	3.	1.	0.	0.	-0.	.042	.017	.037	.0033	.0034	-.0020
FGRUN	285	-19.	23.	-64.	-1092.	-113.	105.	.008	.053	.037	.0049	.0028	-.0020
	300	15.	-23.	64.	328.	113.	98.	.035	.053	.154	.0131	.0048	-.0020
FGRUN	300	-15.	35.	-60.	-328.	-113.	-98.	.035	.053	.154	.0131	.0048	-.0020
	305	10.	-35.	60.	-367.	113.	240.	.049	.053	.311	.0129	.0067	-.0001
ELBOW	305	-10.	42.	-58.	367.	-113.	-240.	.049	.053	.311	.0129	.0067	-.0001
	310	10.	-42.	58.	-413.	114.	235.	.049	.052	.323	.0121	.0067	.0005

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MEMBER	END	FORCES (LBS)			MOMENTS (IN-LBS)			DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ	MX	MY	MZ	DX	DY	DZ	RX	RY	RZ
FGRUN	310	-10.	48.	-57.	413.	-114.	-235.	.049	.052	.323	.0121	.0067	.0005
	315	6.	-48.	57.	-831.	-304.	-59.	.040	.044	.441	.0050	.0066	.0013
ELBOW	315	-6.	54.	-55.	831.	304.	59.	.040	.044	.441	.0050	.0066	.0013
	320	5.	-54.	55.	-814.	-341.	-97.	.033	.046	.449	.0013	.0046	.0014
FGRUN	320	-5.	63.	-52.	814.	341.	97.	.033	.046	.449	.0013	.0046	.0014
	325	-2.	-63.	52.	257.	-312.	-97.	.001	.005	.449	-.0032	-.0007	-.0007
RUN	325	-26.	-13.	-47.	-257.	312.	97.	.001	.005	.449	-.0032	-.0007	-.0007
	330	19.	13.	47.	27.	84.	-97.	.043	-.025	.449	-.0006	-.0027	-.0029
RUN	330	-19.	6.	-42.	-27.	-84.	97.	.043	-.025	.449	-.0008	-.0027	-.0029
	335	12.	-6.	42.	132.	355.	-97.	.065	-.029	.449	.0006	.0011	-.0051
FGRUN	335	-12.	21.	-37.	-132.	-355.	97.	.065	-.029	.449	.0006	.0011	-.0051
	340	7.	-21.	37.	387.	465.	-97.	.024	-.006	.449	.0036	.0059	-.0066
FGRUN	340	-27.	72.	0.	103.	-239.	174.	-.024	-.006	.449	.0036	.0059	-.0066
	345	25.	-72.	-0.	182.	342.	-174.	-.001	.008	.449	.0038	.0070	-.0074
FGRUN	345	-8.	-81.	1.	-182.	-342.	174.	-.001	.008	.449	.0038	.0070	-.0074
	350	6.	81.	-1.	-213.	375.	-174.	-.039	.027	.449	.0037	.0087	-.0085
ELBOW	350	-6.	-78.	2.	213.	-375.	174.	-.039	.027	.449	.0037	.0087	-.0085
	355	5.	78.	-2.	-297.	381.	-168.	-.040	.031	.452	.0024	.0099	-.0088
FGRUN	355	-5.	-71.	4.	297.	-381.	168.	-.040	.031	.452	.0024	.0099	-.0088
	360	1.	71.	-4.	-251.	381.	-136.	.065	.031	.462	-.0005	.0151	-.0104
RUN	360	-1.	-53.	9.	251.	-381.	136.	.065	.031	.462	-.0005	.0151	-.0104
	365	-8.	53.	-9.	-27.	381.	-228.	.361	.031	.402	-.0037	.0266	-.0146
FGRUN	365	8.	-35.	14.	27.	-381.	228.	.361	.031	.402	-.0037	.0266	-.0146
	370	-13.	35.	-14.	130.	381.	-343.	.535	.031	.363	-.0032	.0318	-.0176
ELBOW	370	13.	-29.	16.	-130.	-381.	343.	.535	.031	.363	-.0032	.0318	-.0176
	375	-13.	29.	-16.	148.	399.	-326.	.555	.052	.396	-.0023	.0333	-.0193
FGRUN	375	13.	-23.	18.	-148.	-399.	326.	.555	.052	.396	-.0023	.0333	-.0193
	380	-17.	23.	-18.	148.	575.	-105.	.555	.252	.742	-.0005	.0379	-.0213
ELBOW	380	-17.	-17.	20.	-148.	-575.	105.	.555	.252	.742	-.0005	.0379	-.0213
	385	18.	17.	-20.	126.	597.	-67.	.531	.276	.786	-.0005	.0398	-.0217
FGRUN	385	-18.	-14.	21.	-126.	-597.	67.	.531	.276	.786	-.0005	.0398	-.0217
	390	19.	14.	-21.	49.	597.	3.	.449	.276	.787	-.0002	.0427	-.0218

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06/07/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
 LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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MEMBER	END	FORCES (LBS)			MX	MOMENTS (IN-LBS)		M2	DEFLECTIONS (IN)			ROTATIONS (RAD)		
		FX	FY	FZ		MY			DX	DY	DZ	RX	RY	RZ
ELBOW	390	19.	-11.	21.	-49.	-597.		-3.	.449	.276	.787	-.0002	.0427	-.0218
	395	-20.	11.	-21.	16.	564.		16.	.390	.259	.752	.0003	.0447	-.0221
FGRUN	395	20.	-1.	24.	-16.	-564.		-16.	.390	.259	.752	.0003	.0447	-.0221
	400	-27.	1.	-24.	-0.	0.		-0.	-.181	.000	.182	.0004	.0493	-.0220
FGRUN	340	20.	-33.	-33.	-490.	-227.		-77.	.024	-.006	.449	.0036	.0059	-.0066
	405	-27.	33.	33.	77.	-187.		201.	.095	.064	.619	.0093	.0055	-.0041
FGRUN	405	27.	-15.	-27.	-77.	187.		-201.	.095	.064	.619	.0093	.0055	-.0041
	410	-34.	15.	27.	-250.	-513.		22.	.130	.100	.764	.0085	-.0008	-.0023
ELBOW	410	34.	-6.	-25.	250.	513.		-22.	.130	.100	.764	.0085	-.0008	-.0023
	415	-34.	6.	25.	-263.	-495.		0.	.129	.093	.769	.0071	-.0032	-.0021
FGRUN	415	34.	1.	-23.	263.	495.		0.	.129	.093	.769	.0071	-.0032	-.0021
	420	-36.	-1.	23.	-272.	-99.		-0.	.074	.031	.769	.0042	-.0063	-.0021
RUN	420	38.	13.	-19.	272.	99.		0.	.074	.031	.769	.0042	-.0063	-.0021
	425	-43.	-13.	19.	-423.	390.		-0.	.003	.003	.764	.0002	-.0046	-.0021
RUN	425	-18.	-28.	-15.	423.	-390.		0.	.003	.003	.769	-.0002	-.0046	-.0021
	430	10.	28.	15.	132.	104.		-0.	-.032	.045	.769	-.0026	.0002	-.0021
RUN	430	-10.	-7.	-9.	-132.	-104.		0.	-.032	.045	.769	-.0026	.0002	-.0021
	435	3.	7.	9.	273.	-26.		-0.	-.016	.063	.769	-.0013	.0010	-.0021
RUN	435	-3.	-14.	-3.	-273.	26.		-0.	-.016	.063	.769	.0013	.0010	-.0021
	440	-5.	-14.	3.	0.	0.		0.	.000	.001	.769	.0040	.0007	-.0021

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APPENDIX H
DESIGN, LEVEL A, AND LEVEL B SERVICE
CONDITIONS STRESS ANALYSIS RESULTS

EQUATION (9) REFLECTS OBE RESULTS

06/05/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION SS-B

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ASME SECTION III CLASS 2 OR ANSI B31.1-B STRESS SUMMARY

MEMBER	MODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 6 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	75	1.000	847.	1141.	827.	1674.
	80	1.251	848.	1116.	739.	1587.
FGRUN	80	1.251	807.	1075.	772.	1579.
	85	1.000	853.	1245.	526.	1379.
FGRUN	85	1.000	853.	1245.	526.	1379.
	90	1.251	807.	1073.	293.	1100.
FGRUN	90	1.251	780.	944.	358.	1138.
	95	1.000	791.	1009.	953.	1744.
FGRUN	95	1.000	791.	1009.	953.	1744.
	100	1.000	780.	947.	1659.	2439.
ELBOW	100	1.732	794.	1012.	2874.	3668.
	105	1.732	798.	970.	2256.	3054.
FGRUN	105	1.000	783.	915.	1302.	2085.
	110	1.000	781.	902.	848.	1629.
ELBOW	110	1.732	795.	953.	1469.	2265.
	115	1.732	755.	993.	1099.	1854.
FGRUN	115	1.000	750.	933.	635.	1384.
	120	1.000	767.	1068.	854.	1622.
RUN	120	1.000	767.	1068.	854.	1622.
	125	1.000	759.	977.	743.	1502.
RUN	125	1.000	759.	977.	743.	1502.
	130	1.000	788.	1375.	686.	1474.
ELBOW	130	1.000	788.	1375.	686.	1474.
	135	1.000	815.	1575.	418.	1233.
RUN	135	1.000	815.	1575.	418.	1233.
	140	1.000	839.	1287.	301.	1140.
FGRUN	140	1.000	839.	1287.	301.	1140.
	145	1.251	920.	1565.	260.	1180.

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EQUATION (9) REFLECTS OBE RESULTS

06/05/78

NUPIPE-11M - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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ASME SECTION III CLASS 2 OR ANSI B31.1-B STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ.8 (PSI)	OCCASIONAL STRESS EQ.9 (PSI)	EXPANSION STRESS EQ.10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ.11 (PSI)
FGRUN	5	1.000	2465.	8008.	635.	3100.
	10	1.000	2214.	6879.	588.	2802.
SRUN	10	2.100	3066.	10413.	1236.	4302.
	11	2.100	2674.	8650.	1137.	3811.
SRUN	15	2.100	1529.	3588.	745.	2274.
	20	2.100	1070.	2392.	362.	1431.
SRUN	25	2.100	1335.	3809.	141.	1476.
	31	2.100	1477.	4230.	604.	2141.
FGRUN	31	1.000	1205.	2953.	316.	1521.
	30	1.251	1247.	3053.	629.	1876.
FGRUN	30	1.251	1214.	2600.	629.	1642.
	35	1.000	1186.	2464.	550.	1736.
ELBOW	35	1.000	1186.	2464.	550.	1736.
	40	1.000	1128.	2212.	533.	1661.
FGRUN	40	1.000	1128.	2212.	533.	1661.
	45	1.000	883.	1269.	103.	985.
RUN	45	1.000	803.	1269.	103.	985.
	50	1.000	887.	1675.	382.	1269.
ELBOW	50	1.000	807.	1675.	382.	1269.
	55	1.000	979.	2095.	399.	1378.
RUN	55	1.000	979.	2095.	399.	1378.
	60	1.000	846.	1218.	635.	1480.
ELBOW	60	1.000	846.	1218.	635.	1480.
	65	1.000	833.	961.	75.	909.
RUN	65	1.000	833.	981.	75.	909.
	70	1.000	839.	1033.	244.	1082.
ELBOW	70	1.000	839.	1033.	244.	1082.
	75	1.000	847.	1141.	827.	1674.

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EQUATION (9) REFLECTS OBE RESULTS

06/05/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LUFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EG. 8 (PSI)	OCCASIONAL STRESS EG. 9 (PSI)	EXPANSION STRESS EG. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EG. 11 (PSI)
FGRUN	145	1.251	904.	1506.	141.	1045.
	150	1.000	747.	802.	23.	770.
RUN	150	1.000	747.	802.	23.	770.
	155	1.000	764.	852.	41.	805.
RUN	155	1.000	764.	852.	41.	805.
	160	1.000	733.	733.	0.	733.
FGRUN	145	1.251	751.	1130.	480.	1231.
	165	1.000	1045.	2617.	271.	1316.
FGRUN	170	1.000	1102.	2661.	194.	1296.
	175	1.000	631.	631.	0.	631.
FGRUN	90	1.251	564.	1014.	849.	1413.
	180	1.000	524.	969.	393.	917.
RUN	180	1.000	524.	969.	393.	917.
	185	1.000	470.	536.	0.	470.
RUN	185	1.000	470.	536.	0.	470.
	190	1.000	470.	470.	0.	470.
FGRUN	80	1.251	701.	1533.	892.	1593.
	195	1.000	677.	969.	328.	1005.
RUN	195	1.000	677.	969.	328.	1005.
	200	1.000	680.	1390.	450.	1131.
ELBOW	200	1.613	690.	1549.	727.	1417.
	205	1.613	692.	1522.	678.	1371.
FGRUN	205	1.000	682.	1368.	420.	1102.
	210	1.000	755.	1113.	408.	1164.
RUN	210	1.000	755.	1113.	408.	1164.
	215	1.000	720.	1034.	248.	968.
RUN	215	1.000	720.	1034.	248.	968.
	220	1.000	695.	1354.	100.	795.

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EQUATION (9). REFLECTS OBE RESULTS

06/05/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	220	1.000	695.	1354.	100.	795.
	225	1.000	989.	2953.	112.	1102.
RUN	225	1.000	989.	2953.	112.	1102.
	230	1.000	688.	1557.	210.	898.
RUN	230	1.000	688.	1557.	210.	898.
	235	1.000	718.	2462.	329.	1047.
ELBOW	235	1.000	718.	2462.	329.	1047.
	240	1.000	693.	2324.	219.	912.
RUN	240	1.000	693.	2324.	219.	912.
	245	1.000	736.	1418.	83.	819.
RUN	245	1.000	736.	1418.	83.	819.
	250	1.000	1020.	2684.	492.	1512.
RUN	250	1.000	1020.	2684.	492.	1512.
	255	1.000	823.	1877.	299.	1122.
RUN	255	1.000	823.	1877.	299.	1122.
	260	1.000	800.	2034.	375.	1174.
FGRUN	260	1.000	800.	2034.	375.	1174.
	265	1.000	603.	1391.	375.	1058.
ELBOW	265	1.613	694.	1550.	605.	1299.
	270	1.613	711.	1396.	562.	1274.
FGRUN	270	1.000	697.	1263.	349.	1046.
	275	1.000	676.	1184.	235.	910.
RUN	275	1.000	676.	1184.	235.	910.
	280	1.000	631.	631.	0.	631.
FGRUN	30	1.251	1073.	8592.	112.	1185.
	285	1.000	1204.	6512.	117.	1320.
FGRUN	285	1.000	1150.	3718.	0.	1150.
	290	1.000	457.	512.	0.	457.

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EQUATION (9) REFLECTS OBE RESULTS

06/05/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	290	1.000	457.	512.	0.	457.
	295	1.000	441.	441.	0.	441.
FGRUN	285	1.000	497.	7820.	117.	613.
	300	1.000	481.	2899.	129.	610.
FGRUN	300	1.000	481.	2899.	129.	610.
	305	1.000	528.	3661.	144.	672.
ELBOW	305	1.296	528.	3661.	186.	714.
	310	1.296	530.	3867.	183.	712.
FGRUN	310	1.000	530.	3867.	141.	671.
	315	1.000	554.	6536.	130.	684.
ELBOW	315	1.296	554.	6536.	168.	722.
	320	1.296	563.	6561.	153.	716.
FGRUN	320	1.000	563.	6561.	118.	681.
	325	1.000	794.	2679.	181.	975.
RUN	325	1.000	794.	2679.	181.	975.
	330	1.000	504.	1220.	122.	626.
RUN	330	1.000	504.	1220.	122.	626.
	335	1.000	503.	2935.	72.	575.
FGRUN	335	1.000	503.	2935.	72.	575.
	340	1.000	672.	4360.	55.	727.
FGRUN	340	1.000	611.	2015.	97.	708.
	345	1.000	834.	2924.	122.	955.
FGRUN	345	1.000	834.	2924.	122.	955.
	350	1.000	584.	2684.	99.	683.
ELBOW	350	1.296	584.	2684.	128.	712.
	355	1.296	656.	2867.	121.	777.
FGRUN	355	1.000	656.	2887.	94.	750.
	360	1.000	648.	2893.	85.	733.

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EQUATION (9) REFLECTS OBE RESULTS

06/05/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-1A-299-AB INSIDE CONTAINMENT PENETRATION SS-B

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ASME SECTION III CLASS 2 OR ANSI 831.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	360	1.000	648.	2893.	85.	733.
	365	1.000	711.	2912.	100.	811.
FGRUN	365	1.000	711.	2912.	100.	811.
	370	1.000	762.	3286.	119.	891.
ELBOW	370	1.296	762.	3286.	155.	917.
	375	1.296	734.	3322.	158.	892.
FGRUN	375	1.000	734.	3322.	122.	856.
	380	1.000	568.	3600.	154.	722.
ELBOW	380	1.296	568.	3600.	199.	767.
	385	1.296	567.	3650.	207.	773.
FGRUN	385	1.000	567.	3650.	160.	726.
	390	1.000	563.	3575.	159.	722.
ELBOW	390	1.296	563.	3575.	206.	769.
	395	1.296	554.	3402.	193.	747.
FGRUN	395	1.000	554.	3402.	149.	703.
	400	1.000	441.	441.	0.	441.
FGRUN	340	1.000	569.	3755.	74.	643.
	405	1.000	640.	1687.	66.	706.
FGRUN	405	1.000	640.	1687.	66.	706.
	410	1.000	565.	4012.	63.	629.
ELBOW	410	1.296	565.	4012.	82.	647.
	415	1.296	546.	3951.	70.	616.
FGRUN	415	1.000	546.	3951.	54.	600.
	420	1.000	588.	2174.	38.	626.
RUN	420	1.000	538.	2174.	38.	626.
	425	1.000	1010.	3118.	138.	1148.
RUN	425	1.000	1010.	3118.	138.	1148.
	430	1.000	613.	1438.	92.	705.

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EQUATION (9) REFLECTS OBE RESULTS

06/05/78

NUPIPE-11M - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT C15 ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EC.8 (PSI)	OCCASIONAL STRESS EC.9 (PSI)	EXPANSION STRESS EC.10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EC.11 (PSI)
RUN	430	1.000	613.	1438.	92.	705.
	435	1.000	752.	1934.	46.	798.
RUN	435	1.000	752.	1934.	46.	798.
	440	1.000	441.	441.	0.	441.

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DISREGARD EQUATIONS (10) AND (11) RESULTS HEREAFTER
EQUATION (9) REFLECTS LOCE RESULTS

06/06/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2"-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	5	1.000	2465.	10064.	0.	2465.
	10	1.000	2214.	8717.	0.	2214.
SRUN	10	2.100	3066.	13308.	0.	3066.
	11	2.100	2674.	11204.	0.	2674.
SRUN	15	2.100	1529.	5069.	0.	1529.
	20	2.100	1070.	2629.	0.	1070.
SRUN	25	2.100	1335.	4028.	0.	1335.
	31	2.100	1477.	4818.	0.	1477.
FGRUN	31	1.000	1205.	3327.	0.	1205.
	30	1.251	1247.	3567.	0.	1247.
FGRUN	30	1.251	1214.	3244.	0.	1214.
	35	1.000	1186.	3103.	0.	1186.
ELBOW	35	1.000	1186.	3103.	0.	1186.
	40	1.000	1128.	2805.	0.	1128.
FGRUN	40	1.000	1128.	2805.	0.	1128.
	45	1.000	883.	1521.	0.	883.
RUN	45	1.000	883.	1521.	0.	883.
	50	1.000	887.	1533.	0.	887.
ELBOW	50	1.000	887.	1533.	0.	887.
	55	1.000	979.	2018.	0.	979.
RUN	55	1.000	979.	2018.	0.	979.
	60	1.000	846.	1283.	0.	846.
ELBOW	60	1.000	846.	1283.	0.	846.
	65	1.000	833.	1210.	0.	833.
RUN	65	1.000	833.	1210.	0.	833.
	70	1.000	839.	1243.	0.	839.
ELBOW	70	1.000	839.	1243.	0.	839.
	75	1.000	847.	1313.	0.	847.

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EQUATION (9) REFLECTS LOCE RESULTS

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	75	1.000	847.	1313.	0.	847.
	80	1.251	848.	1304.	0.	848.
FGRUN	80	1.251	807.	1309.	0.	807.
	85	1.000	853.	1543.	0.	853.
FGRUN	85	1.000	853.	1543.	0.	853.
	90	1.251	807.	1281.	0.	807.
FGRUN	90	1.251	780.	1098.	0.	780.
	95	1.000	791.	1091.	0.	791.
FGRUN	95	1.000	791.	1091.	0.	791.
	100	1.000	780.	1077.	0.	780.
ELBOW	100	1.732	794.	1180.	0.	794.
	105	1.732	798.	1190.	0.	798.
FGRUN	105	1.000	783.	1085.	0.	783.
	110	1.000	781.	1050.	0.	781.
ELBOW	110	1.732	795.	1145.	0.	795.
	115	1.732	755.	951.	0.	755.
FGRUN	115	1.000	750.	900.	0.	750.
	120	1.000	767.	959.	0.	767.
RUN	120	1.000	767.	959.	0.	767.
	125	1.000	759.	959.	0.	759.
RUN	125	1.000	759.	959.	0.	759.
	130	1.000	788.	1163.	0.	788.
ELBOW	130	1.000	788.	1163.	0.	788.
	135	1.000	815.	1292.	0.	815.
RUN	135	1.000	815.	1292.	0.	815.
	140	1.000	839.	1338.	0.	839.
FGRUN	140	1.000	839.	1338.	0.	839.
	145	1.251	920.	1737.	0.	920.

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EQUATION (9) REFLECTS LOCE RESULTS

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	145	1.251	904.	1658.	0.	904.
	150	1.000	747.	814.	0.	747.
RUN	150	1.000	747.	814.	0.	747.
	155	1.000	764.	903.	0.	764.
RUN	155	1.000	764.	903.	0.	764.
	160	1.000	733.	733.	0.	733.
FGRUN	145	1.251	751.	1295.	0.	751.
	165	1.000	1045.	2900.	0.	1045.
FGRUN	170	1.000	1102.	3215.	0.	1102.
	175	1.000	631.	631.	0.	631.
FGRUN	90	1.251	564.	1154.	0.	564.
	180	1.000	524.	887.	0.	524.
RUN	180	1.000	524.	887.	0.	524.
	185	1.000	470.	504.	0.	470.
RUN	185	1.000	470.	504.	0.	470.
	190	1.000	470.	470.	0.	470.
FGRUN	80	1.251	701.	937.	0.	701.
	195	1.000	677.	960.	0.	677.
RUN	195	1.000	677.	960.	0.	677.
	200	1.000	680.	1101.	0.	680.
ELBOW	200	1.613	690.	1200.	0.	690.
	205	1.613	692.	1192.	0.	692.
FGRUN	205	1.000	682.	1094.	0.	682.
	210	1.000	755.	1299.	0.	755.
RUN	210	1.000	755.	1299.	0.	755.
	215	1.000	720.	1158.	0.	720.
RUN	215	1.000	720.	1158.	0.	720.
	220	1.000	695.	1412.	0.	695.

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EQUATION (9) REFLECTS LOCE RESULTS

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	220	1.000	695.	1412.	0.	695.
	225	1.000	989.	3109.	0.	989.
RUN	225	1.000	989.	3109.	0.	989.
	230	1.000	688.	977.	0.	688.
RUN	230	1.000	688.	977.	0.	688.
	235	1.000	718.	1553.	0.	718.
ELBOW	235	1.000	718.	1553.	0.	718.
	240	1.000	693.	1662.	0.	693.
RUN	240	1.000	693.	1662.	0.	693.
	245	1.000	736.	1550.	0.	736.
RUN	245	1.000	736.	1550.	0.	736.
	250	1.000	1020.	2674.	0.	1020.
RUN	250	1.000	1020.	2674.	0.	1020.
	255	1.000	823.	2042.	0.	823.
RUN	255	1.000	823.	2042.	0.	823.
	260	1.000	800.	2352.	0.	800.
FGRUN	260	1.000	800.	2352.	0.	800.
	265	1.000	683.	1547.	0.	683.
ELBOW	265	1.613	694.	1739.	0.	694.
	270	1.613	711.	1497.	0.	711.
FGRUN	270	1.000	697.	1347.	0.	697.
	275	1.000	676.	1182.	0.	676.
RUN	275	1.000	676.	1182.	0.	676.
	280	1.000	631.	631.	0.	631.
FGRUN	30	1.251	1073.	4177.	0.	1073.
	285	1.000	1204.	4849.	0.	1204.
FGRUN	285	1.000	1150.	4329.	0.	1150.
	290	1.000	457.	526.	0.	457.

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EQUATION (9) REFLECTS LOCE RESULTS

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NUPIPE-IIN - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	290	1.000	457.	526.	0.	457.
	295	1.000	441.	441.	0.	441.
FGRUN	285	1.000	497.	983.	0.	497.
	300	1.000	481.	633.	0.	481.
FGRUN	300	1.000	481.	633.	0.	481.
	305	1.000	528.	939.	0.	528.
ELBOW	305	1.296	528.	939.	0.	528.
	310	1.296	530.	963.	0.	530.
FGRUN	310	1.000	530.	963.	0.	530.
	315	1.000	554.	1308.	0.	554.
ELBOW	315	1.296	554.	1308.	0.	554.
	320	1.296	563.	1372.	0.	563.
FGRUN	320	1.000	563.	1372.	0.	563.
	325	1.000	794.	2686.	0.	794.
RUN	325	1.000	794.	2686.	0.	794.
	330	1.000	504.	1009.	0.	504.
RUN	330	1.000	504.	1009.	0.	504.
	335	1.000	503.	1053.	0.	503.
FGRUN	335	1.000	503.	1053.	0.	503.
	340	1.000	672.	1509.	0.	672.
FGRUN	340	1.000	611.	2510.	0.	611.
	345	1.000	834.	2849.	0.	834.
FGRUN	345	1.000	834.	2849.	0.	834.
	350	1.000	584.	3102.	0.	584.
ELBOW	350	1.296	584.	3102.	0.	584.
	355	1.296	656.	3437.	0.	656.
FGRUN	355	1.000	656.	3437.	0.	656.
	360	1.000	648.	2766.	0.	648.

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EQUATION (9) REFLECTS LOCE RESULTS

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
LOFT CIS ANALYSIS - 2nd-IA-299-AB INSIDE CONTAINMENT PENETRATION S5-B

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	360	1.000	648.	2766.	0.	648.
	365	1.000	711.	2264.	0.	711.
FGRUN	365	1.000	711.	2264.	0.	711.
	370	1.000	762.	2705.	0.	762.
ELBOW	370	1.296	762.	2705.	0.	762.
	375	1.296	734.	2623.	0.	734.
FGRUN	375	1.000	734.	2623.	0.	734.
	380	1.000	568.	2470.	0.	568.
ELBOW	380	1.296	568.	2470.	0.	568.
	385	1.296	567.	2523.	0.	567.
FGRUN	385	1.000	567.	2523.	0.	567.
	390	1.000	563.	2449.	0.	563.
ELBOW	390	1.296	563.	2449.	0.	563.
	395	1.296	554.	2298.	0.	554.
FGRUN	395	1.000	554.	2298.	0.	554.
	400	1.000	441.	441.	0.	441.
FGRUN	340	1.000	569.	2247.	0.	569.
	405	1.000	640.	2369.	0.	640.
FGRUN	405	1.000	640.	2369.	0.	640.
	410	1.000	565.	1579.	0.	565.
ELBOW	410	1.296	565.	1579.	0.	565.
	415	1.296	546.	1419.	0.	546.
FGRUN	415	1.000	546.	1419.	0.	546.
	420	1.000	588.	1410.	0.	588.
RUN	420	1.000	588.	1410.	0.	588.
	425	1.000	1010.	4306.	0.	1010.
RUN	425	1.000	1010.	4306.	0.	1010.
	430	1.000	613.	1237.	0.	613.

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EQUATION (9) REFLECTS LOCE RESULTS

06/06/78

NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	430	1.000	613.	1237.	0.	613.
	435	1.000	752.	1919.	0.	752.
RUN	435	1.000	752.	1919.	0.	752.
	440	1.000	441.	441.	0.	441.

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APPENDIX I
LEVEL C SERVICE CONDITIONS
STRESS ANALYSIS RESULTS

06/06/78

NUPIPE-IHM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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ASME SECTION III CLASS 2 OR ANSI 831.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	5	1.000	2465.	13551.	0.	2465.
	10	1.000	2214.	11544.	0.	2214.
SRUN	10	2.100	3066.	17760.	0.	3066.
	11	2.100	2674.	14627.	0.	2674.
SRUN	15	2.100	1529.	5647.	0.	1529.
	20	2.100	1070.	3714.	0.	1070.
SRUN	25	2.100	1335.	6283.	0.	1335.
	31	2.100	1477.	6984.	0.	1477.
FGRUN	31	1.000	1205.	4702.	0.	1205.
	30	1.251	1247.	4860.	0.	1247.
FGRUN	30	1.251	1214.	3986.	0.	1214.
	35	1.000	1186.	3743.	0.	1186.
ELBOW	35	1.000	1186.	3743.	0.	1186.
	40	1.000	1128.	3296.	0.	1128.
FGRUN	40	1.000	1128.	3296.	0.	1128.
	45	1.000	883.	1656.	0.	883.
RUN	45	1.000	883.	1656.	0.	883.
	50	1.000	887.	2462.	0.	887.
ELBOW	50	1.000	887.	2462.	0.	887.
	55	1.000	979.	3210.	0.	979.
RUN	55	1.000	979.	3210.	0.	979.
	60	1.000	846.	1591.	0.	846.
ELBOW	60	1.000	846.	1591.	0.	846.
	65	1.000	833.	1128.	0.	833.
RUN	65	1.000	833.	1128.	0.	833.
	70	1.000	839.	1228.	0.	839.
ELBOW	70	1.000	839.	1228.	0.	839.
	75	1.000	847.	1435.	0.	847.

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ASME SECTION III CLASS 2 OR ANSI 831.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	75	1.000	847.	1435.	0.	847.
	80	1.251	848.	1385.	0.	848.
FGRUN	80	1.251	807.	1344.	0.	807.
	85	1.000	853.	1638.	0.	853.
FGRUN	85	1.000	853.	1638.	0.	853.
	90	1.251	807.	1339.	0.	807.
FGRUN	90	1.251	780.	1107.	0.	780.
	95	1.000	791.	1227.	0.	791.
FGRUN	95	1.000	791.	1227.	0.	791.
	100	1.000	780.	1114.	0.	780.
ELBOW	100	1.732	794.	1229.	0.	794.
	105	1.732	798.	1142.	0.	798.
FGRUN	105	1.000	783.	1047.	0.	783.
	110	1.000	781.	1023.	0.	781.
ELBOW	110	1.732	795.	1110.	0.	795.
	115	1.732	755.	1232.	0.	755.
FGRUN	115	1.000	750.	1117.	0.	750.
	120	1.000	767.	1370.	0.	767.
RUN	120	1.000	767.	1370.	0.	767.
	125	1.000	759.	1196.	0.	759.
RUN	125	1.000	759.	1196.	0.	759.
	130	1.000	788.	1963.	0.	788.
ELBOW	130	1.000	788.	1963.	0.	788.
	135	1.000	815.	2335.	0.	815.
RUN	135	1.000	815.	2335.	0.	815.
	140	1.000	839.	1735.	0.	839.
FGRUN	140	1.000	839.	1735.	0.	839.
	145	1.251	920.	2209.	0.	920.

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	145	1.251	904.	2107.	0.	904.
	150	1.000	747.	856.	0.	747.
RUN	150	1.000	747.	856.	0.	747.
	155	1.000	764.	1019.	0.	764.
RUN	155	1.000	764.	1019.	0.	764.
	160	1.000	733.	733.	0.	733.
FGRUN	145	1.251	751.	1508.	0.	751.
	165	1.000	1045.	4190.	0.	1045.
FGRUN	170	1.000	1102.	4619.	0.	1102.
	175	1.000	631.	631.	0.	631.
FGRUN	90	1.251	564.	1464.	0.	564.
	180	1.000	524.	1413.	0.	524.
RUN	180	1.000	524.	1413.	0.	524.
	185	1.000	470.	601.	0.	470.
RUN	185	1.000	470.	601.	0.	470.
	190	1.000	470.	470.	0.	470.
FGRUN	80	1.251	701.	2364.	0.	701.
	195	1.000	677.	1261.	0.	677.
RUN	195	1.000	677.	1261.	0.	677.
	200	1.000	680.	2099.	0.	680.
ELBOW	200	1.613	690.	2407.	0.	690.
	205	1.613	692.	2352.	0.	692.
FGRUN	205	1.000	682.	2054.	0.	682.
	210	1.000	755.	1471.	0.	755.
RUN	210	1.000	755.	1471.	0.	755.
	215	1.000	720.	1347.	0.	720.
RUN	215	1.000	720.	1347.	0.	720.
	220	1.000	695.	2013.	0.	695.

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NUPIPE-IIM - NUCLEAR SERVICES CORPORATION PIPING ANALYSIS PROGRAM - VERSION 1.1
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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	220	1.000	695.	2013.	0.	695.
	225	1.000	989.	4917.	0.	989.
RUN	225	1.000	989.	4917.	0.	989.
	230	1.000	688.	2426.	0.	688.
RUN	230	1.000	688.	2426.	0.	688.
	235	1.000	718.	4206.	0.	718.
ELBOW	235	1.000	718.	4206.	0.	718.
	240	1.000	693.	3955.	0.	693.
RUN	240	1.000	693.	3955.	0.	693.
	245	1.000	736.	2101.	0.	736.
RUN	245	1.000	736.	2101.	0.	736.
	250	1.000	1020.	4347.	0.	1020.
RUN	250	1.000	1020.	4347.	0.	1020.
	255	1.000	823.	2930.	0.	823.
RUN	255	1.000	823.	2930.	0.	823.
	260	1.000	800.	3269.	0.	800.
FGRUN	260	1.000	800.	3269.	0.	800.
	265	1.000	683.	2098.	0.	683.
ELBOW	265	1.613	694.	2405.	0.	694.
	270	1.613	711.	2081.	0.	711.
FGRUN	270	1.000	697.	1829.	0.	697.
	275	1.000	676.	1693.	0.	676.
RUN	275	1.000	676.	1693.	0.	676.
	280	1.000	631.	631.	0.	631.
FGRUN	30	1.251	1073.	16112.	0.	1073.
	285	1.000	1204.	11821.	0.	1204.
FGRUN	285	1.000	1150.	6287.	0.	1150.
	290	1.000	457.	568.	0.	457.

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	MODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	290	1.000	457.	568.	0.	457.
	295	1.000	441.	441.	0.	441.
FGRUN	285	1.000	497.	15143.	0.	497.
	300	1.000	481.	5318.	0.	481.
FGRUN	300	1.000	481.	5318.	0.	481.
	305	1.000	528.	6794.	0.	528.
ELBOW	305	1.296	528.	6794.	0.	528.
	310	1.296	530.	7205.	0.	530.
FGRUN	310	1.000	530.	7205.	0.	530.
	315	1.000	554.	12518.	0.	554.
ELBOW	315	1.296	554.	12518.	0.	554.
	320	1.296	563.	12559.	0.	563.
FGRUN	320	1.000	563.	12559.	0.	563.
	325	1.000	794.	4564.	0.	794.
RUN	325	1.000	794.	4564.	0.	794.
	330	1.000	504.	1936.	0.	504.
RUN	330	1.000	504.	1936.	0.	504.
	335	1.000	503.	5367.	0.	503.
FGRUN	335	1.000	503.	5367.	0.	503.
	340	1.000	672.	8047.	0.	672.
FGRUN	340	1.000	611.	3420.	0.	611.
	345	1.000	834.	5014.	0.	834.
FGRUN	345	1.000	834.	5014.	0.	834.
	350	1.000	584.	4784.	0.	584.
ELBOW	350	1.296	584.	4784.	0.	584.
	355	1.296	656.	5117.	0.	656.
FGRUN	355	1.000	656.	5117.	0.	656.
	360	1.000	648.	5138.	0.	648.

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	360	1.000	648.	5138.	0.	648.
	365	1.000	711.	5114.	0.	711.
FGRUN	365	1.000	711.	5114.	0.	711.
	370	1.000	762.	5810.	0.	762.
ELBOW	370	1.296	762.	5810.	0.	762.
	375	1.296	734.	5910.	0.	734.
FGRUN	375	1.000	734.	5910.	0.	734.
	380	1.000	568.	6633.	0.	568.
ELBOW	380	1.296	568.	6633.	0.	568.
	385	1.296	567.	6734.	0.	567.
FGRUN	385	1.000	567.	6734.	0.	567.
	390	1.000	563.	6588.	0.	563.
ELBOW	390	1.296	563.	6588.	0.	563.
	395	1.296	554.	6250.	0.	554.
FGRUN	395	1.000	554.	6250.	0.	554.
	400	1.000	441.	441.	0.	441.
FGRUN	340	1.000	569.	6941.	0.	569.
	405	1.000	640.	2733.	0.	640.
FGRUN	405	1.000	640.	2733.	0.	640.
	410	1.000	565.	7460.	0.	565.
ELBOW	410	1.296	565.	7460.	0.	565.
	415	1.296	546.	7356.	0.	546.
FGRUN	415	1.000	546.	7356.	0.	546.
	420	1.000	588.	3760.	0.	588.
RUN	420	1.000	588.	3760.	0.	588.
	425	1.000	1010.	5227.	0.	1010.
RUN	425	1.000	1010.	5227.	0.	1010.
	430	1.000	613.	2264.	0.	613.

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ.8 (PSI)	OCCASIONAL STRESS EQ.9 (PSI)	EXPANSION STRESS EQ.10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ.11 (PSI)
RUN	430	1.000	613.	2264.	0.	613.
	435	1.000	752.	3115.	0.	752.
RUN	435	1.000	752.	3115.	0.	752.
	440	1.000	441.	441.	0.	441.

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APPENDIX J
LEVEL D SERVICE CONDITIONS
STRESS ANALYSIS RESULTS

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ASME SECTION III CLASS 2 OR ANSI E31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	5	1.000	2465.	20397.	0.	2465.
	10	1.000	2214.	17339.	0.	2214.
SRUN	10	2.100	3066.	26887.	0.	3066.
	11	2.100	2674.	22094.	0.	2674.
SRUN	15	2.100	1529.	7903.	0.	1529.
	20	2.100	1070.	3173.	0.	1070.
SRUN	25	2.100	1335.	8013.	0.	1335.
	31	2.100	1477.	9318.	0.	1477.
FGRUN	31	1.000	1205.	6184.	0.	1205.
	30	1.251	1247.	6468.	0.	1247.
FGRUN	30	1.251	1214.	5724.	0.	1214.
	35	1.000	1186.	5398.	0.	1186.
ELBOW	35	1.000	1186.	5398.	0.	1186.
	40	1.000	1128.	4752.	0.	1128.
FGRUN	40	1.000	1128.	4752.	0.	1128.
	45	1.000	883.	2101.	0.	883.
RUN	45	1.000	883.	2101.	0.	883.
	50	1.000	887.	3015.	0.	887.
ELBOW	50	1.000	887.	3015.	0.	887.
	55	1.000	979.	4125.	0.	979.
RUN	55	1.000	979.	4125.	0.	979.
	60	1.000	846.	1933.	0.	846.
ELBOW	60	1.000	846.	1933.	0.	846.
	65	1.000	833.	1446.	0.	833.
RUN	65	1.000	833.	1446.	0.	833.
	70	1.000	839.	1570.	0.	839.
ELBOW	70	1.000	839.	1570.	0.	839.
	75	1.000	847.	1856.	0.	847.

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	75	1.000	847.	1856.	0.	847.
	80	1.251	848.	1769.	0.	848.
FGRUN	80	1.251	807.	1297.	0.	807.
	85	1.000	853.	1987.	0.	853.
FGRUN	85	1.000	853.	1987.	0.	853.
	90	1.251	807.	1152.	0.	807.
FGRUN	90	1.251	780.	1126.	0.	780.
	95	1.000	791.	1257.	0.	791.
FGRUN	95	1.000	791.	1257.	0.	791.
	100	1.000	780.	1064.	0.	780.
ELBOW	100	1.732	794.	1163.	0.	794.
	105	1.732	798.	1168.	0.	798.
FGRUN	105	1.000	783.	1067.	0.	783.
	110	1.000	781.	1085.	0.	781.
ELBOW	110	1.732	795.	1191.	0.	795.
	115	1.732	755.	1257.	0.	755.
FGRUN	115	1.000	750.	1136.	0.	750.
	120	1.000	767.	1515.	0.	767.
RUN	120	1.000	767.	1515.	0.	767.
	125	1.000	759.	1361.	0.	759.
RUN	125	1.000	759.	1361.	0.	759.
	130	1.000	788.	2320.	0.	788.
ELBOW	130	1.000	788.	2320.	0.	788.
	135	1.000	815.	2768.	0.	815.
RUN	135	1.000	815.	2768.	0.	815.
	140	1.000	839.	2214.	0.	839.
FGRUN	140	1.000	839.	2214.	0.	839.
	145	1.251	920.	3001.	0.	920.

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ASME SECTION III CLASS 2 OR ANSI 831.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
FGRUN	145	1.251	904.	2809.	0.	904.
	150	1.000	747.	923.	0.	747.
RUN	150	1.000	747.	923.	0.	747.
	155	1.000	764.	1140.	0.	764.
RUN	155	1.000	764.	1140.	0.	764.
	160	1.000	733.	733.	0.	733.
FGRUN	145	1.251	751.	2039.	0.	751.
	165	1.000	1045.	6006.	0.	1045.
FGRUN	170	1.000	1102.	6698.	0.	1102.
	175	1.000	631.	631.	0.	631.
FGRUN	90	1.251	564.	1044.	0.	564.
	180	1.000	524.	1159.	0.	524.
RUN	180	1.000	524.	1159.	0.	524.
	185	1.000	470.	630.	0.	470.
RUN	185	1.000	470.	630.	0.	470.
	190	1.000	470.	470.	0.	470.
FGRUN	80	1.251	701.	2472.	0.	701.
	195	1.000	677.	1404.	0.	677.
RUN	195	1.000	677.	1404.	0.	677.
	200	1.000	680.	1934.	0.	680.
ELBOW	200	1.613	690.	2208.	0.	690.
	205	1.613	692.	2166.	0.	692.
FGRUN	205	1.000	682.	1900.	0.	682.
	210	1.000	755.	2013.	0.	755.
RUN	210	1.000	755.	2013.	0.	755.
	215	1.000	720.	1782.	0.	720.
RUN	215	1.000	720.	1782.	0.	720.
	220	1.000	695.	2729.	0.	695.

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIF FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	220	1.000	695.	2729.	0.	695.
	225	1.000	989.	7017.	0.	989.
RUN	225	1.000	989.	7017.	0.	989.
	230	1.000	688.	2655.	0.	688.
RUN	230	1.000	688.	2655.	0.	688.
	235	1.000	718.	5008.	0.	718.
ELBOW	235	1.000	718.	5008.	0.	718.
	240	1.000	693.	4915.	0.	693.
RUN	240	1.000	693.	4915.	0.	693.
	245	1.000	736.	2915.	0.	736.
RUN	245	1.000	736.	2915.	0.	736.
	250	1.000	1020.	5497.	0.	1020.
RUN	250	1.000	1020.	5497.	0.	1020.
	255	1.000	823.	3981.	0.	823.
RUN	255	1.000	823.	3981.	0.	823.
	260	1.000	800.	4814.	0.	800.
FGRUN	260	1.000	800.	4814.	0.	800.
	265	1.000	683.	2961.	0.	683.
ELBOW	265	1.613	694.	3450.	0.	694.
	270	1.613	711.	2866.	0.	711.
FGRUN	270	1.000	697.	2479.	0.	697.
	275	1.000	676.	2194.	0.	676.
RUN	275	1.000	676.	2194.	0.	676.
	280	1.000	631.	631.	0.	631.
FGRUN	30	1.251	1073.	13914.	0.	1073.
	285	1.000	1204.	9104.	0.	1204.
FGRUN	285	1.000	1150.	9435.	0.	1150.
	290	1.000	457.	636.	0.	457.

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	290	1.000	457.	636.	0.	457.
	295	1.000	441.	441.	0.	441.
FGRUN	285	1.000	497.	14679.	0.	497.
	300	1.000	481.	5194.	0.	481.
FGRUN	300	1.000	481.	5194.	0.	481.
	305	1.000	528.	6413.	0.	528.
ELBOW	305	1.296	528.	6413.	0.	528.
	310	1.296	530.	6803.	0.	530.
FGRUN	310	1.000	530.	6803.	0.	530.
	315	1.000	554.	11934.	0.	554.
ELBOW	315	1.296	554.	11934.	0.	554.
	320	1.296	563.	11962.	0.	563.
FGRUN	320	1.000	563.	11962.	0.	563.
	325	1.000	794.	6123.	0.	794.
RUN	325	1.000	794.	6123.	0.	794.
	330	1.000	504.	2192.	0.	504.
RUN	330	1.000	504.	2192.	0.	504.
	335	1.000	503.	5519.	0.	503.
FGRUN	335	1.000	503.	5519.	0.	503.
	340	1.000	672.	8539.	0.	672.
FGRUN	340	1.000	611.	4627.	0.	611.
	345	1.000	834.	6287.	0.	834.
FGRUN	345	1.000	834.	6287.	0.	834.
	350	1.000	584.	6548.	0.	584.
ELBOW	350	1.296	584.	6548.	0.	584.
	355	1.296	656.	7220.	0.	656.
FGRUN	355	1.000	656.	7220.	0.	656.
	360	1.000	648.	6759.	0.	648.

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ASME SECTION III CLASS 2 OR ANSI B31.1.8 STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	360	1.000	648.	6759.	0.	648.
	365	1.000	711.	6416.	0.	711.
FGRUN	365	1.000	711.	6416.	0.	711.
	370	1.000	762.	7547.	0.	762.
ELBOW	370	1.296	762.	7547.	0.	762.
	375	1.296	734.	7612.	0.	734.
FGRUN	375	1.000	734.	7612.	0.	734.
	380	1.000	568.	8304.	0.	568.
ELBOW	380	1.296	568.	8304.	0.	568.
	385	1.296	567.	8442.	0.	567.
FGRUN	385	1.000	567.	8442.	0.	567.
	390	1.000	563.	8249.	0.	563.
ELBOW	390	1.296	563.	8249.	0.	563.
	395	1.296	554.	7802.	0.	554.
FGRUN	395	1.000	554.	7802.	0.	554.
	400	1.000	441.	441.	0.	441.
FGRUN	400	1.000	441.	441.	0.	441.
	405	1.000	569.	7571.	0.	569.
	405	1.000	640.	4296.	0.	640.
FGRUN	405	1.000	640.	4296.	0.	640.
	410	1.000	565.	7895.	0.	565.
ELBOW	410	1.296	565.	7895.	0.	565.
	415	1.296	546.	7735.	0.	546.
FGRUN	415	1.000	546.	7735.	0.	546.
	420	1.000	588.	4304.	0.	588.
RUN	420	1.000	588.	4304.	0.	588.
	425	1.000	1010.	8396.	0.	1010.
RUN	425	1.000	1010.	8396.	0.	1010.
	430	1.000	613.	2769.	0.	613.

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ASME SECTION III CLASS 2 OR ANSI B31.1-B STRESS SUMMARY

MEMBER	NODE	STRESS INTENSIFY FACTOR	SUSTAINED STRESS EQ. 8 (PSI)	OCCASIONAL STRESS EQ. 9 (PSI)	EXPANSION STRESS EQ. 10 (PSI)	SUSTAINED PLUS EXPANSION STRESS EQ. 11 (PSI)
RUN	430	1.000	613.	2769.	0.	613.
	435	1.000	752.	4271.	0.	752.
RUN	435	1.000	752.	4271.	0.	752.
	440	1.000	441.	441.	0.	441.

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APPENDIX K
COMPONENT SUPPORT ANALYSIS RESULTS

THIS SYSTEM CONTAINS NO SUPPORTS
WHICH REQUIRE ANALYSIS