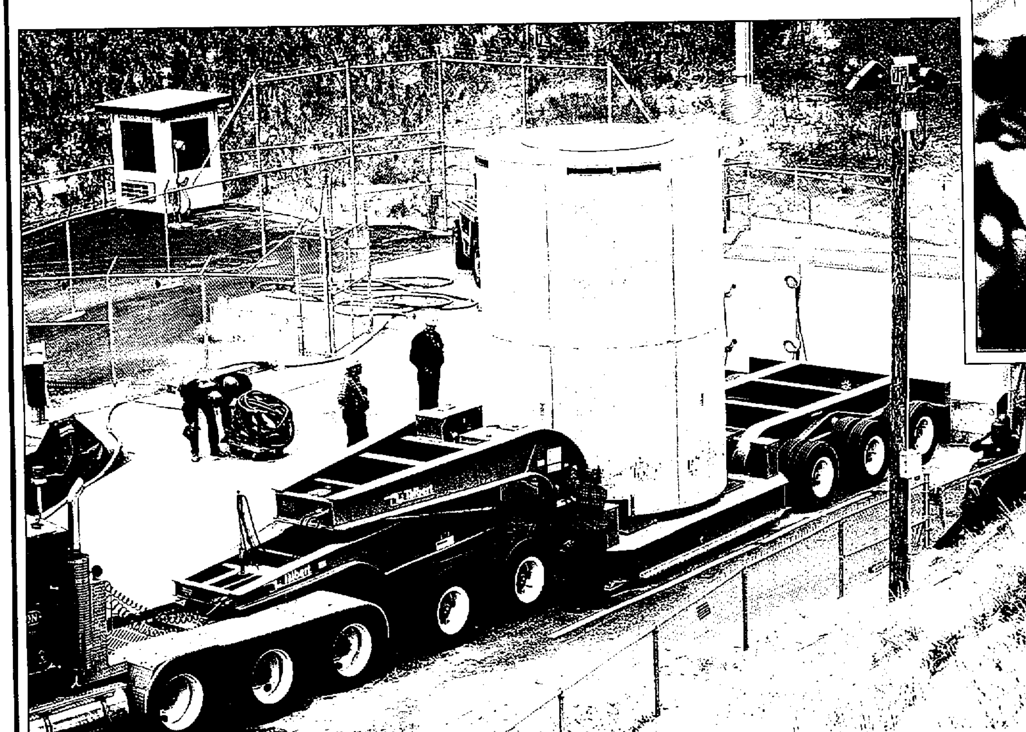
VSC-24 SAR
License Amendment Request 01-01
Fuel Specification

BNFL
Fuel Solutions



Vol. II

TAB 11

License Amendment Request 01-01
Fuel Specification Amendment

Non-Proprietary Calculations

Calculation	Revision	Description
ANO-109.002.110	0	VCC Transporter Lifting Evaluation
PGE01-10.02.05-05	2	TranStor™ Failure Modes and Effects Analysis
VSC02.6.2.3.01	1	VCC Load Combination Evaluation
VSC02.6.2.3.02	3	MSB-24 Load Combination Evaluation
VSC02.6.2.3.03	1	MSB-24 Lifting Devices
VSC02.6.2.3.04	3	MSB-24 Pressure Stress Analysis
VSC02.6.2.3.05	2	MSB-24 Normal, Off-Normal, and Accident Pressure in the MSB
VSC02.6.2.3.06	2	MSB-24 Corrosion Calculation
VSC02.6.2.3.07	2	MSB-24 Thermal Stress Analysis
VSC02.6.2.3.08	2	MSB-24 Drop Analysis
VSC02.6.2.3.09	1	MTC Rail and Door Analysis
VSC02.6.2.3.10	1	MTC Lifting Devices
VSC02.6.2.3.12	1	MTC Cover Plate
VSC02.6.2.3.15	1	VSC-24 Hypothetical Tipover and 5-foot Drop Analysis
VSC02.6.2.3.16	1	MSB Storage Sleeve Buckling Evaluation
VSC02.6.2.3.18	2	VCC Thermal Stress Analysis
VSC02.6.2.3.19	1	VSC Flood, Tornado, and Earthquake Analysis
VSC02.6.2.3.20	1	MSB Brittle Fracture Evaluation
VSC02.6.2.3.21	1	MSB Normal and Off-Normal Handling Load Analysis
VSC02.6.2.3.25	2	MSB Dead Weight and Vertical Drop Bottom Plate Stress Analysis
VSC02.6.2.3.31	1	Calculation for the stress on the Structural Lid for a Lifting Bolt Radius of 26.5”
VSC02.6.2.4.02	0	MTC Temperatures for Helium Backfill Condition
VSC02.6.2.5.01	1	Weight and Center of Gravity
VSC02.6.2.5.02	1	Helium Leakage Analysis
VSC02.6.2.5.03	0	VSC-24 Design Parameters

SNC NO.: ANO-109.002.110
CLIENT NO.: ANO-200

DESIGN CALCULATIONS

VCC Transporter Lifting Evaluation

Prepared by

SIERRA NUCLEAR CORPORATION

for

Entergy Operations, Inc.

QAP 3.0-1, REV 2 (01/94)

ANO-109.002.110

REVISION CONTROL SHEET
FOR DESIGN DOCUMENTS

Rev.	Date	Reason	Affected Pgs.	Preparer	Checker	Proj. Eng.	Affected Documents/Comment
0	9/1/94	Init. Issue	All (1-7)	NS	JCT	JCT	SAR

SIGNATURES

Responsibility	Signature	Initials	Date
Preparer	[signature]	NS	9/1/94
Checker	J.C. Thompson	JCT	9/2/94
Project Engineer	J.C. Thompson	JCT	9/2/94

* List Affected documents and action taken (or to be taken) or other comments in this section.

FORM NO. 3-2, REV. 0 (7/90)

Purpose

The purpose of this analysis is to evaluate the VCC lifting device. The device lifting arrangement is as shown on the following page.

Method and Assumption

The VCC lifting device is analyzed per ANSI N14.6 and ACI 349-85. The design load 302 k is the combined weight of the VCC and loaded MSB with lids. Factors of safety of 3 on yield and 5 on ultimate per ANSI N14.6 are used.

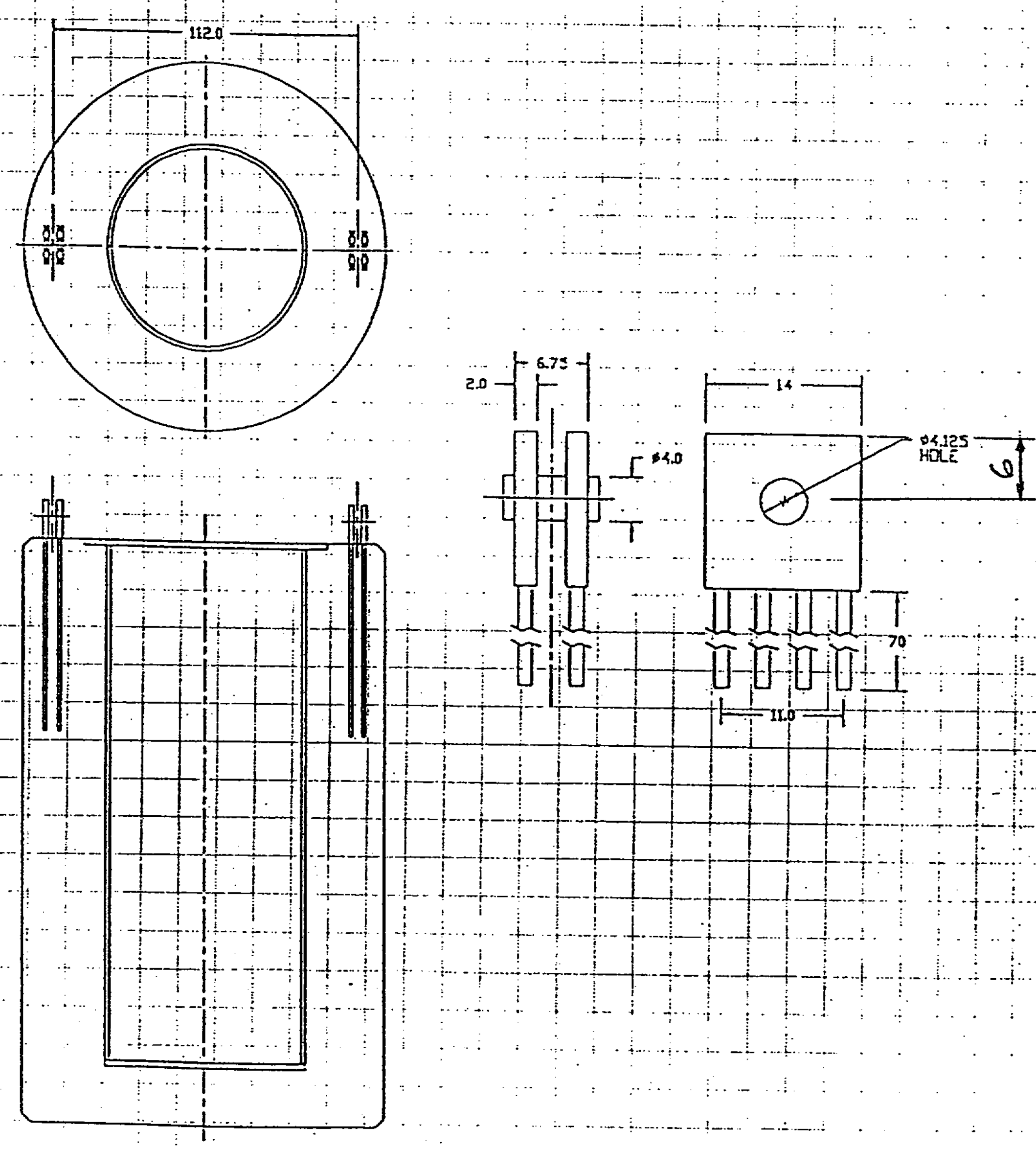
References

1. ANSI N14.6
2. ACI 349-85

SIERRA NUCLEAR CORPORATION

Client: Entergy Operations   Calc. No. ANO-109.002.110

Project No. ANO-200   Title: VCC Lifting Device



Prepared by: NS   Date: 9-1-94   Sheet 2 of 7

Checked by: ET   Date: 9/2/94   Rev. No. 0

Calculations:

Load:

Total load = 302 k

Load per side $P = 302/2 = 151$ k

Lifting pin

Material: 4340 steel ($S_y = 80$ ksi, $S_u = 120$ ksi)

Pin dia = 4"

Shear - Double shear

$$\tau = \frac{4}{3}\frac{P}{2A} = \frac{4}{3} \times \frac{151}{2(\pi \times 2^2)} = 8.0 \text{ ksi}$$

$$F.S._y = \frac{0.58(80)}{8} = 5.8 > 3 \quad \text{ok}$$

$$F.S._u = \frac{0.58(120)}{8} = 8.7 > 5 \quad \text{ok}$$

Bearing between pin and hook ($2\frac{1}{2}$" thick plate)

$$f_{brg} = \frac{P}{A_{brg}} = \frac{151}{2.5 \times 4} = 15.1 \text{ ksi}$$

Max. principal stress

$$\sigma_p = \frac{15.1}{2} + \sqrt{\left(\frac{15.1}{2}\right)^2 + 8^2} = 18.6 \text{ ksi}$$

$$F.S._y = 80/18.6 = 4.3 > 3$$

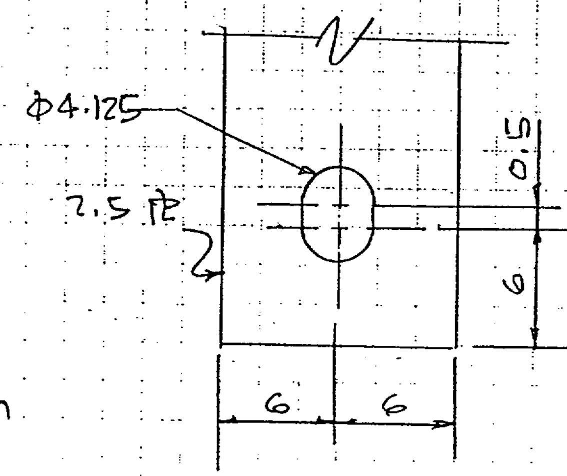
$$F.S._u = 120/18.6 = 6.4 > 5$$

Lifting Arm

Load $P = 151\ k$

Material A537

$S_y = 50$ ksi, $S_u = 70$ ksi



Tension across net section

$$\sigma_t = \frac{P}{A_t} = \frac{151}{2.5(12-4.125)}$$

$= 7.7$ ksi

$F.S._y = 50/7.7 = 6.5 > 3$

$F.S._u = 70/7.7 = 9.1 > 5$

Tearout shear

$$\tau = \frac{P}{A_v} = \frac{151}{2 \times 2.5(6-2.06)}$$

$= 7.7$ ksi

$\sigma_p = \tau = 7.7$

$F.S._y = 6.5 > 3$

$F.S._u = 9.1 > 5$

Per ANSI N14.6 Section 4.2.1.2, the stress design factors of 3 and 5 are not intended to apply where local stresses are relieved by slight yielding in the material.

The stress concentration factor is:

$k = 3.7(1.5) = 5.55 \quad (h/\ell = 0.5,\ d/\ell = 0.34)$

Therefore

$\sigma_{t\text{-}max} = k\ \sigma_{tnet} = 5.55(7.7) = 42.7\ \text{ksi} < S_y = 50\ \text{ksi}$

Lifting Lugs

Material A537 $S_y = 50$ ksi, $S_u = 70$ ksi

Load per lug $F = 151/2 = 75.5$ k

Tension

$\sigma_t = \frac{F}{A_t} = \frac{75.5}{2(14 - 4.125)} = 3.8\ \text{ksi}$ Low

Stress concentration factor:

$k = 3.7(1.5) = 5.55 \quad (d/\ell = 0.29,\ h/\ell = 0.5)$

$\sigma_{tmax} = \sigma_{tnet} \times k = 3.8 \times 5.55 = 21.1\ \text{ksi} < S_y = 50\ \text{ksi}$

Shear

$\tau = \frac{F}{A_v} = \frac{75.5}{2 \times 2(6 - 2.06)} = 4.8\ \text{ksi}$ Low

SIERRA NUCLEAR CORPORATION

Client: Entergy Operations — Calc. No. ANO-109.002.110

Project No. ANO-200 — Title: VCC Lifting Device

Rebars

Material: 4 #11 A706 per lug $S_y = 60$ ksi, $S_u = 80$ ksi

Lug material A537 $S_y = 50$ ksi, $S_u = 70$ ksi

Load = 75.5 k/lug

Rebar tension

$$\sigma_t = \frac{P}{A_t} = \frac{151}{4(1.56)} = 12.1 \text{ ksi}$$

For rebars $F.S._y = 60/12.1 = 4.96 > 3$

$F.S._u = 80/12.1 = 6.6 > 5$

Development length

Per ACI 349 Section 12.2

$$l_{bd} = 0.04 A_b f_y / \sqrt{f_c'} = 59''$$

but not less than $0.0004 d_b f_y = 34''$

where $f_y = 60000$ psi rebar yield

$A_b = 1.56$ in^2 #11 area

$f_c'' = 4000$ psi nominal conc. strength @ 28 days

$d_b = 1.41''$ #11 bar dia.

No appropriate factors need be applied to l_{bd}.

Therefore the 70" embedment for #11 is adequate.

Prepared by: NS Date: 9-1-94 Sheet 6 of 7

Checked by: [initials] Date: 9/2/94 Rev. No. 0

Weld

Weld between A537 material and A706 rebar is complete penetration. Sine the plate has lower yield and ultimate stresses than the rebars, it is therefore more critical. For the lug, $\sigma_t = 12.1$ ksi (σ_t for rebars)

$$F.S._y = 50/12.1 = 4.1 > 3$$

$$F.S._u = 70/12.1 = 5.8 > 5$$

Discussion

The lifting device is adequate to lift a total load of 302 k per ANSI N14.6 and ACI 349.

Conclusion

The VCC lifting device is adequate as designed herein.

CLIENT: Portland General Electric
CLIENT NO.: PGE-01
SNC NO.: PGE01-10.02.05-05
REVISION NO.: 2

DESIGN CALCULATION

TranStor™ FAILURE MODES AND EFFECTS ANALYSIS

PREPARED BY

SIERRA NUCLEAR CORPORATION

FOR

PORTLAND GENERAL ELECTRIC COMPANY

APPROVED BY: [signature] DATE: 11/20/97
Engineering Manager

APPROVED BY: [signature] DATE: 11/20/97
Project Manager

Title: TranStor™ FMEA SNC No: PGE01-10.02.05-05

REVISION CONTROL SHEET

Rev.	Date	Reason	Affected Pages	Preparer	Checker	Proj. Eng.	Affected Documents/Comments
0	4/22/96	Initial Issue	All (1-15) Append. A-D	BAC	JJK	BAC	NONE
1	12/16/96	Comments	1, 2, 4, 5, 10, 11, 13, 14, 15	JR	BAC	BAC	None
2	10/97	DCN PGE01-003	9-12, cover, 1-7, 8-13, ~~10-15~~ JB 10/4/97, B1, B7, C3, C1, C2, C4-C7 (13-15 deleted due to repagination) RSS 11/20/97	~~NS~~ PDM 10/4/97 JB, BAC (C2-C7)	PDM	BAC	

SIGNATURES

Name/Title	Initials	Date
B. Chechelnitsky / prepsrer / PE	BAC	4/22/96
John J. Koehr / Checker	JJK	4/22/96
Jay Rosso / Preparer	JR	12/16/96
~~Nardo Santos / Preparer~~	~~NS~~	~~4/~~ PDM 10/4/97
Jim Baskin / Preparer	JB	10/4/97
Paul Massey / Paul Massey / Checker	PDM	10/4/97

1.0 INTRODUCTION

Operation of the TranStor™ system during loading within the Trojan fuel building introduces previously unreviewed failure modes and effects. Since operations within the fuel building are covered under the plant 10CFR50 license, analysis is necessary to present the consequences of hypothetical accidents in order to determine if an unreviewed safety question exists and support the Trojan 10CFR50 license amendment.

The failure modes and effects listed below are addressed within this evaluation. Item numbers shown are from the FMEA Matrix [Ref. 1].

- 1D: Lifting yoke drop onto loaded basket
- 2E: Cask loading pit liner tear
- 2H: Possible boron dilution of cask load pit, basket, or spent fuel pool
- 3A: Loss of electrical or pump failure during draindown
- 3D: Leak in VDS line during draining/drying
- 3E: Passive failure of line to basket during pressure testing (this condition is addressed in Ref. ~~24~~) 25 PDM 10/4/97 (2)
- 6A: Basket shield lid drop onto basket during placement
- 6I: Drop of basket into storage cask (this condition is addressed in Ref. 24) (2)

2.0 RESULTS/CONCLUSIONS

2.1 The Basket shield lid and shield lid support ring can withstand a Lifting Yoke Drop.

2.2 Cask loading pit leakage due to a postulated liner tear would require over four (4) hours to lower the water level to within ten feet above the Transfer Cask. This is adequate time to install the shield lid to avoid radiation exposure.

2.3 Transfer Cask annulus flush with demin water at a 20 gpm flow rate will result in spent fuel pool (and cask load pit) boron dilution from an initial 2200 ppm to 2000 ppm after 30 hours. Dilution within the basket is not a concern since the basket materials and geometry will maintain the fuel load subcritical.

2.4 This calculation shows that 1.7 psig inside the Basket would be sufficient to vent all generated steam without further pressure increase. Since the Basket is designed for a normal pressure of 10 psig and an accident pressure of 60 psig [Ref. 19], it will not be overpressurized.

2.5 Worst case rupture of the VDS line, with no operator action, during Basket drain down will result in the release of 1,572 gallons of fuel pool water onto the fuel building operating floor. This results in the following radioactivity release:

Item	Activity
Gross β	2.73 x 10^{-4} Ci
Gross γ	5.22 x 10^{-4} Ci
Tritium	9.30 x 10^{-2} Ci

2.6 If the shield lid falls onto the basket flat (i.e., lid plane perpendicular to the fall direction), the lid and its support ring are adequate to withstand the impact load and protect the fuel. If the fall orientation is vertical (i.e., lid plane parallel to the fall direction), the maximum of eight (8) fuel assemblies may be damaged resulting in the release of fission product gases. 7808.3 curies of Kr^{85} and 638.2 curies of Tritium may be released into the fuel building atmosphere. A flat drop of the Shield lid onto its support is bounded by the Lifting Yoke drop analysis.

3.0 DESIGN INPUT AND ASSUMPTIONS

3.1 Lifting Yoke Drop onto Loaded Basket

3.1.1 Weight of the Lifting Yoke is 6,611 lbs [Ref. 8].

3.1.2 The lifting yoke is conservatively assumed to be dropped in air from a height of 28 feet above the Transfer Cask [Ref. 25]. No credit is taken for buoyancy or drag forces, i.e., drop in the air is conservatively assumed.

3.1.3 The shield lid is assumed to be in place as required by procedure. Only a single failure (i.e., yoke drop) needs to be considered. The component geometry is taken from Ref. 7.

3.2 Cask Loading Pit Liner Tear

3.2.1 Cask load pit impact limiter is 36" tall [Ref. 24].

3.2.2 Transfer Cask is 192.1 inches tall [Ref. 13].

3.2.3 For radiological considerations, at least 10 feet of water is required above the loaded Transfer Cask without the shield lid installed.

3.2.4 Initial fuel pool level is at elevation 92'-0". Bottom of the cask loading pit is at elevation 49'-4.25". Cask loading pit is 9' wide and 12' long [Ref. 25].

3.2.5 Leak rate resulting from a postulated cask loading pit liner tear is 44 gpm [Ref. 26].

3.3 Boron Dilution of Cask Load Pit, Basket, or Spent Fuel Pool

3.3.1 Fuel pool volume (including Cask Load Pit) is 51,900 ft^3 (388,212 gallons) [Ref.2]. The initial volume is assumed to remain constant (i.e. volume of flush water added equals volume of pool water drained).

3.3.2 The fuel pool is constantly recirculating (at flow rates >> 20 gpm) during Transfer Cask annulus flush operations. Boron concentration is uniform throughout the entire fuel pool volume. Cask Loading Pit boron concentration is the same as the fuel pool.

3.3.3 Spent fuel pool initial boron concentration is 2200 ppm. Minimum boron concentration is 2000 ppm [Ref. 2].

3.3.4 Transfer Cask annulus flush water flow rate is 20 gpm. This is conservative since normal operational flow rates are 10-20 gpm. Flow rate limit is monitored and controlled by procedure.

3.4 Pressure Required to Vent Steam Evaporated at 26 kWt

Fuel heat generation rate	26 kWt - design basis	
Basket vent	SS-QT8-D-16PF (Swagelok)	[Ref. 7]
(Optional ball valve)	1" 76-6-RT-6 (Gemini)	[Appendix B] (2)

Saturated steam properties at approximately 16 psia:

Temperature	217 °F (677 °R)	[Ref. 18]
Specific volume	24.5 ft^3/lb	[Ref. 18]
Absolute viscosity	0.0125 centipoise $=8.4 \cdot 10^{-6}$ lb_m/ft-sec	[Ref. 21]
Heat of vaporization	2250 kJ/kg	[Ref. 20]
Plastic hose roughness	ε=0.000005	[Ref. 18]
Hose length	L = 80 ft - conservative assumption	
Hose diameter	ID=1.5 in - assumption	

3.5 Leak in VDS Line During Draining/Drying

3.5.1 Basket internal water volume is 363,251 in^3 [Ref.3].

3.5.2 Fuel pool water activity concentration is as follows: [Ref.2]

Item	Radioactivity (μCi/ml)
Gross β	4.587×10^{-5}
Gross Gamma (γ)	8.776×10^{-5}
Tritium (H3)	1.562×10^{-2}

3.5.3 The VDS skid, Transfer Cask, and Basket are located on the fuel building 93' operating floor. The drain down pump suction hose runs from the top of the basket to the VDS skid. And the drain down pump discharge hose runs from the VDS skid into the fuel pool.

3.5.4 No water is released during vacuum drying due to a hypothetical VDS line failure since free standing water is removed during drain down.

3.5.5 The worst case VDS drain line rupture is assumed at the drain down pump discharge. With no operator action this results in complete drainage of the Basket on to the fuel building 93' operating floor.

3.6 Basket Shield Lid Drop onto Basket During Placement

3.6.1 Basket dimensions are provided by Reference 7. Lid weight of 7,500 lbs is used for the analysis [Ref. 3].

3.6.2 Two orientations are considered: the shield lid dropping flat hitting the support ring and on the edge, centered in the Basket.

3.6.3 During the edge drop, the lid is assumed to stop at the top of the Basket structural crosses and sleeve assemblies. This is justified because the 2x5 structural tubes are very rigid and the lid would have to penetrate completely through any Rod Control Cluster Assemblies (RCCA's) extending above the sleeves. | 2

3.6.4 Length of a fuel assembly and RCCA is 168 in [Ref. 11]. Any shield lid impact with an RCCA is assumed to result in fuel assembly damage and release of 30% fission product gases. This is conservative since the fuel assembly length [160 in] is less than the Basket sleeve length (161 in) so fuel assembly damage would be minimized by the sleeve assemblies.[Refs.7 and 10]. | 2

| 2

4.0 METHODOLOGY

4.1 Lifting Yoke Drop onto Loaded Basket

The lifting yoke drop onto the loaded basket is evaluated to show that the shield lid and its support can withstand the impact, thus, protecting the fuel from being damaged. The impact analysis follows the methodology of Bechtel report for missile impacts [Ref.22]. The method is based on the energy balance, i.e. deformation energy of the barrier (lid) must be equal to kinetic energy of the missile (yoke). The barrier is judged to withstand the impact if its allowable ductility ratio is not exceeded. | 2

4.2 Cask Loading Pit Liner Tear

4.2.1 Cask load pit water volume 10 feet over the Transfer Cask is calculated.

4.2.2 The water volume is divided by the postulated leak rate to determine the draindown time.

4.3 Boron Dilution of Cask Load Pit, Basket, or Spent Fuel Pool

4.3.1 Volumetric dilution is applied:

$$V_1 \cdot C_1 = V_2 \cdot C_2$$

where,

V_1 = Fuel pool volume
C_1 = Initial fuel pool boron concentration
V_2 = Final fuel pool volume (V1 + flush water added)
C_2 = Final fuel pool boron concentration

4.3.2 The above calculation is performed for each 1 minute increment. Initial boron concentration is set as the previous minute final boron concentration.

4.4 Pressure Required to Vent Steam Evaporated at 26 kWt

4.4.1 Calculate the amount of steam generated inside the Basket.

4.4.2 Based on the flow rate calculated in step 1, determine the friction losses (Appendix A). Use these losses expressed in psi and atmospheric pressure as a back pressure for the venting valve. (2)

4.4.3 Assume pressure in the Basket and use Swagelok methodology (Appendix B) to determine the flow rate across the valve. (2)

4.4.4 Adjust the Basket pressure until the flow rate across the valve is equal to the rate calculated in step 1. This is the resulting Basket pressure.

4.5 Leak in VDS Line During Draining/Drying

The free volume of the Basket is multiplied by the fuel pool activity to determine the amount of radioactivity released onto the fuel building operating floor at the 93' elevation. (2)

4.6 Basket Shield Lid Drop onto Basket During Placement

4.6.1 For the flat drop orientation, the lid impacts the support ring. Both lid and ring are shown to withstand the drop load using the methodology of Reference 22. Energy analysis similar to that described in 4.1 above is employed.

4.6.2 For the edge drop orientation, the maximum number of fuel assemblies that can be impacted by a shield lid drop is calculated using Basket and shield lid geometry.

4.6.3 The ratio of the number of impacted fuel assemblies to the total number of fuel assemblies in the Basket (24) is multiplied by the total curies of fission product gases in the Basket.

4.6.4 30% of the calculated fission gas curie content is released. This is conservative because the test data actually shows that the fraction is only 8% [Ref. 27]

5.0 CALCULATIONS

5.1 Lifting Yoke Drop onto Loaded Basket

Analysis of the Lifting Yoke drop on the loaded basket is presented in Appendix C.

5.2 Cask Loading Pit Liner Tear

5.2.1 Volume of water 10' above Transfer Cask:

h = elevation of water level
= 49'-4.25" + (impact limiter height) + (Transfer Cask height) + 10 feet
= 49'-4.25" +[(36 in) + (192.1 in) + (120 in)] = 49'-4.25" + 348 in
= 78'-4.25"

Δh = (92'-0") - (78'-4.25") = 13.6 feet

V = Water Volume
= (pit width)(pit length)(Δh) = (9 ft)(12 ft)(13.6 ft) = 1469 ft^3

5.2.2 Time to drain at 44 gpm leak rate:

$$t = \frac{(1469\ ft^3)\cdot(7.48\frac{gal}{ft^3})}{44\ gpm} = 249.7\ \text{min} = 4.2\ hrs$$

2

5.3 Boron Dilution of Cask Load Pit, Basket, or Spent Fuel Pool

5.3.1 Fuel pool boron concentration is calculated at 1 minute intervals using the following equation:

$$C_2 = \frac{C_1 \cdot V_1}{(V_1 + dV)}$$

dV = flush pump flow rate (20 gpm) times 1 minute.

5.3.2 The calculation is performed with a Microsoft Excel spreadsheet. The calculation, results, and graph of the results are presented in Appendix D.

5.3.3 Starting with an initial boron concentrations of 2200 ppm and a demin flush flow rate of 20 gpm, fuel pool boron concentration will be less than 2000 ppm after 30 hours.

5.4 Pressure Required to Vent Steam Evaporated at 26 kWt

Estimate the quantity of steam generated in the Basket:

$26\ kWt\ /\ 2250\ kJ/kg = 0.012\ kg/sec = 0.025\ lbs/sec$

Assuming that the Basket is vented to the surface of the pool, the back pressure p_2 = 14.7 + friction losses.

Estimate the pressure loss due to friction:

assume 80 *ft* of 1.5" (ID) plastic hose: roughness $\varepsilon = 0.000005\ ft$,

relative roughness $\varepsilon / D = 0.00004$

steam viscosity $\mu = 8.4 \cdot 10^{-6}\ lb_m\ /\ ft\text{ - }sec$

velocity $V = \frac{(q \cdot v)}{area} = \frac{(0.025\, lbs/sec \cdot 24\, ft^3/lbs)}{\left[(1.5/12)^2 \cdot \pi/4\right]} = 48.9\ ft/sec$

Reynolds No $N_{Re} = \frac{DV}{\mu v} = \frac{(1.5/12)(48.9)}{(8.4 \cdot 10^{-6})(24)} = 3.0 \cdot 10^4$

From charts (Appendix A)

$f = 0.020, \qquad h_f = \frac{f\,L\,V^2}{2\,D\,g_c} = \frac{(0.020)(80)(48.9)^2}{2(1.5/12)(32.2)} = 475.3\ ft$

$p = \frac{h_f}{v} = \frac{475.3}{24} = 19.8\ psf = 0.14\ psi$ - negligible

Assume p_1 to be 16.4 *psia* (1.7 *psig*). See Appendix B.

$x = \frac{(p_1 - p_2)}{p_1} = \frac{(16.4 - 14.7)}{16.4} = 0.104 \qquad G_g = \frac{(16+2)}{28.8} = 0.625$

$T_1 = 217.2 + 460 = 677.2°\,R$

$N_2 = 22.67\ std\ ft^3/min \qquad C_v$ (for Swagelok valve) = 7.9 (Appendix B) | ②

$q = 22.67 \cdot 7.9 \cdot 16.4 \cdot \left(1 - \frac{2 \cdot 0.104}{3}\right) \cdot \sqrt{\frac{0.104}{0.625 \cdot 677.2}} = 42.8\ ft^3/min$

$q = (42.8\,ft^3/min) \cdot \left(\frac{16.4\ psia}{14.7\ psia}\right) \cdot \left(\frac{530°\,R}{677.2°\,R}\right) = 37.4\,ft^3/min = 0.025\,lbm/s$

The flow rate is equal to the required 0.025 *lbs / sec*, thus, the balance is found.

For the optional Gemini ball valve, C_V is 15.5 (Appendix B) vs 7.9 for the Swagelok valve. Thus the above analysis is conservative in terms of pressure build-up in the basket during venting. | ②

5.5 Leak in VDS Line During Draining/Drying

5.5.1 Maximum volume of fuel pool water which can be pumped out of the Basket is 363,251 in^3 (5.953 x 10^6 ml)[Ref.3]. | ②

5.5.2 Activity Calculations:

Gross β = (5.953 x 10^6 ml)(4.587 x 10^{-5}μCi/ml)(10^{-6}Ci/μCi)
=2.73 x 10^{-4} Ci

Gross γ = (5.953 x 10^6 ml)(8.776 x 10^{-5}μCi/ml)(10^{-6}Ci/μCi)
=5.22 x 10^{-4} Ci

Tritium = (5.953 x 10^6 ml)(1.562 x 10^{-2}μCi/ml)(10^{-6}Ci/μCi)
=9.30 x 10^{-2} Ci

(2)

5.6 Basket Shield Lid Drop onto Basket During Placement

5.6.1 For a flat drop orientation, the analysis is presented in Appendix C. (2)

5.6.2 For the edge drop orientation, the maximum number of impacted fuel assemblies: (2)

Shield Lid OD = 64.10 in [Ref. 7]

Shield Lid thickness = 8 in [Ref. 7]

Distance to top of sleeve assemblies = 161 in [Ref. 7]

Length of fuel assembly with RCCA = 168 in [Ref. 10,11]

Distance from top of Sleeve assemblies to top of RCCA = 168-161 = 7 in

Shield Lid cord length:

$$2 \cdot \sqrt{(32.05)^2 - (32.05 - 7)^2} = 39.99\, in$$

The shield lid impact area is 8 in wide x 39.99 in long. From Reference 7, the maximum number of fuel assemblies that can be impacted by the shield lid is 8.

5.6.3 Fission Product Gases Released

Total Kr^{85} in Basket: 78,083 Ci [Ref. 6]

Total Tritium (H^3) in Basket: 6,382 Ci [Ref. 6]

Number of fuel assemblies per Basket: 24 [Ref. 7]

Assuming 30% of impacted fuel rods fail and release fission product gases:

(8 assy/24)(.30)(78,083 Ci Kr^{85}) = 7808.3 Ci Kr^{85} released

(8 assy/24)(.30)(6,382 Ci H^3) = 638.2 Ci H^3 released

2

6.0 REFERENCES

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9. Not used
10. PGE Drawing 6478-MIS(3)-73-1, W17X17 Fuel Assembly.
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12. Drawing PCC-001, TranStor™ Concrete Cask, Rev. 1.
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27. Elias, Johnson, "Radiological Impact of Clad and Containment Failure in at-Reactor Spent Fuel Storage Facilities", EPRI, 1982.
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APPENDIX A

FRICTION DATA

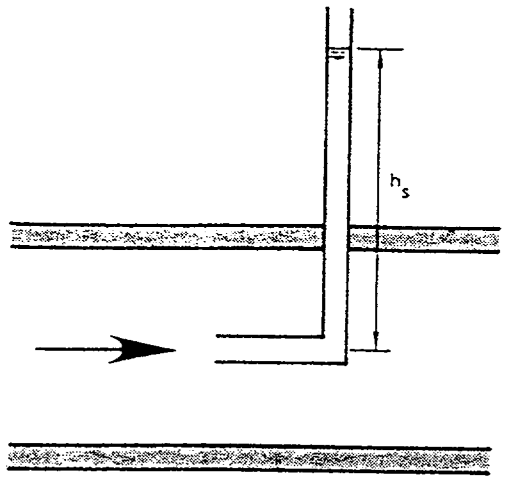

Figure 3.12 A Pitot Tube

Example 3.16

The static pressure of air ($\rho = 0.075$ lbm/ft^3) flowing in a pipe is measured by a precision gage to be 10.0 psig. A pitot tube manometer indicates 20.6 inches of mercury. What is the velocity of the air in the pipe?

The pitot tube measures stagnation pressure. From equation 3.24, using 0.491 lbm/in^3 as the density of mercury,

$$p_s = (20.6)(0.491) = 10.11 \text{ psig}$$

Since stagnation pressure is the sum of static and velocity pressures, the velocity pressure is

$$p_v = p_s - p_p = 10.11 - 10.0 = 0.11 \text{ psig}$$

The velocity head is

$$h_v = \frac{p_v}{\rho} = \frac{(0.11)(144)}{0.075} = 211.1 \text{ ft}$$

From equation 3.53,

$$v = \sqrt{(2)(32.2)(211.2)} = 116.6 \text{ ft/sec}$$

5 HYDRAULIC GRADE LINE

The hydraulic grade line is a graphical representation of the sum of the static and potential heads versus position along the pipeline

$$\text{hydraulic grade} = z + h_p \qquad 3.60$$

Since the pressure head can increase at the expense of the velocity head, the hydraulic grade line can increase if an increase in flow area is encountered.

6 REYNOLDS' NUMBER

The Reynolds number is a dimensionless ratio of the inertial flow forces to the viscous forces within the fluid. Two expressions for Reynolds' number are used, one requiring absolute viscosity, the other kinematic viscosity:

$$N_{Re} = \frac{D_e v \rho}{\mu g_c} \qquad 3.61$$

$$= \frac{D_e v}{\nu} \qquad 3.62$$

The Reynolds number also can be calculated from the mass flow rate per unit area, G. G must have the units of lbm/sec-ft^2.

$$N_{Re} = \frac{D_e G}{\mu g_c} \qquad 3.63$$

The Reynolds number is an important indicator in many types of problems. In addition to being used quantitatively in many equations, the Reynolds number also is used to determine whether fluid flow is laminar or turbulent.

A Reynolds number of 2000 or less indicates *laminar flow*. Fluid particles in laminar flow move in straight paths parallel to the flow direction. Viscous effects are dominant, resulting in a parabolic velocity distribution with a maximum velocity along the fluid flow centerline.

The fluid is said to be *turbulent* if the Reynolds number is greater than 2000.[5] Turbulent flow is characterized by random movement of fluid particles. The velocity distribution is essentially uniform with turbulent flow.

7 EQUIVALENT DIAMETER

The equivalent diameter, D_e, used in equations 3.61 and 3.62, is equal to the inside diameter of a circular pipe. The equivalent diameters of other cross sections in flow are given by table 3.6.

Example 3.17

Determine the equivalent diameter of the open trapezoidal channel shown.

[5] The beginning of the turbulent region is difficult to predict. There actually is a transition region between Reynolds numbers 2000 to 4000. In most fluid problems, however, flow is well within the turbulent region.

PART 4: Fluid Dynamics

1 FLUID CONSERVATION LAWS

Many fluid flow problems can be solved by using the principles of conservation of mass and energy.

When applied to fluid flow, the principle of mass conservation is known as the *continuity equation*:

$$\rho_1 A_1 v_1 = \rho_2 A_2 v_2 \qquad 3.66$$

$$\dot{m}_1 = \dot{m}_2 \qquad 3.67$$

If the fluid is incompressible, $\rho_1 = \rho_2$, so

$$A_1 v_1 = A_2 v_2 \qquad 3.68$$

$$\dot{V}_1 = \dot{V}_2 \qquad 3.69$$

The energy conservation principle is based on the Bernoulli equation. However, terms for friction loss and hydraulic machines must be included.

$$\left(\frac{p_1}{\rho} + \frac{v_1^2}{2g_c} + z_1\right) + h_A = \left(\frac{p_2}{\rho} + \frac{v_2^2}{2g_c} + z_2\right) + h_E + h_f \qquad 3.70$$

2 HEAD LOSS DUE TO FRICTION

The most common expression for calculating head loss due to friction (h_f) is the *Darcy formula*:

$$h_f = \frac{fLv^2}{2Dg_c} \qquad 3.71$$

The *Moody friction factor chart* (figure 3.13) probably is the most convenient method of determining the friction factor, f.

The basic parameter required to use the Moody friction factor chart is the Reynolds number. If the Reynolds number is less than 2000, the friction factor is given by equation 3.72.

$$f = \frac{64}{N_{Re}} \qquad 3.72$$

For turbulent flow ($N_{Re} > 2000$), the friction factor depends on the relative roughness of the pipe. This roughness is expressed by the ratio $\frac{\epsilon}{D}$, where ϵ is the specific surface roughness and D is the inside diameter. Values of ϵ for various types of pipe are found in table 3.8.

Another method for finding the friction head loss is the *Hazen-Williams formula*. The Hazen-Williams formula gives good results for liquids that have kinematic viscosities around 1.2 EE−5 ft^2/sec (corresponding to 60°F water). At extremely high and low temperatures, the Hazen-Williams formula can be as much as 20% in error for water. The Hazen-Williams formula should be used only for turbulent flow.

The Hazen-Williams head loss is

$$h_f = \frac{(3.022)(v)^{1.85} L}{(C)^{1.85}(D)^{1.165}} \qquad 3.73$$

Or, in terms of other units,

$$h_f = (10.44)(L)\,\frac{(\text{gpm})^{1.85}}{(C)^{1.85}(d_{\text{inches}})^{4.8655}} \qquad 3.74$$

Use of these formulas requires a knowledge of the Hazen-Williams coefficient, C, which is assumed to be independent of the Reynolds number. Table 3.8 gives values of C for various types of pipe.

Values of f and h_f are appropriate for clean, new pipe. As some pipes age, it is not uncommon for scale build-up to decrease the equivalent flow diameter. This diameter decrease produces a dramatic increase in the friction loss.

$$\frac{h_{f,\text{scaled}}}{h_{f,\text{new}}} = \left(\frac{D_{\text{new}}}{D_{\text{scaled}}}\right)^5 \qquad 3.75$$

Because of this scale effect, an uprating factor of 10-30% is commonly applied to f or h_f in anticipation of future service conditions.

Example 3.19

50°F water is pumped through 4″ schedule 40 welded steel pipe ($\epsilon = 0.0002$) at the rate of 300 gpm. What is the friction head loss calculated by the Darcy formula for 1000 feet of pipe?

First, it is necessary to collect data on the pipe and water. The fluid viscosity and pipe dimensions can be found from tables at the end of the chapter.

kinematic viscosity = 1.41 EE − 5 ft^2/sec

inside diameter = 0.3355 ft

flow area = 0.0884 ft^2

The flow quantity is

$$(300)(0.002228) = 0.6684 \text{ cfs}$$

The velocity is

$$v = \frac{\dot{V}}{A} = \frac{0.6684}{0.0884} = 7.56 \text{ fps}$$

The Reynolds number is

$$N_{Re} = \frac{(0.3355)(7.56)}{1.41 \text{ EE} - 5} = 1.8 \text{ EE5}$$

A3 OF A4

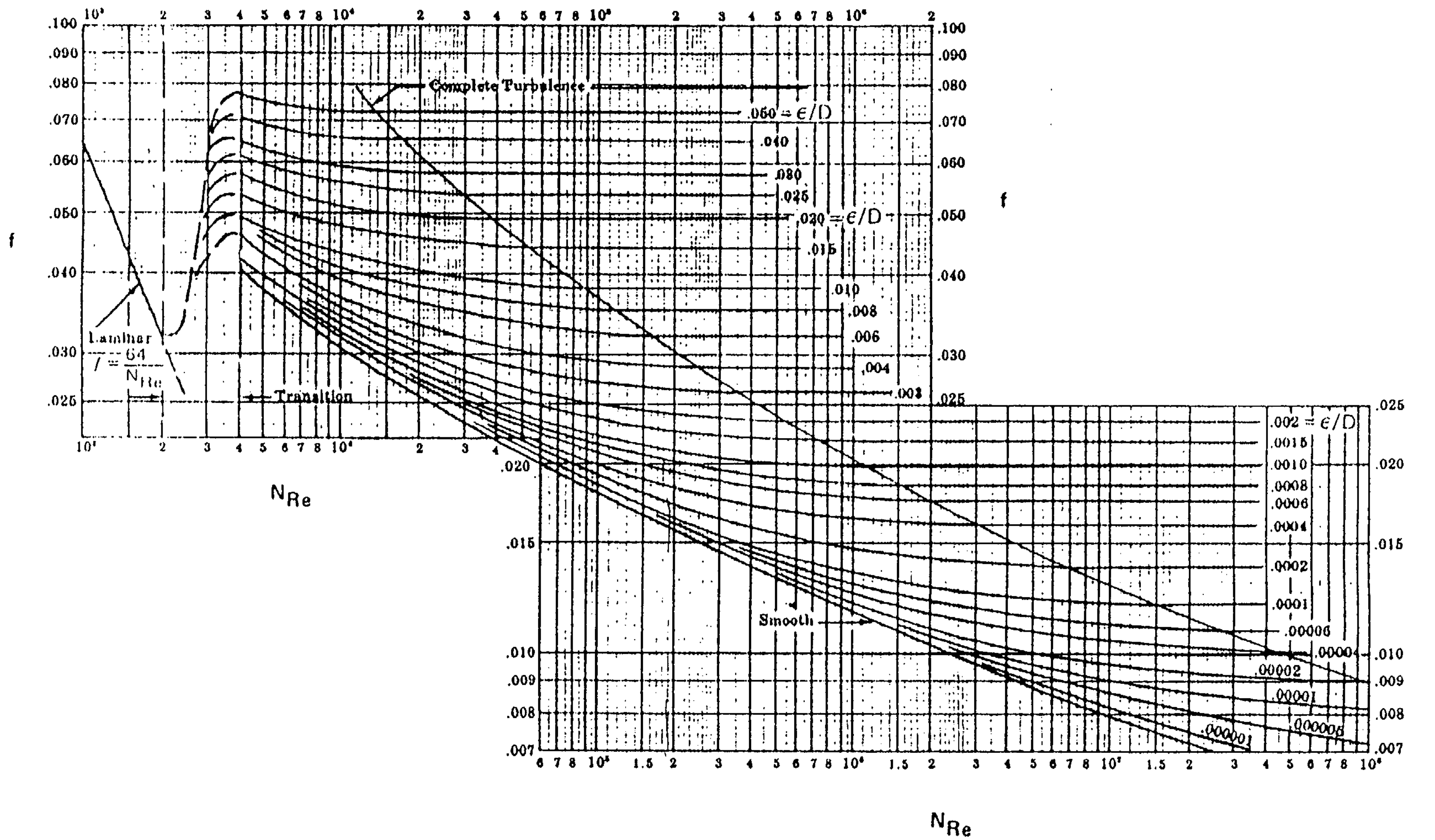

Figure 3.13 Moody Friction Factor Chart

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APPENDIX B

SWAGELOK AND GEMINI VALVE TECHNICAL DATA

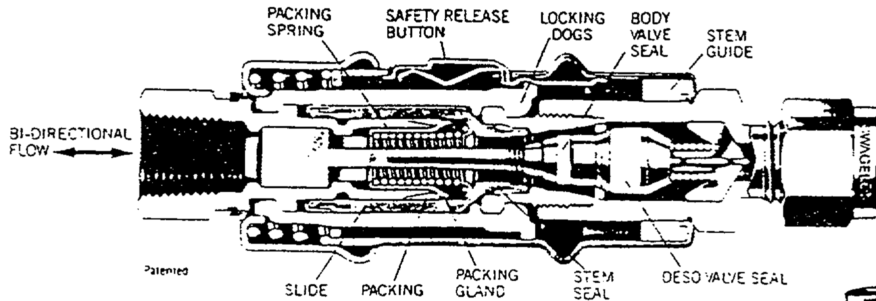
(2)

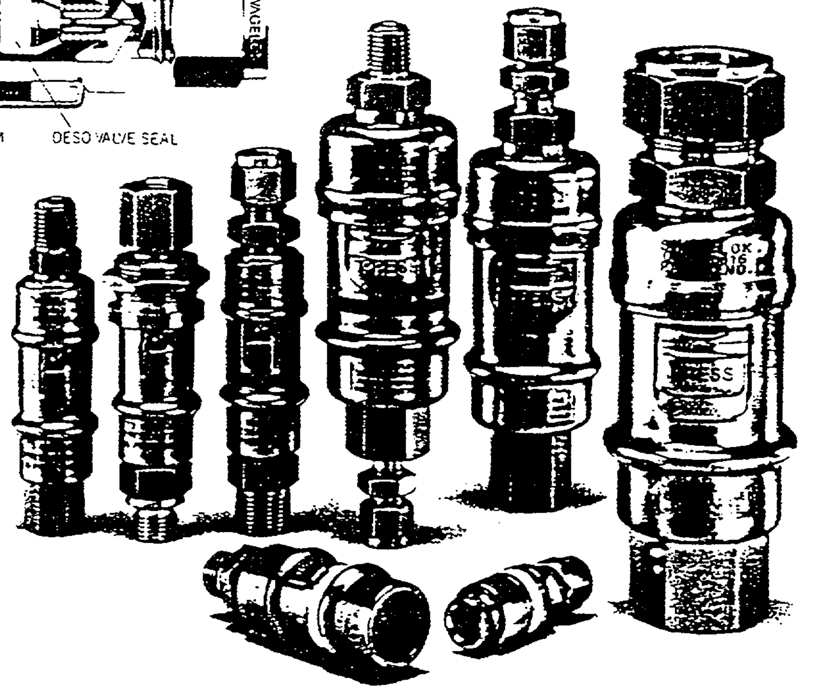
	Revision	Prepared	Date	Checked	Date	Sheet
Client/Project: PGE-01	0	BAC	4/22/96	JK	4/22/96	B1
Subject: TranStor™ FMEA	2	JB	10/4/97	RDM	10/4/97	of
Calculation Number: PGE01-10.02.05-05						B7 (2)

QC-590-2
May, 1990

Swagelok® TFE Sealed Quick-Connects

"QT" Series





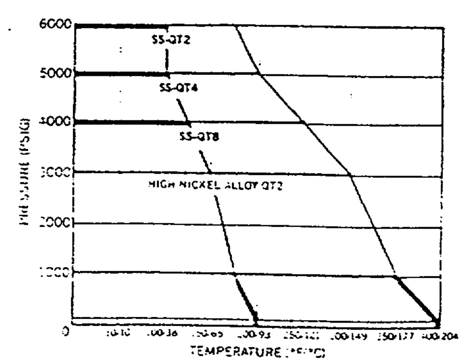
Features

- Simple one-hand push-to-connect operation
- No twisting, turning, or wrench action required when coupling or uncoupling
- Slide hooks for positive valve closure while uncoupling
- Flush valve design in body and stem minimizes air inclusion when coupling and spillage when uncoupling
- Automatic shut-off minimizes pressure loss or fluid spillage when uncoupling
- All 316 stainless steel construction
- All TFE seals (no O-Rings) provide excellent chemical resistance
- Unique safety release button prevents accidental uncoupling
- Internal locking dog mechanism resists stress caused by impulsing and vibration
- Seals recessed for protection from rough handling
- Bi-directional flow
- Reliable connections in vacuum or pressure service
- Single end (SESO) and double end (DESO) shut-off models

Materials

All metal components, including Snap Rings and Springs — 316 stainless steel (high nickel alloys available — "QT2" only)
Seals, Packings, and Back-up Rings — Virgin TFE and filled TFE (UHMW polyethylene available — stainless steel only)
Internal Lubrication — TFE lubricants with TFE seals and silicone lubricants with UHMW polyethylene seals (Other lubricants available for system compatibility.)

Pressure/Temperature Ratings



- COUPLED — TFE Seals
- COUPLED — UHMW Polyethylene Seals
- UNCOUPLED — Both Seals & All Series

Pressure Ratings†

	PSI		
	"QT2"	"QT4"	"QT8"
When coupling or uncoupling	250	100	50
Coupled	6000*	5000	4000
Uncoupled (for bodies & DESO Stems)	1000	1000	1000

†Pressure ratings may be reduced by the end connection. All pressure ratings are measured @70°F (21°C). Refer to Pressure/Temperature Ratings graph for allowable working pressures at elevated temperatures.
*3000 PSI in high nickel alloy.

Pressure ratings may vary according to other system variables. Cycle life may be reduced when operating at elevated pressure.

To determine kPa, multiply PSI by 6.89.
To determine Bar, multiply PSI by .0689.

Temperature Ratings

– 20°F to 400°F (– 29°C to 204°C) @ 100 PSI

Temperature ratings may vary according to other system variables. Cycle life may be reduced when operating at maximum and minimum temperature.

Spillage

"QT2" — 0.1 cc
"QT4" — 0.2 cc
"QT8" — 1.0 cc

The amount of system fluid that escapes when a Quick-Connect is uncoupled (DESO only)

Air Inclusion

"QT2" — 0.1 cc
"QT4" — 0.4 cc
"QT8" — 2.0 cc

The amount of air, trapped between the body and stem valves, that enters the system when a Quick-Connect is coupled (DESO only)

Flow Capacity

Flow coefficient (C_v) of coupled Quick-Connects with like end connections on stem and body. For dissimilar end connections, average the C_v values.

SERIES	END CONNECTION	C_v SESO	C_v DESO
-QT2-	2PF	0.7	0.6
-QT2-	4PF, 4FS, 4FT, 4PM, 4MS, 4MT	0.8	0.7
-QT2-	6PF, 6PM	0.7	0.6
-QT2-	400, 6M0, 4AN	0.7	0.6
-QT2-	600, 3M0	0.9	0.8
-QT4-	4PF, 4FS, 4FT, 4PM, 4MS, 4MT	1.9	1.8
-QT4-	6PF, 6PM	2.0	1.8
-QT4-	400, 6M0	0.8	0.8
-QT4-	600, 10M0	1.6	1.6
-QT8-	8PF, 8FS, 8FT, 8PM, 8MS, 8MT	5.3	4.6
-QT8-	12PF, 12PM	8.9	8.7
-QT8-	16PF, 16PM	8.2	7.9
-QT8-	810, 12M0, 8AN	4.2	3.5
-QT8-	1210	8.2	7.4
-QT8-	1610	9.0	8.8

C_v's are average values — may vary ± 10%

Maximum Allowable Flow Rate GPM of Water @ 70°F (21°C)

"QT2"	"QT4"	"QT8"
15	35	50

SWAGELOK Quick-Connect Co.
Hudson, Ohio 44236

Technical Bulletin No. 8
October 1991
the SWAGELOK companies

VALVE SIZING GRAPHS

SCOPE

This Technical Bulletin presents three simple graphs for estimating the flow of water or air through valves and other components. With scales for both English and metric units, they cover most ordinary industrial applications—from the smallest metering valves to 2-in. ball valves, at system pressures up to 3000 psig.. Technical background and references are included for the occasional applications that fall outside this range.

SAFE VALVE SELECTION

When selecting a valve, total system design must be considered to ensure safe, trouble-free performance. Valve size, function, materials compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibility of the system designer and user.

USING THE GRAPHS

The graphs apply to water and air, or any other fluid with a specific gravity of 1.0. If the fluid has a specific gravity (G) other than 1.0, multiply the water or air flow rate from the graph by $\sqrt{1/G}$.

The gas flow rate (q) is the volumetric flow at standard conditions (14.7 psig at 70°F or 1 bar at 20°C). If a gas is not at standard temperature (70°F or 20°C), multiply the gas flow rate from the graph by $\sqrt{530°R/T_{actual}}$ or $\sqrt{293\,K/T_{actual}}$ using the absolute temperature.

For convenience, the air flow graphs show gage pressures. When using the formulas to calculate gas flows, p_1 and p_2 must be absolute pressures.

TECHNICAL BACKGROUND

The graphs are based on formulas adapted from ISA Standard S75.01, "Flow Equations for Sizing Control Valves,"[1] the industry standard for valve sizing. Their derivation is given in S75.01. These equations include constants (N_1 and N_2), so they can be used with English or metric units.

Flow through valves and other components depends primarily on valve design, inlet and outlet pressures, and fluid density. Valve design characteristics are given as a flow coefficient (C_v) in the product catalog. *The inlet and outlet pressures, fluid density, and other conditions are determined by the user for each application.*

Flow Coefficient

C_v is determined by testing the valve in accordance with ISA S75.02.[2] Testing is done with water at low pressure and at several flow rates. C_v includes the effects of valve diameter, stem tip shape, and flow passage geometry in the valve. It is calculated using the liquid equations; the same C_v value is used in the gas equations, although tests normally are not done with gas.

Piping Disturbances

Flow tests are done in a straight piping system of the same size as the valve. The effects of fittings and piping size changes are not included in the graphs and equations given here.

Exceptions

These equations and graphs apply only to turbulent flow, non-flashing and non-cavitating liquids, and ideal gases. They are not intended for use with mixed-phase fluids, dense slurries, dry solids, or non-Newtonian liquids.[1] ISA Standard S75.01 and the other references on page 4 include information about laminar flow (low velocity or high viscosity), vapors, flashing and cavitating liquids, gases other than air, and non-ideal gases.

Liquids

Because liquids are incompressible fluids, their flow rate depends only on the difference between the inlet and outlet pressures (Δp, pressure drop). The flow is the same whether the pressure is low or high, so long as the difference between the two pressures is the same.

The graph on page 2 shows water flow as a function of pressure drop for a range of C_v values, based on Eq 1:

$$q = N_1 C_v \sqrt{\frac{p_1 - p_2}{G_f}} \qquad \text{(Eq 1)}$$

Gases

Gas flow calculations are slightly more complex, because gases are compressible fluids whose density changes with pressure. In addition, when the outlet pressure is less than one half the inlet pressure, a gas reaches sonic velocity (the velocity of sound) in the valve. This is known as "choked flow," because a further decrease in outlet pressure does not increase the flow.

Choked Flow. The graph on page 3 shows air flow as a function of inlet pressure (gage) for a range of C_v values, based on Eq 2:

$$q = 0.471\, N_2 C_v p_1 \sqrt{\frac{1}{G_g T_1}} \qquad \text{(Eq 2)}$$

where $p_2 < 1/2 p_1$ (absolute).

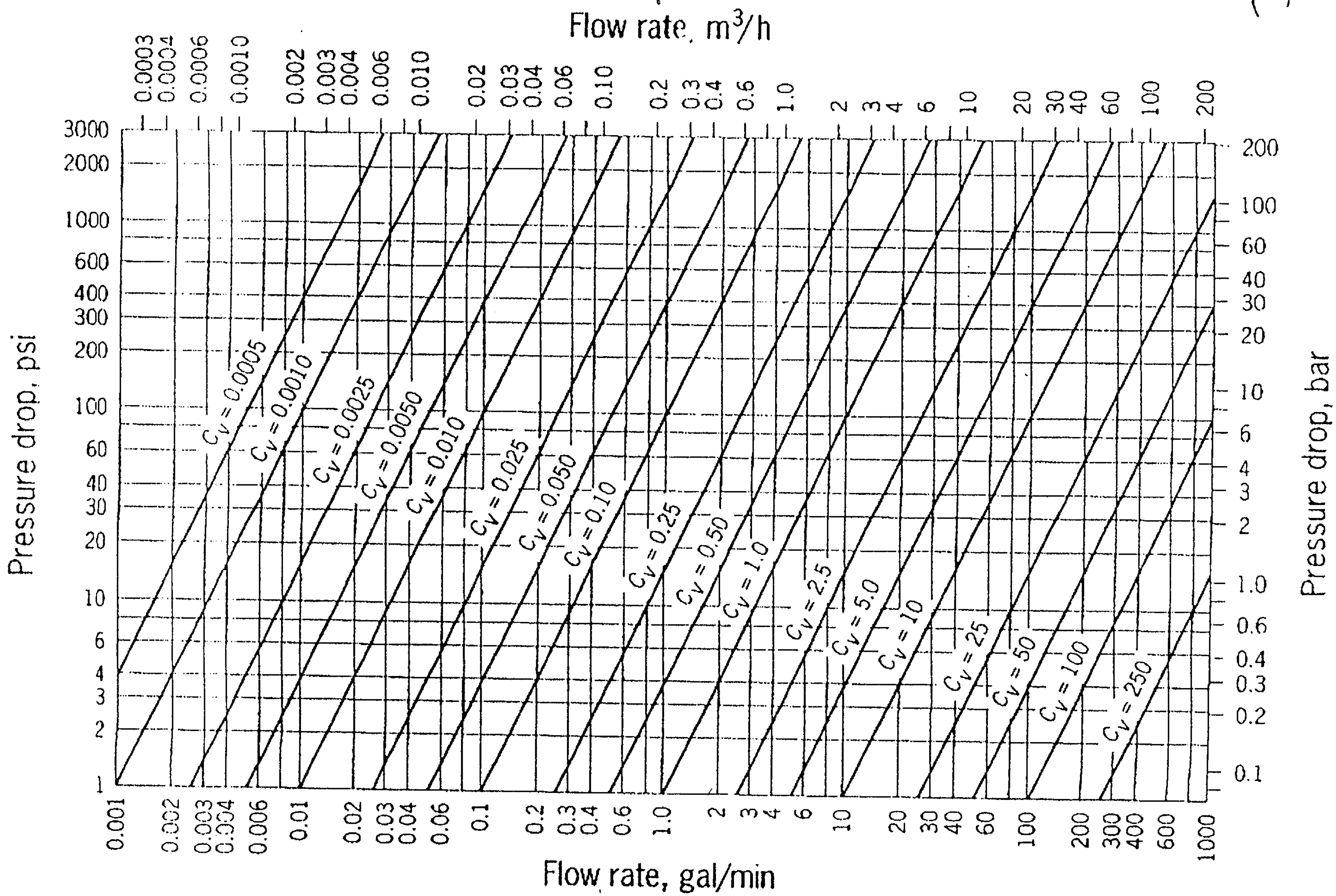
Low Pressure Drop Flow. The graph on page 4 applies when the outlet pressure is more than one half the inlet pressure. This graph shows the air flow rate for a valve with a C_v of 1.0 as a function of inlet pressure and pressure drop, based on Eq 3:

$$q = N_2 C_v p_1 \left(1 - \frac{2x}{3}\right) \sqrt{\frac{x}{G_g T_1}} \qquad \text{(Eq 3)}$$

where $p_2 > 1/2 p_1$ (absolute).

B3 of B7

(continued on page 4)

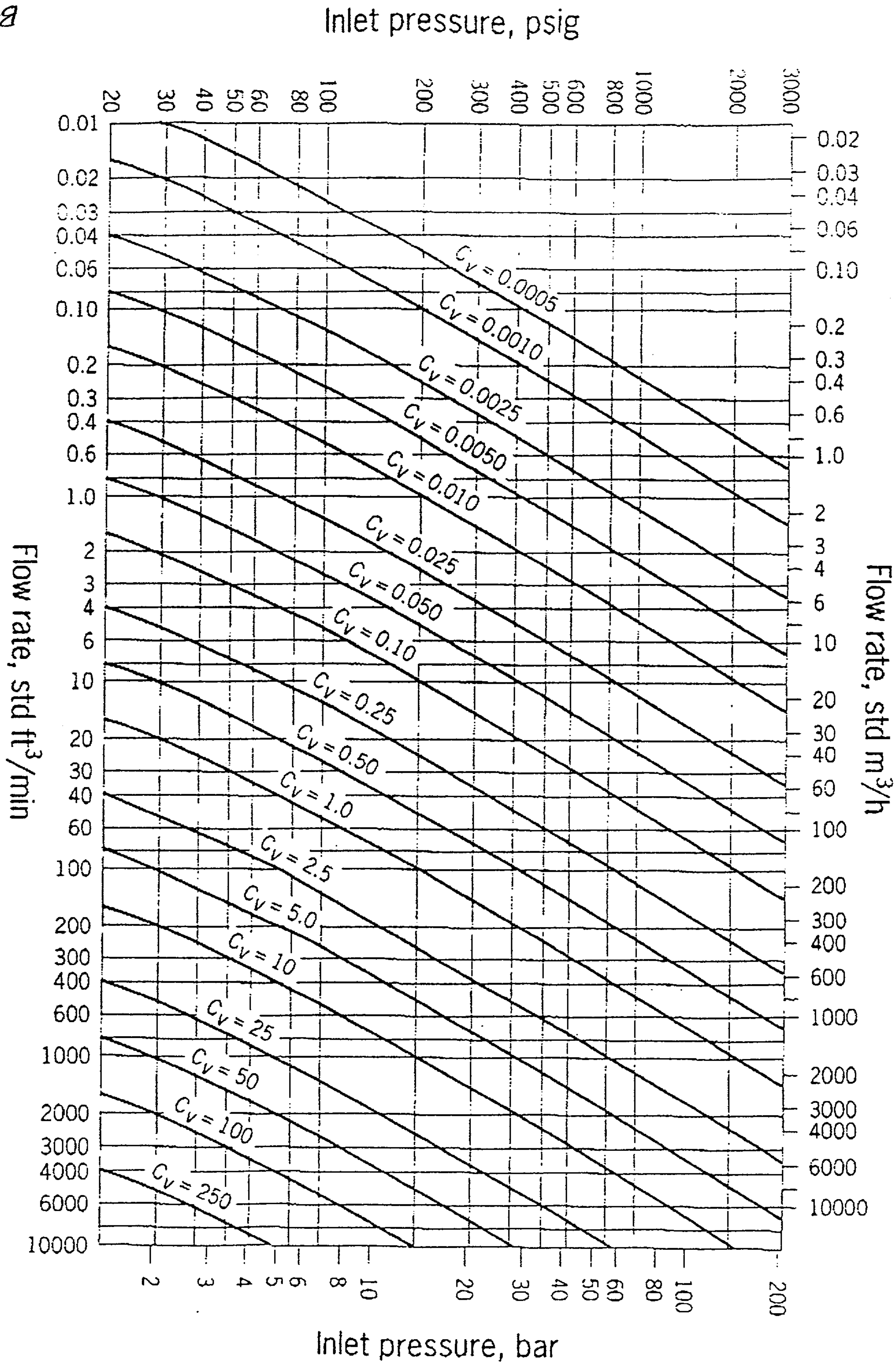


WATER FLOW

Example:

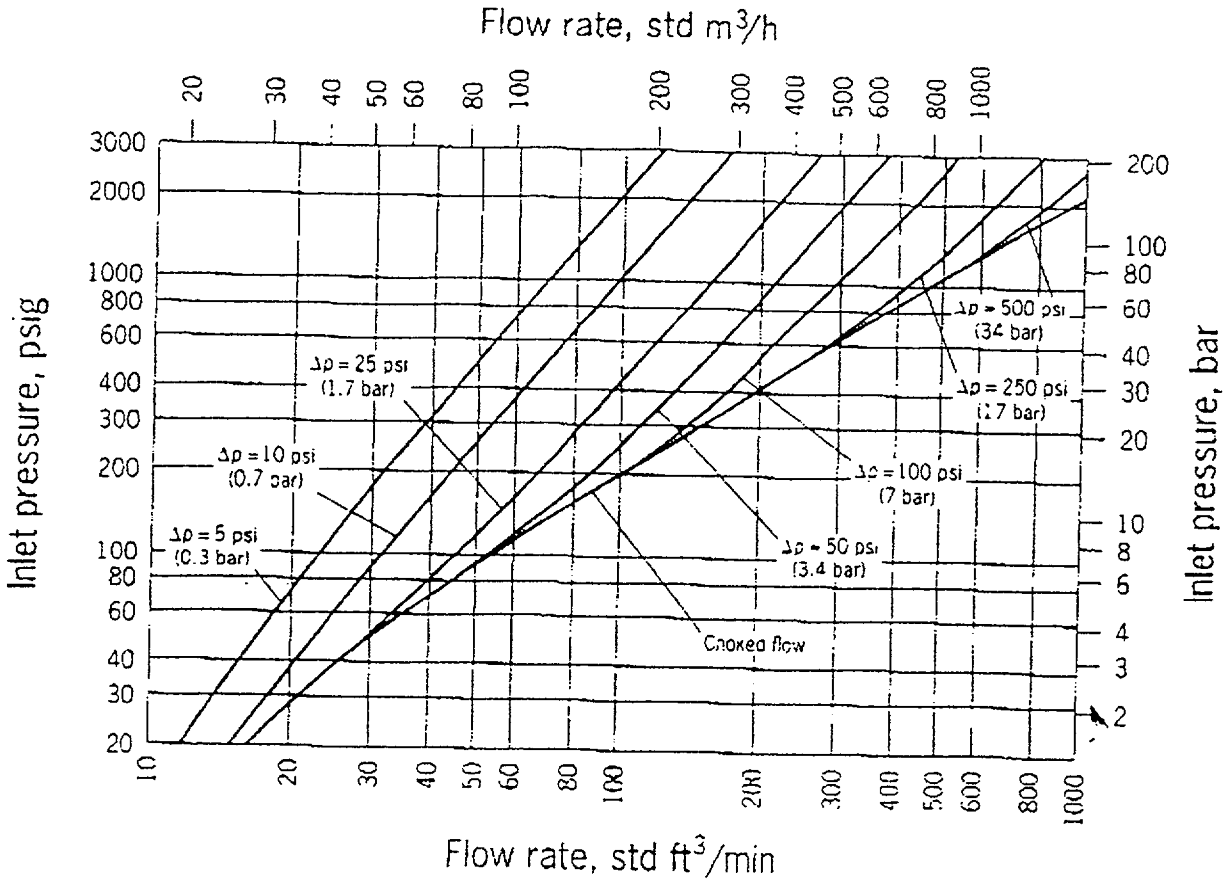
- Enter the verical scale with the pressure drop across the valve (Δp = 60 psi).
- Read across to the desired flow rate (q = 4 gal/min).
- The diagonal line is the desired C_v value (C_v = 0.50).

CHOKED AIR FLOW



Example:

- Enter the vertical scale with the inlet pressure at the valve (p_1 = 200 psig).
- Read across to the desired flow rate (q = 10 std ft³/min).
- The diagonal line is the desired C_v value (C_v = 0.10).



LOW PRESSURE DROP AIR FLOW

Example:

- Enter the vertical scale with the inlet pressure at the valve (p_1 = 200 psig).
- Read across to the diagonal line for the pressure drop across the valve (Δp = 25 psi).
- Read down to the horizontal scale for the flow rate through a valve with a C_v of 1.0 (q = 65 std ft³/min).
- Multiply that flow rate by the valve C_v to determine the actual flow rate.

(continued from page 1)

Symbols Used in Flow Equations

C_v = flow coefficient
q = flow rate
p_1 = inlet pressure
p_2 = outlet pressure
$\Delta p = p_1 - p_2$
$x = (p_1 - p_2)/p_1$
G_l = liquid specific gravity
G_g = gas specific gravity (air = 1.0)
N_1, N_2 = constants for units
T_1 = absolute upstream temperature in K or °R

Numerical Constants for Flow Equations

	Constant N	q	p	T_1
N_1	0.865	m³/h	bar	...
	1.0	gal/min	psi	...
N_2	417	std m³/h	bar	K
	22.67	std ft³/min	psia	°R

Note: K = °C + 273; °R = °F + 460.

CITED REFERENCES

1. "Flow Equations for Sizing Control Valves," ISA S75.01, *Standards and Recommended Practices for Instrumentation and Control,* 10th ed., Vol. 2, 1989.
2. "Control Valve Capacity Test Procedure," ISA S75.02, *Standards and Recommended Practices For Instrumentation and Control,* 10th ed., Vol. 2, 1989.

OTHER REFERENCES

L. Driskell, *Control-Valve Selection and Sizing,* ISA, 1983.

J.W. Hutchinson, *ISA Handbook of Control Valves,* 2nd ed., ISA, 1976.

Note: All references available from Instrument Society of America, 67 Alexander Drive, P.O. Box 12277, Research Triangle Park, NC 27709.

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Facsimile Cover Letter

Date: September 23, 1997
Company: Sierra Nuclear
Attn.: Paul Massey
From: Harry Millette
Inside Sales Manager

(2)

Comments:

Good morning.

Pursuant to our telephone conversation, 1" 76-6-RT-6, we confirm the following. The approximate Cv is 15.5. From the centerline of the valve to the top of the stem is approximately 1.5 inches, bottom of valve to top of stem 2.25 inches. Also following is handle dimension sheets for our Round, 'C' and 'W' - wing style handles.

If you require any additional information or we may be of further service please contact us.

Best regards,
Harry Millette

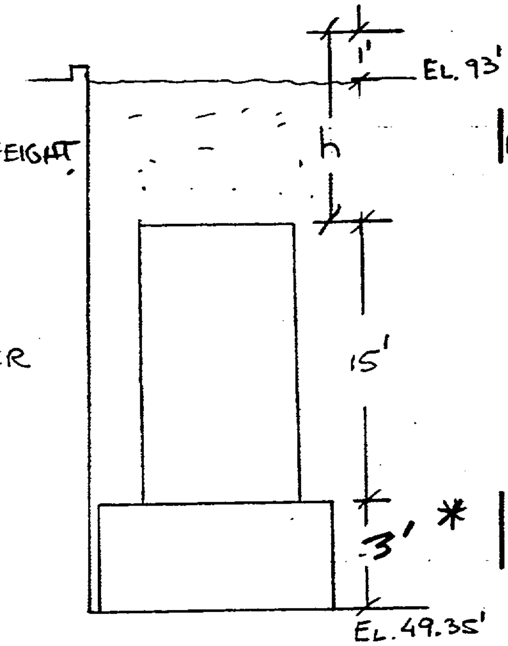
Total Pages Including Cover Letter: 4

APPENDIX C

ANALYSIS OF LIFTING YOKE AND SHIELD LID DROPS ONTO LOADED BASKET

C.1 DROP OF YOKE ON THE SHIELD LID

YOKE WEIGHT



$W_Y = 6{,}611$ LBS

* NOTE: CONSERVATIVELY ASSUME 2' IMPACT LIMITER HEIGHT.

DROP HEIGHT $h = (93+1) - 49 - 2 - 15$
$= 28.0'$

CONSERVATIVELY ASSUME DROP IN THE AIR

$$V_s = \sqrt{2hg} = 42.5 \text{ ft/sec}$$

MISSILE MASS

$$M_m = 6{,}611 / 32.2 = 205.3 \text{ LB} \cdot \text{sec}^2/\text{ft}$$

TARGET EFFECTIVE MASS (ASSUME A CORNER DROP, I.E. $D_x' = D_y' = 0$)

$$M_e = T^2 \frac{\gamma_s T}{g} = \left(\frac{8}{12}\right)^3 \frac{490}{32.2} = 4.5 \text{ LB} \cdot \text{sec}^2/\text{ft}$$

FOR THE PLASTIC IMPACT

$$E_s = \frac{M_m^2 V_s^2}{2(M_m + M_e)} = 181{,}435 \text{ LB-ft}$$

USE THE ELASTO-PLASTIC RESPONSE APPROACH.

THE LID CONSISTS OF TWO PLATES ON TOP OF EACH OTHER (ONE 5.0" THK AND OTHER 3.0" THK). USE THE FORMULAS FROM REF. 22.

CALCULATE DEFLECTION @ YIELD (f_Y = 36 KSI, DIF = 1.2)

$$M_u = (DIF)\, f_Y \frac{t^2}{6} = (1.2)(36)\frac{(5^2+3^2)}{6} = 244.8\ K''/''$$

FROM REF. 22 : $R_m = 2\pi M_u = 1538.1$ KIPS

USE FORMULA FOR SQUARE PLATE TO ESTIMATE X_e : [REF. 22] :

$$X_e = \frac{\alpha R_m a^2}{12 E I}(1-\nu^2) = 0.147 \text{ IN}$$

WHERE $a = \sqrt{\frac{\pi d^2}{4}} = 56.7$ IN $E = 28 \cdot 10^3$ KSI $\nu = 0.3$

$I = \frac{1}{12}(t_1^3 + t_2^3) = \frac{1}{12}(3^3+5^3) = 12.67\ \frac{IN^3}{IN}$ (MOMENT OF INERTIA PER UNIT WIDTH)

$\alpha = 0.139$ FOR SQUARE PLATE

$$X_m = \frac{E_s}{R_m} + \frac{X_e}{2} = \frac{181{,}435 \times 12''/FT}{1{,}538{,}100} + \frac{0.147}{2} = 1.49 \text{ IN}$$

$$\mu = X_m / X_e = 1.49/.147 = 10.1 << 20 \quad \underline{OK}$$

CHECK THE SHIELD LID SUPPORT RING-SHELL INTERFACE WELD

$f_w = R_m / A_w = 1538.1/(4 \times 18'')(2 \times 3/8'') = 28.5$ ksi

Stress intensity = $2 f_w$ = 57 ksi

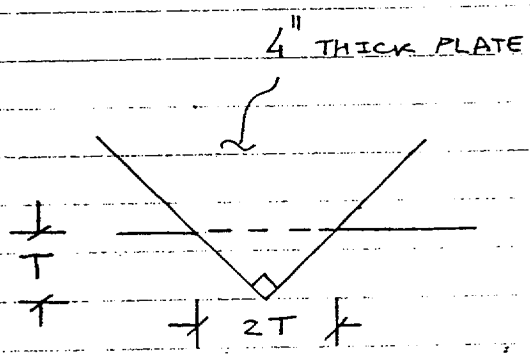
Weld S_u = 80 ksi (E308); Plate S_u = 70 ksi (SA240, Type 304L)

S.I. = 57 ksi < S_u = 70 ksi OK

② ②

Client/Project: PGE-01	Revision	Prepared	Date	Checked	Date	Sheet
Subject: TranStor™ FMEA	2	BAC	10/4/97	MM	10/4/97	C3
						of
Calculation Number: PGE01-10.02.05-05						C7

CALCULATE DEPTH OF PENETRATION. ASSUME EDGE IMPACT (CONSERVATIVE)



AVERAGE AREA THROUGH PENETRATION

$$A_p = \left(\frac{2T}{2}\right)\left(4''\right) = 4T$$

$$D = \sqrt{\frac{4A_p}{\pi}} = \sqrt{\frac{4(4T)}{\pi}} = 2.257\,T^{1/2}$$

USE REF. 22: $T = \dfrac{E^{2/3}}{672D} = \dfrac{E^{2/3}}{(672)(2.257\,T^{1/2})}$ OR

$$T^{3/2} = \frac{E^{2/3}}{1516.7}$$

IMPACT ENERGY IS CALCULATED ABOVE: E = 181,435 LB-FT

$$T = \left(\frac{181{,}435^{2/3}}{1516.7}\right)^{2/3} = 1.65 \text{ IN} \ll 8 \text{ IN} \quad \underline{\text{OK}}$$

C.2 FLAT DROP OF SHIELD LID ONTO THE BASKET

LID WEIGHT $W_L = 7,500$ LBS $M_L = \frac{W_L}{g} = 232.9$ LB·SEC²/ft

DROP IN AIR $h_0 = 1$ ft

$v_0 = \sqrt{2gh} = 8.02$ ft/sec

LID AREA $A = \pi D_L^2/4 = \pi(64)^2/4 = 3217$ IN² $= 22.34$ ft²

BUOYANCY FORCE $W_w = A t \rho_w = (22.34)\left(\frac{8}{12}\right)(62.2 \text{ PCF}) = 926.4$ LBS

DRAG COEFFICIENT $C_D = 2.0$ FOR A CIRCULAR PLATE PERPENDICULAR TO A STREAM.

EQUATION

$$M_L \ddot{x} + \frac{C_D A}{2}\frac{\rho}{g}(\dot{x})^2 - (W_L - W_w) = 0$$

$$x\Big|_{t=0} = 0 \qquad \dot{x}\Big|_{t=0} = v_0 = 8.0 \text{ ft/sec}$$

$$232.9\,\ddot{x} + 43.15(\dot{x})^2 - 6574 = 0$$

$$\ddot{x} + \underbrace{0.185}_{b}(\dot{x})^2 = \underbrace{28.2}_{a} \qquad x\Big|_{t=0} = 0 \quad \dot{x}\Big|_{t=0} = 8.0$$

THE SOLUTION FOR SIMILAR PROBLEM WAS FOUND IN REF. 23

$$\dot{x} = \frac{d}{b}\,\frac{f e^{2dt} - 1}{f e^{2dt} + 1} \qquad \text{WHERE} \quad d = \sqrt{(0.185)(28.2)} = 2.284$$

$$f = \frac{d + b v_0}{d - b v_0} = \frac{2.284 + (.185)(8)}{2.284 - (.185)(8)} = 4.681$$

Client/Project: PGE-01	Revision	Prepared	Date	Checked	Date	Sh
Subject: TranStor™ FMEA	2	BAC	10/4/97	[illegible]	10/4/97	C5
						of
Calculation Number: PGE01-10.02.05-05						C7

$$x = \frac{1}{b}\left[dt - \ln\left\{ \frac{(f+1)e^{2dt}}{fe^{2dt}+1} \right\} \right]$$

The LID IMPACTS THE SUPPORT RING WHEN $X = 28 - 1 = 27'$

ATTACHED SPREADSHEET PRESENTS THE CHANGE OF X AND $\dot{X}$ WITH TIME. THE LID WOULD REACH A TERMINAL VELOCITY OF 12.34 ft/SEC.

THEREFORE, IMPACT ENERGY IS (ASSUMING PLASTIC IMPACT AND TARGET MASS $M_e = 0$):

$$E_S = \frac{M_L v_S^2}{2} = \frac{(232.9)(12.34)^2}{2} = 17{,}733 \text{ LBS-ft}$$

THIS ENERGY IS MUCH LOWER THAN THAT FOR THE YOKE. THEREFORE, YOKE ANALYSIS BOUNDS AND LID AND SUPPORT RING ARE ADEQUATE.

Lid drop spreadsheet								
f=	4.682			b=	0.185			
d=	2.284			t step=	0.025			
time	2dt	x	x dot		time	2dt	x	x dot
0	0.00	0.00	8.00		0.825	3.77	9.17	12.22
0.025	0.11	0.20	8.39		0.85	3.88	9.47	12.24
0.05	0.23	0.42	8.76		0.875	4.00	9.78	12.25
0.075	0.34	0.64	9.09		0.9	4.11	10.08	12.26
0.1	0.46	0.87	9.40		0.925	4.23	10.39	12.27
0.125	0.57	1.11	9.69		0.95	4.34	10.70	12.28
0.15	0.69	1.36	9.95		0.975	4.45	11.00	12.28
0.175	0.80	1.61	10.18		1	4.57	11.31	12.29
0.2	0.91	1.87	10.40		1.025	4.68	11.62	12.30
0.225	1.03	2.13	10.59		1.05	4.80	11.93	12.30
0.25	1.14	2.40	10.77		1.075	4.91	12.23	12.31
0.275	1.26	2.67	10.93		1.1	5.02	12.54	12.31
0.3	1.37	2.94	11.08		1.125	5.14	12.85	12.32
0.325	1.48	3.22	11.21		1.15	5.25	13.16	12.32
0.35	1.60	3.50	11.32		1.175	5.37	13.47	12.32
0.375	1.71	3.79	11.43		1.2	5.48	13.77	12.32
0.4	1.83	4.07	11.53		1.225	5.60	14.08	12.33
0.425	1.94	4.36	11.61		1.25	5.71	14.39	12.33
0.45	2.06	4.66	11.69		1.275	5.82	14.70	12.33
0.475	2.17	4.95	11.76		1.3	5.94	15.01	12.33
0.5	2.28	5.24	11.82		1.325	6.05	15.31	12.33
0.525	2.40	5.54	11.88		1.35	6.17	15.62	12.33
0.55	2.51	5.84	11.93		1.375	6.28	15.93	12.34
0.575	2.63	6.14	11.97		1.4	6.40	16.24	12.34
0.6	2.74	6.44	12.01		1.425	6.51	16.55	12.34
0.625	2.86	6.74	12.05		1.45	6.62	16.86	12.34
0.65	2.97	7.04	12.08		1.475	6.74	17.17	12.34
0.675	3.08	7.34	12.11		1.5	6.85	17.47	12.34
0.7	3.20	7.64	12.13		1.525	6.97	17.78	12.34
0.725	3.31	7.95	12.16		1.55	7.08	18.09	12.34
0.75	3.43	8.25	12.18		1.575	7.19	18.40	12.34
0.775	3.54	8.56	12.19		1.6	7.31	18.71	12.34
0.8	3.65	8.86	12.21					

PGE01-10.02.05-05 Rev. 2

Prepared BAC 10/4/97   checked RON 10/4/97

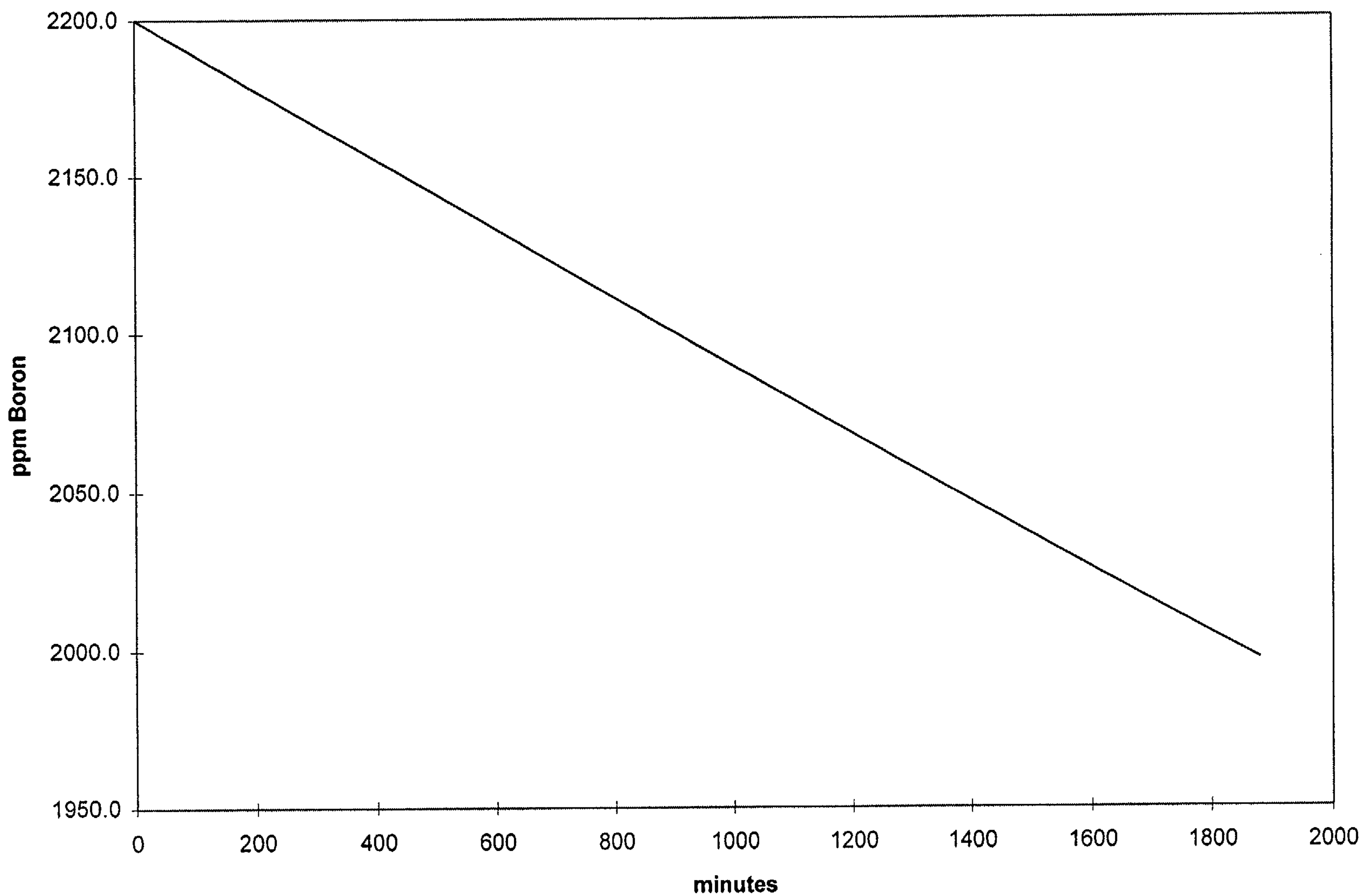
②

APPENDIX D

FUEL POOL BORON DILUTION

Annulus flowrate	20	gpm			
Fuel Pool Volume	388212	gallons	(assume held constant)		
Initial pool [Boron]	2200	ppm			
Demin [Boron]	0	ppm			
Dilution	0.99995				
Minutes	Boron (ppm)				
0	2200.0				
60	2193.2				
120	2186.4				
180	2179.7				
240	2173.0				
300	2166.3				
360	2159.6				
420	2152.9				
480	2146.3				
540	2139.6				
600	2133.0				
660	2126.5				
720	2119.9				
780	2113.3				
840	2106.8				
900	2100.3				
960	2093.8				
1020	2087.4				
1080	2080.9				
1140	2074.5				
1200	2068.1				
1260	2061.7				
1320	2055.4				
1380	2049.0				
1440	2042.7				
1500	2036.4				
1560	2030.1				
1620	2023.8				
1680	2017.6				
1740	2011.4				
1800	2005.2				
1810	2004.1				
1820	2003.1				
1830	2002.1				
1840	2001.0				
1850	2000.0	**30 hours, 50 minutes**			
1860	1999.0				
1870	1997.9				
1880	1996.9				

Fuel Pool Boron Concentration vs. Time during Transfer Cask Annulus Demin Flush



BNFL Fuel Solutions	**CALCULATION PACKAGE**	Calc. Pkg No. VSC02.6.2.3.01 File No.: VSC02.6.2.3.01 Revision: 1

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

VCC Load Combination Evaluation

SCOPE:

Product:	☐ FuelSolutions™	☐ TranStor™	☒ VSC-24	☐ Other ______
Service:	☒ Storage	☐ Transportation		☐ Other ______
Conditions:	☒ Normal	☒ Off-Normal	☒ Accident	☐ Other ______

Component(s):

VCC concrete and steel.

Prepared by: Michelle Heinz

Name: Michelle Heinz

Signature: Michelle Heinz

Date: 2/2/01

Verified by:

Name: James E. Morancy

Signature: [signature]

Date: 2/2/01

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: Srinivasan

Date: 3/26/01

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1 – 10		Replaces Calculation WEP109-002.01, Rev. 2	J. Hibbard	M. Heinz
1	1 - 10		Updated the references and revised design parameters and calculations based on the updated references. (VSC02-ECN-008)	M. Heinz	J. Moroney

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-427.

RECORD OF VERIFICATION

	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	(YES)	NO	N/A
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	(YES)	NO	N/A
(i) Computer calculations are properly identified.	YES	NO	(N/A)
(j) Computer codes used are under configuration control.	YES	NO	(N/A)
(k) Computer codes used are applicable to the calculation.	YES	NO	(N/A)
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

See Verification Memorandum for Comments.

Verifier: James E. Moroney [signature] 2/2/01

Name/Signature/Date

1.0 INTRODUCTION

The VSC-24 concrete structure is designed to meet the requirements of ANS-57.9 (Reference 1). This calculation provides evaluation of the load combinations required by this standard.

2.0 METHODOLOGY AND ASSUMPTIONS

The load combinations shown in ANS-57.9 (Reference 1), Section 6.17 can be reduced to the set shown below:

a,b	$1.4D + 1.7L$
c,d	$0.75 (1.4D + 1.7L + 1.7T_0)$
e	$D + L + T_0 + E$
f	$D + L + T_0 + A$
*	$D + L + T_0 + W_t$

where:

D	dead load
L	live load
T_0	normal temperature load
T_a	accident temperature load
W_t	tornado missile load
A	heavy load drop load
E	seismic load

* This load combination has been added to meet the intent of ANS-57.9 (Reference 1) ($A = W_t$ - impact load) and to show that the structure also meets ACI 349, Section 9.2 (Reference 2) load combinations ($Y_m = W_t$)

Other loads of ANS-57.9, Section 6.17 (Reference 1) and ACI 349, Section 9.2 (Reference 2) are not applicable for the following reasons:

a) Normal and accident pressure for the VCC is 0 - the cask is open to atmosphere. Therefore, there is no P_a (ACI 349, Reference 2).

b) There are no loads associated with attached piping and equipment because the VCC is a freestanding structure. Thus, there is no R_0, R_a, Y_j, or Y_r (ACI 349, Reference 2).

c) There are no liquid or soil pressure on the cask (flood pressure is negligible). Thus, there are no F and H (ACI 349, Reference 2 and ANS-57.9, Reference 1).

d) Tornado wind does not overturn the cask. It is assumed that the wind load is negligible; $W = 0$ (ACI 349, Reference 2 and ANS-57.9, Reference 1).

e) $T_a = T_0$, since the –40°F ambient is the worst case used for the thermal stress analysis.

2.0 CALCULATIONS AND RESULTS

a) Dead Load (D)

The total weight of the loaded VSC is 290,000 lb (bounds all values from Reference 3).

Conservatively assume that the whole weight is supported only by the part of the VCC bottom under the MSB footprint (D = 62.5"; Reference 16), and use a 5% dead weight increase per ANS-57.9 (Reference 1, Section 6.17.1.1).

$$\sigma = \frac{P}{A} = \frac{290{,}000 \times 1.05}{\pi \cdot \frac{62.5^2}{4}} = 0.099 ksi \text{ - compression}$$

Stress in the wall from the dead weight is:

$$\sigma = \rho \cdot g \cdot l = 150 \cdot 1 \cdot 230 \cdot 1.05 = 0.021 ksi \text{ - compression}$$

where: ρ = 150 lb/ft^3 (VCC concrete density from Reference 16)
l = 230 inches (bounds all VCC lengths in Reference 16)

b) Live Load (L)

The live loads for the VCC are the weight of snow and ice. The flat roof snow load in accordance with Reference 7, Equation 5a is

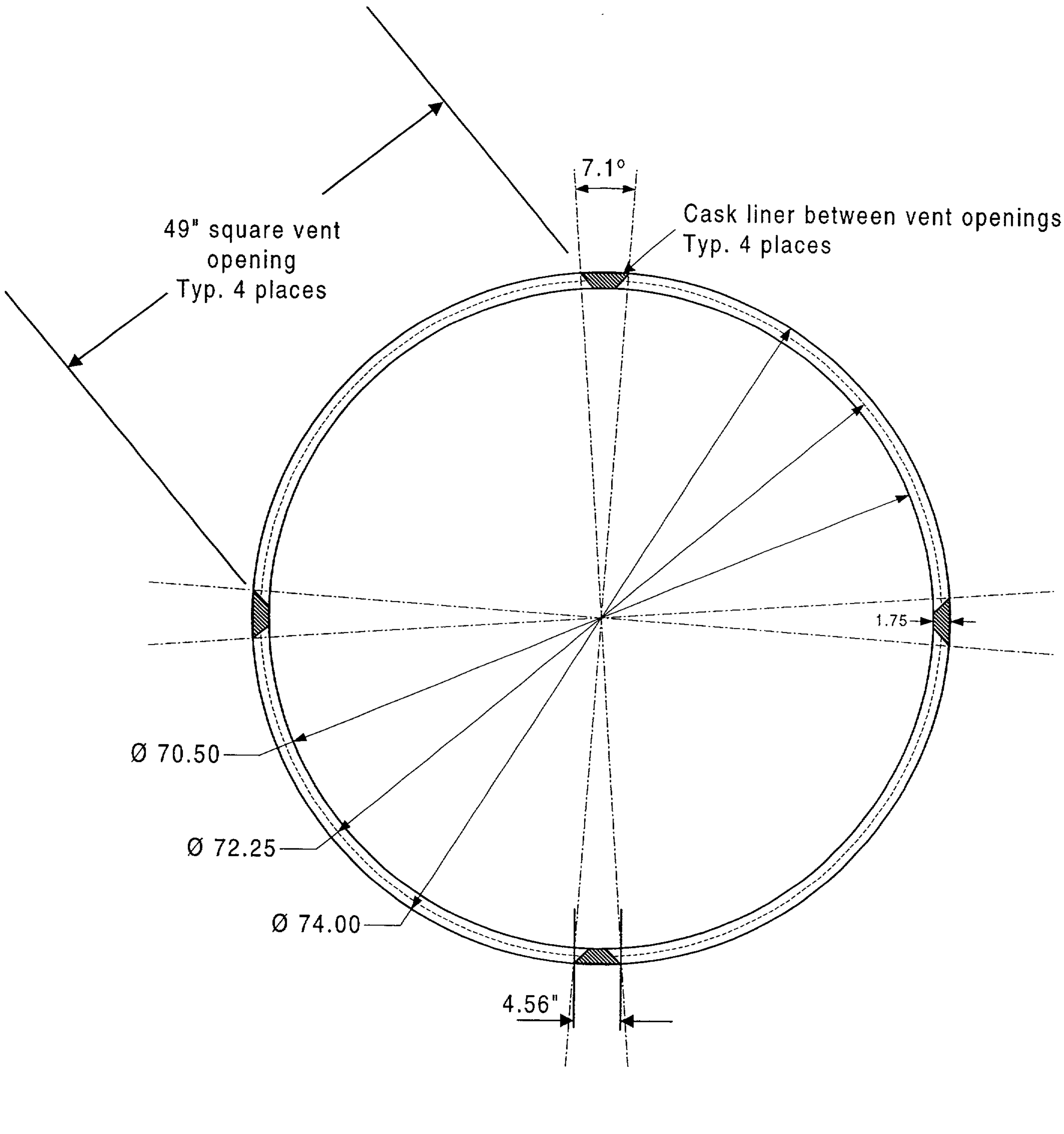
$P_{sn} = 0.7*C_e*C_t*I*p_g$

where: P_{sn} = snow load (lb/ft^2)
C_e = exposure factor (1.0 per Reference 7, Table 18, where wind does not reduce the snow load)
C_t = thermal factor (conservatively assumed to be 1.2 per Reference 7, Table 19, for an unheated structure)
I = Importance factor (conservatively assumed to be 1.2 per Reference 7, Table 20)
p_g = ground snow load (conservatively assumed to be 400 lb/ft^2 for the worst case location in Alaska per Reference 7, Table 17)

The snow load is

$P_{sn} = 403.2\ psf = 2.80\ psi$

The weight of the loaded MTC is P = 186.3 *kips* (bounds all weights in Reference 3). The weight of the loaded MTC is transferred from the top of the liner to the cask bottom by the cask liner. A cross section through the liner at the elevation of the vent holes is shown on the following page (dimensions from Reference 16).



Section Through Cask Liner at Vent Hole Elevation

The liner cross section area at the vent holes is

Compressive Area (A_c) = 20.2 in^2

Stress in the liner: $\sigma = \dfrac{186.3kips \cdot 1.05}{20.2} = 9.68$ ksi

Stress on the VCC bottom from the MTC mass is (use liner ID vs. OD for conservatism and assume the load is uniform; liner ID from Reference 16):

$$\sigma = \frac{186.3kips \cdot 1.05}{\dfrac{\pi \cdot 70.5^2}{4}} = 0.050ksi \text{ - negligible compression.}$$

Stress in the VCC wall due to the snow and ice load (VCC diameter = 132" from Ref. 16; MSB OD from Reference 16):

$$\sigma = \frac{P_{sn} \cdot \dfrac{\pi}{4} \cdot 132^2}{\dfrac{\pi}{4}\left(132^2 - 74^2\right)} = 0.004ksi \text{ - compression, negligible.}$$

c) Thermal Load (T_0, T_a - same because the worst case was used for the thermal analysis).

From the VCC thermal stress analysis (Reference 4):

Max. concrete stresses: $\sigma = 0.4ksi$ $\tau = 0.08ksi$

Max. liner stress intensity: $S.I._L = 2.1ksi$

Max. axial rebar stress: $\sigma = 28.8ksi$

Max. bottom plate: $S.I. = 6.2ksi$

Max. cover plate: $S.I. = 5.3ksi$

Max. hoop rebar stress: $\sigma = 14.6ksi$

All liner stresses are well below the 32.4 ksi yield strength of A-36 material at 250°F (Reference 16 for liner material, Table I-1.2 of Ref. 10 for yield strength; 250°F bounds the maximum calculated liner temperature in Reference 13). All rebar stresses are well below the 60-ksi-yield strength of A-615 Gr. 60 material (Reference 16 for rebar material and Reference 15 for room temperature yield strength). It is assumed that the rebar yield strength at 250°F is approximately the same as at room temperature.

It is noted that the thermal stress analysis does not reflect the following three design changes: 1) the liner thickness is 1.75" vs. 2" modeled in the thermal stress analysis, 2) the liner inner diameter is 70.5" vs. 65.75" modeled in the thermal stress analysis, and 3) no studs are provided between the liner and concrete, i.e., the two components are axially decoupled. The first and second design changes have an insignificant affect on thermal stresses because these stresses are a function of the relative stiffness and the concrete shell is much more rigid than the liner. The third change relieves the axial stress, and hence, the calculated value is conservative.

d) Seismic Load (E)

From the VCC tornado, flood, and earthquake analysis (Ref. 5)

Shear stress $\tau = 0.0109\ ksi$ Normal (bending) stress $\sigma = 0.046\ ksi$

No credit is taken for the rebars.

e) Drop load (A)

From the VCC tipover and drop analysis (Ref. 6)

Required shear capacity: $V = 81.5\ kips/ft$

Required moment capacity: $M = 1{,}308\ kip\text{-}in/ft$

Available shear capacity: $V_u = 340\ kips/ft$

Available moment capacity: $M_u = 1{,}486\ kip\text{-}in/ft$

f) Tornado missile load (W_t)

From the VCC tornado analysis (Ref. 5)

Required shear capacity: $V = 457.4\ kips$

Required moment capacity: $M = 91{,}476\ kip\text{-}in$

Available shear capacity: $V_u = 1{,}110\ kip$

Available moment capacity: $M_u = 223{,}600\ kip\text{-}in$

Concrete load combination

The minimum specified strength of the concrete is 4*ksi* (Reference 16). The tensile and shear allowable stresses are (compression allowable strength from Reference 2, Paragraph 10.2.7, with the strength reduction factor for reinforced concrete from Paragraph 9.3.2.(c); shear allowable strength from Reference 2, Paragraph 11.3.1.1, with the reduction factor from Paragraph 9.3.2.(d)):

$$\sigma_{all} = 0.7 \cdot 0.85 \cdot 4 = 2.4ksi \qquad \tau_{all} = 0.85 \cdot 2\sqrt{4000} = 0.11ksi$$

Load combinations for the concrete:

a,b
$$\tau = 0$$
$$\sigma = 1.4D + 1.7L = 1.4(0.099) + 1.7(0.050) = 0.22ksi < 2.4ksi$$

c,d
$$\tau = 0.75(1.4D + 1.7L + 1.7T_0) = 0.75[1.4(0) + 1.7(0) + 1.7(0.08)] = 0.10ksi < 0.11ksi$$
$$\sigma = 0.75(1.4D + 1.7L + 1.7T_0) = 0.75[1.4(0.099) + 1.7(0.05) + 1.7(0.4)] = 0.68ksi < 2.4ksi$$

e
$$\tau = D + L + T_0 + E = 0 + 0 + 0.08 + 0.0109 = 0.091ksi < 0.11ksi$$
$$\sigma = D + L + T_0 + E = 0.099 + 0.050 + 0.4 + 0.046 = 0.60ksi < 2.4ksi$$

f
$$V = D + L + T_0 + A = 0 + 0 + 0 + 81.5 = 81.5kips/ft < 340kips/ft$$
$$M = D + L + T_0 + A = 0 + 0 + 0 + 1{,}308 = 1{,}308kip-in/ft < 1{,}486kip\text{-}in/ft$$

D and L do not produce any shear or moment across the VCC wall because they are axisymmetric. T_0 is also axisymmetric; it produces no shear but it is included for the moment consideration because it results in tension in the outside hoop bars and may reduce the available moment capacity. However, the maximum horizontal drop moment produces tension in inner hoops and compression in outer hoops, thus, counteracting thermal load. Therefore, it is conservative to use $T_0 = 0$ for this load combination.

$$* V = D + L + T_0 + W_t = 0 + 0 + 0 + 457 = 457kips < 1{,}110kips$$
$$M = D + L + T_0 + W_t = 0 + 0 + 0 + 91{,}476 = 91{,}476kip-in < 223{,}600kip\text{-}in$$

D, L, and T_0 do not produce any shear or moment across the VCC section because they are axisymmetric.

Steel load combinations

The rebar load combinations are addressed with the concrete because the concrete capacities rely on strength of the reinforcement. For the liner, the combinations are reduced to (a,b) and (c,d) because no liner credit is taken for resisting D, E, A, and W_t, and stresses due to these loads are small. Hence, for the liner:

a,b

$\sigma = 1.4D + 1.7L = 1.4(0.0) + 1.7(9.68) = 16.5 ksi < 0.6\ F_y = 0.6 \cdot 32.4 = 19.4$ ksi (@ 250°F)

c,d

$\sigma = 0.75(1.4D + 1.7L + 1.7T_0) = 0.75[1.4(0.0) + 1.7(9.68) + 1.7(2.1)] = 15.0 ksi < 19.4$ ksi

3.0 CONCLUSIONS

VCC-24 component stresses for the design load combinations are less than the allowable stresses.

4.0 REFERENCES

1. ANS-57.9, Design Criteria for ISFSI (Dry Storage Type), 1984.
2. ACI 349, Code Requirements for Nuclear Safety Related Concrete Structures, 1980.
3. BNFL Calculation No. VSC02.6.2.5.01, Rev. 1, "Weight and Center of Gravity."
4. BNFL Calculation No. VSC02.6.2.3.18, Rev. 2, "VCC Thermal Stress Analysis."
5. BNFL Calculation No. VSC02.6.2.3.19, Rev. 1, "VSC Flood, Tornado, and Earthquake Analysis."
6. BNFL Calculation No. VSC02.6.2.3.15, Rev. 1, "VSC-24 Hypothetical Tip-Over and 5-foot Drop Analyses."
7. ASCE 7-93, "Minimum Design Loads for Buildings and Other Structures", 1994.
8. Deleted.
9. Deleted.
10. ASME Boiler and Pressure Vessel Code, Section III, Division 1, Appendices, 1986 Edition with the 1988 Addenda.
11. Deleted.
12. Deleted.
13. BNFL Calculation No. WEP-109-003.4, "VSC-24 Thermal Hydraulic Analysis," Revision 2.
14. Deleted.
15. ASTM Specification A-615/A-615M-96a, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement."
16. BNFL Calculation No. VSC02.6.2.5.03, Rev. 0, "VSC-24 Design Parameters"

BNFL Fuel Solutions	**CALCULATION PACKAGE**	Calc. Pkg No. VSC02.6.2.3.02 File No.: VSC02.6.2.3.02 Revision: 3

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

MSB-24 Load Combination Evaluation

SCOPE:

Product: ☐ FuelSolutions™ ☐ TranStor™ ☒ VSC-24 ☐ Other ____________

Service: ☒ Storage ☐ Transportation ☐ Other ____________

Conditions: ☒ Normal ☒ Off-Normal ☒ Accident ☐ Other ____________

Component(s):

MSB Pressure Retaining Components (Shell, Bottom Plate, Structural Lid, Closure Welds)

Prepared by:

Name: Michelle Heinz

Signature: Michelle Heinz

Date: 2/16/01

Verified by:

Name: James Moroney

Signature: [signature]

Date: 2/16/01

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: R Srinivasan

Date: 3/26/01

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1 – 12		Replaces Calculations WEP109-002.04, Rev. 5	Robert Keating	Michelle Heinz
1	All		Incorporated changes due to alternative support of MSB by ceramic tiles, as per ECN No. VSC02-ECN-003 Revised to reflect new stress values	Warren Price	Soo Bee Kok
2	1, 2, 3, 5, 6, 9, & 24	None	Editorial change to table reference, p. 5. Editorial change, p. 6. Revised to reflect new thermal stresses from Ref. 1, p. 9. Corrected ASME Code references and updated BNFL Calculation references to the current revisions, p. 24. Minor revision of cover pages 1 and 2 (VSC02-ECN-005).	Jim Hibbard	Michelle Heinz
3	All	None	Revised each '1' in the 'Cat' column on p. 26 to '2' per VSC02-ECN-007. Updated References on p. 25, and revised stresses and calculations on pages 10-14 based on the updated References. Added a table to combine dead load, off-normal pressure, normal handling, and thermal stresses. Revised a table such that dead load, off-normal pressure, and off-normal handling stresses are combined. Page numbering changed on all pages. (VSC02-ECN-008)	M. Heinz	J. Moroney

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-427.

RECORD OF VERIFICATION	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	YES	NO	(N/A)
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	(YES)	NO	N/A
(i) Computer calculations are properly identified.	(YES)	NO	N/A
(j) Computer codes used are under configuration control.	(YES)	NO	N/A
(k) Computer codes used are applicable to the calculation.	(YES)	NO	N/A
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

See Verification Memorandum for Comments.

Verifier: James Moroney [signature] 2/16/01

Name/Signature/Date

TABLE OF CONTENTS

1. INTRODUCTION

The MSB-24 is designed to meet the requirements of Section III, Subsection NC of the ASME Code [Reference 8]. This calculation addresses load combinations for the appropriate Service Levels of the Code.

2. DESIGN INPUT AND METHODOLOGY

All input was taken from References (1) through (7). Horizontal seismic load cannot cause any damage because it will not overturn the VSC [Ref. 6]. Conservatism of the methodology:

- Stresses were added using absolute values - without sign consideration
- Design stresses for SA-516-70 (Reference 11 for material) are at the following bounding temperatures (Reference 10 for temperatures – see Section 3.1 for a discussion of the sleeve temperature):
  MSB Shell and Sleeve = 500 °F
  MSB Ends = 300 °F

ASME allowable stresses are as follows (Values of S_m are from Table I-1.1, Reference 9, values of S_u are from Table I-3.1, Reference 9):

Table 2-1 Allowable Stresses (ksi)

Service Level	Stress Type	Stress Limit	Stress 500 F	Stress 300 F
Level A:	Pm	Sm	20.50	22.50
	PL + Pb	1.5 Sm	30.75	33.75
	PL + Pb +Q	3 Sm	61.50	67.50
Level B	Pm	1.1 Sm	22.55	24.75
	PL + Pb	1.65 Sm	33.83	37.13
	Pl + Pb + Q	3 Sm	61.50	67.50
Level C:	Pm	1.2 Sm	24.60	27.00
	PL + Pb	1.8 Sm	36.90	40.50
Level D	Pm	0.7 Su	49.00	49.00
	PL + Pb	1.5 Pm	73.50	73.50
	Pmax(1)	0.9 Su	63.00	63.00

(1) Pmax is the allowable plastic system stress.

Per Reference 8, a 0.75 coefficient is applied to the allowable stresses for partial penetration welds and full allowables are used for full penetration welds. The partial penetration welds include the structural lid, shield lid and support ring welds. It is noted that the ASME Code specifies use of the 0.75 factor when the weld material strength is less than that of the two metals being joined. It is concluded that the 0.75 factor is not required since the weld strength is greater than the materials being joined. However, it is conservative however to apply, and the factor is not removed in this revision of the calculation.

3. CALCULATIONS

3.1. Service Level A Stresses

The loads acting on the MSB during normal operation (i.e., Service Level A) are thermal, normal pressure, dead load, and normal handling. All stresses have been taken from corresponding analyses [Reference 1 through 5, and 7].

Due to the fact that the dead weight, pressure, and normal handling stresses are calculated separately, any combination of the separate analyses would not directly account for the interaction between them. For this reason a single finite element analysis combining the above loads has been completed. The model used was exactly the same as the model used for the dead weight analysis reported in Reference 7, with the addition of normal pressure of 8.9 psig (bounds pressure from Reference 4) applied to the MSB shell and MSB base, and the normal handling acceleration of 1.0g (Reference 5) also included. A listing of the ANSYS model is included in Attachment 1 of this analysis. Figure 3-1, Figure 3-2, and Figure 3-3 plot the MSB stresses for shell top, middle, and bottom locations respectively. The stresses used for the load combination in Table 3-1 are derived from the stress summary of Tables 3-6 (MSB Shell) and Table 3-7 (MSB Base). The stress in the MSB weld is conservatively taken to be the worst stress from either the MSB shell or the MSB base. High local stresses due to the structural discontinuity caused by the presence of the ceramic tiles are not included in the evaluation, as directed by the ASME code.

The sleeve stresses are based on a temperature of 500 °F. This is not the highest temperature in the sleeve, but it bounds the temperature from Reference 1 at the highest stress location (outermost wall of the outermost sleeve). The stresses at locations in the sleeve that exceed 500 °F were also reviewed and are not limiting.

The normal operating stresses are reported in Table 3-1. The stresses are compared to the Service Level A allowable stresses that are calculated in Table 2-1.

3.2 Service Level B Stresses

Stresses for the limiting Service Level B load combination are presented in Table 3-2. The combination includes dead load, off-normal pressure, normal handling, and thermal stresses. Stresses are obtained from References 1 through 5 and Reference 7. In Table 3-2, the sums of the stresses for the load combination are compared to the Level B allowable stresses that are calculated in Table 2-1.

3.3 Service Level C Stresses

Stresses for the limiting Level C load combination are presented in Table 3-3. The combination includes dead load, off-normal pressure, and off-normal handling stresses.

Stresses are obtained from References 2, 3, 5, and 7. In some instances the off-normal handling stress is less limiting than the normal handling stress; therefore, the maximum of the normal and off-normal handling stresses is reported. In Table 3-3, the sums of the stresses for the load combination are compared to the Level C allowable stresses that are calculated in Table 2-1.

3.4 Service Level D Stresses

All Service Level D load combinations are bounded by at least one of the three load combinations described below.

3.4.1 Drop Accident

This event is classified as Service Level D loading. Although the MSB pressurization accident could be caused by a drop, these two events are considered separately. The reason is that stresses due to a drop exist for a very short time, while pressure from rod failure needs time to rise. Therefore, only the normal pressure is considered for this accident.

Stress intensities are taken from References 2 and 3 except vertical drop bending stresses are taken from the additional analysis in Reference 7 if the Reference 7 analysis is more limiting.

Thermal stresses are self-limiting and not applicable to a faulted condition. Dead load is already included in the drop load and is not separately listed. The stresses are summarized in Tables 3-4 and 3-5 for the vertical and horizontal drops, respectively. The horizontal drop condition for the sleeve is evaluated separately in Reference 3.

3.4.2 Critical Pressure

This event is classified as Service Level D loading. The critical pressure accident condition only includes the accident pressure, dead load, and normal handling load. Stress intensities are taken from References 2, 3, 5, and 7. Thermal stresses are self-limiting and are not applicable to a faulted condition. The stresses are summarized in Table 3-6. Due to the fact that the dead load and critical pressure stresses are calculated separately, any combination of the separate analyses would not directly account for the interaction between the two. For this reason a single finite element analysis combining the critical pressure load with the dead load has been completed. The model used was exactly the same as the model used for the dead weight analysis reported in Reference 7, with the addition of critical pressure applied to the MSB shell and MSB base. A listing of the ANSYS model is included in Attachment 2 of this analysis. Figure 3-4, Figure 3-5, and Figure 3-6 plot the stresses for the element top, middle, and bottom locations for the MSB shell, respectively. The stresses used for the load combination in Table 3-6 are derived from the stress summaries of Table 3-8 (MSB Shell) and Table 3-9 (MSB Base). The stress in the MSB weld is conservatively taken to be the worst stress from either the MSB shell or the MSB base. High local stresses due to the structural discontinuity caused by the presence of the ceramic tiles are not included in the evaluation, as directed by the ASME code.

The values of stress reported in Table 3-6 for the MSB shell, MSB base, and MSB base weld reflect the results from the single analysis described above. All other combined stresses are derived by adding the stresses from the separate analyses.

Table 3-1 Service Level A Stresses (Stresses in ksi)

		Dead Load	Pressure Stress	Vertical + Horiz Normal Handling	Dead Load + Pressure + Vertical Normal handling	Horiz Normal Handling	Thermal Stress	Sum of Stresses	ASME Code Limit	Design Margin	Acceptable
MSB Shell	Pm	–(1)	–(1)	–(1)	1.02	0.69	0.00	1.71	20.50	10.99	OK
	PL + Pb	–(1)	–(1)	–(1)	3.74	1.61	0.00	5.35	30.75	4.75	OK
	PL + Pb + Q	–(1)	–(1)	–(1)	3.74	1.61	1.37	6.72	61.50	8.15	OK
Bottom Plate	Pm	–(1)	–(1)	–(1)	0.39	1.05	0.00	1.44	22.50	14.63	OK
	PL + Pb	–(1)	–(1)	–(1)	27.50	1.41	0.00	28.91	33.75	0.17	OK
	PL + Pb + Q	–(1)	–(1)	–(1)	27.50	1.41	19.40	48.31	67.50	0.40	OK
Structural Lid	Pm	0.01	0.05	0.72	NA	NA	0.00	0.78	22.50	27.85	OK
	PL + Pb	0.04	1.19	1.57	NA	NA	0.00	2.80	33.75	11.05	OK
	PL + Pb + Q	0.04	1.19	1.57	NA	NA	0.18	2.98	67.50	21.61	OK
Bottom Weld	Pm	–(1)	–(1)	–(1)	1.02	0.93	0.00	1.95	22.50	10.54	OK
	PL + Pb	–(1)	–(1)	–(1)	27.50	1.41	0.00	28.91	33.75	0.17	OK
	PL + Pb + Q	–(1)	–(1)	–(1)	27.50	1.41	19.40	48.31	67.50	0.40	OK
Structural Lid Weld	Pm	0.04	0.25	0.38	NA	NA	0.00	0.67	16.88	24.19	OK
	PL + Pb	0.08	2.35	1.61	NA	NA	0.00	4.04	25.31	5.27	OK
	PL + Pb + Q	0.08	2.35	1.61	NA	NA	0.50	4.54	50.63	10.16	OK
Shield Lid	Pm	0.03	0.00	0.49	NA	NA	0.00	0.52	22.50	42.27	OK
	PL + Pb	0.31	0.00	1.00	NA	NA	0.00	1.31	33.75	24.76	OK
	PL + Pb + Q	0.31	0.00	1.00	NA	NA	0.00	1.31	67.50	50.53	OK
Shield Lid Weld	Pm	0.27	1.26	0.60	NA	NA	0.00	2.13	16.88	6.91	OK
	PL + Pb	0.27	4.84	1.00	NA	NA	0.00	6.11	25.31	3.14	OK
	PL + Pb + Q	0.27	4.84	1.00	NA	NA	1.30	7.41	50.63	5.83	OK
Support Ring Weld	Pm	0.18	0.00	0.18	NA	NA	0.00	0.36	16.88	45.57	OK
	PL + Pb	0.18	0.00	0.18	NA	NA	0.00	0.36	25.31	68.85	OK
	PL + Pb + Q	0.18	0.00	0.18	NA	NA	0.00	0.36	50.63	138.70	OK
Sleeve Assembly	Pm	0.06	0.00	2.02	NA	NA	0.00	2.08	20.50	8.84	OK
	PL + Pb	0.06	0.00	2.09	NA	NA	0.00	2.15	30.75	13.29	OK
	PL + Pb + Q	0.06	0.00	2.09	NA	NA	52.00	54.15	61.50	0.14	OK

Notes:

(1) For the combination involving the MSB shell, MSB base, and Base weld, the results from the individual analyses of dead weight, pressure and handling are not combined. For these components a separate analysis directly including dead weight + pressure + vertical component of handling has been run with results as shown. The horizontal component of normal handling load is then added separately to give the final combined stress.

All other components combine the individual results of the separate load cases.

Table 3-2 Service Level B Stresses (Stresses in ksi)

		Dead Load	Off-Normal Pressure Stress	Normal Handling	Thermal Stress	Sum of Stresses	ASME Code Limit	Design Margin	Acceptable
MSB Shell	Pm	0.50	1.17	1.19	0.00	2.86	22.55	6.88	OK
	PL + Pb	1.50	4.35	3.11	0.00	8.96	33.83	2.78	OK
	PL + Pb + Q	1.50	4.35	3.11	1.37	10.33	61.50	4.95	OK
Bottom Plate	Pm	0.35	0.40	1.40	0.00	2.15	25.08	10.67	OK
	PL + Pb	12.20	11.61	13.61	0.00	37.42	37.62	0.01	OK
	PL + Pb + Q	12.20	11.61	13.61	19.40	56.82	68.40	0.20	OK
Structural Lid	Pm	0.01	0.05	0.72	0.00	0.78	24.75	30.73	OK
	PL + Pb	0.04	1.19	1.57	0.00	2.80	37.13	12.26	OK
	PL + Pb + Q	0.04	1.19	1.57	0.18	2.98	67.50	21.61	OK
Bottom Weld	Pm	0.50	1.17	1.43	0.00	3.10	25.08	7.09	OK
	PL + Pb	12.20	11.61	13.61	0.00	37.42	37.62	0.01	OK
	PL + Pb + Q	12.20	11.61	13.61	19.40	56.82	68.40	0.20	OK
Structural Lid Weld	Pm	0.04	0.25	0.38	0.00	0.67	18.56	26.71	OK
	PL + Pb	0.08	2.35	1.61	0.00	4.04	27.85	5.89	OK
	PL + Pb + Q	0.08	2.35	1.61	0.50	4.54	50.63	10.16	OK
Shield Lid	Pm	0.03	0.00	0.49	0.00	0.52	24.75	46.60	OK
	PL + Pb	0.31	0.00	1.00	0.00	1.31	37.13	27.34	OK
	PL + Pb + Q	0.31	0.00	1.00	0.00	1.31	67.50	50.53	OK
Shield Lid Weld	Pm	0.27	1.26	0.60	0.00	2.13	18.56	7.70	OK
	PL + Pb	0.27	4.84	1.00	0.00	6.11	27.85	3.56	OK
	PL + Pb + Q	0.27	4.84	1.00	1.30	7.41	50.63	5.83	OK
Support Ring Weld	Pm	0.18	0.00	0.18	0.00	0.36	18.56	50.22	OK
	PL + Pb	0.18	0.00	0.18	0.00	0.36	27.85	75.84	OK
	PL + Pb + Q	0.18	0.00	0.18	0.00	0.36	50.63	138.70	OK
Sleeve Assembly	Pm	0.06	0.00	2.02	0.00	2.08	22.55	9.83	OK
	PL + Pb	0.06	0.00	2.09	0.00	2.15	33.83	14.72	OK
	PL + Pb + Q	0.06	0.00	2.09	52.00	54.15	61.50	0.14	OK

Notes:

(1) The allowable stresses for the bottom plate and bottom weld are based on a temperature of 250°F. This is not the highest temperature in the bottom plate, however it bounds the Reference 10 temperature of 214°F at the highest bottom plate stress location (bottom plate edge). The stresses at locations in the bottom plate that exceed 250°F were reviewed and are not limiting. Because a gap exists between the bottom plate and the bottom of the fuel region in the Reference 10 finite element model, the actual temperature of the bottom plate edge is expected to be higher than 214°F. The temperature at the bottom edge of the fuel region from Reference 10 is 286°F. Based on engineering judgement, the bottom plate edge temperature is not expected to be higher than 250°F.

Table 3-3 Service Level C Stresses (Stresses in ksi)

		Dead Load	Off-Normal Pressure Stress	Off Normal Handling	Sum of Stresses	ASME Code Limit	Design Margin	Acceptable
MSB Shell	Pm	0.50	1.17	3.89	5.56	24.60	3.42	OK
	PL + Pb	1.50	4.35	9.09	14.94	36.90	1.47	OK
Bottom Plate	Pm	0.35	0.40	5.93	6.68	27.00	3.04	OK
	PL + Pb	12.20	11.61	14.64	38.45	40.50	0.05	OK
Structural Lid	Pm	0.01	0.05	4.02	4.08	27.00	5.62	OK
	PL + Pb	0.04	1.19	8.62	9.85	40.50	3.11	OK
Bottom Weld	Pm	0.50	1.17	5.22	6.89	27.00	2.92	OK
	PL + Pb	12.20	11.61	14.64	38.45	40.50	0.05	OK
Structural Lid Weld	Pm	0.04	0.25	1.89	2.18	20.25	8.29	OK
	PL + Pb	0.08	2.35	8.62	11.05	30.38	1.75	OK
Shield Lid	Pm	0.03	0.00	2.58	2.61	27.00	9.34	OK
	PL + Pb	0.31	0.00	3.87	4.18	40.50	8.69	OK
Shield Lid Weld	Pm	0.27	1.26	2.16	3.69	20.25	4.48	OK
	PL + Pb	0.27	4.84	4.13	9.24	30.38	2.29	OK
Support Ring Weld	Pm	0.18	0.00	1.44	1.62	20.25	11.48	OK
	PL + Pb	0.18	0.00	1.44	1.62	30.38	17.72	OK
Sleeve Assembly	Pm	0.06	0.00	11.03	11.09	24.60	1.22	OK
	PL + Pb	0.06	0.00	11.45	11.51	36.90	2.21	OK

Table 3-4 Service Level D Stresses - Vertical Drop Accident (Stresses in ksi)

		Pressure Stress	Vertical Drop	Sum of Stresses	ASME Code Limit	Design Margin	Acceptable
MSB Shell	Pm	1.17	46.50	47.67	49.00	0.03	OK
	PL + Pb	4.35	47.00	51.35	63.00	0.23	OK
Bottom Plate	Pm	0.40	23.10	23.50	49.00	1.09	OK
	PL + Pb	11.61	48.30	59.91	63.00	0.05	OK
Structural Lid	Pm	0.05	1.05	1.10	49.00	43.55	OK
	PL + Pb	1.19	4.90	6.09	73.50	11.07	OK
Bottom Weld	Pm	1.17	46.50	47.67	49.00	0.03	OK
	PL + Pb	11.61	48.30	59.91	63.00	0.05	OK
Structural Lid Weld	Pm	0.25	4.20	4.45	36.75	7.26	OK
	PL + Pb	2.35	9.10	11.45	55.13	3.81	OK
Shield Lid	Pm	0.00	3.20	3.20	49.00	14.31	OK
	PL + Pb	0.00	36.80	36.80	73.50	1.00	OK
Shield Lid Weld	Pm	1.26	32.80	34.06	36.75	0.08	OK
	PL + Pb	4.84	32.80	37.64	55.13	0.46	OK
Support Ring Weld	Pm	0.00	21.89	21.89	36.75	0.68	OK
	PL + Pb	0.00	21.89	21.89	55.13	1.52	OK
Sleeve Assembly	Pm	0.00	7.50	7.50	49.00	5.53	OK
	PL + Pb	0.00	7.50	7.50	73.50	8.80	OK

Table 3-5 Service Level D Stresses – Horizontal Drop Accident (Stresses in ksi)

		Pressure Stress	Horizontal Drop	Sum of Stresses	ASME Code Limit	Design Margin	Acceptable
MSB Shell	Pm	1.17	21.40	22.57	49.00	1.17	OK
	PL + Pb	4.35	50.00	54.35	73.50	0.35	OK
Bottom Plate	Pm	0.40	32.60	33.00	49.00	0.48	OK
	PL + Pb	11.61	43.60	55.21	73.50	0.33	OK
Structural Lid	Pm	0.05	22.10	22.15	49.00	1.21	OK
	PL + Pb	1.19	47.40	48.59	73.50	0.51	OK
Bottom Weld	Pm	1.17	28.70	29.87	49.00	0.64	OK
	PL + Pb	11.61	43.60	55.21	73.50	0.33	OK
Structural Lid Weld	Pm	0.25	10.40	10.65	36.75	2.45	OK
	PL + Pb	2.35	47.40	49.75	55.13	0.11	OK
Shield Lid	Pm	0.00	14.20	14.20	49.00	2.45	OK
	PL + Pb	0.00	21.30	21.30	73.50	2.45	OK
Shield Lid Weld	Pm	1.26	10.20	11.46	36.75	2.21	OK
	PL + Pb	4.84	22.70	27.54	55.13	1.00	OK

Table 3-6 Service Level D Stresses – Critical Pressure (Stresses in ksi)

		Dead Load	Critical Pressure Stress	Dead Load + Critical Pressure	Normal Handling	Sum of Stresses	ASME Code Limit	Design Margin	Acceptable
MSB Shell	Pm	–(1)	–(1)	2.07	1.19	3.26	49.00	14.03	OK
	PL + Pb	–(1)	–(1)	6.69	3.11	9.80	73.50	6.50	OK
Bottom Plate	Pm	–(1)	–(1)	0.87	1.40	2.27	49.00	20.59	OK
	PL + Pb	–(1)	–(1)	39.09	13.61	52.70	73.50	0.39	OK
Structural Lid	Pm	0.01	0.29	N.A	0.72	1.02	49.00	47.04	OK
	PL + Pb	0.04	7.16	N.A	1.57	8.77	73.50	7.38	OK
Bottom Weld	Pm	–(1)	–(1)	2.07	1.43	3.50	49.00	13.00	OK
	PL + Pb	–(1)	–(1)	39.09	13.61	52.70	73.50	0.39	OK
Structural Lid Weld	Pm	0.04	1.47	N.A	0.38	1.89	36.75	18.44	OK
	PL + Pb	0.08	14.11	N.A	1.61	15.80	55.13	2.49	OK
Shield Lid	Pm	0.03	0.00	N.A	0.49	0.52	49.00	93.23	OK
	PL + Pb	0.31	0.00	N.A	1.00	1.31	73.50	55.11	OK
Shield Lid Weld	Pm	0.27	7.58	N.A	0.60	8.45	36.75	3.35	OK
	PL + Pb	0.27	29.05	N.A	1.00	30.32	55.13	0.82	OK
Support Ring Weld	Pm	0.18	0.00	N.A	0.18	0.36	36.75	100.41	OK
	PL + Pb	0.18	0.00	N.A	0.18	0.36	55.13	151.11	OK
Sleeve Assembly	Pm	0.06	0.00	N.A	2.02	2.08	49.00	22.53	OK
	PL + Pb	0.06	0.00	N.A	2.09	2.15	73.50	33.15	OK

Notes:

(1) For the combination involving the MSB shell, MSB base, and Base weld, the results from the individual analyses of dead weight, and critical pressure are not combined. For these components a separate analysis directly including dead weight + critical pressure has been run and with results as shown. The handling stresses are then added separately to give the final combined stress.

All other components combine the individual results of the separate load cases.

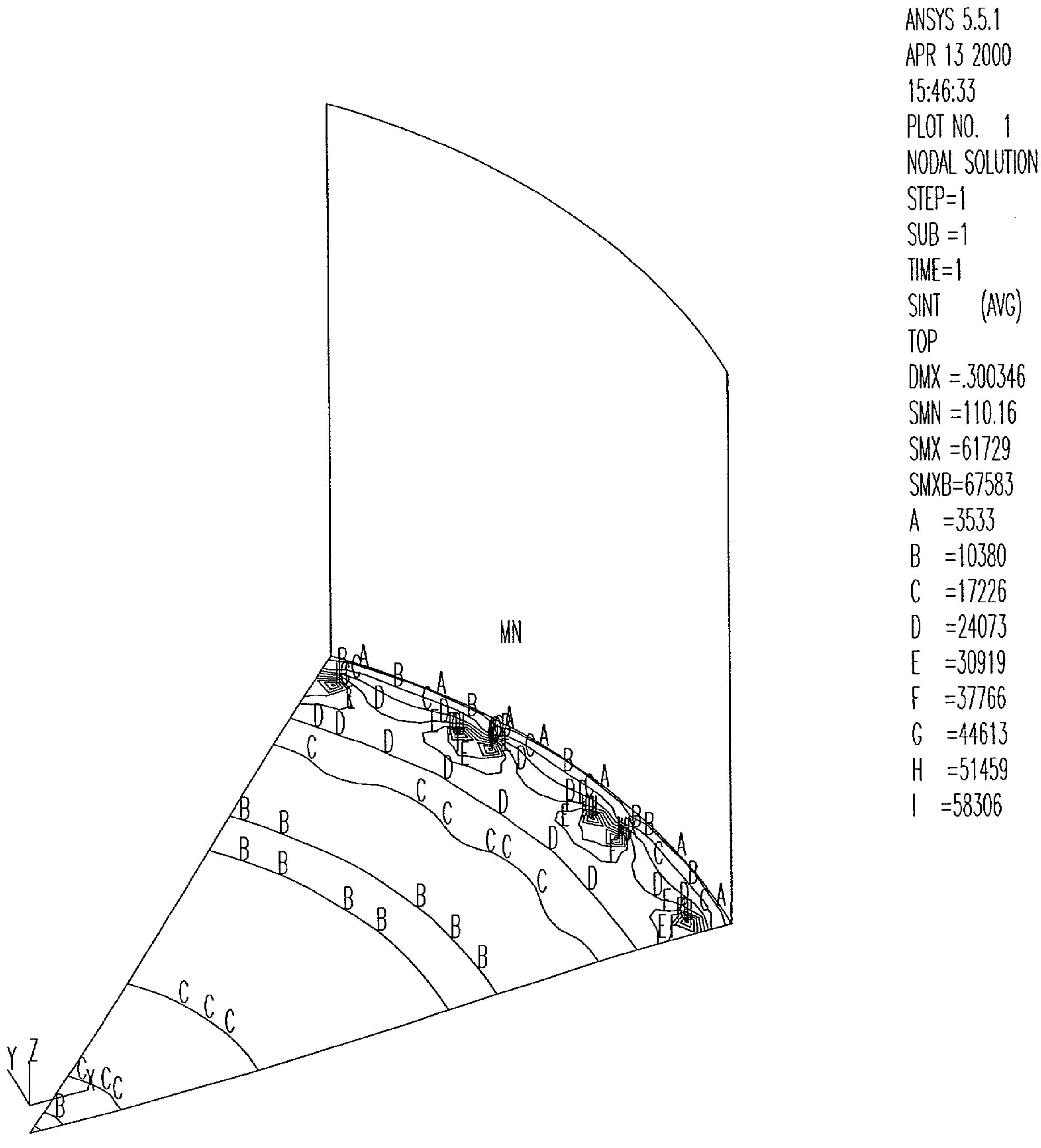


Figure 3-1 Plot of Stress Intensity In MSB, Shell Top. Dead Weight + Normal Pressure + Vertical Handling

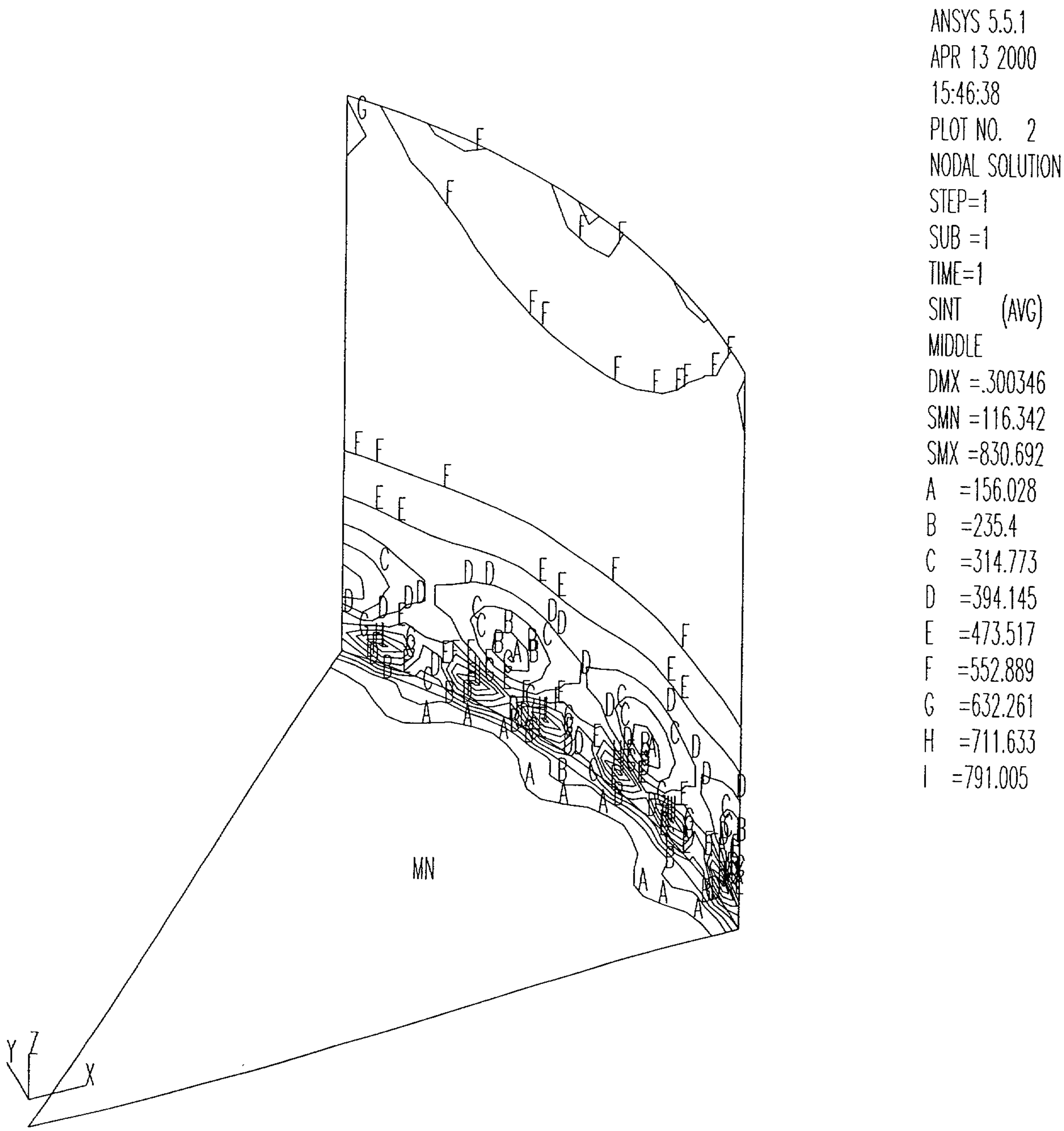


Figure 3-2 Plot of Stress Intensity In MSB, Shell Middle.
Dead Weight + Normal Pressure + Vertical Handling

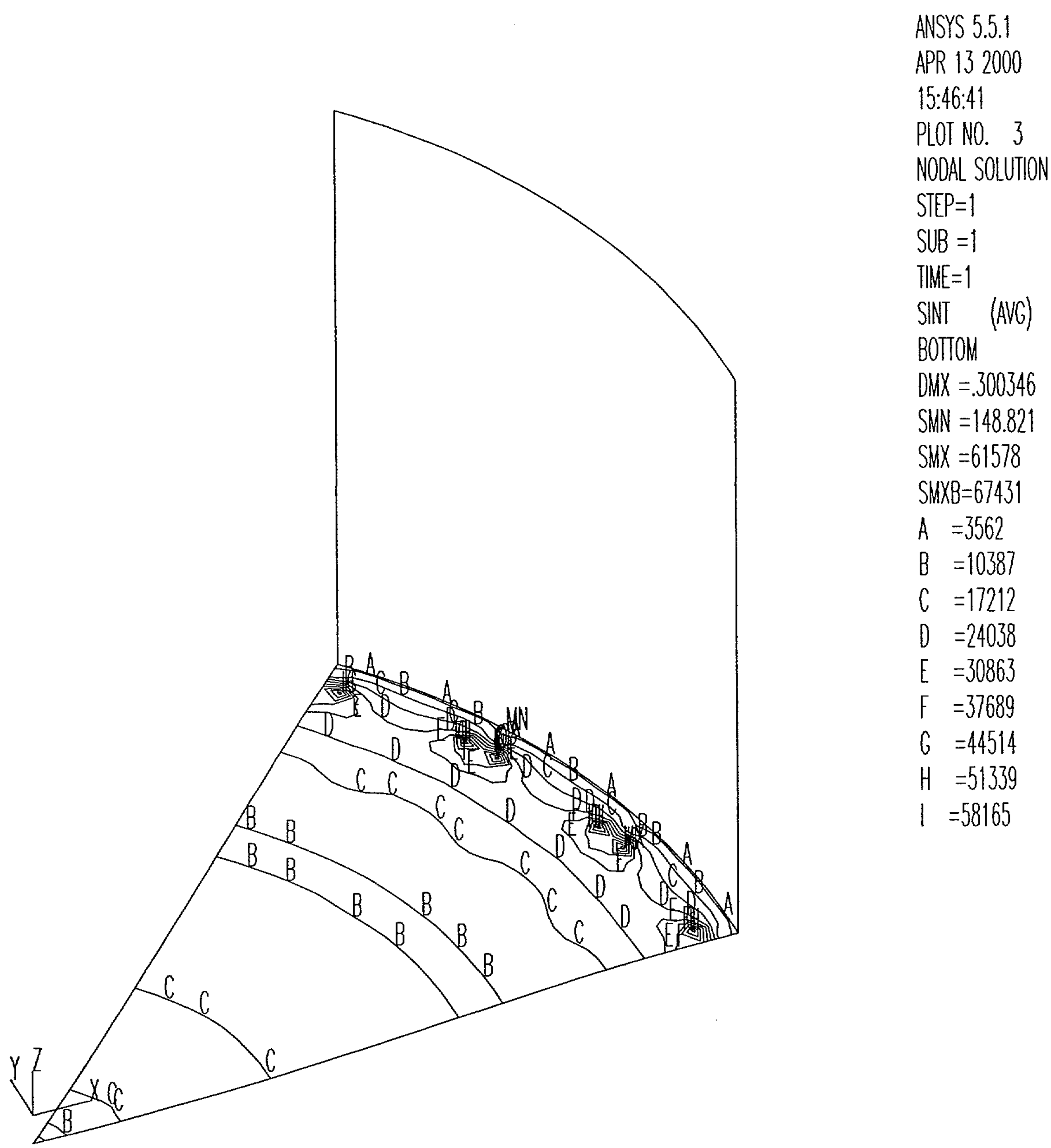


Figure 3-3 Plot of Stress Intensity In MSB, Shell Bottom.
Dead Weight + Normal Pressure + Vertical Handling

Table 3-6 **Summary of Stress Intensity In MSB Shell. Dead Weight + Normal Pressure + Vertical Handling Component**

Shell TOP

NODE	S1	S2	S3	SINT	SEQV
562	2981.4	663.34	-8.7465	2990.2	2717.2
574	2980.3	661.90	-8.7467	2989.0	2716.5
586	2979.1	661.61	-8.7467	2987.9	2715.5
575	2961.7	681.80	-8.7454	2970.4	2692.4
563	2961.2	681.55	-8.7453	2969.9	2692.0
587	2960.0	682.20	-8.7454	2968.8	2690.7
564	1548.9	-8.7250	-185.39	1734.2	1653.0
588	1549.7	-8.7234	-183.13	1732.8	1652.5
576	1548.7	-8.7238	-183.60	1732.3	1651.9
561	1538.9	-8.7542	-190.38	1729.2	1646.0

Shell MIDDLE

NODE	S1	S2	S3	SINT	SEQV
589	-4.2972	-90.350	-1022.5	1018.2	977.99
565	-4.2982	-90.810	-1022.3	1018.0	977.58
577	-4.2981	-90.728	-1022.1	1017.8	977.49
560	-4.2806	-85.594	-1021.5	1017.2	979.13
572	-4.2816	-85.944	-1020.6	1016.3	978.02
584	-4.2812	-85.815	-1020.4	1016.1	977.90
623	87.116	-4.4482	-743.58	830.69	788.90
681	86.595	-4.4484	-743.05	829.65	788.08
739	86.636	-4.4484	-742.84	829.48	787.89
753	79.481	-4.4467	-740.05	819.53	780.96

Shell BOTTOM

NODE	S1	S2	S3	SINT	SEQV
562	-0.18896	-935.86	-3740.1	3739.9	3370.9
574	-0.18905	-936.36	-3739.6	3739.4	3370.3
586	-0.18895	-935.74	-3738.9	3738.7	3369.7
575	-0.18585	-936.67	-3723.5	3723.3	3354.6
563	-0.18567	-935.99	-3723.2	3723.0	3354.4
587	-0.18572	-936.06	-3722.6	3722.4	3353.9
576	-0.11839	-630.22	-2969.3	2969.2	2709.7
588	-0.11815	-629.61	-2969.2	2969.1	2709.7
564	-0.11821	-629.33	-2969.1	2969.0	2709.8
561	-0.13314	-624.47	-2959.9	2959.8	2702.3

**Table 3-7 Summary of Stress Intensity In MSB Base.
Dead Weight + Normal Pressure + Vertical Handling Component**

Shell TOP

NODE	S1	S2	S3	SINT	SEQV
7	61693.	35531.	-35.972	61729.	53665.
16	61652.	35511.	-35.972	61688.	53630.
12	61639.	35495.	-35.972	61675.	53618.
.					
.					
.					
263	27508.	2542.2	-35.972	27544.	26350.
271	27473.	2432.5	-35.972	27509.	26361.
276	27440.	2305.3	-35.972	27476.	26383.
344	27427.	1415.4	-35.972	27463.	26767.
341	27425.	1310.5	-35.972	27461.	26813.

Shell MIDDLE

NODE	S1	S2	S3	SINT	SEQV
2	369.86	84.483	-17.986	387.85	348.11
28	369.57	84.173	-17.986	387.56	347.91
20	368.54	85.716	-17.986	386.52	346.51
11	368.53	85.756	-17.986	386.51	346.49
562	309.44	99.779	-17.986	327.43	287.26
574	309.31	99.135	-17.986	327.29	287.24
586	309.02	99.469	-17.986	327.01	286.91
575	308.26	99.636	-17.986	326.25	286.18
587	308.15	100.02	-17.986	326.13	286.01
563	308.02	100.11	-17.986	326.00	285.88

Shell BOTTOM

NODE	S1	S2	S3	SINT	SEQV
7	0.0000	-35273.	-61578.	61578.	53516.
16	0.0000	-35254.	-61537.	61537.	53481.
12	0.0000	-35238.	-61524.	61524.	53469.
.					
.					
.					
263	0.0000	-2359.6	-27294.	27294.	26194.
271	0.0000	-2251.0	-27258.	27258.	26205.
276	0.0000	-2124.9	-27224.	27224.	26226.
344	0.0000	-1237.6	-27211.	27211.	26614.
341	0.0000	-1135.5	-27207.	27207.	26657.

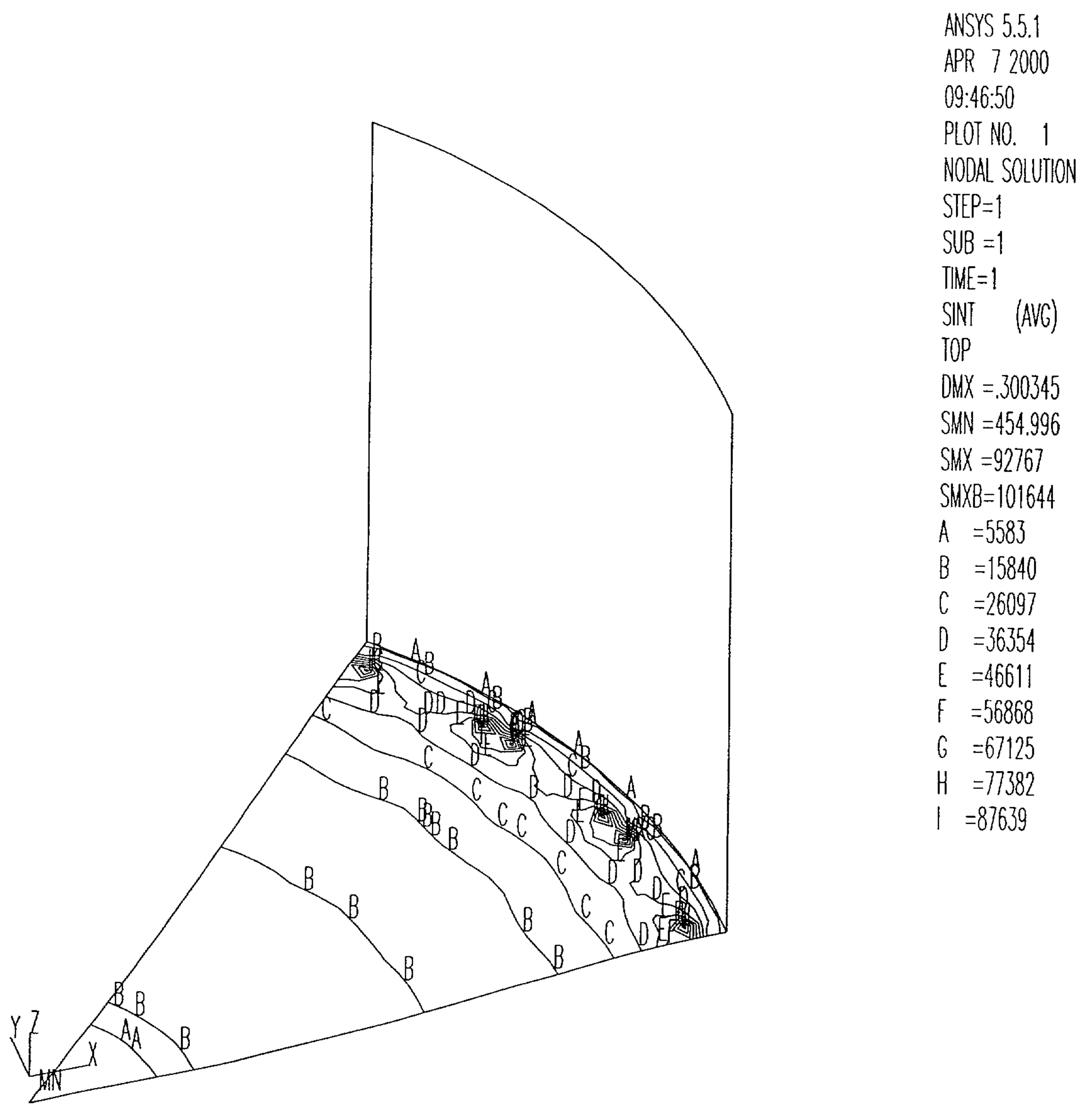


Figure 3-4 Plot of Stress Intensity In MSB, Shell Top. Dead Weight + Critical Pressure

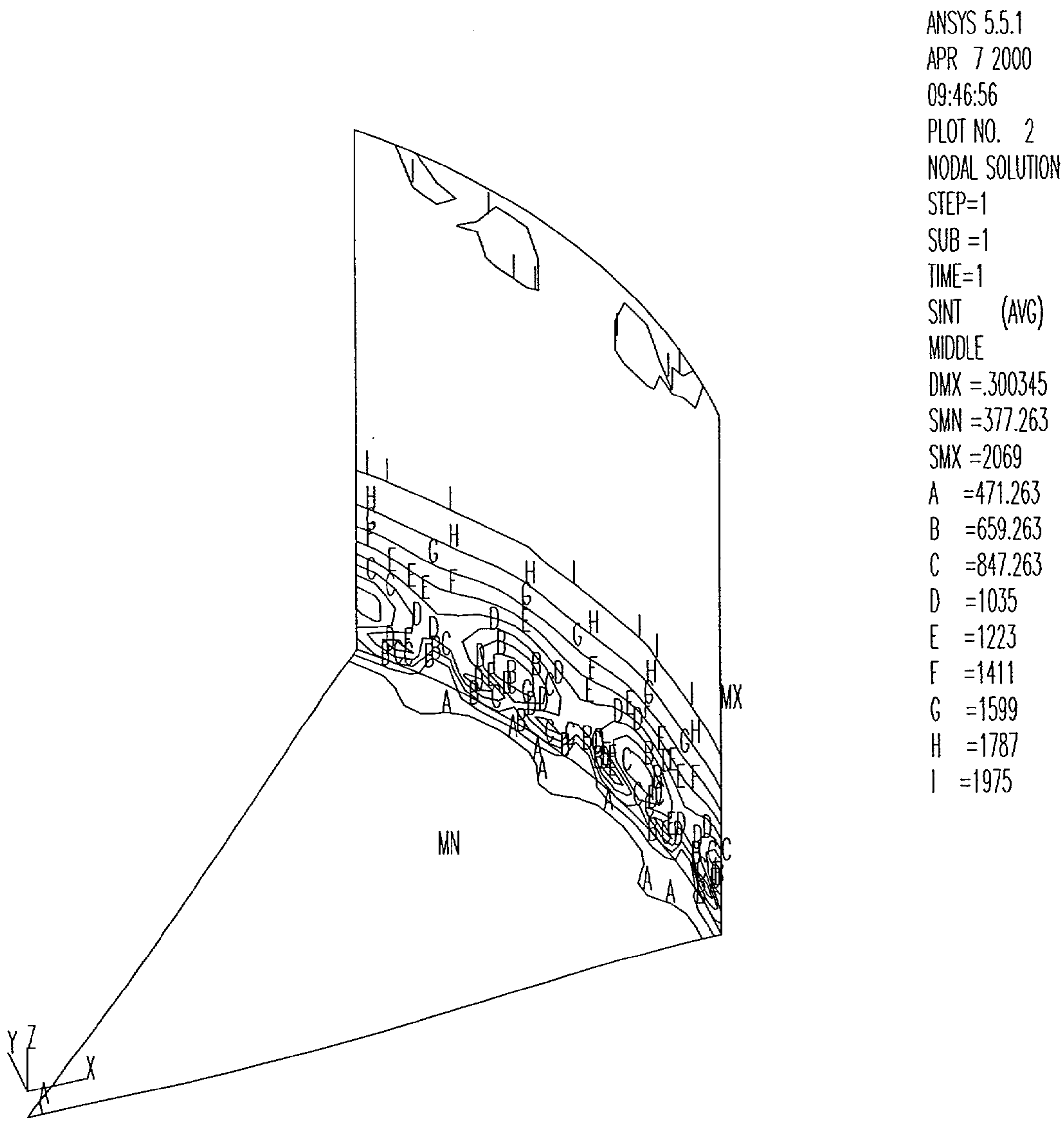


Figure 3-5 Plot of Stress Intensity In MSB, Shell Middle. Dead Weight + Critical Pressure

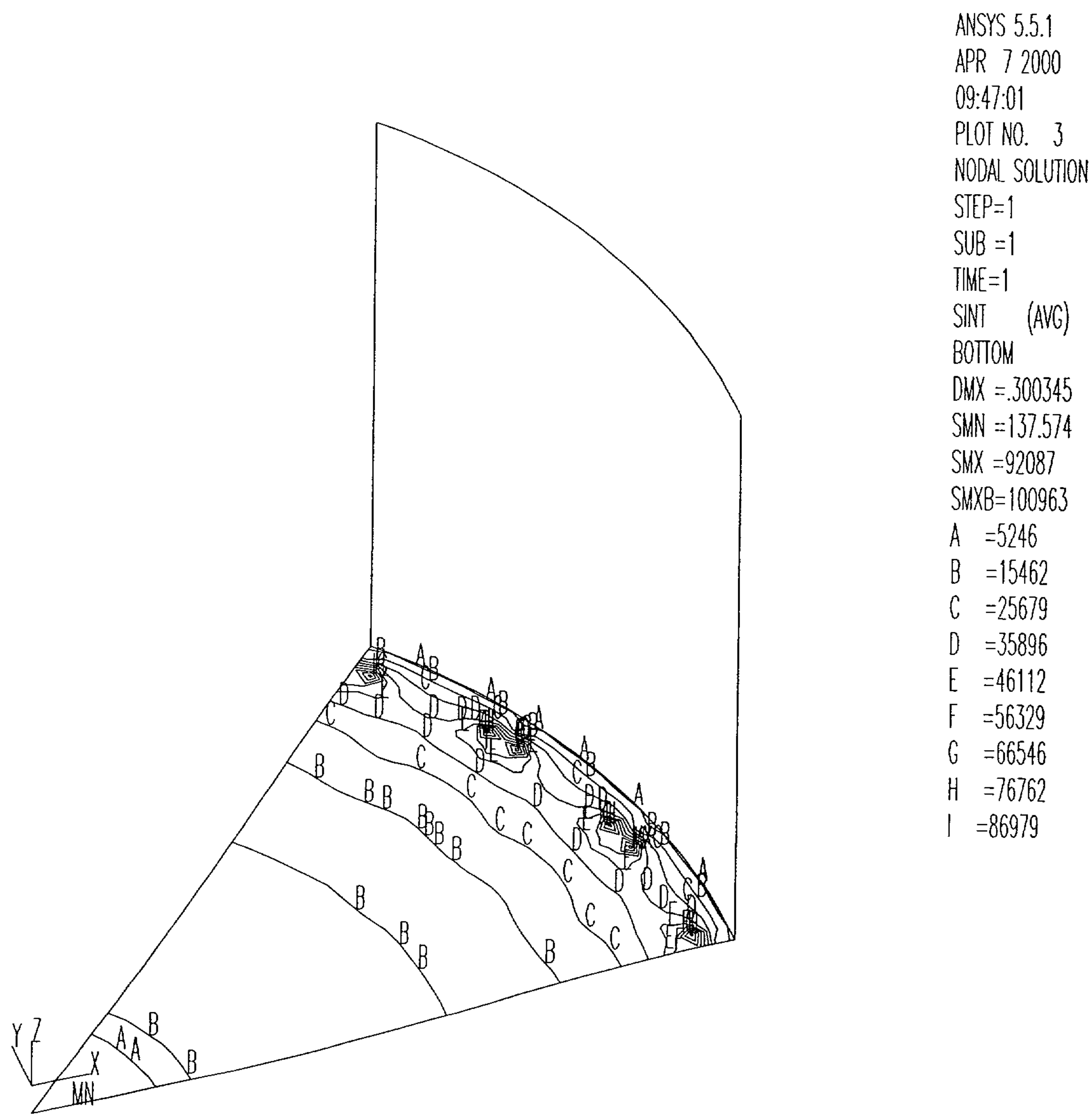


Figure 3-6 **Plot of Stress Intensity In MSB, Shell Bottom. Dead Weight + Critical Pressure**

Table 3-8 Summary of Stress Intensity In MSB Shell. Dead Weight + Critical Pressure

Shell Top

NODE	S1	S2	S3	SINT	SEQV
562	5865.8	1524.1	-59.656	5925.4	5313.6
586	5861.9	1522.3	-59.656	5921.6	5310.3
574	5861.6	1522.1	-59.656	5921.3	5310.1
563	5835.8	1548.5	-59.651	5895.4	5278.4
587	5835.2	1549.3	-59.651	5894.9	5277.7
575	5834.9	1548.4	-59.651	5894.6	5277.6
17	4173.1	1287.2	-59.705	4232.8	3745.6
8	4172.4	1287.4	-59.705	4232.1	3744.9
26	4167.0	1286.8	-59.705	4226.7	3739.9
10	4144.2	1291.1	-59.710	4203.9	3717.4

Shell MIDDLE

NODE	S1	S2	S3	SINT	SEQV
780	1920.5	-30.000	-148.74	2069.3	2012.5
1059	1920.0	-30.000	-148.80	2068.8	2012.1
798	1919.5	-29.524	-148.71	2068.2	2011.2
987	1919.0	-29.524	-148.76	2067.7	2010.8
868	1919.5	-29.430	-148.16	2067.6	2010.9
781	1918.5	-30.000	-148.89	2067.4	2010.6
1020	1919.2	-29.430	-148.24	2067.4	2010.6
857	1919.6	-29.430	-147.68	2067.2	2010.7
832	1918.7	-29.430	-148.48	2067.2	2010.3
1058	1918.2	-30.000	-148.95	2067.2	2010.3

Shell BOTTOM

NODE	S1	S2	S3	SINT	SEQV
562	-0.34011	-1666.6	-6688.4	6688.1	6030.2
586	-0.34003	-1666.2	-6686.6	6686.2	6028.5
574	-0.34003	-1666.3	-6685.8	6685.5	6027.7
563	-0.33635	-1665.5	-6665.5	6665.2	6008.2
587	-0.33644	-1665.5	-6665.3	6665.0	6008.0
575	-0.33640	-1665.5	-6664.5	6664.2	6007.2
588	-0.26170	-1277.9	-5476.7	5476.4	4962.5
564	-0.26169	-1277.3	-5475.4	5475.1	4961.4
576	-0.26169	-1277.6	-5474.7	5474.5	4960.7
561	-0.27838	-1271.0	-5465.8	5465.5	4953.9

Table 3-9 Summary of Stress Intensity In MSB Base. Dead Weight + Critical Pressure

Shell TOP

NODE	S1	S2	S3	SINT	SEQV
7	92694.	53202.	-73.536	92767.	80634.
16	92631.	53172.	-73.536	92705.	80580.
12	92612.	53148.	-73.536	92686.	80562.
.					
.					
.					
263	39012.	3372.7	-73.536	39086.	37482.
271	38958.	3207.7	-73.536	39032.	37499.
276	38943.	3032.2	-73.536	39017.	37560.
268	38827.	2916.0	-73.536	38900.	37495.
279	38588.	2768.5	-73.536	38661.	37322.

Shell MIDDLE

NODE	S1	S2	S3	SINT	SEQV
2	835.41	351.88	-36.768	872.18	756.81
28	835.16	351.92	-36.768	871.93	756.59
20	833.92	353.77	-36.768	870.69	755.37
11	833.71	353.87	-36.768	870.48	755.18
562	634.31	273.03	-36.768	671.08	581.74
574	633.94	272.49	-36.768	670.71	581.44
586	633.85	272.69	-36.768	670.61	581.34
575	632.10	273.22	-36.768	668.87	579.77
587	632.10	273.62	-36.768	668.87	579.75
563	631.99	273.46	-36.768	668.75	579.66

Shell BOTTOM

NODE	S1	S2	S3	SINT	SEQV
7	0.0000	-52431.	-92087.	92087.	80005.
16	0.0000	-52401.	-92025.	92025.	79951.
12	0.0000	-52377.	-92005.	92005.	79933.
.					
.					
.					
263	0.0000	-2706.3	-38320.	38320.	37041.
271	0.0000	-2542.6	-38265.	38265.	37060.
276	0.0000	-2368.6	-38249.	38249.	37121.
268	0.0000	-2252.7	-38132.	38132.	37057.
279	0.0000	-2106.6	-37893.	37893.	36885.

4 CONCLUSIONS

The MSB components meet ASME Code requirements under all service loading conditions.

5 REFERENCES:

1. BNFL Calculation VSC02.6.2.3.07, MSB Thermal Stress Analysis, Rev. 2
2. BNFL Calculation VSC02.6.2.3.04, MSB-24 Pressure Stress Analysis, Rev. 3
3. BNFL Calculation VSC02.6.2.3.08, MSB-24 Drop Analysis, Rev. 2
4. BNFL Calculation VSC02.6.2.3.05, Normal, Off-Normal, and Maximum Accident Pressure in the MSB, Rev. 2
5. BNFL Calculation VSC02.6.2.3.21, Normal and Off-Normal Handling Analysis, Rev. 2
6. BNFL Calculation VSC02.6.2.3.19, VSC Flood, Tornado and Earthquake Analysis, Rev. 1
7. BNFL Calculation VSC02.6.2.3.25, MSB Dead Weight and Vertical Drop Bottom Plate Bending Stress Analysis, Rev. 2
8. ASME American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code, *Rules for Construction of Nuclear Power Plant Components*," Section III, Division 1, Subsection NC, "*Class 2 Components*," 1986 Edition with the 1988 Addenda.
9. ASME American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code, *Rules for Construction of Nuclear Power Plant Components*," Section III, Division 1, "*Appendices*," 1986 Edition with the 1988 Addenda.
10. Calculation WEP-109-003.018, "VSC Transfer Cask Thermal Analysis", Rev. 2.
11. BNFL Calculation No. VSC02.6.2.5.03, Rev. 0, "VSC-24 Design Parameters"

6.0 ELECTRONIC FILES

Filename	File Date	Code	Cat	Version	Platform	Machine
Vscnorm+pr+vh2.inp	4/13/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+pr+vh2.out	4/13/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+pr+vh2.db	4/13/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+pr+vh2.rst	4/13/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+pr+vh2-pp.inp	4/13/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+pr+vh2-pp.out	4/13/00	ANSYS	2	5.5	NT	8834BW323307
Vscdwt+press.inp	3/23/00	ANSYS	2	5.5	NT	8834BW323307
Vscdwt+press.out	3/23/00	ANSYS	2	5.5	NT	8834BW323307
Vscdwt+press.db	3/23/00	ANSYS	2	5.5	NT	8834BW323307
Vscdwt+press.rst	3/23/00	ANSYS	2	5.5	NT	8834BW323307
Vscdwt+press-pp.inp	3/27/00	ANSYS	2	5.5	NT	8834BW323307
Vscdwt+press-pp.out	3/27/00	ANSYS	2	5.5	NT	8834BW323307

<u>File Description</u>

Vscnorm+pr+vh2.inp	ANSYS input data file. Dead weight (1g) + press (8.9 psig) + vertical handling (1.0g), corroded.
Vscnorm+pr+vh2.out	ANSYS output data file. Dead weight (1g) + press (8.9 psig) + vertical handling (1.0g), corroded.
Vscnorm+pr+vh2.db	ANSYS database file. Dead weight (1g) + press (8.9 psig) + vertical handling (1.0g), corroded.
Vscnorm+pr+vh2.rst	ANSYS results file. Dead weight (1g) + press (8.9 psig) + vertical handling (1.0g), corroded.
Vscnorm+pr+vh2-pp.inp	ANSYS post processing input file. Dead weight (1g) + press (8.9 psig) + vertical handling (1.0g), corroded.
Vscnorm+pr+vh2-pp.out	ANSYS post processing output file. Dead weight (1g) + press (8.9 psig) + vertical handling (1.0g), corroded.

Vscdwt+press.inp	ANSYS input data file. Dead weight (1g) + critical press (60psig).
Vscdwt+press.out	ANSYS output data file. Dead weight (1g) + critical press (60psig).
Vscdwt+press.db	ANSYS database file. Dead weight (1g) + critical press (60psig).
Vscdwt+press.rst	ANSYS results file. Dead weight (1g) + critical press (60psig).
Vscdwt+press-pp.inp	ANSYS post processing input file. Dead weight (1g) + critical press (60psig).
Vscdwt+press-pp.out	ANSYS post processing output file. Dead weight (1g) + critical press (60psig).

ATTACHMENT 1

COMBINED ANALYSIS OF DEAD WEIGHT + NORMAL PRESSURE + VERTICAL HANDLING COMPONENT

```
!
! * 3D ANALYSIS OF BASE PLATE STRESS WITH
! * MSB BASE SUPPORTED BY CERAMIC TILES AROUND EDGE
! * NORMAL OPERATING CONDITION 1g + normal pressure 8.9 psi
! * VERTICAL COMPONENT OF NORMAL HANDLING ADDED = 0.5 X 2 DLF = 1g

/filname,vscnorm+press+vh2

/Prep7
/Title,VSC Base Plate Stress Analysis

! Element Types
et,1,shell63              ! Elastic Shell elements
et,2,contac52             ! 3-D Point to Point Gap Elements
keyopt,2,3,1              ! Use soft spring across open gap
keyopt,2,7,1              ! Use reasonable time increment

!*** CHECK MATERIAL PROPERTIES
! Material Properties
! SA-516, Grade 70 Ferritic Carbon Steel, 300 deg.F
dens,1,0.284
nuxy,1,0.29
ex,1,28.3E6

*afun,deg                    ! Angles in degrees as default

!******************
!*** Parameters ***
!******************
OD  = 62.5                   ! Outside diameter
ID  = 60.5                   ! Inside diameter
WTH = (OD-ID)/2              ! Wall thickness
BRAD = ID/2+WTH/2            ! C/L radius of basket
BTH = 0.75                   ! Base plate thickness
LET = 1.7                    ! Length of ceramic tile
TTH = 0.30                   ! Ceramic tile thickness
TR1 = 30.0                   ! C/L radius ceramic tiles
THETA = asin((LET/2)/TR1)    ! Angle between center & edge of tiles
VLE = 30.0                   ! Length of modeled vertical portion of vessel
ACC = 2                      ! Dead weight (1g) + Vertical handling (1g)
TOL = 0.001                  ! Select tolerance

! Real constants
r,1,BTH                      ! Thickness of base plate (non tile regions)
r,2,BTH                      ! Thickness of base plate (tiles region)
r,3,WTH                      ! Thickness of basket wall
r,4,1e6,TTH,3                ! Contact stiffness, MSB to base

!*****************
!*** Keypoints ***
!*****************
csys,1
k,1,
k,2,TR1-LET/2,0,0
k,3,BRAD,0,0
```

```
k,4,TR1-LET/2,THETA,0
k,5,BRAD,THETA,0
k,6,TR1-LET/2,15-THETA,0
k,7,BRAD,15-THETA,0
k,8,TR1-LET/2,15+THETA,0
k,9,BRAD,15+THETA,0
k,10,TR1-LET/2,30-THETA,0
k,11,BRAD,30-THETA,0
k,12,TR1-LET/2,30+THETA,0
k,13,BRAD,30+THETA,0
k,14,TR1-LET/2,45-THETA,0
k,15,BRAD,45-THETA,0
k,16,TR1-LET/2,45,0
k,17,BRAD,45,0

ksel,s,loc,x,BRAD
kgen,2,all,,,,,VLE/4,100
ksel,s,loc,z,VLE/4
kgen,2,all,,,,,VLE*3/4,100
ksel,all

! Areas
! Tile areas first
csys,1
a,2,3,5,4
a,6,7,9,8
a,10,11,13,12
a,14,15,17,16
type,1
mat,1
real,2
esize,0.9
amesh,1,4

! Rest of Base
a,1,2,4,6,8,10,12,14,16
a,4,5,7,6
a,8,9,11,10
a,12,13,15,14

lsel,s,line,,22,24
lesize,all,,,7
lsel,all
real,1
amesh,5,8

! Basket shell
numstr,area,21
a,3,103,105,5
a,5,105,107,7
a,7,107,109,9
a,9,109,111,11
a,11,111,113,13
a,13,113,115,15
a,15,115,117,17
```

```
a,103,203,205,105
a,105,205,207,107
a,107,207,209,109
a,109,209,211,111
a,111,211,213,113
a,113,213,215,115
a,115,215,217,117

esize,1.2
real,3
amesh,21,27
esize,2.0
amesh,28,34

!****************
!*** Contacts ***
!****************
! Contact between basket base & cask
! Select nodes on ceramic tile elements
esel,s,real,,1
nsle,s
! Generate coincident set of nodes
ngen,2,2000,all,,,0,0,-TTH
! Generate contact elements
esel,s,real,,1
nsle,s
*get,numnodes,node,,count
nsel,a,node,,1999,3999
*get,nextnode,node,,num,min
type,2
real,4
*do,i,1,numnodes
  *if,i,eq,1,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *elseif,i,ge,2,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *endif
*enddo

! Remove contacts on periphery of tiles
asel,s,area,,1,4
esla,s
nsle,s,ext
esln,s
esel,r,type,,2
edel,all
nall
eall

!*******************
!*** Constraints ***
!*******************
```

```
! Symmetry BC's
esel,s,type,,1
nsle,s
csys,1
nsel,s,loc,y,45
nrotat,all
dsym,symm,y,1
esel,s,type,,1
nsle,s
nsel,s,loc,y,0
dsym,symm,y

! Contacts at ground
esel,s,type,,2
nsle,s
nsel,r,,,1999,3999
d,all,all,0
nall

! Base of tiles
esel,s,real,,2
nsle
d,all,uz,0

!*********************
!*** Applied Loads ***
!*********************
! Pressure on basket base due to contents
esel,s,real,,1,2
nsle,s
sfe,all,2,pres,,(13.536*ACC) + 8.9
nall
eall
! Normal pressure on MSB wall
esel,s,real,,3
nsle,s
sfe,all,2,pres,,8.9
nall
eall

! Force on side wall due to part of
! Basket not included in model.
! Interior nodes first
FORCE = 3442.5*ACC     ! Calculated mass missing in 1/8 model
csys,1
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
*get,NUMNODES,node,,count
nsel,r,loc,y,1,44
NODEFORC = FORCE/(NUMNODES-1)
f,all,fz,-NODEFORC
nall
! Exterior nodes (half the load)
csys,1
nsel,s,loc,x,BRAD
```

```
nsel,r,loc,z,VLE
nsel,r,loc,y,0
f,all,fz,-NODEFORC/2
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
nsel,r,loc,y,45
f,all,fz,-NODEFORC/2
nall

! Drop Acceleration
acel,,,ACC          ! 1g Body load acceleration + 1g vertical handling

allsel

!****************
!*** Solution ***
!****************
/solu

solve

finish

/post1
set
prrsol
fini
/exit
```

ATTACHMENT 2

COMBINED ANALYSIS OF DEAD WEIGHT + CRITICAL PRESSURE

```
!
! * 3D ANALYSIS OF BASE PLATE STRESS WITH
! * MSB BASE SUPPORTED BY CERAMIC TILES AROUND EDGE
! * NORMAL OPERATING CONDITION 1g
! * PLUS CRITICAL PRESSURE 60 psi

/filname,vscdwt+press

/Prep7
/Title,VSC Base Plate Stress Analysis

! Element Types
et,1,shell63              ! Elastic Shell elements
et,2,contac52             ! 3-D Point to Point Gap Elements
keyopt,2,3,1              ! Use soft spring across open gap
keyopt,2,7,1              ! Use reasonable time increment

!*** CHECK MATERIAL PROPERTIES
! Material Properties
! SA-516, Grade 70 Ferritic Carbon Steel, 300 deg.F
dens,1,0.284
nuxy,1,0.29
ex,1,28.3E6

*afun,deg                   ! Angles in degrees as default

!******************
!*** Parameters ***
!******************
OD  = 62.5                  ! Outside diameter
ID  = 60.5                  ! Inside diameter
WTH = (OD-ID)/2             ! Wall thickness
BRAD = ID/2+WTH/2           ! C/L radius of basket
BTH = 0.75                  ! Base plate thickness
LET = 1.7                   ! Length of ceramic tile
TTH = 0.30                  ! Ceramic tile thickness
TR1 = 30.0                  ! C/L radius ceramic tiles
THETA = asin((LET/2)/TR1)   ! Angle between center & edge of tiles
VLE = 30.0                  ! Length of modeled vertical portion of vessel
TOL = 0.001                 ! Select tolerance

! Real constants
r,1,BTH                     ! Thickness of base plate (non tile regions)
r,2,BTH                     ! Thickness of base plate (tiles region)
r,3,WTH                     ! Thickness of basket wall
r,4,1e6,TTH,3               ! Contact stiffness, MSB to base

!*****************
!*** Keypoints ***
!*****************
csys,1
k,1,
k,2,TR1-LET/2,0,0
k,3,BRAD,0,0
k,4,TR1-LET/2,THETA,0
```

```
k,5,BRAD,THETA,0
k,6,TR1-LET/2,15-THETA,0
k,7,BRAD,15-THETA,0
k,8,TR1-LET/2,15+THETA,0
k,9,BRAD,15+THETA,0
k,10,TR1-LET/2,30-THETA,0
k,11,BRAD,30-THETA,0
k,12,TR1-LET/2,30+THETA,0
k,13,BRAD,30+THETA,0
k,14,TR1-LET/2,45-THETA,0
k,15,BRAD,45-THETA,0
k,16,TR1-LET/2,45,0
k,17,BRAD,45,0

ksel,s,loc,x,BRAD
kgen,2,all,,,,,VLE/4,100
ksel,s,loc,z,VLE/4
kgen,2,all,,,,,VLE*3/4,100
ksel,all

! Areas
! Tile areas first
csys,1
a,2,3,5,4
a,6,7,9,8
a,10,11,13,12
a,14,15,17,16
type,1
mat,1
real,2
esize,0.9
amesh,1,4

! Rest of Base
a,1,2,4,6,8,10,12,14,16
a,4,5,7,6
a,8,9,11,10
a,12,13,15,14

lsel,s,line,,22,24
lesize,all,,,7
lsel,all
real,1
amesh,5,8

! Basket shell
numstr,area,21
a,3,103,105,5
a,5,105,107,7
a,7,107,109,9
a,9,109,111,11
a,11,111,113,13
a,13,113,115,15
a,15,115,117,17
```

```
a,103,203,205,105
a,105,205,207,107
a,107,207,209,109
a,109,209,211,111
a,111,211,213,113
a,113,213,215,115
a,115,215,217,117

esize,1.2
real,3
amesh,21,27
esize,2.0
amesh,28,34

!****************
!*** Contacts ***
!****************
! Contact between basket base & cask
! Select nodes on ceramic tile elements
esel,s,real,,1
nsle,s
! Generate coincident set of nodes
ngen,2,2000,all,,,0,0,-TTH
! Generate contact elements
esel,s,real,,1
nsle,s
*get,numnodes,node,,count
nsel,a,node,,1999,3999
*get,nextnode,node,,num,min
type,2
real,4
*do,i,1,numnodes
  *if,i,eq,1,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *elseif,i,ge,2,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *endif
*enddo

! Remove contacts on periphery of tiles
asel,s,area,,1,4
esla,s
nsle,s,ext
esln,s
esel,r,type,,2
edel,all
nall
eall

!******************
!*** Constraints ***
!******************
! Symmetry BC's
```

```
esel,s,type,,1
nsle,s
csys,1
nsel,s,loc,y,45
nrotat,all
dsym,symm,y,1
esel,s,type,,1
nsle,s
nsel,s,loc,y,0
dsym,symm,y

! Contacts at ground
esel,s,type,,2
nsle,s
nsel,r,,,1999,3999
d,all,all,0
nall

! Base of tiles
esel,s,real,,2
nsle
d,all,uz,0

!*********************
!*** Applied Loads ***
!*********************
! Pressure on basket base due to contents PLUS critical pressure
esel,s,real,,1,2
nsle,s
sfe,all,2,pres,,13.536 + 60
nall
eall
! Pressure on MSB wall due to critical pressure
esel,s,real,,3
nsle,s
sfe,all,2,pres,,60
nall
eall

! Force on side wall due to part of
! Basket not included in model.
! Interior nodes first
FORCE = 3442.5     ! Calculated mass missing in 1/8 model
csys,1
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
*get,NUMNODES,node,,count
nsel,r,loc,y,1,44
NODEFORC = FORCE/(NUMNODES-1)
f,all,fz,-NODEFORC
nall
! Exterior nodes (half the load)
csys,1
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
```

```
nsel,r,loc,y,0
f,all,fz,-NODEFORC/2
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
nsel,r,loc,y,45
f,all,fz,-NODEFORC/2
nall

! Drop Acceleration
acel,,,1            ! 1g Body load acceleration

allsel

!****************
!*** Solution ***
!****************
/solu

solve

finish

/post1
set,1,last
prrsol
fini
/exit
```

BNFL Fuel Solutions	**CALCULATION PACKAGE**	Calc. Pkg No. VSC02.6.2.3.03 File No.: VSC02.6.2.3.03 Revision: 1

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

MSB-24 Lifting Devices.

SCOPE:

Product:	☐ FuelSolutions™	☐ TranStor™	☒ VSC-24	☐ Other ________
Service:	☒ Storage	☐ Transportation		☐ Other ________
Conditions:	☒ Normal	☐ Off-Normal	☐ Accident	☐ Other ________

Component(s):

MSB hoist rings, hoist ring bolts, and structural lid.

Prepared by:

Name: ROBERT KEATING

Signature: [signature]

Date: 1-31-2001

Verified by:

Name: Regina Parkerson

Signature: Regina Parkerson

Date: 1-31-2001

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: R Srinivasan

Date: 3/26/01

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1 – 15 Appendix Pages A1 – A18		Replaces Calculation WEP109-002.3, Rev. 5	Robert Keating	Regina Parkerson
1	1-18 Appendix Pages A1 – A18		Incorporated ECN VSC02-ECN-008	Robert Keating	Regina Parkerson

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-427.

RECORD OF VERIFICATION

	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	(YES)	NO	N/A
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	(YES)	NO	N/A
(i) Computer calculations are properly identified.	(YES)	NO	N/A
(j) Computer codes used are under configuration control.	(YES)	NO	N/A
(k) Computer codes used are applicable to the calculation.	(YES)	NO	N/A
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

Verifier: Regina Parkerson/Regina Parkerson / 1-31-2001

Name/Signature/Date

TABLE OF CONTENTS

1. INTRODUCTION

The design of MSB lifting devices must meet the requirements of NUREG 0612, Control of Heavy Loads at Nuclear Power Plants [Reference 3.2.1]. In addition to development of the safe load paths, procedures, etc., the NUREG also requires that the special lifting devices and lifting points on heavy loads qualify as "single-failure proof"; otherwise, consequences of the drop must be evaluated. In order not to subject clients to the burden of considering the drop of the MSB, SNC chose to design the MSB lifting points as single-failure proof. This calculation determines whether the MSB lifting points support the single-failure proof design by analyzing the MSB hoist rings, hoist ring bolts, and the structural lid.

Revision 0 of this calculation was prepared to address technical issues from review of Calculation WEP109-002.3, Revision 5. This calculation supercedes WEP109-002.3, Revision 5.

2. REQUIREMENTS

2.1 Design Inputs

2.1.1 NUREG 0612, "Control of Heavy Loads at Nuclear Power Plants", 1980.
(Specifies the following criteria for single-failure proof devices:)

a) The ANSI N14.6 [Ref. 3.2.2] requirements must be met. For a dual load path design (i.e., a single-failure does not result in uncontrolled movement of the load), the stresses at any point shall not exceed 1/3 of material yield strength or 1/5 of its ultimate strength (safety factors of 3 on yield and 5 on ultimate). As an alternative, the double factors of safety of 6 and 10 must be provided if the lift point system does not have a load path redundancy.

b) According to ANSI N14.6, the design shall be based on maximum principal stresses rather than stress intensity. However, stress concentrations do not have to be considered.

c) On top of the ANSI N14.6 criteria above, the design shall include the dynamic load factor (but this factor is not specified by NUREG 0612). Based on discussions with the NRC, the increase of 10% was selected to meet this requirement.

d) The stresses for off-normal handling events should not exceed AISC Code allowable stresses.

2.2 Regulatory Commitments

See Section 2.1.

3. REFERENCES

3.1 BFS Calculation Packages

3.1.1 BNFL Calculation No. VSC02.6.2.5.01, Revision 1, Weight and Center of Gravity. *(Bounding weight of dry loaded MSB).*

3.1.2 BNFL Calculation No. VSC02.6.2.5.03, Revision 0, VSC-24 Design Parameters. *(Calculation Design Parameters)*

3.2 General References

3.2.1 NUREG 0612, Control of Heavy Loads at Nuclear Power Plants, 1980.

3.2.2 ANSI N14.6, Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds or More , 1986.

3.2.3 American Drill Bushing Company Catalog.

3.2.4 Marks, Standard Handbook for Mechanical Engineers , Seventh Edition.

3.2.5 ASME Boiler and Pressure Vessel Code, Section III, Division 1, NC-3262, 1986 Edition with the 1988 Addenda.

3.2.6 National Bureau of Standards Handbook H28, Screw -Thread Standard for Federal Services, 1957.

3.2.7 Deleted.

3.2.8 ASME Boiler and Pressure Vessel Code, Section III, Division 1, Appendices, 1986 Edition with the 1988 Addenda.

3.2.9 Deleted.

3.2.10 ANSI B1.1, Appendix B, Section B2, 1989.

3.2.11 SNC Calculation WEP.109.003.04, “VCC-24 Thermal-Hydraulic Analysis”, Rev. 2.

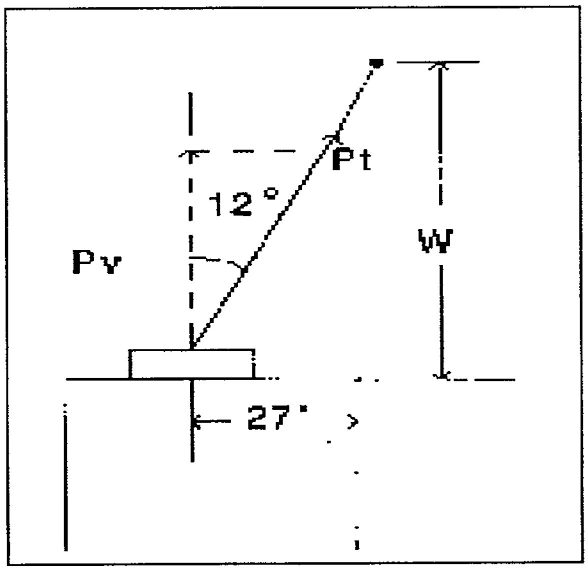
3.2.12 American Institute of Steel Construction, Manual of Steel Construction, 9th Edition.

4. ASSUMPTIONS

4.1 Design Configuration

4.1.1 The design of the MSB lifting devices is presented in Figure 4.1-1. This design has 6 lifting points and can be considered either as a dual-load path (two separate sets of three lugs) or as a single path with all six points. Both approaches produce the same result because in the latter case the load per lug is halved but the safety factors must be doubled per (a) above. This last approach is selected; hence, all six lugs are designed to carry the load and the safety factors shall be 6 for S_y and 10 for S_u.

FIGURE 4.1-1: MSB Lifting Device Design



4.2 Design Criteria

None.

4.3 Calculation Assumptions

4.3.1 The maximum angle between the MSB centerline and the MSB lifting point is assumed to be 12°. (For example, if the crane is 20 ft. off the ground, an angle of 12° corresponds to an 8.5 ft. offset between the crane and the MSB. It is very unlikely that a crane operator would have the crane offset by this amount).

5. CALCULATION METHODOLOGY

To determine whether the MSB lifting points are single-failure proof, as specified by criteria in NUREG 0612, factors of safety are calculated for the MSB hoist rings, hoist ring bolts, and the structural lid. The calculated factors of safety are then compared to values specified in Section 2.1.

The maximum load one hoist ring could experience is first calculated. The hoist ring factor of safety against ultimate is then obtained by dividing the ultimate capacity of the ring by this maximum possible load.

Three factors of safety are calculated for the hoist ring bolts – a factor of safety against yield and a factor of safety against ultimate for the internal thread, and a factor of safety against ultimate for the external thread. The ultimate and yield strength of the structural lid for the internal thread, and the ultimate strength of the hoist for the external thread, are divided by internal and external shear stresses, respectively, to obtain the safety factors. The shear stresses are obtained using bolt properties and the calculated design load for thread shear.

The structural lid is analyzed using ANSYS PC/Linear Version 4.3A-2. The maximum principal stress is obtained from the ANSYS output. The actual stress is obtained by scaling this maximum stress by the ratio of the actual load to the ANSYS input load. Safety factors against yield and ultimate are calculated by dividing the yield and ultimate stresses of the lid by the actual stress on the lid.

There are two configurations evaluated in this analysis. A two row matrix is used to evaluate these two configurations. The first row is for the Point Beach/Palisades configuration, and the second row is for the ANO configuration.

6. CALCULATIONS

6.1 MSB Loads and Lifting Point Height

For the design load the total weight will be increased by 10% to account for the dynamic load factor per NUREG 0612:

Considering a 10% increase in load, the load per lifting lug is calculated as follows:

$P_{MSB} := \begin{bmatrix} 63000 \\ 69000 \end{bmatrix} lbf$ The weight of a fully loaded MSB

$N_{ring} := 6$ Number of Hoist Rings (Reference 3.1.2)

The analysis of the load assumes an angle of :

$\alpha := 90\ deg - 12\ deg$ Angle

$\alpha = 78 \cdot deg$

$R_{ring} := 27\ in$ Radius of the Ring (Reference 3.1.2)

$w := R_{ring} \cdot \tan(\alpha)$ Height of the lifting point

$w = 10.6\ ft$

This is a reasonable requirement since the angle will be controlled by the length of the slings used for the lift.

The design load per hoist ring is:

$$P_{design} := \frac{P_{MSB}}{\sin(\alpha)} \cdot \frac{1.1}{N_{ring}}$$

$$P_{design} = \begin{bmatrix} 11808 \\ 12933 \end{bmatrix} \cdot lbf$$

6.2 American Drill Bushing Hoist Rings

The American Drill Bushing Company's hoist rings #23202 (Point Beach/Palisades) and #23200 (ANO1/ANO2) are used for the MSB lifting hoist ring (Reference 3.1.2). These devices are designed with a factor of safety of 5 [Reference 3.2.3]. Therefore, their breaking load is:

$$P_{ring} := \begin{bmatrix} 24000 \\ 30000 \end{bmatrix} lbf$$ Design Capacity of the Hoist Ring

$$P_{break} := \overrightarrow{\left(P_{ring} \cdot 5\right)}$$

$$P_{break} = \begin{bmatrix} 120000 \\ 150000 \end{bmatrix} \cdot lbf$$ In any direction

For the MSB application this device provides a factor of safety of:

$$K_{ring} := \overrightarrow{\frac{P_{break}}{P_{design}}} \qquad K_{ring} = \begin{bmatrix} 10.163 \\ 11.599 \end{bmatrix}$$

$$Compl_{ring} = \begin{bmatrix} \text{"> 10.0 OKAY"} \\ \text{"> 10.0 OKAY"} \end{bmatrix}$$

6.3 Thread Shear Evaluation

The structural lid thickness is 3" (Reference 3.1.2) while the length of thread on the hoist ring bolts is 1.5" (Point Beach/Palisades) or 2.0" (ANO1/ANO2) per Reference 3.1.2. At least 1/8" of material must be left under the bolt hole to not breach the containment boundary and the hole must be drilled almost 1/2" deeper than the required thread length, specified in NC-3262.4 (Reference 3.2.5); therefore, the full engagement length for the hoist ring bolts can not be provided. The following calculation determines the maximum load based on thread shear capacity.

The hoist thread is a 1.5-6UNC thread (Point Beach/Palisades) or a 2.0-4.5 UNC thread (ANO1/ANO2), per Reference 3.1.2. The thread properties are as follows (Reference 3.2.6):

$n := \begin{bmatrix} 6.0 \\ 4.5 \end{bmatrix} \cdot \frac{1}{in}$ Number of Threads Per Inch

$D_{s\_min} := \begin{bmatrix} 1.4794 \\ 1.9751 \end{bmatrix} in$ Minimum Major Diameter of External Thread

$E_{n\_max} := \begin{bmatrix} 1.4022 \\ 1.8681 \end{bmatrix} in$ Maximum Pitch Diameter of Internal Thread

$K_{n\_max} := \begin{bmatrix} 1.350 \\ 1.795 \end{bmatrix} in$ Maximum Minor Diameter of Internal Thread

$E_{s\_min} := \begin{bmatrix} 1.3812 \\ 1.8433 \end{bmatrix} in$ Minimum Pitch Diameter of External Thread

$L_e := \begin{bmatrix} 1.5 \\ 2.0 \end{bmatrix} in$ Length of Engagement (Reference 3.1.2)

$A_s := \begin{bmatrix} 1.405 \\ 2.50 \end{bmatrix} in^2$ Stress Area of the Hoist Ring

The material for the structural lid is 516-70 Carbon Steel (Reference 3.1.2). The properties are based on a bounding operating temperature of 300F [Ref 3.2.11].

$S_{y\_lid} := 33700\ psi$ Reference 3.2.8, Section III, Appendix I, Table I-1.2, at 300F

$S_{u\_lid} := 70000\ psi$ Reference 3.2.8, Section III, Appendix I, Table I-3.1, at 300F

The minimum material properties for the hoist ring can be determined based on the capacity of the hoist ring (assuming a minimum factor of safety of 5 on ultimate)

$$S_{u\_hoist} := \overrightarrow{\left(5 \cdot \frac{P_{ring}}{A_s}\right)}$$

$$S_{u\_hoist} = \begin{bmatrix} 85409 \\ 60000 \end{bmatrix} \cdot psi$$

The internal thread shear area and shear stress are [Reference 3.2.10]

$$AS_n := \overrightarrow{\left[\left(L_e \cdot \pi \cdot n \cdot D_{s\_min}\right) \cdot \left[\frac{1}{2 \cdot n} + 0.57735 \cdot \left(D_{s\_min} - E_{n\_max}\right)\right]\right]}$$

$$AS_n = \begin{bmatrix} 5.35 \\ 9.655 \end{bmatrix} \cdot in^2$$

$$\tau_n := \overrightarrow{\frac{P_{design}}{AS_n}} \qquad \tau_n = \begin{bmatrix} 2207 \\ 1339 \end{bmatrix} \cdot psi$$

The external thread shear area and shear stress are [Reference 3.2.10]

$$AS_s := \overrightarrow{\left[\left(L_e \cdot \pi \cdot n \cdot K_{n\_max}\right) \cdot \left[\frac{1}{2 \cdot n} + 0.57735 \cdot \left(E_{s\_min} - K_{n\_max}\right)\right]\right]}$$

$$AS_s = \begin{bmatrix} 3.868 \\ 7.054 \end{bmatrix} \cdot in^2$$

$$\tau_s := \overrightarrow{\frac{P_{design}}{AS_s}} \qquad \tau_s = \begin{bmatrix} 3052 \\ 1833 \end{bmatrix} \cdot psi$$

The factors of safety for the internal thread are

Factor of safety against yield

$$K1_n := \overrightarrow{\frac{0.57 \cdot S_{y\_lid}}{\tau_n}}$$

$$K1_n = \begin{bmatrix} 8.703 \\ 14.341 \end{bmatrix}$$

$$Comp1_n = \begin{bmatrix} \text{"> 6.0 OKAY"} \\ \text{"> 6.0 OKAY"} \end{bmatrix}$$

Factor of safety against ultimate

$$K2_n := \overrightarrow{\frac{0.57 \cdot S_{u\_lid}}{\tau_n}}$$

$$K2_n = \begin{bmatrix} 18.078 \\ 29.787 \end{bmatrix}$$

$$Comp2_n = \begin{bmatrix} \text{"> 10.0 OKAY"} \\ \text{"> 10.0 OKAY"} \end{bmatrix}$$

The factors of safety for the external thread are

Factor of safety against ultimate

$$K2_s := \overrightarrow{\frac{0.57 \cdot S_{u\_hoist}}{\tau_s}}$$

$$K2_s = \begin{bmatrix} 15.949 \\ 18.655 \end{bmatrix}$$

$$Comp2_s = \begin{bmatrix} \text{"> 10.0 OKAY"} \\ \text{"> 10.0 OKAY"} \end{bmatrix}$$

6.4 Structural Lid

The structural lid and its junction with the shell were modeled using ANSYS PC/Linear Version 4.3A-2. The node/element diagram is presented in Figure 6.4-1.

One third of the structure was modeled and symmetry boundary condition used at 0 degrees and 120 degrees. Shell elements (STIF63) were employed in the model. The modeled force per each hoist ring is:

$F_z := 11692\ \text{lbf}$

$F_r := F_z \cdot \tan(15\ \text{deg})$ $\qquad\qquad$ $F_r = 3133 \cdot \text{lbf}$

Using an angle of 15 deg in lieu of 12 deg is conservative since it provides the same vertical load but results in a higher lateral load.

Complete ANSYS Version 4.3A-2 input/output is attached. It can be seen that the maximum principal stress does not exceed 2.2 ksi. The actual stresses are calculated by scaling the calculated stress by the ratio of the bounding load to the evaluated load. Therefore:

$\sigma_{model} := 2200\ \text{psi}$

$\sigma_{lid} := \sigma_{model} \cdot \dfrac{P_{design}}{F_z}$ $\qquad\qquad$ $\sigma_{lid} = \begin{bmatrix} 2222 \\ 2433 \end{bmatrix} \cdot \text{psi}$

Factor of safety against yield

$$K1_{lid} := \overrightarrow{\frac{S_{y\_lid}}{\sigma_{lid}}}$$

$$K1_{lid} = \begin{bmatrix} 15.168 \\ 13.849 \end{bmatrix}$$

$$Comp1_{lid} = \begin{bmatrix} \text{"> 6.0 OKAY"} \\ \text{"> 6.0 OKAY"} \end{bmatrix}$$

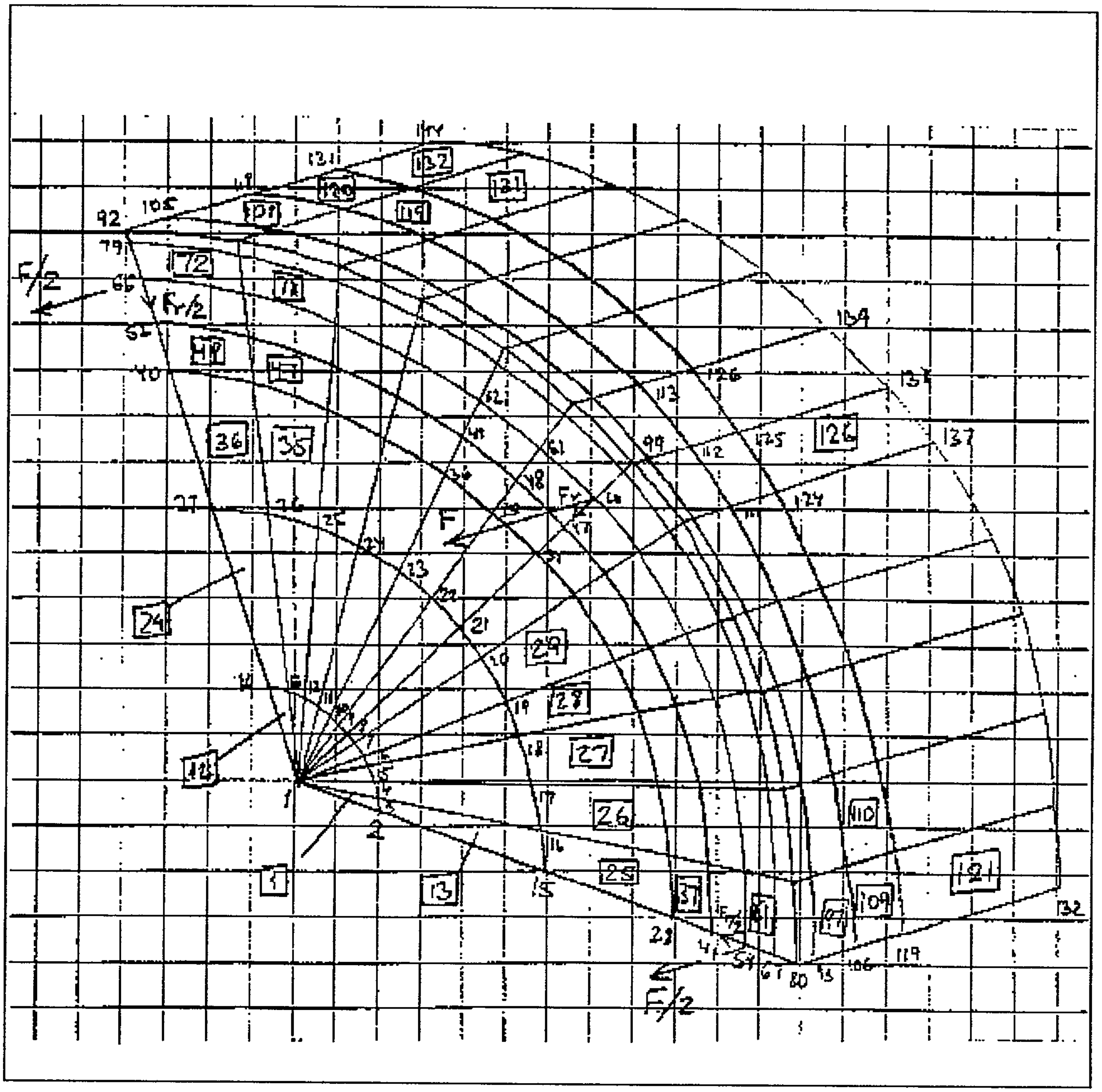
Factor of safety against ultimate

$$K2_{lid} := \overrightarrow{\frac{S_{u\_lid}}{\sigma_{lid}}}$$

$$K2_{lid} = \begin{bmatrix} 31.506 \\ 28.766 \end{bmatrix}$$

$$Comp2_{lid} = \begin{bmatrix} \text{"> 10.0 OKAY"} \\ \text{"> 10.0 OKAY"} \end{bmatrix}$$

FIGURE 6.4-1: Structural Lid Finite Element Model



6.5 MSB with Off-Normal Lifting Event

As part of the design of the MSB and MTC, there is a postulated off-normal handling event in which the MSB/MTC configuration is lifted by the MSB lifting devices and the MTC is suspended off of the MSB. The acceptance criteria for this off-normal event is that the MSB must meet AISC Code allowable stresses. This will ensure that the assembly is safe, but because this is an off-normal event, the assembly may not meet a factor of safety of 6.0 on yield and 10.0 on ultimate.

The allowable stress in tension for AISC components is (Reference 3.2.12):

$\sigma_{AISC} := 0.6\, S_{y\_lid}$ $\qquad\qquad$ $\sigma_{AISC} = 20220 \cdot psi$

For the Design Condition, the "allowable stress" is the limiting of:

$\sigma_{yield\_all} := \dfrac{S_{y\_lid}}{6}$ $\qquad\qquad$ $\sigma_{yield\_all} = 5617 \cdot psi$

$\sigma_{ultimate\_all} := \dfrac{S_{u\_lid}}{10}$ $\qquad\qquad$ $\sigma_{ultimate\_all} = 7000 \cdot psi$

The most limiting condition, therefore is yield. If the MSB is assumed to stress the MSB lifting devices to their design limit (σ_{yield_all}), then the remaining portion of the AISC allowable stress ($\sigma_{AISC} - \sigma_{yield\_all}$) is available to carry the MTC weight. The weight of the MTC that can be carried by the MSB lifting devices is calculated using the following:

$$Load_{increase} := \overrightarrow{\left[\frac{P_{MSB}}{\sigma_{yield\_all}} \cdot \left(\sigma_{AISC} - \sigma_{yield\_all}\right)\right]}$$

$$Load_{increase} = \begin{bmatrix} 163800 \\ 179400 \end{bmatrix} \cdot lbf$$

Since the bounding MTC weight is less than 120,000 lbf [Reference 3.1.1], the MSB lifting devices will always meet the AISC Code for the off-normal condition.

7. CONCLUSIONS

The calculation presented in Section 6.0 shows that the MSB lifting points are single-failure proof as specified in NUREG 0612. The hoist ring bolts and MSB structural lid have safety factors greater than 6 and 10 against yield and ultimate, respectively, and hence meet the NUREG 0612 requirements for single-failure proof devices.

The MSB Lifting Devices meet AISC Code allowable stresses for off-normal handling condition where the MTC is suspended from the MSB.

Summary of Conservatism

- An MSB load angle of 15° is used in lieu of 12° to determine the lateral input load to the finite element model. This is conservative because the 15° angle produces a larger lateral load than the 12° angle.

8. ELECTRONIC FILES

8.1 Computer Runs

No new computer calculations were prepared in this calculation. Computer calculations from WEP109-002.03, Revision 5 are used as an input to this calculation. For convenience, the computer printout from WEP109-002.03, Revision 5 are provided in Attachment A.

8.2 Other Electronic Files

None.

9. ATTACHMENT A – ANSYS INPUT AND OUTPUT FOR MSB STRUCTURAL LID

LIST ALL SELECTED NODE DSYS= 0

NODE	X	Y	Z	THXY	THYZ	THXZ
1	0.00000E+00	0.00000E+00	0.00000E+00	0.00	0.00	0.00
2	5.0000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
3	4.9240	0.86824	0.00000E+00	10.00	0.00	0.00
4	4.6985	1.7101	0.00000E+00	20.00	0.00	0.00
5	4.3301	2.5000	0.00000E+00	30.00	0.00	0.00
6	3.8302	3.2139	0.00000E+00	40.00	0.00	0.00
7	3.2139	3.8302	0.00000E+00	50.00	0.00	0.00
8	2.5000	4.3301	0.00000E+00	60.00	0.00	0.00
9	1.7101	4.6985	0.00000E+00	70.00	0.00	0.00
10	0.86824	4.9240	0.00000E+00	80.00	0.00	0.00
11	0.19482E-10	5.0000	0.00000E+00	90.00	0.00	0.00
12	-0.86824	4.9240	0.00000E+00	100.00	0.00	0.00
13	-1.7101	4.6985	0.00000E+00	110.00	0.00	0.00
14	-2.5000	4.3301	0.00000E+00	120.00	0.00	0.00
15	15.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
16	14.772	2.6047	0.00000E+00	10.00	0.00	0.00
17	14.095	5.1303	0.00000E+00	20.00	0.00	0.00
18	12.990	7.5000	0.00000E+00	30.00	0.00	0.00
19	11.491	9.6418	0.00000E+00	40.00	0.00	0.00
20	9.6418	11.491	0.00000E+00	50.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
21	7.5000	12.990	0.00000E+00	60.00	0.00	0.00
22	5.1303	14.095	0.00000E+00	70.00	0.00	0.00
23	2.6047	14.772	0.00000E+00	80.00	0.00	0.00
24	0.58447E-10	15.000	0.00000E+00	90.00	0.00	0.00
25	-2.6047	14.772	0.00000E+00	100.00	0.00	0.00
26	-5.1303	14.095	0.00000E+00	110.00	0.00	0.00
27	-7.5000	12.990	0.00000E+00	120.00	0.00	0.00
28	21.700	0.00000E+00	0.00000E+00	0.00	0.00	0.00
29	21.370	3.7682	0.00000E+00	10.00	0.00	0.00
30	20.391	7.4218	0.00000E+00	20.00	0.00	0.00
31	18.793	10.850	0.00000E+00	30.00	0.00	0.00
32	16.623	13.948	0.00000E+00	40.00	0.00	0.00
33	13.948	16.623	0.00000E+00	50.00	0.00	0.00
34	10.850	18.793	0.00000E+00	60.00	0.00	0.00
35	7.4218	20.391	0.00000E+00	70.00	0.00	0.00
36	3.7682	21.370	0.00000E+00	80.00	0.00	0.00
37	0.84554E-10	21.700	0.00000E+00	90.00	0.00	0.00
38	-3.7682	21.370	0.00000E+00	100.00	0.00	0.00
39	-7.4218	20.391	0.00000E+00	110.00	0.00	0.00
40	-10.850	18.793	0.00000E+00	120.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
41	23.700	0.00000E+00	0.00000E+00	0.00	0.00	0.00
42	23.340	4.1155	0.00000E+00	10.00	0.00	0.00
43	22.271	8.1059	0.00000E+00	20.00	0.00	0.00
44	20.525	11.850	0.00000E+00	30.00	0.00	0.00
45	18.155	15.234	0.00000E+00	40.00	0.00	0.00
46	15.234	18.155	0.00000E+00	50.00	0.00	0.00
47	11.850	20.525	0.00000E+00	60.00	0.00	0.00
48	8.1059	22.271	0.00000E+00	70.00	0.00	0.00
49	4.1155	23.340	0.00000E+00	80.00	0.00	0.00
50	0.92347E-10	23.700	0.00000E+00	90.00	0.00	0.00
51	-4.1155	23.340	0.00000E+00	100.00	0.00	0.00

52	-8.1059	22.271	0.00000E+00	110.00	0.00	0.00
53	-11.850	20.525	0.00000E+00	120.00	0.00	0.00
54	27.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
55	26.590	4.6885	0.00000E+00	10.00	0.00	0.00
56	25.372	9.2345	0.00000E+00	20.00	0.00	0.00
57	23.383	13.500	0.00000E+00	30.00	0.00	0.00
58	20.683	17.355	0.00000E+00	40.00	0.00	0.00
59	17.355	20.683	0.00000E+00	50.00	0.00	0.00
60	13.500	23.383	0.00000E+00	60.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
61	9.2345	25.372	0.00000E+00	70.00	0.00	0.00
62	4.6885	26.590	0.00000E+00	80.00	0.00	0.00
63	0.10521E-09	27.000	0.00000E+00	90.00	0.00	0.00
64	-4.6885	26.590	0.00000E+00	100.00	0.00	0.00
65	-9.2345	25.372	0.00000E+00	110.00	0.00	0.00
66	-13.500	23.383	0.00000E+00	120.00	0.00	0.00
67	29.500	0.00000E+00	0.00000E+00	0.00	0.00	0.00
68	29.052	5.1226	0.00000E+00	10.00	0.00	0.00
69	27.721	10.090	0.00000E+00	20.00	0.00	0.00
70	25.548	14.750	0.00000E+00	30.00	0.00	0.00
71	22.598	18.962	0.00000E+00	40.00	0.00	0.00
72	18.962	22.598	0.00000E+00	50.00	0.00	0.00
73	14.750	25.548	0.00000E+00	60.00	0.00	0.00
74	10.090	27.721	0.00000E+00	70.00	0.00	0.00
75	5.1226	29.052	0.00000E+00	80.00	0.00	0.00
76	0.11495E-09	29.500	0.00000E+00	90.00	0.00	0.00
77	-5.1226	29.052	0.00000E+00	100.00	0.00	0.00
78	-10.090	27.721	0.00000E+00	110.00	0.00	0.00
79	-14.750	25.548	0.00000E+00	120.00	0.00	0.00
80	30.250	0.00000E+00	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
81	29.790	5.2529	0.00000E+00	10.00	0.00	0.00
82	28.426	10.346	0.00000E+00	20.00	0.00	0.00
83	26.197	15.125	0.00000E+00	30.00	0.00	0.00
84	23.173	19.444	0.00000E+00	40.00	0.00	0.00
85	19.444	23.173	0.00000E+00	50.00	0.00	0.00
86	15.125	26.197	0.00000E+00	60.00	0.00	0.00
87	10.346	28.426	0.00000E+00	70.00	0.00	0.00
88	5.2529	29.790	0.00000E+00	80.00	0.00	0.00
89	0.11787E-09	30.250	0.00000E+00	90.00	0.00	0.00
90	-5.2529	29.790	0.00000E+00	100.00	0.00	0.00
91	-10.346	28.426	0.00000E+00	110.00	0.00	0.00
92	-15.125	26.197	0.00000E+00	120.00	0.00	0.00
93	30.250	0.00000E+00	-2.0000	0.00	0.00	0.00
94	29.790	5.2529	-2.0000	10.00	0.00	0.00
95	28.426	10.346	-2.0000	20.00	0.00	0.00
96	26.197	15.125	-2.0000	30.00	0.00	0.00
97	23.173	19.444	-2.0000	40.00	0.00	0.00
98	19.444	23.173	-2.0000	50.00	0.00	0.00
99	15.125	26.197	-2.0000	60.00	0.00	0.00
100	10.346	28.426	-2.0000	70.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
101	5.2529	29.790	-2.0000	80.00	0.00	0.00
102	0.11787E-09	30.250	-2.0000	90.00	0.00	0.00
103	-5.2529	29.790	-2.0000	100.00	0.00	0.00
104	-10.346	28.426	-2.0000	110.00	0.00	0.00
105	-15.125	26.197	-2.0000	120.00	0.00	0.00

106	30.250	0.00000E+00	-6.0000	0.00	0.00	0.00
107	29.790	5.2529	-6.0000	10.00	0.00	0.00
108	28.426	10.346	-6.0000	20.00	0.00	0.00
109	26.197	15.125	-6.0000	30.00	0.00	0.00
110	23.173	19.444	-6.0000	40.00	0.00	0.00
111	19.444	23.173	-6.0000	50.00	0.00	0.00
112	15.125	26.197	-6.0000	60.00	0.00	0.00
113	10.346	28.426	-6.0000	70.00	0.00	0.00
114	5.2529	29.790	-6.0000	80.00	0.00	0.00
115	0.11787E-09	30.250	-6.0000	90.00	0.00	0.00
116	-5.2529	29.790	-6.0000	100.00	0.00	0.00
117	-10.346	28.426	-6.0000	110.00	0.00	0.00
118	-15.125	26.197	-6.0000	120.00	0.00	0.00
119	30.250	0.00000E+00	-14.000	0.00	0.00	0.00
120	29.790	5.2529	-14.000	10.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
121	28.426	10.346	-14.000	20.00	0.00	0.00
122	26.197	15.125	-14.000	30.00	0.00	0.00
123	23.173	19.444	-14.000	40.00	0.00	0.00
124	19.444	23.173	-14.000	50.00	0.00	0.00
125	15.125	26.197	-14.000	60.00	0.00	0.00
126	10.346	28.426	-14.000	70.00	0.00	0.00
127	5.2529	29.790	-14.000	80.00	0.00	0.00
128	0.11787E-09	30.250	-14.000	90.00	0.00	0.00
129	-5.2529	29.790	-14.000	100.00	0.00	0.00
130	-10.346	28.426	-14.000	110.00	0.00	0.00
131	-15.125	26.197	-14.000	120.00	0.00	0.00
132	30.250	0.00000E+00	-30.000	0.00	0.00	0.00
133	29.790	5.2529	-30.000	10.00	0.00	0.00
134	28.426	10.346	-30.000	20.00	0.00	0.00
135	26.197	15.125	-30.000	30.00	0.00	0.00
136	23.173	19.444	-30.000	40.00	0.00	0.00
137	19.444	23.173	-30.000	50.00	0.00	0.00
138	15.125	26.197	-30.000	60.00	0.00	0.00
139	10.346	28.426	-30.000	70.00	0.00	0.00
140	5.2529	29.790	-30.000	80.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
141	0.11787E-09	30.250	-30.000	90.00	0.00	0.00
142	-5.2529	29.790	-30.000	100.00	0.00	0.00
143	-10.346	28.426	-30.000	110.00	0.00	0.00
144	-15.125	26.197	-30.000	120.00	0.00	0.00

LIST ALL SELECTED ELEMENTS. (LIST NODES)

ELEM	MAT	TYP	REL	NODES			
1	1	1	1	2	3	1	1
2	1	1	1	3	4	1	1
3	1	1	1	4	5	1	1
4	1	1	1	5	6	1	1
5	1	1	1	6	7	1	1
6	1	1	1	7	8	1	1
7	1	1	1	8	9	1	1
8	1	1	1	9	10	1	1
9	1	1	1	10	11	1	1
10	1	1	1	11	12	1	1
11	1	1	1	12	13	1	1
12	1	1	1	13	14	1	1

13	1	1	1	15	16	3	2
14	1	1	1	16	17	4	3
15	1	1	1	17	18	5	4
16	1	1	1	18	19	6	5
17	1	1	1	19	20	7	6
18	1	1	1	20	21	8	7
19	1	1	1	21	22	9	8
20	1	1	1	22	23	10	9

ELEM	MAT	TYP	REL	NODES			
21	1	1	1	23	24	11	10
22	1	1	1	24	25	12	11
23	1	1	1	25	26	13	12
24	1	1	1	26	27	14	13
25	1	1	1	28	29	16	15
26	1	1	1	29	30	17	16
27	1	1	1	30	31	18	17
28	1	1	1	31	32	19	18
29	1	1	1	32	33	20	19
30	1	1	1	33	34	21	20
31	1	1	1	34	35	22	21
32	1	1	1	35	36	23	22
33	1	1	1	36	37	24	23
34	1	1	1	37	38	25	24
35	1	1	1	38	39	26	25
36	1	1	1	39	40	27	26
37	1	1	1	41	42	29	28
38	1	1	1	42	43	30	29
39	1	1	1	43	44	31	30
40	1	1	1	44	45	32	31

ELEM	MAT	TYP	REL	NODES			
41	1	1	1	45	46	33	32
42	1	1	1	46	47	34	33
43	1	1	1	47	48	35	34
44	1	1	1	48	49	36	35
45	1	1	1	49	50	37	36
46	1	1	1	50	51	38	37
47	1	1	1	51	52	39	38
48	1	1	1	52	53	40	39
49	1	1	1	54	55	42	41
50	1	1	1	55	56	43	42
51	1	1	1	56	57	44	43
52	1	1	1	57	58	45	44
53	1	1	1	58	59	46	45
54	1	1	1	59	60	47	46
55	1	1	1	60	61	48	47
56	1	1	1	61	62	49	48
57	1	1	1	62	63	50	49
58	1	1	1	63	64	51	50
59	1	1	1	64	65	52	51
60	1	1	1	65	66	53	52

ELEM	MAT	TYP	REL	NODES			
61	1	1	1	67	68	55	54
62	1	1	1	68	69	56	55
63	1	1	1	69	70	57	56

64	1	1	1	70	71	58	57
65	1	1	1	71	72	59	58
66	1	1	1	72	73	60	59
67	1	1	1	73	74	61	60
68	1	1	1	74	75	62	61
69	1	1	1	75	76	63	62
70	1	1	1	76	77	64	63
71	1	1	1	77	78	65	64
72	1	1	1	78	79	66	65
73	1	1	4	80	81	68	67
74	1	1	4	81	82	69	68
75	1	1	4	82	83	70	69
76	1	1	4	83	84	71	70
77	1	1	4	84	85	72	71
78	1	1	4	85	86	73	72
79	1	1	4	86	87	74	73
80	1	1	4	87	88	75	74

ELEM	MAT	TYP	REL	NODES			
81	1	1	4	88	89	76	75
82	1	1	4	89	90	77	76
83	1	1	4	90	91	78	77
84	1	1	4	91	92	79	78
85	1	1	2	93	94	81	80
86	1	1	2	94	95	82	81
87	1	1	2	95	96	83	82
88	1	1	2	96	97	84	83
89	1	1	2	97	98	85	84
90	1	1	2	98	99	86	85
91	1	1	2	99	100	87	86
92	1	1	2	100	101	88	87
93	1	1	2	101	102	89	88
94	1	1	2	102	103	90	89
95	1	1	2	103	104	91	90
96	1	1	2	104	105	92	91
97	1	1	2	106	107	94	93
98	1	1	2	107	108	95	94
99	1	1	2	108	109	96	95
100	1	1	2	109	110	97	96

ELEM	MAT	TYP	REL	NODES			
101	1	1	2	110	111	98	97
102	1	1	2	111	112	99	98
103	1	1	2	112	113	100	99
104	1	1	2	113	114	101	100
105	1	1	2	114	115	102	101
106	1	1	2	115	116	103	102
107	1	1	2	116	117	104	103
108	1	1	2	117	118	105	104
109	1	1	2	119	120	107	106
110	1	1	2	120	121	108	107
111	1	1	2	121	122	109	108
112	1	1	2	122	123	110	109
113	1	1	2	123	124	111	110
114	1	1	2	124	125	112	111
115	1	1	2	125	126	113	112
116	1	1	2	126	127	114	113
117	1	1	2	127	128	115	114

118	1	1	2	128	129	116	115
119	1	1	2	129	130	117	116
120	1	1	2	130	131	118	117

ELEM	MAT	TYP	REL	NODES			
121	1	1	2	132	133	120	119
122	1	1	2	133	134	121	120
123	1	1	2	134	135	122	121
124	1	1	2	135	136	123	122
125	1	1	2	136	137	124	123
126	1	1	2	137	138	125	124
127	1	1	2	138	139	126	125
128	1	1	2	139	140	127	126
129	1	1	2	140	141	128	127
130	1	1	2	141	142	129	128
131	1	1	2	142	143	130	129
132	1	1	2	143	144	131	130

LIST ALL ELEMENT TYPES

NO.	STIF	KEYOPT VALUES									INOTPR	
1	63	0	0	0	0	0	0	0	0	0	0	QUAD. FLAT SHELL

LIST ALL REAL SETS

REAL CONSTANT SET 1 ITEMS 1 TO 6
3.0000 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00

REAL CONSTANT SET 2 ITEMS 1 TO 6
0.75000 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00

REAL CONSTANT SET 4 ITEMS 1 TO 6
0.75000 0.75000 3.0000 3.0000 0.00000E+00 0.00000E+00

LIST ALL MATERIALS PROPERTY= ALL

PROPERTY TABLE EX MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	28000.	2300.0	28000.

PROPERTY TABLE NUXY MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.30000	2300.0	0.30000

LIST DISPLACEMENTS FOR ALL SELECTED NODES

NODE	LABEL	DISP	CDISP
1	ROTY	0.000000000E+00	0.000000000E+00
41	ROTX	0.000000000E+00	0.000000000E+00
80	ROTX	0.000000000E+00	0.000000000E+00
131	UY	0.000000000E+00	0.000000000E+00
118	UY	0.000000000E+00	0.000000000E+00
92	ROTZ	0.000000000E+00	0.000000000E+00
66	ROTX	0.000000000E+00	0.000000000E+00
40	ROTX	0.000000000E+00	0.000000000E+00
1	UX	0.000000000E+00	0.000000000E+00
119	UY	0.000000000E+00	0.000000000E+00
143	UX	0.000000000E+00	0.000000000E+00
144	UZ	0.000000000E+00	0.000000000E+00

142	UX	0.000000000E+00	0.000000000E+00
28	ROTX	0.000000000E+00	0.000000000E+00
105	UY	0.000000000E+00	0.000000000E+00
106	UY	0.000000000E+00	0.000000000E+00
2	UY	0.000000000E+00	0.000000000E+00
136	UZ	0.000000000E+00	0.000000000E+00
93	UY	0.000000000E+00	0.000000000E+00
27	ROTX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
53	ROTX	0.000000000E+00	0.000000000E+00
138	UZ	0.000000000E+00	0.000000000E+00
80	UY	0.000000000E+00	0.000000000E+00
1	UY	0.000000000E+00	0.000000000E+00
67	ROTX	0.000000000E+00	0.000000000E+00
15	ROTX	0.000000000E+00	0.000000000E+00
92	UY	0.000000000E+00	0.000000000E+00
67	UY	0.000000000E+00	0.000000000E+00
141	UX	0.000000000E+00	0.000000000E+00
143	UZ	0.000000000E+00	0.000000000E+00
79	UY	0.000000000E+00	0.000000000E+00
14	ROTX	0.000000000E+00	0.000000000E+00
92	ROTX	0.000000000E+00	0.000000000E+00
139	UZ	0.000000000E+00	0.000000000E+00
54	UY	0.000000000E+00	0.000000000E+00
140	UX	0.000000000E+00	0.000000000E+00
54	ROTX	0.000000000E+00	0.000000000E+00
2	ROTX	0.000000000E+00	0.000000000E+00
93	ROTZ	0.000000000E+00	0.000000000E+00
41	UY	0.000000000E+00	0.000000000E+00

DE	LABEL	DISP	CDISP
139	UX	0.000000000E+00	0.000000000E+00
131	ROTZ	0.000000000E+00	0.000000000E+00
79	ROTX	0.000000000E+00	0.000000000E+00
1	ROTX	0.000000000E+00	0.000000000E+00
138	UX	0.000000000E+00	0.000000000E+00
80	ROTZ	0.000000000E+00	0.000000000E+00
1	UX	0.000000000E+00	0.000000000E+00
28	UY	0.000000000E+00	0.000000000E+00
137	UX	0.000000000E+00	0.000000000E+00
15	UY	0.000000000E+00	0.000000000E+00
142	UZ	0.000000000E+00	0.000000000E+00
66	UY	0.000000000E+00	0.000000000E+00
136	UX	0.000000000E+00	0.000000000E+00
135	UZ	0.000000000E+00	0.000000000E+00
119	ROTZ	0.000000000E+00	0.000000000E+00
141	UZ	0.000000000E+00	0.000000000E+00
135	UX	0.000000000E+00	0.000000000E+00
132	UZ	0.000000000E+00	0.000000000E+00
134	UX	0.000000000E+00	0.000000000E+00
118	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
137	UZ	0.000000000E+00	0.000000000E+00
140	UZ	0.000000000E+00	0.000000000E+00
3	UY	0.000000000E+00	0.000000000E+00
[illegible]33	UZ	0.000000000E+00	0.000000000E+00
133	UX	0.000000000E+00	0.000000000E+00
106	ROTZ	0.000000000E+00	0.000000000E+00

14	UY	0.000000000E+00	0.000000000E+00
40	UY	0.000000000E+00	0.000000000E+00
27	UY	0.000000000E+00	0.000000000E+00
134	UZ	0.000000000E+00	0.000000000E+00
32	UX	0.000000000E+00	0.000000000E+00
05	ROTZ	0.000000000E+00	0.000000000E+00

LIST FORCES FOR ALL SELECTED NODES

NODE	LABEL	FORCE	CFORCE
54	FZ	5.84500000	0.000000000E+00
60	FZ	11.6900000	0.000000000E+00
66	FZ	5.84500000	0.000000000E+00
54	FX	-1.56500000	0.000000000E+00
60	FX	-3.13000000	0.000000000E+00
66	FX	-1.56500000	0.000000000E+00

NODAL STRESSES ARE SHELL TOP

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
1	0.70160438	0.69381915	0.00000000E+00	0.70160438	0.69774
2	0.70876975	0.69584756	0.00000000E+00	0.70876975	0.70240
3	0.70451105	0.69588513	0.00000000E+00	0.70451105	0.70023
4	0.69983094	0.69052978	0.00000000E+00	0.69983094	0.69522
5	0.69962263	0.68605605	0.00000000E+00	0.69962263	0.69294
6	0.69951090	0.69104642	0.00000000E+00	0.69951090	0.69531
7	0.70474791	0.69598763	0.00000000E+00	0.70474791	0.70041
8	0.70910801	0.69590018	0.00000000E+00	0.70910801	0.70261
9	0.70474791	0.69598763	0.00000000E+00	0.70474791	0.70041
10	0.69951090	0.69104642	0.00000000E+00	0.69951090	0.69531
11	0.69962263	0.68605605	0.00000000E+00	0.69962263	0.69294
12	0.69983094	0.69052978	0.00000000E+00	0.69983094	0.69522
13	0.70451105	0.69588513	0.00000000E+00	0.70451105	0.70023

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
14	0.70876975	0.69584756	0.00000000E+00	0.70876975	0.70240
15	0.75585597	0.59554049	0.00000000E+00	0.75585597	0.69238
16	0.77620314	0.62237910	0.00000000E+00	0.77620314	0.71350
17	0.77908850	0.62631647	0.00000000E+00	0.77908850	0.71639
18	0.78129176	0.63298377	0.00000000E+00	0.78129176	0.71943
19	0.77997877	0.62514113	0.00000000E+00	0.77997877	0.71657
20	0.77779996	0.62026396	0.00000000E+00	0.77779996	0.71386
21	0.75775648	0.59303631	0.00000000E+00	0.75775648	0.69292
22	0.77779997	0.62026396	0.00000000E+00	0.77779997	0.71386
23	0.77997878	0.62514113	0.00000000E+00	0.77997878	0.71657
24	0.78129176	0.63298377	0.00000000E+00	0.78129176	0.71943
25	0.77908850	0.62631647	0.00000000E+00	0.77908850	0.71639
26	0.77620315	0.62237910	0.00000000E+00	0.77620315	0.71350

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
27	0.75585598	0.59554049	0.00000000E+00	0.75585598	0.692[illegible]
28	1.1053642	0.59689363	0.00000000E+00	1.1053642	0.962[illegible]
29	0.98989002	0.59304186	0.00000000E+00	0.98989002	0.86344
30	0.76053028	0.46277285	0.00000000E+00	0.76053028	0.66394
31	0.66128693	0.39815751	0.00000000E+00	0.66128693	0.57676
32	0.76102168	0.46192946	0.00000000E+00	0.76102168	0.66424

33	0.99133814	0.59078121	0.00000000E+00	0.99133814	0.86437
34	1.1074830	0.59384160	0.00000000E+00	1.1074830	0.96428
35	0.99133814	0.59078121	0.00000000E+00	0.99133814	0.86437
36	0.76102169	0.46192946	0.00000000E+00	0.76102169	0.66424
37	0.66128693	0.39815751	0.00000000E+00	0.66128693	0.57676
38	0.76053029	0.46277285	0.00000000E+00	0.76053029	0.66394
39	0.98989003	0.59304186	0.00000000E+00	0.98989003	0.86344

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
40	1.1053643	0.59689363	0.00000000E+00	1.1053643	0.96262
41	1.6308918	0.85095947	0.00000000E+00	1.6308918	1.4130
42	0.97785534	0.52421382	0.00000000E+00	0.97785534	0.85490
43	0.62085718	0.38453544	0.00000000E+00	0.62085718	0.54587
44	0.53281850	0.34533222	0.00000000E+00	0.53281850	0.46813
45	0.62036253	0.38443687	0.00000000E+00	0.62036253	0.54551
46	0.97832788	0.52253678	0.00000000E+00	0.97832788	0.85532
47	1.6328183	0.84785974	0.00000000E+00	1.6328183	1.4146
48	0.97832788	0.52253677	0.00000000E+00	0.97832788	0.85532
49	0.62036253	0.38443687	0.00000000E+00	0.62036253	0.54551
50	0.53281851	0.34533222	0.00000000E+00	0.53281851	0.46813
51	0.62085719	0.38453544	0.00000000E+00	0.62085719	0.54587
52	0.97785535	0.52421382	0.00000000E+00	0.97785535	0.85490

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
53	1.6308918	0.85095948	0.00000000E+00	1.6308918	1.4130
54	2.1560667	1.7453750	0.00000000E+00	2.1560667	1.9891
55	0.82918693	0.56380691	0.00000000E+00	0.82918693	0.73985
56	0.36643476	0.26031017	0.00000000E+00	0.36643476	0.32742
57	0.29292527	0.22967514	0.00000000E+00	0.29292527	0.26791
58	0.36377002	0.26168813	0.00000000E+00	0.36377002	0.32579
59	0.82671088	0.56468624	0.00000000E+00	0.82671088	0.73826
60	2.1577023	1.7423157	0.00000000E+00	2.1577023	1.9892
61	0.82671088	0.56468625	0.00000000E+00	0.82671088	0.73826
62	0.36377002	0.26168813	0.00000000E+00	0.36377002	0.32579
63	0.29292526	0.22967514	0.00000000E+00	0.29292526	0.26791
64	0.36643476	0.26031018	0.00000000E+00	0.36643476	0.32742
65	0.82918692	0.56380692	0.00000000E+00	0.82918692	0.73985

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

E	SIG1	SIG2	SIG3	SI	SI
66	2.1560667	1.7453750	0.00000000E+00	2.1560667	1.9891
67	1.3688600	0.64688391	0.00000000E+00	1.3688600	1.1889
68	0.28390643	0.54435158E-01	-0.76308655E-01	0.36021509	0.32645

69	0.22607207	0.29953100E-01	-0.19960880E-01	0.24603295	0.22762
70	0.20952760	0.10878700E-01	-0.93322885E-02	0.21885988	0.20957
71	0.22410208	0.29253395E-01	-0.20089549E-01	0.24419163	0.22618
72	0.28312340	0.53122701E-01	-0.76823462E-01	0.35994686	0.32647
73	1.3693692	0.64412823	0.00000000E+00	1.3693692	1.[illegible]4
74	0.28312342	0.53122724E-01	-0.76823460E-01	0.35994688	0.32[illegible]47
75	0.22410208	0.29253399E-01	-0.20089547E-01	0.24419162	0.22618
76	0.20952759	0.10878699E-01	-0.93322905E-02	0.21885988	0.20957
77	0.22607206	0.29953095E-01	-0.19960880E-01	0.24603294	0.22762
78	0.28390645	0.54435178E-01	-0.76308650E-01	0.36021510	0.32645

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
79	1.3688600	0.64688392	0.00000000E+00	1.3688600	1.1889
80	0.36376236	-0.15801311	-0.51715064	0.88091300	0.79083
81	0.32899890E-01	-0.14613677	-0.85482541	0.88772530	0.81886
82	0.29121798E-02	-0.18864945	-0.90873294	0.91164512	0.83996
83	0.10098923E-01	-0.20393040	-0.86355449	0.87365342	0.79456
84	0.11340296E-02	-0.19511597	-0.92474829	0.92588232	0.85306
85	0.31801430E-01	-0.15804114	-0.88558434	0.91738577	0.84470
86	0.36141149	-0.17098353	-0.54866261	0.91007410	0.81388
87	0.31801434E-01	-0.15804114	-0.88558435	0.91738579	0.84470
88	0.11340271E-02	-0.19511597	-0.92474828	0.92588231	0.85306
89	0.10098922E-01	-0.20393040	-0.86355449	0.87365341	0.79456
90	0.29121750E-02	-0.18864945	-0.90873292	0.91164510	0.83[illegible]
91	0.32899896E-01	-0.14613678	-0.85482544	0.88772533	0.81[illegible]6

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
92	0.36376236	-0.15801312	-0.51715065	0.88091300	0.79083
93	0.11974243	0.00000000E+00	-0.68014994	0.79989237	0.74727
94	0.00000000E+00	-0.18815492	-0.61009729	0.61009729	0.54766
95	0.00000000E+00	-0.37820401	-0.67178363	0.67178363	0.58556
96	0.00000000E+00	-0.44294859	-0.59801163	0.59801163	0.53793
97	0.00000000E+00	-0.38719700	-0.67470731	0.67470731	0.58900
98	0.00000000E+00	-0.20716419	-0.62469848	0.62469848	0.55800
99	0.95718732E-01	0.00000000E+00	-0.69869391	0.79441264	0.75118
100	0.00000000E+00	-0.20716420	-0.62469848	0.62469848	0.55800
101	0.00000000E+00	-0.38719699	-0.67470730	0.67470730	0.58900
102	0.00000000E+00	-0.44294859	-0.59801164	0.59801164	0.53793
103	0.00000000E+00	-0.37820401	-0.67178362	0.67178362	0.58556
104	0.00000000E+00	-0.18815494	-0.61009730	0.61009730	0.54766

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI

105	0.11974244	0.00000000E+00	-0.68014996	0.79989239	0.74727
106	1.0004206	0.00000000E+00	-0.19790703	1.1983277	1.1126
107	0.68343197	0.00000000E+00	-0.22147804	0.90491000	0.81818
108	0.32766891	0.00000000E+00	-0.23791963	0.56558854	0.49536
109	0.21226015	0.00000000E+00	-0.19972232	0.41198247	0.36009
10	0.34402671	0.00000000E+00	-0.23771297	0.58173968	0.51020
111	0.70860497	0.00000000E+00	-0.21336416	0.92196913	0.83758
112	0.99750234	0.00000000E+00	-0.18284751	1.1803498	1.1003
113	0.70860497	0.00000000E+00	-0.21336415	0.92196912	0.83758
114	0.34402671	0.00000000E+00	-0.23771297	0.58173968	0.51020
115	0.21226014	0.00000000E+00	-0.19972233	0.41198246	0.36009
116	0.32766891	0.00000000E+00	-0.23791964	0.56558855	0.49536
117	0.68343196	0.00000000E+00	-0.22147802	0.90490998	0.81818

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
118	1.0004206	0.00000000E+00	-0.19790702	1.1983277	1.1126
119	0.70350534	0.14103406	0.00000000E+00	0.70350534	0.64480
120	0.58816932	0.64526620E-01	0.00000000E+00	0.58816932	0.55910
121	0.41469646	0.00000000E+00	-0.63200890E-01	0.47789735	0.45052
122	0.32844541	0.00000000E+00	-0.10707137	0.43551677	0.39495
123	0.42676086	0.00000000E+00	-0.63545108E-01	0.49030597	0.46256
124	0.63065925	0.65077572E-01	0.00000000E+00	0.63065925	0.60087
125	0.74781515	0.15061045	0.00000000E+00	0.74781515	0.68513
126	0.63065925	0.65077574E-01	0.00000000E+00	0.63065925	0.60087
127	0.42676086	0.00000000E+00	-0.63545108E-01	0.49030597	0.46256
128	0.32844541	0.00000000E+00	-0.10707137	0.43551678	0.39495
129	0.41469646	0.00000000E+00	-0.63200890E-01	0.47789735	0.45052
130	0.58816932	0.64526625E-01	0.00000000E+00	0.58816932	0.55910

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
131	0.70350533	0.14103406	0.00000000E+00	0.70350533	0.64480
132	0.46510071	0.13405308E-01	0.00000000E+00	0.46510071	0.45854
133	0.49454333	0.48645479E-01	-0.20842641E-02	0.49662759	0.47499
134	0.49160623	0.86896088E-01	0.00000000E+00	0.49160623	0.45645
135	0.49019665	0.10792691	0.00000000E+00	0.49019665	0.44614
136	0.50009788	0.99286817E-01	0.00000000E+00	0.50009788	0.46005
137	0.51203528	0.81361096E-01	0.00000000E+00	0.51203528	0.47807
138	0.51618771	0.75821744E-01	0.00000000E+00	0.51618771	0.48276
139	0.51203528	0.81361095E-01	0.00000000E+00	0.51203528	0.47807
140	0.50009788	0.99286816E-01	0.00000000E+00	0.50009788	0.46005
141	0.49019665	0.10792691	0.00000000E+00	0.49019665	0.44614
142	0.49160623	0.86896087E-01	0.00000000E+00	0.49160623	0.45645
143	0.49454333	0.48645477E-01	-0.20842642E-02	0.49662759	0.47499

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
144	0.46510071	0.13405307E-01	0.00000000E+00	0.46510071	0.45854

XIMUMS					
NODE	60	66	84	60	60
VALUE	2.1577023	1.7453750	-0.92474829	2.1577023	1.989

NODAL STRESSES ARE SHELL BOTTOM

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
1	0.00000000E+00	-0.74025266	-0.74511280	0.74511280	0.74269
2	0.00000000E+00	-0.74397079	-0.75417132	0.75417132	0.74915
3	0.00000000E+00	-0.74159013	-0.75074290	0.75074290	0.74622
4	0.00000000E+00	-0.73392298	-0.74457468	0.74457468	0.73932
5	0.00000000E+00	-0.72940223	-0.74246502	0.74246502	0.73605
6	0.00000000E+00	-0.73427342	-0.74436517	0.74436517	0.73938
7	0.00000000E+00	-0.74159780	-0.75097728	0.75097728	0.74634
8	0.00000000E+00	-0.74394633	-0.75447386	0.75447386	0.74930
9	0.00000000E+00	-0.74159780	-0.75097728	0.75097728	0.74634
10	0.00000000E+00	-0.73427342	-0.74436517	0.74436517	0.73[illegible]
11	0.00000000E+00	-0.72940223	-0.74246502	0.74246502	0.73[illegible]
12	0.00000000E+00	-0.73392298	-0.74457468	0.74457468	0.73932
13	0.00000000E+00	-0.74159013	-0.75074290	0.75074290	0.74622

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
14	0.00000000E+00	-0.74397079	-0.75417132	0.75417132	0.74915
15	0.00000000E+00	-0.66392717	-0.79263706	0.79263706	0.73794
16	0.00000000E+00	-0.68658856	-0.80567948	0.80567948	0.75373
17	0.00000000E+00	-0.68439393	-0.80365210	0.80365210	0.75177
18	0.00000000E+00	-0.68912596	-0.80585517	0.80585517	0.75469
19	0.00000000E+00	-0.68309466	-0.80497208	0.80497208	0.75210
20	0.00000000E+00	-0.68441022	-0.80786027	0.80786027	0.75428
21	0.00000000E+00	-0.66156227	-0.79499413	0.79499413	0.73859
22	0.00000000E+00	-0.68441022	-0.80786027	0.80786027	0.75428
23	0.00000000E+00	-0.68309466	-0.80497208	0.80497208	0.75210
24	0.00000000E+00	-0.68912596	-0.80585518	0.80585518	0.75469
25	0.00000000E+00	-0.68439394	-0.80365211	0.80365211	0.75177
26	0.00000000E+00	-0.68658856	-0.80567948	0.80567948	0.75373

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

OAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
27	0.00000000E+00	-0.66392717	-0.79263706	0.79263706	0.73794
28	0.00000000E+00	-0.73825778	-1.1086167	1.1086167	0.97960
29	0.00000000E+00	-0.68065923	-0.98927831	0.98927831	0.87690
30	0.00000000E+00	-0.53616814	-0.75645170	0.75645170	0.67407
31	0.00000000E+00	-0.47128984	-0.66576802	0.66576802	0.59309
32	0.00000000E+00	-0.53582774	-0.75773568	0.75773568	0.67495
33	0.00000000E+00	-0.67857583	-0.99276290	0.99276290	0.87906
34	0.00000000E+00	-0.73499617	-1.1134801	1.1134801	0.98269
35	0.00000000E+00	-0.67857583	-0.99276290	0.99276290	0.87906
36	0.00000000E+00	-0.53582774	-0.75773568	0.75773568	0.67495
37	0.00000000E+00	-0.47128984	-0.66576803	0.66576803	0.59309
38	0.00000000E+00	-0.53616814	-0.75645171	0.75645171	0.67407
39	0.00000000E+00	-0.68065923	-0.98927832	0.98927832	0.87690

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
40	0.00000000E+00	-0.73825779	-1.1086167	1.1086167	0.97960
41	0.00000000E+00	-1.1160679	-1.6073404	1.6073404	1.4267
42	0.00000000E+00	-0.61881142	-0.93833744	0.93833744	0.82947
43	0.00000000E+00	-0.45885953	-0.61091029	0.61091029	0.55195
44	0.00000000E+00	-0.40376274	-0.52743119	0.52743119	0.47779
45	0.00000000E+00	-0.46029532	-0.61055047	0.61055047	0.55214
46	0.00000000E+00	-0.61746267	-0.94132951	0.94132951	0.83157
7	0.00000000E+00	-1.1125827	-1.6128933	1.6128933	1.4301
48	0.00000000E+00	-0.61746267	-0.94132950	0.94132950	0.83157
49	0.00000000E+00	-0.46029531	-0.61055048	0.61055048	0.55214
50	0.00000000E+00	-0.40376274	-0.52743120	0.52743120	0.47779
51	0.00000000E+00	-0.45885953	-0.61091030	0.61091030	0.55195
52	0.00000000E+00	-0.61881142	-0.93833745	0.93833745	0.82947

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
53	0.00000000E+00	-1.1160679	-1.6073405	1.6073405	1.4267
54	0.00000000E+00	-1.8087696	-2.1727308	2.1727308	2.0196
55	0.00000000E+00	-0.58030343	-0.84691715	0.84691715	0.75733
56	0.00000000E+00	-0.24857435	-0.40694034	0.40694034	0.35687
57	0.00000000E+00	-0.21988675	-0.34605710	0.34605710	0.30398
58	0.00000000E+00	-0.25332823	-0.40350323	0.40350323	0.35476
59	0.00000000E+00	-0.58685712	-0.84315802	0.84315802	0.75611
60	0.00000000E+00	-1.8059644	-2.1790451	2.1790451	2.0225
61	0.00000000E+00	-0.58685713	-0.84315802	0.84315802	0.75611
62	0.00000000E+00	-0.25332824	-0.40350322	0.40350322	0.35476
63	0.00000000E+00	-0.21988675	-0.34605710	0.34605710	0.30398
	0.00000000E+00	-0.24857436	-0.40694033	0.40694033	0.35687
	0.00000000E+00	-0.58030344	-0.84691714	0.84691714	0.75733

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	
66	0.00000000E+00	-1.8087696	-2.1727308	2.1727308	2.0196
67	0.00000000E+00	-0.47871424	-1.3868033	1.3868033	1.2238
68	0.79590276E-01	-0.40024073E-01	-0.32731677	0.40690704	0.37279
69	0.37618085E-01	-0.13599898E-01	-0.26970282	0.30732091	0.28800
70	0.13556137E-01	-0.83611866E-03	-0.27115857	0.28471470	0.27794
71	0.37301021E-01	-0.14455597E-01	-0.26959420	0.30689522	0.28733
72	0.79453474E-01	-0.40799403E-01	-0.32991324	0.40936671	0.37471
73	0.00000000E+00	-0.47598312	-1.3938055	1.3938055	1.2308
74	0.79453465E-01	-0.40799417E-01	-0.32991326	0.40936672	0.37471
75	0.37301014E-01	-0.14455598E-01	-0.26959419	0.30689521	0.28733
76	0.13556139E-01	-0.83611693E-03	-0.27115856	0.28471470	0.27794
77	0.37618085E-01	-0.13599896E-01	-0.26970281	0.30732089	0.28800
78	0.79590261E-01	-0.40024084E-01	-0.32731678	0.40690704	0.37279

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
79	0.00000000E+00	-0.47871425	-1.3868033	1.3868033	1.2238
80	1.8160421	0.47880785	-0.35614419	2.1721863	1.9291
81	1.5117541	0.33934909	-0.37841506E-01	1.5495957	1.4059
82	1.1345084	0.24285819	-0.28566774E-01	1.1630751	1.05[illegible]
83	1.0490909	0.21194336	-0.41089801E-01	1.0901807	0.98[illegible]
84	1.1523515	0.24655494	-0.27358119E-01	1.1797096	1.0736
85	1.5407836	0.34577555	-0.37669097E-01	1.5784527	1.4323
86	1.8503967	0.48552428	-0.35679536	2.2071920	1.9595
87	1.5407836	0.34577554	-0.37669102E-01	1.5784527	1.4323
88	1.1523515	0.24655494	-0.27358117E-01	1.1797096	1.0736
89	1.0490909	0.21194335	-0.41089802E-01	1.0901807	0.98979
90	1.1345084	0.24285819	-0.28566770E-01	1.1630751	1.0579
91	1.5117541	0.33934909	-0.37841507E-01	1.5495956	1.4059

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

Calc. Pckg. VSC02.6.2.3.03
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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
92	1.8160421	0.47880786	-0.35614419	2.1721863	1.9291
93	2.1802424	0.10051098	0.00000000E+00	2.1802424	2.1327
94	1.5471746	0.49985846E-01	-0.18664455E-01	1.5658390	1.5332
95	1.0478508	0.25089199E-01	-0.88477289E-02	1.0566986	1.0401
96	0.93726235	0.00000000E+00	-0.16021407E-01	0.95328375	0.94538
97	1.0627365	0.25959234E-01	-0.10446493E-01	1.0731830	1.0555
98	1.5650238	0.50928605E-01	-0.21792510E-01	1.5868163	1.5522
99	2.2072822	0.10079612	0.00000000E+00	2.2072822	2.159[illegible]
00	1.5650238	0.50928602E-01	-0.21792516E-01	1.5868163	1.55[illegible]
1	1.0627365	0.25959240E-01	-0.10446493E-01	1.0731830	1.0555
102	0.93726234	0.00000000E+00	-0.16021403E-01	0.95328375	0.94538
103	1.0478509	0.25089213E-01	-0.88477282E-02	1.0566986	1.0401
104	1.5471745	0.49985842E-01	-0.18664465E-01	1.5658390	1.5332

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
LL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
105	2.1802424	0.10051097	0.00000000E+00	2.1802424	2.1327
106	0.77819544	0.00000000E+00	-0.35438580	1.1325812	1.0065
107	0.55611173	0.00000000E+00	-0.27292838	0.82904011	0.73427
108	0.34232794	0.00000000E+00	-0.14897385	0.49130179	0.43807
109	0.27468321	0.00000000E+00	-0.11214442	0.38682763	0.34550
110	0.34401843	0.00000000E+00	-0.15176712	0.49578555	0.44204
111	0.55727029	0.00000000E+00	-0.28145987	0.83873017	0.74133
112	0.75807564	0.00000000E+00	-0.35881918	1.1168948	0.99154
113	0.55727028	0.00000000E+00	-0.28145988	0.83873016	0.74133
114	0.34401844	0.00000000E+00	-0.15176711	0.49578555	0.44204
115	0.27468322	0.00000000E+00	-0.11214442	0.38682764	0.34550
116	0.34232796	0.00000000E+00	-0.14897384	0.49130179	0.43807
117	0.55611171	0.00000000E+00	-0.27292839	0.82904009	0.73427

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
118	0.77819543	0.00000000E+00	-0.35438580	1.1325812	1.0065
119	0.54922545	0.00000000E+00	-0.81277530E-01	0.63050298	0.59456
120	0.50073709	0.40697168E-02	-0.47848985E-01	0.54858607	0.52505
121	0.45511777	0.44280380E-01	0.00000000E+00	0.45511777	0.43508
122	0.43589413	0.10019705	0.00000000E+00	0.43589413	0.39547
123	0.45920250	0.51362888E-01	0.00000000E+00	0.45920250	0.43618
124	0.50351940	0.00000000E+00	-0.67838802E-01	0.57135820	0.54135
125	0.52956574	0.00000000E+00	-0.14109728	0.67066302	0.61283
126	0.50351940	0.00000000E+00	-0.67838803E-01	0.57135820	0.54135
127	0.45920250	0.51362891E-01	0.00000000E+00	0.45920250	0.43618
128	0.43589413	0.10019705	0.00000000E+00	0.43589413	0.39547
129	0.45511777	0.44280384E-01	0.00000000E+00	0.45511777	0.43508
130	0.50073709	0.40697164E-02	-0.47848985E-01	0.54858607	0.52505

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
131	0.54922545	0.00000000E+00	-0.81277525E-01	0.63050297	0.59456
132	0.50368450	0.15234196E-01	0.00000000E+00	0.50368450	0.49624
133	0.51769094	0.28717519E-01	0.00000000E+00	0.51769094	0.50395
134	0.47883250	0.83767215E-01	0.00000000E+00	0.47883250	0.44294
135	0.44791935	0.12080823	0.00000000E+00	0.44791935	0.40139
136	0.48579248	0.10004835	0.00000000E+00	0.48579248	0.44434
[illegible]	0.53705257	0.66197022E-01	0.00000000E+00	0.53705257	0.50757
138	0.55334375	0.52713803E-01	0.00000000E+00	0.55334375	0.52896
139	0.53705257	0.66197021E-01	0.00000000E+00	0.53705257	0.50757
140	0.48579248	0.10004834	0.00000000E+00	0.48579248	0.44434

141	0.44791935	0.12080823	0.00000000E+00	0.44791935	0.40139
142	0.47883250	0.83767214E-01	0.00000000E+00	0.47883250	0.44294
143	0.51769094	0.28717519E-01	0.00000000E+00	0.51769094	0.50395

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

)AD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
144	0.50368449	0.15234194E-01	0.00000000E+00	0.50368449	0.49624

MAXIMUMS					
NODE	99	66	60	99	99
VALUE	2.2072822	-1.8087696	-2.1790451	2.2072822	2.159

BNFL Fuel Solutions	**CALCULATION PACKAGE**	Calc. Pkg No. VSC02.6.2.3.04 File No.: VSC02.6.2.3.04 Revision: 3

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

MSB-24 Pressure Stress Analysis

SCOPE:

Product:	☐ FuelSolutions™	☐ TranStor™	☒ VSC-24	☐ Other ______
Service:	☒ Storage	☐ Transportation		☐ Other ______
Conditions:	☒ Normal	☒ Off-Normal	☒ Accident	☐ Other ______

Component(s):

MSB Pressure Retaining Components (Shell, Bottom Plate, Structural Lid, Closure Welds)

Prepared by:	Verified by:
Name: Michelle Heinz	*Name:* James Moroney
Signature: Michelle Heinz	*Signature:* [signature]
Date: 1/24/01	*Date:* 2/21/01

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: R Srinivasan

Date: 3/26/01

Form QAP 3.2-1, Revision 1

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1 – 12 A1 to A8 B1 to B21	None	Replaces Calculations WEP109-002.04, Rev. 5. Per ECN No WEP01-C-018	R. Keating	M Heinz
1	1-5, 9, 10, 12		Incorporated changes due to alternative support of MSB by ceramic tiles, as per ECN No. VSC02-ECN-003 Bounding pressure for normal operation changed to 10psig. Table 4-1 modified in line with the above	W. Price	G. Mukhim
2	1, 2, 3, 4, & 12	None	Editorial changes on p. 4 and p. 10. Revised References 2, 5, and 7 on p. 12 (VSC02-ECN-005).	Jim Hibbard	Michelle Heinz
3	1, 2, 3, 5, 10, 12	None	On p. 5, added a note concerning the validity of the MSB length used in the finite element model. Added off-normal pressures to p. 10. Updated References on p 12. (VSC02-ECN-008).	Michelle Heinz	Jim Moroney

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-0427.

RECORD OF VERIFICATION

	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	YES	NO	(N/A)
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	(YES)	NO	N/A
(i) Computer calculations are properly identified.	(YES)	NO	N/A
(j) Computer codes used are under configuration control.	(YES)	NO	N/A
(k) Computer codes used are applicable to the calculation.	(YES)	NO	N/A
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

See Verification memo for comments

Verifier: James Moroney [signature] 2/21/01

Name/Signature/Date

1.0 INTRODUCTION

This analysis evaluates stresses in the MSB shell, structural lid and bottom plate due to internal and external pressure loads. This pressure results from:

1. Normal operational pressure (caused by ambient temperature fluctuation).

2. Off-normal pressure (caused by failure of 10% of the fuel rods inside the MSB)

3. Postulated accident event of failure of all fuel rods inside the MSB.

4. The maximum external pressure. Since this pressure represents a vacuum inside the MSB, buckling could become an issue and the maximum external pressure must also be evaluated. The allowable external pressure is calculated for the MSB per ASME, Section NC - 3133.3.

The stresses are combined with stresses due to other loads and evaluated against the acceptance criteria in a separate calculation.

2.0 DESIGN INPUT AND ASSUMPTIONS

MSB Geometry

L =	181 in[1]	- Length of the vessel [Ref. 1]
S_s =	1.00 in[2]	- Thickness of the shell wall [Ref. 1]
S_b =	0.75 in	- Thickness of the bottom [Ref. 1]
S_c =	3.0 in	- Thickness of the structural lid [Ref. 1]
S_w =	0.75 in	- Structural Lid-to-shell weld size [Ref. 1]
D =	62.5 in	- Diameter of the vessel [Ref. 1]

Notes:

1. The finite element model is based on an MSB length of 181 inches. According to Reference 1, various other lengths should be considered, however because stresses due to internal pressure are not dependent on length, the finite element model is considered valid for the lengths in Reference 1.
2. The finite element model is based on a wall thickness of 0.75 inches. The stresses presented in this analysis are for a wall thickness of 1.00 inches. The finite element analysis results are adjusted to account for the wall thickness.

Normal Operating and Off-Normal Operating Pressures

The maximum normal operating internal pressure is assumed to be 10 psig. This pressure bounds the normal operating pressure calculated in calculation VSC02.6.2.3.5 [Ref. 2]. A pressure of 10 psig is also used for the off-normal condition. This is the maximum off-normal operating pressure calculated in Ref. 2.

Maximum External Pressure

The maximum normal operating external pressure is 10 psig. This pressure bounds the maximum external pressure calculated in calculation VSC02.6.2.3.5 [Ref. 2].

Accident Event Conditions

The postulated event is a breach of all fuel rods inside the MSB results in the maximum pressure that the MSB could experience. This is a Service Level D event and the corresponding ASME Code allowable stresses are applicable. The accident event internal pressure is assumed to be 60 psig which bounds the maximum accident pressure calculated in calculation VSC02.6.2.3.05 [Ref. 2].

3.0 METHODOLOGY

The analysis was done by using a two-dimensional model of the MSB shell, bottom plate, and structural lid. ANSYS (Version 4.3 A-2) element STIF51 (axisymmetric shell) was used. The reason for using finite element analysis in lieu of hand calculation is the different thickness of the structural lid (3") and its weld to the shell (3/4") (no solution is available for this configuration) and also because the model is needed for thermal stresses. The model is presented in Figure 3-1.

The analysis has been later revised due to the NRC staff comment regarding adequacy of the FEA mesh. The NRC suggested that the mesh size could be too coarse to accurately predict stresses at the bottom and top welds.

To address the NRC's concern, a calculation was performed for the bottom weld stress using Roark, Table XIII, formula # 30 [Ref. 3]. The result of $34ksi$ is different by only $\frac{34-33.1}{34}=3\%$ from that obtained by FEA. Therefore, the mesh at the bottom is justified.

For the top region the stress in the junction is classified as secondary (ASME III, Appendix XIII, Table XIII-1130.1, Note 4 [Ref. 7]) and does not need to be evaluated for the Service Level D loading. Nevertheless, the detailed analyses have been performed. The model used STIF42 axisymmetric elements and is presented in Figure 3-2.

The shell wall finite element model was based on a thickness of 0.75 inches. The actual wall thickness is currently 1 inch which allows for corrosion over 50 years. This calculation provides results for a 1-inch thick vessel. The required corrosion allowance will be addressed in a separate analysis.

No assumptions apply to this calculation.

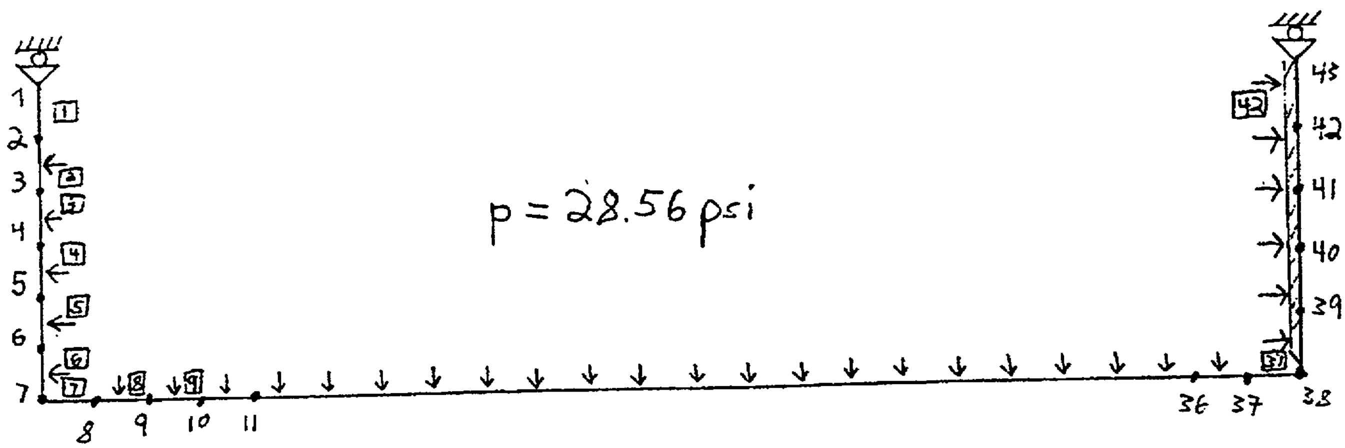

Figure 3-1. Finite Element Model

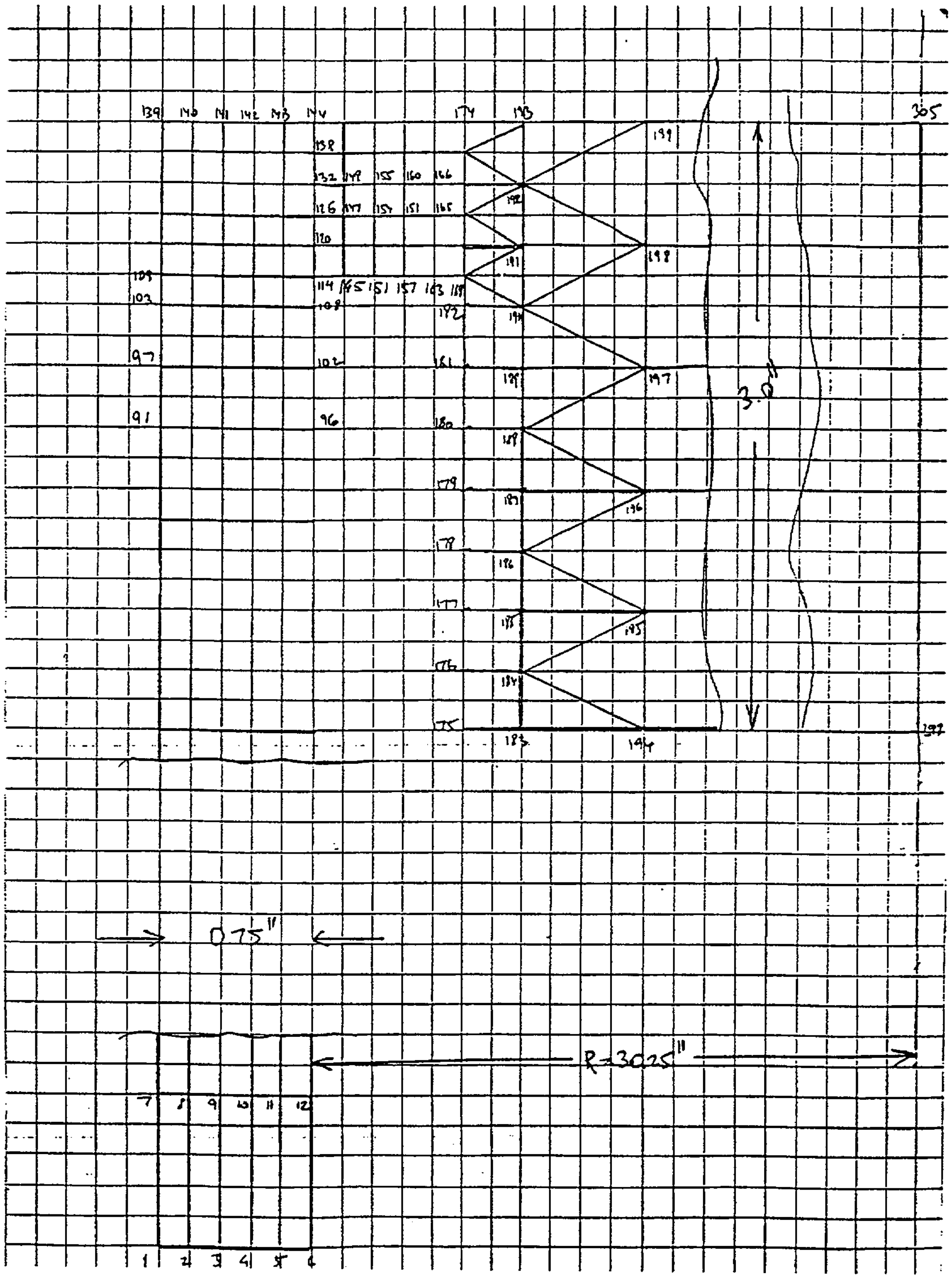

Figure 3-2. Structural Lid Model

4.0 CALCULATIONS

ANSYS Model Results

The ANSYS Version 4.3 A-2 input/output for both models is attached. The results are summarized below. The ANSYS model was run with an internal pressure of 28.5 psig and a shell wall thickness of 0.75 inches. Therefore, the results must be adjusted to account for the actual pressures for each event and for the shell wall thickness change. The membrane stresses are inversely proportional to wall thickness and bending stresses are inversely proportional to the square of the thickness.

1) Shell model with STIF51 axisymmetric elements (Attachment 1)

Bottom plate:

$$P_m = \max\left[el\ 1-6,\ \text{mid}\right] = 1.15\ ksi$$

$$P_L + P_b = \max\left[el\ 1-6,\ \text{top or bot}\right] = 33.1\ ksi$$

Shell:

$$P_m = \max[7-37, \text{mid}] = 4.45 ksi \cdot \frac{0.75 in}{1.0 in} = 3.34 ksi$$

$$P_L + P_b = \max[7-37, \text{top or bot}] = 22 ksi \cdot \left[\frac{0.75 in}{1.0 in}\right]^2 = 12.4 ksi$$

Structural Lid:

$$P_m = \max[38-42, \text{mid}] = 0.14 ksi$$

$$P_L + P_b = \max[38-42, \text{top or bot}] = 3.4 ksi$$

Bottom weld:

$P_m = \max[6-7, \text{mid}] = 4.45 ksi$ (max at element 7)

$P_m = 4.45 ksi \cdot \frac{0.75 in}{1.0 in} = 3.34 ksi$ (scale since element 7 is on the MSB shell)

$P_L + P_b = \max[6-7, \text{top or bot}] = 33.1 ksi$ (max at element 6).

No scaling required since element 6 is on the MSB base.

Top weld:

$$P_m = \max[37-38, \text{mid}] = 0.7 ksi$$

$$P_L + P_b = \max[37-38, \text{top or bot}] = 6.7 ksi$$

2) Top region model using STIF42 elements (Attachment 2)

The maximum calculated stress intensity is 6.5ksi - consistent with the previous analysis (6.7 ksi, $\Delta = 3\%$). Therefore, model in 1) above is justified. See Figure 3-2 for the model and Attachment 2 for the results.

3) In addition, the following stresses for the shield lid weld are from Ref. 4.

Shield Lid weld: $P_m = 3.6ksi$

$P_L + P_b = 13.8ksi$

Stresses for Pressure Load Cases

The stresses for each of the internal pressure cases is scaled from the ANSYS results (which used a pressure of 28.5 psig) using the pressure for each condition (10 psig for normal operating and off-normal operating, and 60 psig for accident). The above results were adjusted accordingly and are summarized below.

Table 4-1
MSB-24 Stresses for Operating and Accident Pressures

	ANSYS Case		Normal Operating Pressure		Off-Normal Operating Pressure		Accident Pressure	
Location	Pm	Pl + Pb	Pm	Pl + Pb	Pm	Pl + Pb	Pm	Pl + Pb
Shell	3.34	12.4	1.17	4.35	1.17	4.35	7.03	26.11
Bottom Plate	1.15	33.1	0.40	11.61	0.40	11.61	2.42	69.68
Structural Lid	0.14	3.4	0.05	1.19	0.05	1.19	0.29	7.16
Bottom Weld	3.34	33.1	1.17	11.61	1.17	11.61	7.03	69.68
Structural Lid Weld	0.7	6.7	0.25	2.35	0.25	2.35	1.47	14.11
Shield Lid Weld	3.6	13.8	1.26	4.84	1.26	4.84	7.58	29.05

External Pressure

To calculate the allowable external pressure, use ASME Code, Section NC-3133.3 [Ref 5]

From Appendix VII, Figure VII - 1100 – 1 [Ref. 7], for $L_0 / D = 2.9$ and $D / T = 62.5$

$$A = 0.0009$$

From Appendix VII, Figure VII - 1101 – 2 [Ref. 7], for A=0.0009 and E=27E6 psi (500F – Bounding Temperature per Reference 6)

$$B = 9{,}800$$

Therefore,

$$P_C = \frac{4 \cdot B}{3 \cdot \left(\dfrac{D_0}{T} \right)} = 210 psig > 10.0 psig$$

5.0 CONCLUSIONS

The calculated stresses are presented in Table 4-1. The pressure stress is only one of the stresses to be considered in the load combinations. Thus, no conclusions are drawn relative to meeting the ASME Code allowable stresses. The load combination is done in a separate calculation.

6.0 REFERENCES

1. BNFL Calculation No. VSC02.6.2.5.03, Rev. 0, VSC-24 Design Parameters.
2. BNFL Calculation VSC02.6.2.3.05, Revision 2, MSB-24 Normal, Off-Normal, and Accident Pressure in the MSB.
3. Roark, Formulas for Stress and Strain, Fourth Edition.
4. BNFL Calculation VSC02.6.2.3.24, Rev. 0, MSB Shield Lid Weld Analysis.
5. ASME Code, Section III, Subsection NC, 1986 Edition with the 1988 Addenda.
6. SNC Calculation WEP 109.003.05, MSB-24 Thermal-Hydraulic Analysis, Revision 5.
7. ASME Code, Section III, Division 1, Appendices, 1986 Edition with 1988 Addenda.

MSB Shell ANSYS output from WEP 109-002.04

LIST ALL ELEMENT TYPES

NO.	STIF				KEYOPT VALUES						INOTPR	
	51	0	0	0	0	1	0	0	0	0	0	PLASTIC AXISYM. CONIC SHELL

LIST ALL SELECTED NODE DSYS= 0

NODE	X	Y	Z	THXY	THYZ	THXZ
1	0.00000E+00	0.00000E+00	0.00000E+00	0.00	0.00	0.00
2	8.0000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
3	16.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
4	24.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
5	28.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
6	30.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
7	31.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
8	31.000	3.0000	0.00000E+00	0.00	0.00	0.00
9	31.000	9.0000	0.00000E+00	0.00	0.00	0.00
10	31.000	15.000	0.00000E+00	0.00	0.00	0.00
11	31.000	21.000	0.00000E+00	0.00	0.00	0.00
12	31.000	27.000	0.00000E+00	0.00	0.00	0.00
13	31.000	33.000	0.00000E+00	0.00	0.00	0.00
14	31.000	39.000	0.00000E+00	0.00	0.00	0.00
15	31.000	45.000	0.00000E+00	0.00	0.00	0.00
16	31.000	51.000	0.00000E+00	0.00	0.00	0.00
17	31.000	57.000	0.00000E+00	0.00	0.00	0.00
18	31.000	63.000	0.00000E+00	0.00	0.00	0.00
19	31.000	69.000	0.00000E+00	0.00	0.00	0.00
20	31.000	75.000	0.00000E+00	0.00	0.00	0.00

DE	X	Y	Z	THXY	THYZ	THXZ
21	31.000	81.000	0.00000E+00	0.00	0.00	0.00
22	31.000	87.000	0.00000E+00	0.00	0.00	0.00
23	31.000	93.000	0.00000E+00	0.00	0.00	0.00
24	31.000	99.000	0.00000E+00	0.00	0.00	0.00
25	31.000	105.00	0.00000E+00	0.00	0.00	0.00
26	31.000	111.00	0.00000E+00	0.00	0.00	0.00
27	31.000	117.00	0.00000E+00	0.00	0.00	0.00
28	31.000	123.00	0.00000E+00	0.00	0.00	0.00
29	31.000	129.00	0.00000E+00	0.00	0.00	0.00
30	31.000	137.00	0.00000E+00	0.00	0.00	0.00
31	31.000	146.00	0.00000E+00	0.00	0.00	0.00
32	31.000	155.00	0.00000E+00	0.00	0.00	0.00
33	31.000	163.00	0.00000E+00	0.00	0.00	0.00
34	31.000	170.00	0.00000E+00	0.00	0.00	0.00
35	31.000	175.00	0.00000E+00	0.00	0.00	0.00
36	31.000	178.00	0.00000E+00	0.00	0.00	0.00
37	31.000	180.00	0.00000E+00	0.00	0.00	0.00
38	31.000	181.00	0.00000E+00	0.00	0.00	0.00
39	29.000	181.00	0.00000E+00	0.00	0.00	0.00
40	25.000	181.00	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
41	17.000	181.00	0.00000E+00	0.00	0.00	0.00
42	9.0000	181.00	0.00000E+00	0.00	0.00	0.00
43	0.00000E+00	181.00	0.00000E+00	0.00	0.00	0.00

LIST ALL SELECTED ELEMENTS. (LIST NODES)

ELEM	MAT	TYP	REL	NODES	
1	1	1	1	1	2
2	1	1	1	2	3
3	1	1	1	3	4
4	1	1	1	4	5
5	1	1	1	5	6
6	1	1	1	6	7
7	1	1	1	7	8
8	1	1	1	8	9
9	1	1	1	9	10
10	1	1	1	10	11
11	1	1	1	11	12
12	1	1	1	12	13
13	1	1	1	13	14
14	1	1	1	14	15
15	1	1	1	15	16
16	1	1	1	16	17
17	1	1	1	17	18
18	1	1	1	18	19
19	1	1	1	19	20
20	1	1	1	20	21

ELEM	MAT	TYP	REL	NODES	
21	1	1	1	21	22
22	1	1	1	22	23
23	1	1	1	23	24
24	1	1	1	24	25
25	1	1	1	25	26
26	1	1	1	26	27
27	1	1	1	27	28
28	1	1	1	28	29
29	1	1	1	29	30
30	1	1	1	30	31
31	1	1	1	31	32
32	1	1	1	32	33
33	1	1	1	33	34
34	1	1	1	34	35
35	1	1	1	35	36
36	1	1	1	36	37
37	1	1	1	37	38
38	1	1	3	38	39
39	1	1	2	39	40
40	1	1	2	40	41

ELEM	MAT	TYP	REL	NODES	
41	1	1	2	41	42
42	1	1	2	42	43

LIST ALL MATERIALS PROPERTY= ALL

PROPERTY TABLE EX MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	28000.	2300.0	28000.

PERTY TABLE ALPX MAT= 1 NUM. POINTS= 3

TEMPERATURE	DATA	TEMPERATURE	DATA
70.000	0.55300E-05	100.00	0.55300E-05

200.00 0.58900E-05

LIST ALL REAL SETS

REAL CONSTANT SET 1 ITEMS 1 TO 6

0.75000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 2 ITEMS 1 TO 6

3.0000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 3 ITEMS 1 TO 6

0.75000	3.0000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

LIST DISPLACEMENTS FOR ALL SELECTED NODES

NODE	LABEL	DISP	CDISP
1	UX	0.000000000E+00	0.000000000E+00
43	UX	0.000000000E+00	0.000000000E+00
1	UY	0.000000000E+00	0.000000000E+00

LIST PRESSURES FOR ALL SELECTED NODES

ELEM	FACE	VALUE(S)		FACE NODES	
1	1	0.28500E-01	0.00000E+00	1	2
2	1	0.28500E-01	0.00000E+00	2	3
3	1	0.28500E-01	0.00000E+00	3	4
4	1	0.28500E-01	0.00000E+00	4	5
5	1	0.28500E-01	0.00000E+00	5	6
6	1	0.28500E-01	0.00000E+00	6	7
7	1	0.28500E-01	0.00000E+00	7	8
8	1	0.28500E-01	0.00000E+00	8	9
9	1	0.28500E-01	0.00000E+00	9	10
10	1	0.28500E-01	0.00000E+00	10	11
11	1	0.28500E-01	0.00000E+00	11	12
12	1	0.28500E-01	0.00000E+00	12	13
13	1	0.28500E-01	0.00000E+00	13	14
14	1	0.28500E-01	0.00000E+00	14	15
15	1	0.28500E-01	0.00000E+00	15	16
16	1	0.28500E-01	0.00000E+00	16	17
17	1	0.28500E-01	0.00000E+00	17	18
18	1	0.28500E-01	0.00000E+00	18	19
19	1	0.28500E-01	0.00000E+00	19	20
20	1	0.28500E-01	0.00000E+00	20	21

ELEM	FACE	VALUE(S)		FACE NODES	
21	1	0.28500E-01	0.00000E+00	21	22
22	1	0.28500E-01	0.00000E+00	22	23
23	1	0.28500E-01	0.00000E+00	23	24
24	1	0.28500E-01	0.00000E+00	24	25
25	1	0.28500E-01	0.00000E+00	25	26
26	1	0.28500E-01	0.00000E+00	26	27
27	1	0.28500E-01	0.00000E+00	27	28
28	1	0.28500E-01	0.00000E+00	28	29
29	1	0.28500E-01	0.00000E+00	29	30
30	1	0.28500E-01	0.00000E+00	30	31
31	1	0.28500E-01	0.00000E+00	31	32
32	1	0.28500E-01	0.00000E+00	32	33
33	1	0.28500E-01	0.00000E+00	33	34
34	1	0.28500E-01	0.00000E+00	34	35
35	1	0.28500E-01	0.00000E+00	35	36

36	1	0.28500E-01	0.00000E+00	36	37
37	1	0.28500E-01	0.00000E+00	37	38
38	1	0.28500E-01	0.00000E+00	38	39
39	1	0.28500E-01	0.00000E+00	39	40
40	1	0.28500E-01	0.00000E+00	40	41

ELEM	FACE	VALUE(S)		FACE NODES	
41	1	0.28500E-01	0.00000E+00	41	42
42	1	0.28500E-01	0.00000E+00	42	43

PRINT ELEMENT STRESS ITEMS PER ELEMENT

***** POST1 ELEMENT STRESS LISTING *****

OAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIT
1	24.597820
2	19.906977
3	10.852800
4	18.034800
5	27.563614
6	33.145349
7	22.001897
8	4.1260732
9	1.5986758
10	1.3469188
11	1.2088433
12	1.1922915
13	1.1980767
14	1.1986292

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIT
15	1.1983894
16	1.1983718
17	1.1983816
18	1.1983822
19	1.1983818
20	1.1983818
21	1.1983818
22	1.1983818
23	1.1983818
24	1.1983818
25	1.1983818
26	1.1983818
27	1.1983820
28	1.1983811

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIT
29	1.1983753
30	1.1984899
31	1.1971255
32	1.2057918
33	1.2370044
34	0.77120443
35	1.0589710
36	3.8652950
37	6.7520054

38	1.7339088
39	1.6223259
40	2.2681374
41	2.8821099
42	3.2224865

RINT ELEMENT STRESS ITEMS PER ELEMENT

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIB
1	26.910586
2	22.219742
3	12.972873
4	18.034800
5	25.250848
6	30.832584
7	20.623634
8	3.0953280
9	1.9271637
10	1.3179282
11	1.1357474
12	1.1516991
13	1.1586465
14	1.1578868

***** POST1 ELEMENT STRESS LISTING *****

OAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIB
15	1.1576246
16	1.1576595
17	1.1576693
18	1.1576678
19	1.1576674
20	1.1576675
21	1.1576675
22	1.1576675
23	1.1576675
24	1.1576675
25	1.1576675
26	1.1576674
27	1.1576678
28	1.1576682

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

LEM	SIB
29	1.1576537
30	1.1578090
31	1.1566076
32	1.1544756

33	1.2692174
34	1.1274844
35	0.34760544
36	2.6327083
37	5.4962323
38	1.6720996
39	1.8022611
40	2.4480725
41	3.0620450
42	3.4024217

PRINT ELEMENT STRESS ITEMS PER ELEMENT

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIM
1	1.1563827
2	1.1563827
3	1.1563827
4	1.1563827
5	1.1563827
6	1.1563827
7	4.4566488
8	3.3501960
9	1.2517262
10	1.3324235
11	1.1722953
12	1.1719953
13	1.1783616
14	1.1782580

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIM
15	1.1780070
16	1.1780157
17	1.1780255
18	1.1780250
19	1.1780246
20	1.1780246
21	1.1780246
22	1.1780246
23	1.1780246
24	1.1780246
25	1.1780246
26	1.1780246
27	1.1780249
28	1.1780246

***** POST1 ELEMENT STRESS LISTING *****

.D STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	SIM
29	1.1780145
30	1.1781494
31	1.1768665
32	1.1801337
33	1.2531109
34	0.91487878
35	0.65111906
36	1.0947511
37	0.71349881
38	0.13487353
39	0.89967565E-01
40	0.89967565E-01
41	0.89967565E-01
42	0.89967565E-01

MSB Top End Ansys output from WEP-109-002.04

LIST ALL ELEMENT TYPES

NO.	STIF			KEYOPT VALUES							INOTPR	
1	42	0	0	1	0	0	0	0	0	0	0	ISOPAR. STRESS SOLID, 2-D

LIST ALL SELECTED NODE DSYS= 0

NODE	X	Y	Z	THXY	THYZ	THXZ
1	31.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
2	30.850	0.00000E+00	0.00000E+00	0.00	0.00	0.00
3	30.700	0.00000E+00	0.00000E+00	0.00	0.00	0.00
4	30.550	0.00000E+00	0.00000E+00	0.00	0.00	0.00
5	30.400	0.00000E+00	0.00000E+00	0.00	0.00	0.00
6	30.250	0.00000E+00	0.00000E+00	0.00	0.00	0.00
7	31.000	0.75000	0.00000E+00	0.00	0.00	0.00
8	30.850	0.75000	0.00000E+00	0.00	0.00	0.00
9	30.700	0.75000	0.00000E+00	0.00	0.00	0.00
10	30.550	0.75000	0.00000E+00	0.00	0.00	0.00
11	30.400	0.75000	0.00000E+00	0.00	0.00	0.00
12	30.250	0.75000	0.00000E+00	0.00	0.00	0.00
13	31.000	1.5000	0.00000E+00	0.00	0.00	0.00
14	30.850	1.5000	0.00000E+00	0.00	0.00	0.00
15	30.700	1.5000	0.00000E+00	0.00	0.00	0.00
16	30.550	1.5000	0.00000E+00	0.00	0.00	0.00
17	30.400	1.5000	0.00000E+00	0.00	0.00	0.00
18	30.250	1.5000	0.00000E+00	0.00	0.00	0.00
19	31.000	2.2500	0.00000E+00	0.00	0.00	0.00
20	30.850	2.2500	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
21	30.700	2.2500	0.00000E+00	0.00	0.00	0.00
22	30.550	2.2500	0.00000E+00	0.00	0.00	0.00
23	30.400	2.2500	0.00000E+00	0.00	0.00	0.00
24	30.250	2.2500	0.00000E+00	0.00	0.00	0.00
25	31.000	3.0000	0.00000E+00	0.00	0.00	0.00
26	30.850	3.0000	0.00000E+00	0.00	0.00	0.00
27	30.700	3.0000	0.00000E+00	0.00	0.00	0.00
28	30.550	3.0000	0.00000E+00	0.00	0.00	0.00
29	30.400	3.0000	0.00000E+00	0.00	0.00	0.00
30	30.250	3.0000	0.00000E+00	0.00	0.00	0.00
31	31.000	3.7500	0.00000E+00	0.00	0.00	0.00
32	30.850	3.7500	0.00000E+00	0.00	0.00	0.00
33	30.700	3.7500	0.00000E+00	0.00	0.00	0.00
34	30.550	3.7500	0.00000E+00	0.00	0.00	0.00
35	30.400	3.7500	0.00000E+00	0.00	0.00	0.00
36	30.250	3.7500	0.00000E+00	0.00	0.00	0.00
37	31.000	4.5000	0.00000E+00	0.00	0.00	0.00
38	30.850	4.5000	0.00000E+00	0.00	0.00	0.00
39	30.700	4.5000	0.00000E+00	0.00	0.00	0.00
40	30.550	4.5000	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
41	30.400	4.5000	0.00000E+00	0.00	0.00	0.00
42	30.250	4.5000	0.00000E+00	0.00	0.00	0.00
43	31.000	5.2500	0.00000E+00	0.00	0.00	0.00
44	30.850	5.2500	0.00000E+00	0.00	0.00	0.00
45	30.700	5.2500	0.00000E+00	0.00	0.00	0.00
46	30.550	5.2500	0.00000E+00	0.00	0.00	0.00

47	30.400	5.2500	0.00000E+00	0.00	0.00	0.00
48	30.250	5.2500	0.00000E+00	0.00	0.00	0.00
49	31.000	6.0000	0.00000E+00	0.00	0.00	0.00
50	30.850	6.0000	0.00000E+00	0.00	0.00	0.00
51	30.700	6.0000	0.00000E+00	0.00	0.00	0.00
52	30.550	6.0000	0.00000E+00	0.00	0.00	0.00
53	30.400	6.0000	0.00000E+00	0.00	0.00	0.00
54	30.250	6.0000	0.00000E+00	0.00	0.00	0.00
55	31.000	6.7500	0.00000E+00	0.00	0.00	0.00
56	30.850	6.7500	0.00000E+00	0.00	0.00	0.00
57	30.700	6.7500	0.00000E+00	0.00	0.00	0.00
58	30.550	6.7500	0.00000E+00	0.00	0.00	0.00
59	30.400	6.7500	0.00000E+00	0.00	0.00	0.00
60	30.250	6.7500	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
61	31.000	7.5000	0.00000E+00	0.00	0.00	0.00
62	30.850	7.5000	0.00000E+00	0.00	0.00	0.00
63	30.700	7.5000	0.00000E+00	0.00	0.00	0.00
64	30.550	7.5000	0.00000E+00	0.00	0.00	0.00
65	30.400	7.5000	0.00000E+00	0.00	0.00	0.00
66	30.250	7.5000	0.00000E+00	0.00	0.00	0.00
67	31.000	8.2500	0.00000E+00	0.00	0.00	0.00
68	30.850	8.2500	0.00000E+00	0.00	0.00	0.00
69	30.700	8.2500	0.00000E+00	0.00	0.00	0.00
70	30.550	8.2500	0.00000E+00	0.00	0.00	0.00
71	30.400	8.2500	0.00000E+00	0.00	0.00	0.00
72	30.250	8.2500	0.00000E+00	0.00	0.00	0.00
73	31.000	9.0000	0.00000E+00	0.00	0.00	0.00
74	30.850	9.0000	0.00000E+00	0.00	0.00	0.00
75	30.700	9.0000	0.00000E+00	0.00	0.00	0.00
76	30.550	9.0000	0.00000E+00	0.00	0.00	0.00
77	30.400	9.0000	0.00000E+00	0.00	0.00	0.00
78	30.250	9.0000	0.00000E+00	0.00	0.00	0.00
79	31.000	9.7500	0.00000E+00	0.00	0.00	0.00
80	30.850	9.7500	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
81	30.700	9.7500	0.00000E+00	0.00	0.00	0.00
82	30.550	9.7500	0.00000E+00	0.00	0.00	0.00
83	30.400	9.7500	0.00000E+00	0.00	0.00	0.00
84	30.250	9.7500	0.00000E+00	0.00	0.00	0.00
85	31.000	10.500	0.00000E+00	0.00	0.00	0.00
86	30.850	10.500	0.00000E+00	0.00	0.00	0.00
87	30.700	10.500	0.00000E+00	0.00	0.00	0.00
88	30.550	10.500	0.00000E+00	0.00	0.00	0.00
89	30.400	10.500	0.00000E+00	0.00	0.00	0.00
90	30.250	10.500	0.00000E+00	0.00	0.00	0.00
91	31.000	11.000	0.00000E+00	0.00	0.00	0.00
92	30.850	11.000	0.00000E+00	0.00	0.00	0.00
93	30.700	11.000	0.00000E+00	0.00	0.00	0.00
94	30.550	11.000	0.00000E+00	0.00	0.00	0.00
95	30.400	11.000	0.00000E+00	0.00	0.00	0.00
96	30.250	11.000	0.00000E+00	0.00	0.00	0.00
97	31.000	11.500	0.00000E+00	0.00	0.00	0.00
98	30.850	11.500	0.00000E+00	0.00	0.00	0.00
99	30.700	11.500	0.00000E+00	0.00	0.00	0.00
100	30.550	11.500	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ

101	30.400	11.500	0.00000E+00	0.00	0.00	0.00
102	30.250	11.500	0.00000E+00	0.00	0.00	0.00
103	31.000	11.800	0.00000E+00	0.00	0.00	0.00
104	30.850	11.800	0.00000E+00	0.00	0.00	0.00
105	30.700	11.800	0.00000E+00	0.00	0.00	0.00
106	30.550	11.800	0.00000E+00	0.00	0.00	0.00
107	30.400	11.800	0.00000E+00	0.00	0.00	0.00
108	30.250	11.800	0.00000E+00	0.00	0.00	0.00
109	31.000	11.950	0.00000E+00	0.00	0.00	0.00
110	30.850	11.950	0.00000E+00	0.00	0.00	0.00
111	30.700	11.950	0.00000E+00	0.00	0.00	0.00
112	30.550	11.950	0.00000E+00	0.00	0.00	0.00
113	30.400	11.950	0.00000E+00	0.00	0.00	0.00
114	30.250	11.950	0.00000E+00	0.00	0.00	0.00
115	31.000	12.100	0.00000E+00	0.00	0.00	0.00
116	30.850	12.100	0.00000E+00	0.00	0.00	0.00
117	30.700	12.100	0.00000E+00	0.00	0.00	0.00
118	30.550	12.100	0.00000E+00	0.00	0.00	0.00
119	30.400	12.100	0.00000E+00	0.00	0.00	0.00
120	30.250	12.100	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
121	31.000	12.250	0.00000E+00	0.00	0.00	0.00
122	30.850	12.250	0.00000E+00	0.00	0.00	0.00
123	30.700	12.250	0.00000E+00	0.00	0.00	0.00
124	30.550	12.250	0.00000E+00	0.00	0.00	0.00
125	30.400	12.250	0.00000E+00	0.00	0.00	0.00
126	30.250	12.250	0.00000E+00	0.00	0.00	0.00
127	31.000	12.400	0.00000E+00	0.00	0.00	0.00
128	30.850	12.400	0.00000E+00	0.00	0.00	0.00
129	30.700	12.400	0.00000E+00	0.00	0.00	0.00
130	30.550	12.400	0.00000E+00	0.00	0.00	0.00
131	30.400	12.400	0.00000E+00	0.00	0.00	0.00
132	30.250	12.400	0.00000E+00	0.00	0.00	0.00
133	31.000	12.550	0.00000E+00	0.00	0.00	0.00
134	30.850	12.550	0.00000E+00	0.00	0.00	0.00
135	30.700	12.550	0.00000E+00	0.00	0.00	0.00
136	30.550	12.550	0.00000E+00	0.00	0.00	0.00
137	30.400	12.550	0.00000E+00	0.00	0.00	0.00
138	30.250	12.550	0.00000E+00	0.00	0.00	0.00
139	31.000	12.700	0.00000E+00	0.00	0.00	0.00
140	30.850	12.700	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
141	30.700	12.700	0.00000E+00	0.00	0.00	0.00
142	30.550	12.700	0.00000E+00	0.00	0.00	0.00
143	30.400	12.700	0.00000E+00	0.00	0.00	0.00
144	30.250	12.700	0.00000E+00	0.00	0.00	0.00
145	30.100	11.950	0.00000E+00	0.00	0.00	0.00
146	30.100	12.100	0.00000E+00	0.00	0.00	0.00
147	30.100	12.250	0.00000E+00	0.00	0.00	0.00
148	30.100	12.400	0.00000E+00	0.00	0.00	0.00
149	30.100	12.550	0.00000E+00	0.00	0.00	0.00
150	30.100	12.700	0.00000E+00	0.00	0.00	0.00
151	29.950	11.950	0.00000E+00	0.00	0.00	0.00
152	29.950	12.100	0.00000E+00	0.00	0.00	0.00
153	29.950	12.250	0.00000E+00	0.00	0.00	0.00
154	29.950	12.400	0.00000E+00	0.00	0.00	0.00
155	29.950	12.550	0.00000E+00	0.00	0.00	0.00
156	29.950	12.700	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
157	29.800	11.950	0.00000E+00	0.00	0.00	0.00
158	29.800	12.100	0.00000E+00	0.00	0.00	0.00
159	29.800	12.250	0.00000E+00	0.00	0.00	0.00
160	29.800	12.400	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
161	29.800	12.550	0.00000E+00	0.00	0.00	0.00
162	29.800	12.700	0.00000E+00	0.00	0.00	0.00
163	29.650	11.950	0.00000E+00	0.00	0.00	0.00
164	29.650	12.100	0.00000E+00	0.00	0.00	0.00
165	29.650	12.250	0.00000E+00	0.00	0.00	0.00
166	29.650	12.400	0.00000E+00	0.00	0.00	0.00
167	29.650	12.550	0.00000E+00	0.00	0.00	0.00
168	29.650	12.700	0.00000E+00	0.00	0.00	0.00
169	29.500	11.950	0.00000E+00	0.00	0.00	0.00
170	29.500	12.100	0.00000E+00	0.00	0.00	0.00
171	29.500	12.250	0.00000E+00	0.00	0.00	0.00
172	29.500	12.400	0.00000E+00	0.00	0.00	0.00
173	29.500	12.550	0.00000E+00	0.00	0.00	0.00
174	29.500	12.700	0.00000E+00	0.00	0.00	0.00
175	29.500	9.7000	0.00000E+00	0.00	0.00	0.00
176	29.500	10.000	0.00000E+00	0.00	0.00	0.00
177	29.500	10.300	0.00000E+00	0.00	0.00	0.00
178	29.500	10.600	0.00000E+00	0.00	0.00	0.00
179	29.500	10.900	0.00000E+00	0.00	0.00	0.00
180	29.500	11.200	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
181	29.500	11.500	0.00000E+00	0.00	0.00	0.00
182	29.500	11.800	0.00000E+00	0.00	0.00	0.00
183	29.200	9.7000	0.00000E+00	0.00	0.00	0.00
184	29.200	10.000	0.00000E+00	0.00	0.00	0.00
185	29.200	10.300	0.00000E+00	0.00	0.00	0.00
186	29.200	10.600	0.00000E+00	0.00	0.00	0.00
187	29.200	10.900	0.00000E+00	0.00	0.00	0.00
188	29.200	11.200	0.00000E+00	0.00	0.00	0.00
189	29.200	11.500	0.00000E+00	0.00	0.00	0.00
190	29.200	11.800	0.00000E+00	0.00	0.00	0.00
191	29.200	12.100	0.00000E+00	0.00	0.00	0.00
192	29.200	12.400	0.00000E+00	0.00	0.00	0.00
193	29.200	12.700	0.00000E+00	0.00	0.00	0.00
194	28.600	9.7000	0.00000E+00	0.00	0.00	0.00
195	28.600	10.300	0.00000E+00	0.00	0.00	0.00
196	28.600	10.900	0.00000E+00	0.00	0.00	0.00
197	28.600	11.500	0.00000E+00	0.00	0.00	0.00
198	28.600	12.100	0.00000E+00	0.00	0.00	0.00
199	28.600	12.700	0.00000E+00	0.00	0.00	0.00
200	27.600	9.7000	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
201	27.600	10.300	0.00000E+00	0.00	0.00	0.00
202	27.600	10.900	0.00000E+00	0.00	0.00	0.00
203	27.600	11.500	0.00000E+00	0.00	0.00	0.00
204	27.600	12.100	0.00000E+00	0.00	0.00	0.00
205	27.600	12.700	0.00000E+00	0.00	0.00	0.00
206	26.000	9.7000	0.00000E+00	0.00	0.00	0.00
207	26.000	10.300	0.00000E+00	0.00	0.00	0.00
208	26.000	10.900	0.00000E+00	0.00	0.00	0.00
209	26.000	11.500	0.00000E+00	0.00	0.00	0.00
210	26.000	12.100	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
211	26.000	12.700	0.00000E+00	0.00	0.00	0.00
212	24.000	9.7000	0.00000E+00	0.00	0.00	0.00
213	24.000	10.300	0.00000E+00	0.00	0.00	0.00
214	24.000	10.900	0.00000E+00	0.00	0.00	0.00
215	24.000	11.500	0.00000E+00	0.00	0.00	0.00
216	24.000	12.100	0.00000E+00	0.00	0.00	0.00
217	24.000	12.700	0.00000E+00	0.00	0.00	0.00
218	22.000	9.7000	0.00000E+00	0.00	0.00	0.00
219	22.000	10.300	0.00000E+00	0.00	0.00	0.00
220	22.000	10.900	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
221	22.000	11.500	0.00000E+00	0.00	0.00	0.00
222	22.000	12.100	0.00000E+00	0.00	0.00	0.00
223	22.000	12.700	0.00000E+00	0.00	0.00	0.00
224	20.000	9.7000	0.00000E+00	0.00	0.00	0.00
225	20.000	10.300	0.00000E+00	0.00	0.00	0.00
226	20.000	10.900	0.00000E+00	0.00	0.00	0.00
227	20.000	11.500	0.00000E+00	0.00	0.00	0.00
228	20.000	12.100	0.00000E+00	0.00	0.00	0.00
229	20.000	12.700	0.00000E+00	0.00	0.00	0.00
230	18.000	9.7000	0.00000E+00	0.00	0.00	0.00
231	18.000	10.300	0.00000E+00	0.00	0.00	0.00
232	18.000	10.900	0.00000E+00	0.00	0.00	0.00
233	18.000	11.500	0.00000E+00	0.00	0.00	0.00
234	18.000	12.100	0.00000E+00	0.00	0.00	0.00
235	18.000	12.700	0.00000E+00	0.00	0.00	0.00
236	16.000	9.7000	0.00000E+00	0.00	0.00	0.00
237	16.000	10.300	0.00000E+00	0.00	0.00	0.00
238	16.000	10.900	0.00000E+00	0.00	0.00	0.00
239	16.000	11.500	0.00000E+00	0.00	0.00	0.00
240	16.000	12.100	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
241	16.000	12.700	0.00000E+00	0.00	0.00	0.00
242	14.000	9.7000	0.00000E+00	0.00	0.00	0.00
243	14.000	10.300	0.00000E+00	0.00	0.00	0.00
244	14.000	10.900	0.00000E+00	0.00	0.00	0.00
245	14.000	11.500	0.00000E+00	0.00	0.00	0.00
246	14.000	12.100	0.00000E+00	0.00	0.00	0.00
247	14.000	12.700	0.00000E+00	0.00	0.00	0.00
248	12.000	9.7000	0.00000E+00	0.00	0.00	0.00
249	12.000	10.300	0.00000E+00	0.00	0.00	0.00
250	12.000	10.900	0.00000E+00	0.00	0.00	0.00
251	12.000	11.500	0.00000E+00	0.00	0.00	0.00
252	12.000	12.100	0.00000E+00	0.00	0.00	0.00
253	12.000	12.700	0.00000E+00	0.00	0.00	0.00
254	10.000	9.7000	0.00000E+00	0.00	0.00	0.00
255	10.000	10.300	0.00000E+00	0.00	0.00	0.00
256	10.000	10.900	0.00000E+00	0.00	0.00	0.00
257	10.000	11.500	0.00000E+00	0.00	0.00	0.00
258	10.000	12.100	0.00000E+00	0.00	0.00	0.00
259	10.000	12.700	0.00000E+00	0.00	0.00	0.00
260	8.0000	9.7000	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
261	8.0000	10.300	0.00000E+00	0.00	0.00	0.00
262	8.0000	10.900	0.00000E+00	0.00	0.00	0.00
263	8.0000	11.500	0.00000E+00	0.00	0.00	0.00
264	8.0000	12.100	0.00000E+00	0.00	0.00	0.00

265	8.0000	12.700	0.00000E+00	0.00	0.00	0.00
266	6.0000	9.7000	0.00000E+00	0.00	0.00	0.00
267	6.0000	10.300	0.00000E+00	0.00	0.00	0.00
268	6.0000	10.900	0.00000E+00	0.00	0.00	0.00
269	6.0000	11.500	0.00000E+00	0.00	0.00	0.00
270	6.0000	12.100	0.00000E+00	0.00	0.00	0.00
271	6.0000	12.700	0.00000E+00	0.00	0.00	0.00
272	4.0000	9.7000	0.00000E+00	0.00	0.00	0.00
273	4.0000	10.300	0.00000E+00	0.00	0.00	0.00
274	4.0000	10.900	0.00000E+00	0.00	0.00	0.00
275	4.0000	11.500	0.00000E+00	0.00	0.00	0.00
276	4.0000	12.100	0.00000E+00	0.00	0.00	0.00
277	4.0000	12.700	0.00000E+00	0.00	0.00	0.00
278	2.0000	9.7000	0.00000E+00	0.00	0.00	0.00
279	2.0000	10.300	0.00000E+00	0.00	0.00	0.00
280	2.0000	10.900	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
281	2.0000	11.500	0.00000E+00	0.00	0.00	0.00
282	2.0000	12.100	0.00000E+00	0.00	0.00	0.00
283	2.0000	12.700	0.00000E+00	0.00	0.00	0.00
284	0.00000E+00	9.7000	0.00000E+00	0.00	0.00	0.00
285	0.00000E+00	10.300	0.00000E+00	0.00	0.00	0.00
286	0.00000E+00	10.900	0.00000E+00	0.00	0.00	0.00
287	0.00000E+00	11.500	0.00000E+00	0.00	0.00	0.00
288	0.00000E+00	12.100	0.00000E+00	0.00	0.00	0.00
289	0.00000E+00	12.700	0.00000E+00	0.00	0.00	0.00
290	29.800	9.7000	0.00000E+00	0.00	0.00	0.00
291	29.800	10.000	0.00000E+00	0.00	0.00	0.00
292	29.800	10.300	0.00000E+00	0.00	0.00	0.00
293	29.800	10.600	0.00000E+00	0.00	0.00	0.00
294	29.800	10.900	0.00000E+00	0.00	0.00	0.00
295	29.800	11.200	0.00000E+00	0.00	0.00	0.00
296	29.800	11.500	0.00000E+00	0.00	0.00	0.00
297	29.800	11.800	0.00000E+00	0.00	0.00	0.00
298	30.100	9.7000	0.00000E+00	0.00	0.00	0.00
299	30.100	10.000	0.00000E+00	0.00	0.00	0.00
300	30.100	10.300	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
301	30.100	10.600	0.00000E+00	0.00	0.00	0.00
302	30.100	10.900	0.00000E+00	0.00	0.00	0.00
303	30.100	11.200	0.00000E+00	0.00	0.00	0.00
304	30.100	11.500	0.00000E+00	0.00	0.00	0.00
305	30.100	11.800	0.00000E+00	0.00	0.00	0.00

LIST ALL SELECTED ELEMENTS. (LIST NODES)

ELEM	MAT	TYP	REL	NODES			
1	1	1	1	2	1	7	8
2	1	1	1	3	2	8	9
3	1	1	1	4	3	9	10
4	1	1	1	5	4	10	11
5	1	1	1	6	5	11	12
6	1	1	1	8	7	13	14
7	1	1	1	9	8	14	15
8	1	1	1	10	9	15	16
9	1	1	1	11	10	16	17
10	1	1	1	12	11	17	18

11	1	1	1	14	13	19	20
12	1	1	1	15	14	20	21
13	1	1	1	16	15	21	22
14	1	1	1	17	16	22	23
15	1	1	1	18	17	23	24
16	1	1	1	20	19	25	26
17	1	1	1	21	20	26	27
18	1	1	1	22	21	27	28
19	1	1	1	23	22	28	29
20	1	1	1	24	23	29	30

ELEM	MAT	TYP	REL	NODES			
21	1	1	1	26	25	31	32
22	1	1	1	27	26	32	33
23	1	1	1	28	27	33	34
24	1	1	1	29	28	34	35
25	1	1	1	30	29	35	36
26	1	1	1	32	31	37	38
27	1	1	1	33	32	38	39
28	1	1	1	34	33	39	40
29	1	1	1	35	34	40	41
30	1	1	1	36	35	41	42
31	1	1	1	38	37	43	44
32	1	1	1	39	38	44	45
33	1	1	1	40	39	45	46
34	1	1	1	41	40	46	47
35	1	1	1	42	41	47	48
36	1	1	1	44	43	49	50
37	1	1	1	45	44	50	51
38	1	1	1	46	45	51	52
39	1	1	1	47	46	52	53
40	1	1	1	48	47	53	54

ELEM	MAT	TYP	REL	NODES			
41	1	1	1	50	49	55	56
42	1	1	1	51	50	56	57
43	1	1	1	52	51	57	58
44	1	1	1	53	52	58	59
45	1	1	1	54	53	59	60
46	1	1	1	56	55	61	62
47	1	1	1	57	56	62	63
48	1	1	1	58	57	63	64
49	1	1	1	59	58	64	65
50	1	1	1	60	59	65	66
51	1	1	1	62	61	67	68
52	1	1	1	63	62	68	69
53	1	1	1	64	63	69	70
54	1	1	1	65	64	70	71
55	1	1	1	66	65	71	72
56	1	1	1	68	67	73	74
57	1	1	1	69	68	74	75
58	1	1	1	70	69	75	76
59	1	1	1	71	70	76	77
60	1	1	1	72	71	77	78

ELEM	MAT	TYP	REL	NODES			
61	1	1	1	74	73	79	80

62	1	1	1	75	74	80	81
63	1	1	1	76	75	81	82
64	1	1	1	77	76	82	83
65	1	1	1	78	77	83	84
66	1	1	1	80	79	85	86
67	1	1	1	81	80	86	87
68	1	1	1	82	81	87	88
69	1	1	1	83	82	88	89
70	1	1	1	84	83	89	90
71	1	1	1	86	85	91	92
72	1	1	1	87	86	92	93
73	1	1	1	88	87	93	94
74	1	1	1	89	88	94	95
75	1	1	1	90	89	95	96
76	1	1	1	92	91	97	98
77	1	1	1	93	92	98	99
78	1	1	1	94	93	99	100
79	1	1	1	95	94	100	101
80	1	1	1	96	95	101	102

ELEM	MAT	TYP	REL	NODES			
81	1	1	1	98	97	103	104
82	1	1	1	99	98	104	105
83	1	1	1	100	99	105	106
84	1	1	1	101	100	106	107
85	1	1	1	102	101	107	108
86	1	1	1	104	103	109	110
87	1	1	1	105	104	110	111
88	1	1	1	106	105	111	112
89	1	1	1	107	106	112	113
90	1	1	1	108	107	113	114
91	1	1	1	110	109	115	116
92	1	1	1	111	110	116	117
93	1	1	1	112	111	117	118
94	1	1	1	113	112	118	119
95	1	1	1	114	113	119	120
96	1	1	1	116	115	121	122
97	1	1	1	117	116	122	123
98	1	1	1	118	117	123	124
99	1	1	1	119	118	124	125
100	1	1	1	120	119	125	126

ELEM	MAT	TYP	REL	NODES			
101	1	1	1	122	121	127	128
102	1	1	1	123	122	128	129
103	1	1	1	124	123	129	130
104	1	1	1	125	124	130	131
105	1	1	1	126	125	131	132
106	1	1	1	128	127	133	134
107	1	1	1	129	128	134	135
108	1	1	1	130	129	135	136
109	1	1	1	131	130	136	137
110	1	1	1	132	131	137	138
111	1	1	1	134	133	139	140
.12	1	1	1	135	134	140	141
113	1	1	1	136	135	141	142
114	1	1	1	137	136	142	143
115	1	1	1	138	137	143	144

116	1	1	1	145	114	120	146
117	1	1	1	146	120	126	147
118	1	1	1	147	126	132	148
119	1	1	1	148	132	138	149
120	1	1	1	149	138	144	150

ELEM	MAT	TYP	REL	NODES			
121	1	1	1	151	145	146	152
122	1	1	1	152	146	147	153
123	1	1	1	153	147	148	154
124	1	1	1	154	148	149	155
125	1	1	1	155	149	150	156
126	1	1	1	157	151	152	158
127	1	1	1	158	152	153	159
128	1	1	1	159	153	154	160
129	1	1	1	160	154	155	161
130	1	1	1	161	155	156	162
131	1	1	1	163	157	158	164
132	1	1	1	164	158	159	165
133	1	1	1	165	159	160	166
134	1	1	1	166	160	161	167
135	1	1	1	167	161	162	168
136	1	1	1	169	163	164	170
137	1	1	1	170	164	165	171
138	1	1	1	171	165	166	172
139	1	1	1	172	166	167	173
140	1	1	1	173	167	168	174

ELEM	MAT	TYP	REL	NODES			
141	1	1	1	174	193	173	173
142	1	1	1	193	192	173	173
143	1	1	1	173	192	172	172
144	1	1	1	172	192	171	171
145	1	1	1	171	192	191	191
146	1	1	1	171	191	170	170
147	1	1	1	170	191	169	169
148	1	1	1	169	191	190	190
149	1	1	1	169	190	182	182
150	1	1	1	183	175	176	184
151	1	1	1	184	176	177	185
152	1	1	1	185	177	178	186
153	1	1	1	186	178	179	187
154	1	1	1	187	179	180	188
155	1	1	1	188	180	181	189
156	1	1	1	189	181	182	190
157	1	1	1	194	183	184	184
158	1	1	1	195	184	185	185
159	1	1	1	194	184	195	195
160	1	1	1	195	185	186	186

ELEM	MAT	TYP	REL	NODES			
161	1	1	1	195	186	196	196
162	1	1	1	186	187	196	196
163	1	1	1	196	187	188	188
164	1	1	1	196	188	197	197
165	1	1	1	188	189	197	197
166	1	1	1	189	190	197	197

167	1	1	1	197	190	198	198
168	1	1	1	190	191	198	198
169	1	1	1	198	191	192	192
170	1	1	1	198	192	199	199
171	1	1	1	192	193	199	199
172	1	1	1	200	194	195	201
173	1	1	1	201	195	196	202
174	1	1	1	202	196	197	203
175	1	1	1	203	197	198	204
176	1	1	1	204	198	199	205
177	1	1	1	206	200	201	207
178	1	1	1	207	201	202	208
179	1	1	1	208	202	203	209
180	1	1	1	209	203	204	210

ELEM	MAT	TYP	REL	NODES			
181	1	1	1	210	204	205	211
182	1	1	1	212	206	207	213
183	1	1	1	213	207	208	214
184	1	1	1	214	208	209	215
185	1	1	1	215	209	210	216
186	1	1	1	216	210	211	217
187	1	1	1	218	212	213	219
188	1	1	1	219	213	214	220
189	1	1	1	220	214	215	221
190	1	1	1	221	215	216	222
191	1	1	1	222	216	217	223
192	1	1	1	224	218	219	225
193	1	1	1	225	219	220	226
194	1	1	1	226	220	221	227
195	1	1	1	227	221	222	228
196	1	1	1	228	222	223	229
197	1	1	1	230	224	225	231
198	1	1	1	231	225	226	232
199	1	1	1	232	226	227	233
200	1	1	1	233	227	228	234

ELEM	MAT	TYP	REL	NODES			
201	1	1	1	234	228	229	235
202	1	1	1	236	230	231	237
203	1	1	1	237	231	232	238
204	1	1	1	238	232	233	239
205	1	1	1	239	233	234	240
206	1	1	1	240	234	235	241
207	1	1	1	242	236	237	243
208	1	1	1	243	237	238	244
209	1	1	1	244	238	239	245
210	1	1	1	245	239	240	246
211	1	1	1	246	240	241	247
212	1	1	1	248	242	243	249
213	1	1	1	249	243	244	250
214	1	1	1	250	244	245	251
215	1	1	1	251	245	246	252
216	1	1	1	252	246	247	253
217	1	1	1	254	248	249	255
218	1	1	1	255	249	250	256
219	1	1	1	256	250	251	257
220	1	1	1	257	251	252	258

ELEM	MAT	TYP	REL	NODES			
221	1	1	1	258	252	253	259
222	1	1	1	260	254	255	261
223	1	1	1	261	255	256	262
224	1	1	1	262	256	257	263
225	1	1	1	263	257	258	264
226	1	1	1	264	258	259	265
227	1	1	1	266	260	261	267
228	1	1	1	267	261	262	268
229	1	1	1	268	262	263	269
230	1	1	1	269	263	264	270
231	1	1	1	270	264	265	271
232	1	1	1	272	266	267	273
233	1	1	1	273	267	268	274
234	1	1	1	274	268	269	275
235	1	1	1	275	269	270	276
236	1	1	1	276	270	271	277
237	1	1	1	278	272	273	279
238	1	1	1	279	273	274	280
239	1	1	1	280	274	275	281
240	1	1	1	281	275	276	282

ELEM	MAT	TYP	REL	NODES			
241	1	1	1	282	276	277	283
242	1	1	1	284	278	279	285
243	1	1	1	285	279	280	286
244	1	1	1	286	280	281	287
245	1	1	1	287	281	282	288
246	1	1	1	288	282	283	289
247	1	1	1	175	290	291	176
248	1	1	1	176	291	292	177
249	1	1	1	177	292	293	178
250	1	1	1	178	293	294	179
251	1	1	1	179	294	295	180
252	1	1	1	180	295	296	181
253	1	1	1	181	296	297	182
254	1	1	1	182	163	169	169
255	1	1	1	182	297	163	163
256	1	1	1	297	157	163	163

LIST DISPLACEMENTS FOR ALL SELECTED NODES

NODE	LABEL	DISP	CDISP
289	UX	0.000000000E+00	0.000000000E+00
288	UX	0.000000000E+00	0.000000000E+00
287	UX	0.000000000E+00	0.000000000E+00
286	UX	0.000000000E+00	0.000000000E+00
285	UX	0.000000000E+00	0.000000000E+00
284	UX	0.000000000E+00	0.000000000E+00
1	UY	0.000000000E+00	0.000000000E+00
2	UY	0.000000000E+00	0.000000000E+00
3	UY	0.000000000E+00	0.000000000E+00
4	UY	0.000000000E+00	0.000000000E+00
5	UY	0.000000000E+00	0.000000000E+00
6	UY	0.000000000E+00	0.000000000E+00

LIST ALL MATERIALS PROPERTY= ALL

PROPERTY TABLE EX MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.28000E+08	2300.0	0.28000E+08

ROPERTY TABLE NUXY MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.30000	2300.0	0.30000

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.29000	2300.0	0.29000

LIST PRESSURES FOR ALL SELECTED NODES

ELEM	FACE	VALUE(S)		FACE NODES	
5	4	28.600	0.00000E+00	12	6
10	4	28.600	0.00000E+00	18	12
15	4	28.600	0.00000E+00	24	18
20	4	28.600	0.00000E+00	30	24
25	4	28.600	0.00000E+00	36	30
30	4	28.600	0.00000E+00	42	36
35	4	28.600	0.00000E+00	48	42
40	4	28.600	0.00000E+00	54	48
45	4	28.600	0.00000E+00	60	54
50	4	28.600	0.00000E+00	66	60
55	4	28.600	0.00000E+00	72	66
60	4	28.600	0.00000E+00	78	72
65	4	28.600	0.00000E+00	84	78
70	4	28.600	0.00000E+00	90	84
75	4	28.600	0.00000E+00	96	90
80	4	28.600	0.00000E+00	102	96
85	4	28.600	0.00000E+00	108	102
247	1	28.500	0.00000E+00	175	290
150	1	28.500	0.00000E+00	183	175
197	1	28.600	0.00000E+00	230	224

ELEM	FACE	VALUE(S)		FACE NODES	
192	1	28.600	0.00000E+00	224	218
187	1	28.600	0.00000E+00	218	212
182	1	28.600	0.00000E+00	212	206
202	1	28.600	0.00000E+00	236	230
237	1	28.600	0.00000E+00	278	272
232	1	28.600	0.00000E+00	272	266
227	1	28.600	0.00000E+00	266	260
222	1	28.600	0.00000E+00	260	254
217	1	28.600	0.00000E+00	254	248
212	1	28.600	0.00000E+00	248	242
207	1	28.600	0.00000E+00	242	236
157	1	28.600	0.00000E+00	194	183
242	1	28.600	0.00000E+00	284	278
172	1	28.600	0.00000E+00	200	194
177	1	28.600	0.00000E+00	206	200
252	2	28.500	0.00000E+00	295	296
247	2	28.500	0.00000E+00	290	291
248	2	28.500	0.00000E+00	291	292
249	2	28.500	0.00000E+00	292	293
250	2	28.500	0.00000E+00	293	294

ELEM	FACE	VALUE(S)	FACE NODES

251	2	28.500	0.00000E+00	294	295
253	2	28.500	0.00000E+00	296	297
256	1	28.500	0.00000E+00	297	157

§

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
1	1283.3094	909.47795	0.32020833E-01	1283.2773	1143.[illegible]
2	1244.1452	758.50173	-6.1333902	1250.2786	1091.7
3	1204.7585	607.13950	-12.135741	1216.8942	1053.9
4	1165.1520	455.49477	-17.996904	1183.1489	1031.4
5	1125.3576	303.81419	-23.844383	1149.2020	1025.4
6	1085.3814	152.36779	-29.862808	1115.2442	1036.2
7	1275.5851	911.46668	-0.72313001E-01	1275.6574	1138.1
8	1236.1540	759.72444	-6.1965179	1242.3505	1085.6
9	1196.4947	607.59344	-12.166563	1208.6613	1046.8
10	1156.6344	455.25617	-18.004003	1174.6384	1023.6
11	1116.5630	302.79397	-23.810158	1140.3731	1017.1
12	1076.3101	150.57306	-29.784465	1106.0946	1027.8
13	1251.9574	916.15202	-0.30616751	1252.2635	1122.6

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
14	1211.8281	762.48543	-6.3256515	1218.1538	10[illegible]9
15	1171.5259	608.66210	-12.223636	1183.7496	10[illegible].5
16	1131.0069	454.61101	-18.007035	1149.0139	1000.2
17	1090.2848	300.43449	-23.718462	1114.0032	992.45
18	1049.3133	146.25539	-29.562638	1078.8759	1002.5
19	1211.0093	919.66245	-0.72732260	1211.7366	1095.5
20	1170.2364	764.52051	-6.5466957	1176.7831	1035.3
21	1129.3295	609.42172	-12.295620	1141.6252	989.98
22	1088.2453	454.27895	-17.970448	1106.2157	961.41
23	1046.9126	298.79759	-23.499565	1070.4122	951.13
24	1005.2815	143.12183	-29.111407	1034.3929	959.93
25	1150.7068	915.85395	-1.2690425	1151.9758	1054.3
26	1110.0244	762.01927	-6.8202009	1116.8446	989.84

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

Attachment 2
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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
27	1069.3404	608.75732	-12.386510	1081.7269	940.23
28	1028.4648	455.44963	-17.929960	1046.3947	907.57
29	987.36148	301.76691	-23.228206	1010.5897	893.57
30	945.82341	147.31368	-28.485370	974.30878	899.39
31	1068.4391	895.87484	-2.0498534	1070.4890	995.52
32	1029.7105	749.89067	-7.2280940	1036.9385	929[illegible]
33	991.06295	604.85840	-12.550126	1003.6131	876.[illegible]0
34	952.32166	460.11817	-17.906305	970.22797	840.27
35	913.28428	314.54685	-22.835214	936.11950	821.19
36	873.75065	167.81767	-27.574075	901.32472	821.31
37	961.70810	848.66092	-2.9091802	964.61728	913.52

38	928.01436	721.27815	-7.7052379	935.71960	851.45
39	894.65887	595.84179	-12.875127	907.53400	801.08

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
40	861.19621	470.53963	-18.079218	879.27542	763.06
41	827.52506	344.25993	-22.533816	850.05888	738.58
42	793.15675	215.83484	-26.593801	819.75055	729.70
43	828.22677	760.39800	-4.1214143	832.34818	801.16
44	804.47118	668.45251	-8.5295122	813.00070	754.43
45	781.17022	579.02929	-13.673468	794.84368	715.53
46	757.98814	490.05706	-18.630464	776.61860	683.32
47	734.50234	398.95997	-22.227576	756.72991	657.09
48	710.32788	305.52282	-25.420177	735.74806	639.32
49	667.57041	615.65430	-5.4009059	672.97132	650.23
50	659.97194	582.00282	-9.7763767	669.74832	634.92
51	653.57611	552.29840	-15.385398	668.96151	624.54
52	647.27165	521.79499	-20.007881	667.27953	614.36

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
53	640.92308	488.69623	-22.302396	663.22547	602.59
54	633.62210	452.26309	-24.462662	658.08476	591.22
55	479.62318	398.26526	-7.8707549	487.49394	458.09
56	497.96463	453.14485	-12.737838	510.70247	491.19
57	520.14206	509.46961	-19.053175	539.19524	533.95
58	570.18261	536.63503	-22.302443	592.48505	576.68
59	623.10936	556.14567	-22.330518	645.43988	615.88
60	674.03913	574.95168	-23.302405	697.34153	656.46
61	269.90453	113.82246	-34.081210	303.98574	273.63
62	327.54241	272.41735	-21.932757	349.47517	328.38
63	459.54363	379.98876	-26.579174	486.12280	451.75
64	638.15220	436.38155	-26.127630	664.27983	590.09
65	813.81492	493.19292	-22.803472	836.61840	732.17

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
66	987.43879	548.93481	-22.456033	1009.8948	878.99
67	46.325366	-2.1934844	-336.77503	383.10040	362.70
68	149.92556	83.573191	-79.321097	229.24665	208.93
69	391.64705	255.16948	-40.833324	432.48037	383.19
70	729.93303	361.80597	-30.401926	760.33495	658.77
71	1069.2668	468.55624	-23.187567	1092.4543	948.43
72	1411.2856	575.05253	-22.072095	1433.3577	1248.1
73	-7.4500938	-177.67522	-874.50700	867.05691	795.97
74	20.175881	-12.389612	-339.82211	359.99799	345.15
75	315.87421	160.34463	-70.735084	386.60930	337.28
76	846.66969	331.69058	-35.770596	882.44029	767.94

77	1399.3402	504.31201	-22.326065	1421.6663	1245.
78	1955.9645	676.13316	-19.614249	1975.5788	1736.

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
79	2.8471790	-375.09709	-1541.3049	1544.1521	1394.5
80	17.731738	-128.94074	-730.44471	748.17645	687.25
81	238.83757	119.06252	-124.48542	363.32298	321.30
82	990.72484	370.55548	-43.292841	1034.0177	901.63
83	1807.0435	622.98996	-29.182444	1836.2260	1612.9
84	2633.8971	876.16563	-28.997270	2662.8944	2345.9
85	-8.7002086	-499.70819	-2254.8967	2246.1965	2045.5
86	9.3574680	-166.93082	-1156.7836	1166.1411	1089.0
87	188.84343	168.37624	-201.60252	390.44595	380.69
88	1132.6503	508.11248	-36.915193	1169.5655	1013.7
89	2243.8650	851.00841	-19.619160	2263.4842	1978.0
90	3365.7572	1194.8887	-17.563614	3383.3208	2969.5
91	6.2025635	-574.37681	-2948.5368	2954.7394	2711.5

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
92	8.8732781	-159.01857	-1559.1606	1568.0338	14[illegible]3
93	256.88193	145.25397	-310.50774	567.38966	521.15
94	1306.8685	681.56832	-67.457662	1374.3262	1192.3
95	2635.3482	1092.7024	-45.621740	2680.9700	2330.9
96	3988.8405	1503.2124	-59.357564	4048.1980	3536.4
97	23.520104	-543.40727	-3517.7938	3541.3139	3294.6
98	40.270978	-40.636133	-1852.5052	1892.7762	1853.7
99	432.11498	128.68798	-368.78869	800.90367	702.12
100	1353.7173	890.19849	-80.230774	1433.9481	1267.8
101	3073.5842	1428.9531	-28.992792	3102.5770	2689.1
102	4544.4441	1901.9957	39.869253	4504.5748	3920.9
103	108.78014	-406.33715	-3680.1201	3788.9003	3559.4
104	218.72791	146.12137	-1938.9662	2157.6941	2122.9

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
105	670.32038	501.87278	-482.08292	1152.4033	1082.8
106	1244.8416	1163.0898	533.98201	710.85955	676.08
107	2942.6841	1606.4322	173.61082	2769.0733	2403.2
108	6333.2191	2539.6878	-138.37328	6471.5924	5636.0
109	103.85735	-220.58411	-3365.6479	3469.5053	3319.1
110	339.02810	226.30713	-1851.2449	2190.2730	213[illegible]
111	810.29420	686.20265	-697.92209	1508.2163	145[illegible].5
112	1509.7146	1288.3479	467.55403	1042.1606	954.11
113	2861.9053	2102.3570	1613.7711	1248.1342	1104.6
114	6025.3797	3461.4946	2979.8070	3045.5727	2839.9
115	110.64414	72.726743	-2728.6446	2839.2887	2820.5

116	485.05187	305.54461	-1658.6842	2143.7361	2062.
117	925.60967	790.55668	-937.38983	1862.9995	1801.

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	S
118	1405.2333	1233.0742	-178.41187	1583.6451	1508.
119	2039.4545	1703.5237	742.12973	1297.3248	1172.
120	3149.0611	2075.6294	849.97895	2299.0822	2009.
121	424.50274	95.017816	-1895.2759	2319.7786	2174.
122	651.81749	329.53253	-1383.1143	2034.9318	1905.
123	887.09122	809.29474	-1130.6335	2017.7247	1981.
124	1204.4281	1094.3569	-752.46659	1956.8947	1904.
125	1531.8125	1292.6145	-263.33640	1795.1489	1691.
126	1722.8350	1401.3830	7.7795261	1715.0554	1581.
127	777.86523	64.103116	-1052.4426	1830.3078	1602.
128	841.08327	242.61515	-1038.5256	1879.6139	1681.
129	928.83329	605.95825	-1132.4402	2061.2735	1923.
130	1022.1856	802.48031	-1065.0163	2087.2019	1991.

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
131	1131.0863	836.31819	-858.14199	1989.2283	1867.
132	1141.9989	801.31808	-722.10514	1864.1040	1727.
133	1046.3326	-19.347918	-440.44012	1486.7727	1340.
134	1009.0303	46.783191	-655.62318	1664.6535	1481.
135	974.50054	252.53208	-1006.9413	1981.4419	1754.
136	931.21274	340.19554	-1277.3559	2208.5687	1991.
137	895.91231	343.08806	-1443.7548	2339.6671	2124.
138	882.06349	312.53829	-1510.0513	2392.1148	2167.
139	1231.3179	-8.8133483	-194.55791	1425.8758	1342.
140	1163.6909	-16.784228	-439.43994	1603.1308	1450.
141	1026.3234	72.858883	-1021.9406	2048.2640	1779.
142	827.53732	113.20938	-1772.3370	2599.8743	2327.4
143	660.81448	133.94235	-2409.1708	3069.9853	2843.

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
144	585.54314	130.05172	-2725.5984	3311.1415	3108.5
145	4449.8728	1948.0137	-443.60458	4893.4774	4252.6
146	2119.4473	1459.1570	-181.95725	2301.4046	2060.6
147	1436.1495	1248.0700	-153.58112	1589.7307	1515.0
148	1124.5988	707.41139	-724.59713	1849.1960	1691.9
149	891.82917	263.46381	-1480.1547	2371.9839	2131.6
150	621.77908	105.45324	-2652.2317	3274.0108	3048.8
151	2483.7150	1534.6946	181.07216	2302.6428	2006.9
152	1840.9195	1403.9509	-81.298009	1922.2175	1756.6
153	1218.7408	1127.9296	-532.19893	1750.9397	1707.9
154	1082.8652	638.83506	-829.18970	1912.0549	1739.6

155	932.85264	217.13599	-1346.0423	2278.8949	2023.
156	749.13830	67.389611	-2258.0497	3007.1880	2731.

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	S
157	1207.9869	863.33470	-504.24623	1712.2332	1586.
158	1297.7295	1127.6061	-455.22936	1752.9589	1677.
159	1130.4404	997.33364	-629.78481	1760.2252	1699.
160	1062.0296	557.80802	-846.43510	1908.4647	1715.
161	1001.4186	177.48576	-1122.1769	2123.5955	1861.
162	931.62876	39.091860	-1681.9876	2613.6164	2302.
163	715.44906	461.57222	-513.39443	1228.8435	1136.
164	1013.2359	847.16635	-616.64306	1629.8789	1555.
165	1042.1722	764.12152	-679.48020	1721.6524	1603.
166	1076.8589	469.49755	-734.58201	1811.4409	1599.
167	1087.6708	152.36948	-849.16349	1936.8343	1686.
168	1127.7408	37.820046	-1078.4765	2206.2173	1914.
169	720.68341	320.28029	-361.88378	1082.5672	951.14

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
170	885.46471	500.06076	-475.22717	1360.6919	1[illegible].2
171	1019.0401	486.78057	-493.54490	1512.5850	13[illegible].4
172	1105.4247	376.32835	-570.69029	1676.1150	1459.4
173	1197.9631	118.29557	-482.41912	1680.3822	1487.6
174	1312.6161	32.521932	-499.10555	1811.7217	1616.3
175	-8.4781724	-43.220273	-1438.4031	1429.9249	1412.8
176	-26.391697	-65.096012	-1162.4400	1136.0483	1117.4
177	-15.012761	-117.45090	-887.46919	872.45643	827.18
178	6.1646900	-173.84947	-611.60814	617.77283	552.23
179	0.68095274	-244.35502	-348.26895	348.94990	312.82
180	8.5459135	-77.145035	-302.20994	310.75586	278.33
181	193.14669	-3.0656505	-346.69829	539.84498	473.66
182	509.45518	153.13146	-413.82888	923.28405	811.45

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
183	-35.045266	-117.30165	-1487.2675	1452.2222	1414.6
184	4.9097434	-129.12399	-1187.2654	1192.1752	1132.9
185	27.783692	-192.64976	-908.26636	936.05005	851.06
186	64.716143	-217.53210	-614.95323	679.66937	594.53
187	68.606267	-266.93935	-338.48611	407.09238	379.30
188	91.271319	-40.218806	-260.19460	351.46592	30[illegible]
189	243.77884	78.742040	-271.01266	514.79150	457.[illegible]4
190	555.30653	165.70636	-291.51557	846.82210	735.99
191	871.09044	302.86738	-352.03909	1223.1295	1065.0
192	1174.5939	259.42847	-270.07872	1444.6726	1277.7
193	1501.8068	217.14097	-120.11513	1621.9220	1482.5

194	-114.13301	-289.95884	-1600.9174	1486.7843	1407.
195	22.453014	-233.27193	-943.65984	966.11285	869.9

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

OAD STEP 1 ITERATION= 1 SECTION= 1
IME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	S
196	96.584062	-251.29426	-332.44424	429.02830	398.6
197	292.35063	153.88021	-206.92692	499.27754	447.2
198	933.27283	235.79007	-143.29612	1076.5689	949.1
199	1646.3993	393.97388	62.839861	1583.5595	1447.
200	-14.237021	-454.84410	-1680.9606	1666.7235	1499.
201	32.311942	-333.78314	-1006.2520	1038.5639	913.8
202	127.94567	-243.30222	-331.86984	459.81551	422.6
203	348.12704	223.75618	-131.24831	479.37535	431.2
204	1033.4578	343.83764	-32.844324	1066.3022	938.0
205	1730.3446	548.33284	-1.1366565	1731.4813	1534.
206	-22.543916	-788.25271	-1872.9816	1850.4377	1615.
207	7.0836873	-495.50099	-1115.9730	1123.0567	976.4
208	99.118573	-266.03977	-364.52700	463.64557	423.2

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
209	386.37372	266.07868	-108.26112	494.63484	447.20
10	1140.8249	515.19855	-25.570063	1166.3949	1013.3
11	1900.7436	822.86238	-0.67350427	1901.4171	1655.6
212	-25.381378	-1149.5227	-2086.2062	2060.8249	1791.5
213	-7.6164532	-697.00492	-1243.9518	1236.3353	1075.4
214	67.060659	-304.49664	-406.72289	473.78355	432.07
215	429.08456	317.39214	-87.340252	516.42481	470.84
216	1266.3596	718.58531	-21.002685	1287.3623	1121.2
217	2107.9288	1169.0893	-3.3364106	2111.2652	1836.5
218	-24.025325	-1498.2676	-2287.6511	2263.6258	1993.1
219	-11.477442	-902.04840	-1365.0006	1353.5231	1193.3
220	46.211308	-352.20887	-446.80560	493.01691	453.37
221	469.70626	367.82897	-67.071845	536.77811	493.96

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
222	1387.6956	923.97585	-16.479746	1404.1753	1240.9
223	2310.4443	1521.2387	-4.7374636	2315.1817	2041.6
224	-24.803924	-1818.8833	-2472.9643	2448.1604	2197.6
225	-15.191583	-1091.1125	-1476.1395	1460.9479	1312.8
226	29.640411	-400.40303	-483.98314	513.62355	477.50
227	506.69588	417.83843	-53.060547	559.75643	521.20
8	1498.9337	1113.6118	-13.002527	1511.9362	1362.1
9	2495.7438	1841.7156	-3.7580595	2499.5018	2247.2
0	-24.830858	-2109.3919	-2640.6545	2615.8237	2396.3
231	-17.285225	-1263.3646	-1576.7428	1559.4576	1429.7
232	17.757296	-446.51012	-517.48227	535.23957	503.65

233	540.23550	465.75934	-42.847370	583.08287	549.7
234	1599.4786	1285.8267	-11.072606	1610.5512	1479.8

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
235	2663.4062	2132.1118	-3.7282560	2667.1345	2446.6
236	-24.930997	-2369.4571	-2790.8927	2765.9617	2582.2
237	-18.660398	-1418.0486	-1666.8460	1648.1856	1539.6
238	9.1226299	-489.91837	-547.52425	556.64688	530.31
239	570.26759	510.13899	-35.210640	605.47823	577.88
240	1689.5916	1440.6635	-9.8171004	1699.4087	1590.3
241	2813.6255	2392.1777	-3.6976827	2817.3232	2633.0
242	-24.795324	-2599.2709	-2923.6590	2898.8637	2751.7
243	-19.481565	-1555.0540	-1746.4689	1726.9873	1640.1
244	2.7113806	-529.43452	-574.06026	576.77165	555.89
245	596.80870	550.38722	-29.516593	626.32529	604.54
246	1769.2167	1577.6829	-9.0012864	1778.2180	1691.0
247	2946.4139	2622.0314	-3.7955250	2950.2094	2802.8

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
248	-24.535785	-2798.9528	-3039.0270	3014.4912	290
49	-19.913411	-1674.2225	-1815.6107	1795.6973	1729.6
50	-2.0099712	-564.60940	-597.11559	595.10562	579.61
51	619.85996	586.05251	-25.298186	645.15815	629.00
252	1838.3555	1696.8940	-8.6216403	1846.9772	1780.7
253	3061.7687	2821.6906	-4.0755376	3065.8443	2953.6
254	-24.015395	-2968.5104	-3136.9574	3112.9420	3032.5
255	-19.830524	-1775.7674	-1874.2701	1854.4396	1807.4
256	-5.3039717	-595.08773	-616.65561	611.35164	600.91
257	639.39977	616.87037	-22.339206	661.73897	650.82
258	1897.0143	1798.4484	-8.7112643	1905.7255	1858.6
259	3159.7027	2991.2586	-4.5903920	3164.2931	3083.8
260	-22.641197	-3108.7671	-3217.4009	3194.7597	3142.0

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
261	-18.938854	-1859.7731	-1922.2750	1903.3362	1873.0
262	-7.3858953	-619.84604	-633.61631	626.23041	619.48
263	656.16806	642.03296	-20.475452	676.64352	669.71
264	1945.0145	1882.4625	-9.6148510	1954.6293	1924.2
265	3240.1402	3131.5159	-5.9718363	3246.1120	3193.
266	-21.258569	-3220.4060	-3280.4633	3259.2048	3229.
7	-17.216379	-1927.7569	-1959.7716	1942.5552	1926.8
	-7.8468698	-638.84614	-648.63154	640.78467	635.95
9	671.15990	661.15427	-20.126610	691.28651	686.34
70	1982.4932	1950.4478	-11.329726	1993.8229	1978.0
271	3303.1912	3243.1503	-7.3516002	3310.5428	3281.0

272	-5.5744826	-3299.8603	-3330.7662	3325.1917	3309.
273	-3.4728548	-1972.3418	-1995.0502	1991.5773	1980.

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	S
274	-2.6252897	-650.43780	-664.62685	662.00156	655.1
275	686.76909	673.02033	-25.292383	712.06147	705.3
276	2017.7129	1995.0103	-25.069637	2042.7825	2031.
277	3353.5068	3322.5587	-23.094721	3376.6015	3361.
278	-54.439643	-3362.9727	-3378.0496	3323.6100	3316.
279	-40.504126	-2007.8198	-2024.8754	1984.3713	1975.
280	-17.176884	-660.46653	-672.96340	655.78652	1975.
281	695.37971	683.19350	-10.720410	706.10012	649.8
282	2047.6964	2030.5620	12.242867	2035.4535	700.2
283	3400.9738	3385.7371	26.120490	3374.8533	2026.
284	20.746349	-3378.1639	-3378.1639	3398.9102	3367.
285	9.5978462	-2017.1897	-2017.1897	2026.7875	3398.
286	-7.9466325	-664.15506	-664.15506	656.20843	2026.

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

NODE	SIG1	SIG2	SIG3	SI	SI
287	686.97318	686.97318	-20.763078	707.73625	707.73
288	2040.0059	2040.0059	-38.403327	2078.4092	2078.4
289	3400.9913	3400.9913	-49.623105	3450.6144	3450.6
290	-16.099630	-29.190350	-1418.8157	1402.7161	1396.2
291	-24.076370	-43.005524	-1140.4102	1116.3338	1106.9
292	-25.869065	-78.904323	-868.14367	842.27461	817.16
293	-20.543337	-148.22518	-604.33313	583.78980	532.23
294	-20.892447	-257.28005	-354.47931	333.58686	299.56
295	-25.960959	-118.70551	-408.96968	383.00872	346.11
296	114.68456	-21.785278	-581.04345	695.72801	638.72
297	446.43945	200.75642	-655.57024	1102.0097	1019.5

MAXIMUMS

NODE	108	114	103	108	108
VALUE	6333.2191	3461.4946	-3680.1201	6471.5924	5636.

BNFL Fuel Solutions	CALCULATION PACKAGE	Calc. Pkg No. VSC02.6.2.3.05 File No.: VSC02.6.2.3.05 Revision: 2

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

Normal, Off-Normal, and Maximum Accident Pressure in the MSB

SCOPE:

Product:	☐ FuelSolutions™	☐ TranStor™	☒ VSC-24	☐ Other ______
Service:	☒ Storage	☐ Transportation		☐ Other ______
Conditions:	☒ Normal	☒ Off-Normal	☒ Accident	☐ Other ______

Component(s):

Entire MSB

Prepared by:

Name: J L Hibbard

Signature: J L Hibbard

Date: 3-05-01

Verified by:

Name: Michelle Heinz

Signature: Michelle Heinz

Date: 3-05-01

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: R Srinivasan

Date: 3/26/01

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1 - 28		Replaces Calculations WEP109-002.05, Rev. 1 and WEP109-002.23, Rev. 1	Jim Hibbard	Michelle Heinz
1	All pages	None	Revised the basket fill temperature (Assumption 4.3.3). Revised the normal condition maximum basket temperature (Section 6.3.1). All pages revised to be consistent with these changes (VSC02-ECN-005).	Jim Hibbard	Michelle Heinz
2	All Pages	None	Revised the calculation to address six fuel assembly types. Revised references for fuel design parameters. Added volume for BPRA hold-down. Revised calculation approach for volume of fuel assembly end fittings. (VSC02-ECN-008)	Jim Hibbard	Michelle Heinz

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-427.

RECORD OF VERIFICATION

	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	(YES)	NO	N/A
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	YES	NO	(N/A)
(i) Computer calculations are properly identified.	YES	NO	(N/A)
(j) Computer codes used are under configuration control.	YES	NO	(N/A)
(k) Computer codes used are applicable to the calculation.	YES	NO	(N/A)
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

Verifier: Michelle Heinz / Michelle Heinz / 3-05-01

Name/Signature/Date

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

The purpose/objective of this calculation is to determine the maximum and minimum internal pressures for the Multi-Assembly Sealed Basket (MSB) for normal, off-normal, and hypothetical accident events for storage and transfer conditions. These pressures are used in other BFNL calculations for stress analysis of the MSB. The scope for the calculation is the entire MSB.

This calculation replaces Calculations WEP109-002.05, Rev. 1 and WEP109-002.23, Rev. 1. The principal differences between Revision 0 of this calculation and calculations WEP109-002.05, Rev. 1 and WEP109-002.23, Rev. 1 are:

- The temperatures used as inputs in this calculation have been increased.
- The effect of fission gas release on the thermal conductivity of helium is accounted for.
- The methodology in this calculation for calculating the minimum and maximum pressures for normal and off-normal conditions has been revised. Temperatures are selected to be conservative, and the backfill pressure is based on the technical specifications.

2.0 REQUIREMENTS

2.1 Design Inputs

2.1.1 NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems," NRC, January, 1997.

2.2 Regulatory Commitments

See Section 2.1.

3.0 REFERENCES

3.1 BFS Calculation Packages

3.1.1 Calculation WEP-109-003.4, Rev. 2, VSC-24 Thermal Hydraulic Analysis.
(Peak fuel temperature and MSB exterior temperature inputs)

3.1.2 Calculation WEP-109-003.5, Rev. 5, MSB-24 Thermal-Hydraulic Analysis.
(Peak fuel temperature and MSB exterior temperature inputs)

3.1.3 Deleted.

3.1.4 Calculation VSC02.6.2.5.03, Rev. 0, VSC-24 Design Parameters.
(Design input data)

3.1.5 Calculation VSC02.6.2.4.02, Rev. 0, MTC Temperatures for Helium Backfill Condition.
(Minimum fill gas temperature)

3.1.6 Calculation WEP-109-003.18, Rev. 2, VSC Transfer Cask Thermal Analysis.
(MTC thermal analysis results)

3.2 General References

3.2.1 Handbook of Chemistry and Physics, The Chemical Rubber Company, 52nd Edition.

3.2.2 E. Elias, C. B. Johnson, "Radiological Impact of Clad and Containment Failures in at Reactor Spent Fuel Storage Facilities," EPRI NP-2716, 1982.
(Fission gas release from fuel pellet)

3.2.3 American National Standard for Decay Heat Power in Light Water Reactors, ANSI/ANS-5.1-1994, American Nuclear Society, IL.
(Fission event energy release)

3.2.4 NUREG-1536, Standard Review Plan for Dry Cask Storage Systems, NRC, January 1997.
(Percent fuel rod failures for normal, off-normal, and accident conditions)

3.2.5 Von Ubisch, H., et al, "Thermal Conductivities of Mixtures of Fission Product Gases with Helium and with Argon", Proceedings of the Second United Nations International Conference on the Peaceful Uses of Atomic Energy, September 1958.
(Effect of fission gases on helium thermal conductivity)

3.2.6 Enclosure to NRC Letter to BNFL, Withdrawal to VSC-24 Safety Analysis Report Amendment Request (TAC No. L21826, Docket No. 72-1007), October 16, 1998.
(Gas atoms per fission)

3.2.7 Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors."
(Fission gas release from fuel pellet)

3.2.8 "Hybrid B_4C Absorber Control Rod Evaluation Report", WCAP-8846A, Westinghouse Electric Corp, October 1977.
(Fission gas release from fuel pellet)

4.0 ASSUMPTIONS

4.1 Design Configuration

4.1.1 MSB Cavity

Minimum bounding MSB ID accounting for dimensional tolerances — $IDmin_{MSB} := 59.8\ in$ — Ref. 3.1.4

Minimum bounding basket cavity length accounting for dimensional tolerances (Reference 3.1.4)

$$Lmin_{cav} = \begin{bmatrix} 178.60 \\ 178.60 \\ 150.55 \\ 166.65 \\ 167.25 \\ 169.25 \end{bmatrix} \cdot in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Basket backfill pressure — $P_{bask.bkfl} := 1\ atm$ — Tech Specs

4.1.2 Basket Guide Sleeves

Ref. 3.1.4

Tube outer dimension — $width_{tube} := 9.2\ in$ — (square tube)

Tube thickness — $t_{tube} := 0.2 \cdot in$

Tube length

$$L_{tube} := \begin{bmatrix} 159.0 \\ 159.0 \\ 147.5 \\ 163.6 \\ 163.6 \\ 163.6 \end{bmatrix} in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

4.1.3 <u>Basket Supports</u>

Ref. 3.1.4

Diameter	$Dia_{bas.sup} := 59.2\ in$
Number of curved support plates	$No_{curv.supp.plts} := 3$
Height of curved support plates	$h_{curv.supp.plts} := 28.0\ in$
Thickness of curved support plates	$t_{curv.supp.plts} := 0.5\ in$
Number of support wall plates	$No_{wall.supp.plts} := 24$
Height of support wall plates	$h_{wall.supp.plts} := 28.0\ in$
Thickness of support wall plates	$t_{wall.supp.plts} := 0.5\ in$
Width of support wall plates	$w_{wall.supp.plts} := 4.37\ in$
Number of support bars	$No_{supp.bars} := 12$
Height of support bars	$h_{supp.bars} := 28.0\ in$
Thickness of support bars	$t_{supp.bars} := 1.45\ in$
Width of support bars	$w_{supp.bars} := 2.0\ in$

4.1.4 Fuel Data

Maximum fuel rod outside diameter
Reference 3.1.4

$$OD_{FlRd.max} := \begin{bmatrix} 0.43 \\ 0.382 \\ 0.418 \\ 0.422 \\ 0.422 \\ 0.374 \end{bmatrix} in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Maximum fuel rod inside diameter
Reference 3.1.4

$$ID_{FlRd.max} := \begin{bmatrix} 0.377 \\ 0.332 \\ 0.366 \\ 0.377 \\ 0.3736 \\ 0.329 \end{bmatrix} in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Minimum fuel pellet outside diameter
Reference 3.1.4

$$OD_{FlPel.min} := \begin{bmatrix} 0.368 \\ 0.325 \\ 0.358 \\ 0.364 \\ 0.3659 \\ 0.3225 \end{bmatrix} in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Maximum irradiated fuel rod length
Reference 3.1.4

$$L_{FlRd.irr.max} := \begin{bmatrix} 155.22 \\ 162.61 \\ 141.40 \\ 153.92 \\ 153.40 \\ 153.16 \end{bmatrix} in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Maximum fuel length
Reference 3.1.4

$$L_{fuel} := \begin{bmatrix} 141.8 \\ 150.0 \\ 132.0 \\ 145.2 \\ 144.0 \\ 144.0 \end{bmatrix} in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Plenum length
Reference 3.1.4

$$L_{plenum} := \begin{bmatrix} 11.72 \\ 9.53 \\ 8.0 \\ 6.99 \\ 8.2 \\ 6.3 \end{bmatrix} in \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Plenum spring weight
Reference 3.1.4

$$m_{spring} := \begin{bmatrix} .042 \\ .1 \\ .05 \\ .07 \\ .044 \\ .037 \end{bmatrix} lb \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Plenum spring material
density, Reference 3.1.4

$$\rho_{spring} := 0.30 \frac{lb}{in^3}$$

Number of fuel rods
Reference 3.1.4

$$No_{FlRd} := \begin{bmatrix} 208 \\ 236 \\ 208 \\ 179 \\ 204 \\ 264 \end{bmatrix} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Fuel rod backfill gas pressure
Reference 3.1.4

$$P_{rod.bkfl} := \left[\begin{bmatrix} 415 \\ 450 \\ 450 \\ 460 \\ 475 \\ 500 \end{bmatrix} + 14.7 \right] \cdot psi \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Maximum fuel assembly mass
without BPRAs, Reference 3.1.4

$$m_{max.woBPRA} := \begin{bmatrix} 1515 \\ 1430 \\ 1360 \\ 1330 \\ 1480 \\ 1495 \end{bmatrix} \cdot lb \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Maximum fuel rod mass Reference 3.1.4	$m_{rod.max} := \begin{bmatrix} 7.00 \\ 5.70 \\ 5.80 \\ 6.68 \\ 6.85 \\ 5.37 \end{bmatrix} \cdot lb$	$f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$
Number of fuel assemblies Reference 3.1.4	$No_{fuel.assem} := 24$	
Maximum uranium mass per assembly Reference 3.1.4	$m_{ur.assem} := \begin{bmatrix} 0.464 \\ 0.413 \\ 0.413 \\ 0.407 \\ 0.469 \\ 0.426 \end{bmatrix} MT$	$f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$
Maximum Fuel Burnup	$Fuel_{burn} := 51800 \frac{MW \cdot day}{MT}$	Ref. 3.1.4
Density of fuel assembly stainless steel	$\rho_{stl} := 0.29 \cdot \frac{lb}{in^3}$	Ref. 3.1.4

4.1.5 <u>BPRA Data</u>

Number of BPRA per assembly
Reference 3.1.4

$$No_{BPRA} := \begin{bmatrix} 16 \\ 0 \\ 8 \\ 16 \\ 0 \\ 24 \end{bmatrix} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

BPRA backfill gas pressure
Reference 3.1.4

$$P_{BPRA.bkfl} := \begin{bmatrix} 400 + 14.7 \\ 0 \\ 450 + 14.7 \\ 460 + 14.7 \\ 0 \\ 500 + 14.7 \end{bmatrix} psi \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

BPRA fill gas volume per rod
Reference 3.1.4

$$V_{BPRA.rod} := \begin{bmatrix} 1.6 \\ 0 \\ 1.6 \\ 1.6 \\ 0 \\ 1.6 \end{bmatrix} in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

BPRA Boron-10 mass per rod
Reference 3.1.4

$$m_{BPRA.boron} := \begin{bmatrix} 2.61 \\ 0 \\ 2.61 \\ 2.873 \\ 0 \\ 2.873 \end{bmatrix} gm \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

4.1.6 Temperature Design Inputs

Basket in VCC and 75°F Ambient Temperature

$$
\begin{array}{c} \\ T_{VCC.75} := \end{array}
\begin{array}{c} \text{MSB Peak} \quad \text{MSB Shell} \\ \begin{bmatrix} 202 & 169 \\ 684 & 269 \\ 423 & 197 \end{bmatrix} \cdot F \end{array}
\begin{array}{l} \\ \text{MSB Top} \\ \text{MSB Middle} \\ \text{MSB Bottom} \end{array}
$$

References for Temperatures

MSB Top Peak	Ref. 3.1.1 Figure 6
MSB Top Shell	Ref. 3.1.1 Figure 6
MSB Middle Peak	Ref. 3.1.2 Summary Section
MSB Middle Shell	Ref. 3.1.2 Summary Section
MSB Bottom Peak	Ref. 3.1.1 Node 51 ANSYS Output
MSB Bottom Shell	Ref. 3.1.1 Figure 6

Note:

The bottom peak and shell temperatures are at the elevation of the bottom of the fuel. See the discussion for the average temperature formula in Section 6.3.1.

Basket in MTC, 75°F Ambient Temperature, and Helium Fill Gas

$$
\begin{array}{c} \\ T_{MTC.75.He} := \end{array}
\begin{array}{c} \text{MSB Peak} \quad \text{MSB Shell} \\ \begin{bmatrix} 265 & 159 \\ 765 & 404 \\ 424 & 284 \end{bmatrix} \cdot F \end{array}
\begin{array}{l} \\ \text{MSB Top} \\ \text{MSB Middle} \\ \text{MSB Bottom} \end{array}
$$

References for Temperatures

MSB Top Peak	Ref. 3.1.6 Node 13 ANSYS Output
MSB Top Shell	Ref. 3.1.6 Node 73 ANSYS Output
MSB Middle Peak	Ref. 3.1.6 p. 16
MSB Middle Shell	Ref. 3.1.6 p. 16
MSB Bottom Peak	Ref. 3.1.6 Node 6 ANSYS Output
MSB Bottom Shell	Ref. 3.1.6 Node 66 ANSYS Output

Note:

The bottom peak and shell temperatures are at the elevation of the bottom of the fuel. See the discussion for the average temperature formula in Section 6.3.1.

Basket in MTC, 75°F Ambient Temperature, and Vacuum

	MSB Peak	MSB Shell	
	270	158	MSB Top
	796	404	MSB Middle
	432	286	MSB Bottom

$$T_{MTC.75.vac} := \begin{bmatrix} 270 & 158 \\ 796 & 404 \\ 432 & 286 \end{bmatrix} \cdot F$$

References for Temperatures

MSB Top Peak	Ref. 3.1.6 Node 13 ANSYS Output
MSB Top Shell	Ref. 3.1.6 Node 73 ANSYS Output
MSB Middle Peak	Ref. 3.1.6 p. 16
MSB Middle Shell	Ref. 3.1.6 p. 16
MSB Bottom Peak	Ref. 3.1.6 Node 6 ANSYS Output
MSB Bottom Shell	Ref. 3.1.6 Node 66 ANSYS Output

Basket in MTC, 32°F Ambient Air Temperature, 1/3 Submerged in Fuel Pool at 100°F, and Vacuum

	MSB Peak	MSB Shell	
	103.6	89.4	MSB Top
	385.3	172.4	MSB Middle
	329.1	126.3	MSB Bottom

$$T_{MTC.load.He} := \begin{bmatrix} 103.6 & 89.4 \\ 385.3 & 172.4 \\ 329.1 & 126.3 \end{bmatrix} \cdot F$$

References for Temperatures

MSB Top Peak	Ref. 3.1.5 Node 13 ANSYS Output
MSB Top Shell	Ref. 3.1.5 Node 73 ANSYS Output
MSB Middle Peak	Ref. 3.1.5 Node 9 ANSYS Output
MSB Middle Shell	Ref. 3.1.5 Node 69 ANSYS Output
MSB Bottom Peak	Ref. 3.1.5 Node 6 ANSYS Output
MSB Bottom Shell	Ref. 3.1.5 Node 66 ANSYS Output

4.2 Design Criteria

None.

4.3 Calculation Assumptions

4.3.1 All gases and gas mixtures behave according to the Ideal Gas Law.

4.3.2 For the minimum pressure case, assume that the basket fill gas temperature is equal to the maximum steady-state basket interior temperature for normal conditions. No fuel rods fail for this case. These assumptions will minimize the molar quantity and pressure of the basket fill gas.

4.3.3 The initial He fill gas temperature for fuel rods and BPRAs is 68°F.

$$T_{He.init} := 68\ F$$

4.3.4 100% of the fill gas escapes each failed fuel rod.

4.3.5 Using Q=200 MeV/fission, then 1 MWd equates to 2.70x10^{21} fissions. [Ref. 3.2.3, Appendix C]

$$Q := 200 \cdot \frac{MeV}{fission}$$

$$No_{fissions.MWd} := \frac{1}{Q}$$

$$No_{fissions.MWd} = 2.70 \cdot 10^{21} \cdot \frac{fission}{MW \cdot day}$$

4.3.6 Each fission generates 0.303 fission gas atoms. [Ref. 3.2.6]

$$No_{atoms.fission} := 0.303 \frac{atoms}{fission}$$

4.3.7 30% of the fission gas is released from fuel pellets to the rod gas internal volume [Ref. 3.2.7, Paragraph C.1.d]. This number is conservative (a more realistic volume is 8%, Ref. 3.2.2, p. 3-1).

$$Rod_{release} := 30 \cdot \%$$

4.3.8 30% of the fission gas is released from the burnable poison in BPRAs to the rod gas internal volume [Refs. 3.2.7, Paragraph C.1.d and 3.2.8, Section 4.1.1]. This number is an upper bound (Ref. 3.2.8, Section 4.1.1).

$$BPRA_{release} := 30 \cdot \%$$

For the maximum pressure cases:

4.3.9 1% of fuel rods fail under normal conditions for the basket. [Ref. 3.2.4]

$$Rod\_fail_{1} := 1 \cdot \%$$

4.3.10 10% of fuel rods fail under off-normal conditions for the basket. [Ref. 3.2.4]

$$Rod\_fail_{10} := 10 \cdot \%$$

4.3.11 100% of fuel rods fail under accident conditions for the basket. [Ref. 3.2.4]

$$Rod\_fail_{100} := 100 \cdot \%$$

4.3.12 Failure of 1% of the fuel rods has no significant affect on basket interior temperatures. The small release of fission product gases from 1% of the rods does not significantly effect the basket gas conductivity.

4.3.13 For off-normal and accident maximum pressure conditions, the average basket interior temperature is assumed to vary linearly with basket gas conductivity.

4.3.14 The basket internals nominal calculated volume is increased by an assumed 10% to account for maximum material conditions (material and dimensional tolerances).

$$V_{increase} := 10 \cdot \%$$

4.3.15 The diameter and length of a BPRA are assumed to be the same as the diameter and length of a fuel rod.

4.3.16 The mass of the BPRA hold-down assembly is assumed to be 10 lb.

$$m_{BPRA.hold} := \begin{bmatrix} 10 \\ 0 \\ 10 \\ 10 \\ 0 \\ 10 \end{bmatrix} \cdot lb \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

4.3.17 It is assumed that the heat load of the fuel assemblies in the MSB is 24 kw or less. This heat load is the basis for the calculated MSB temperatures provided above in Section 4.1.

4.3.18 For the minimum pressure calculation, it is assumed that the temperature of the gas in the MSB is minimum ambient temperature of -40°F. This conservatively assumes there is no heat generation from the fuel assemblies.

$$T_{VCC.minus40} := -40\ F$$

4.3.19 The MSB average gas temperature is calculated from finite element detailed thermal analysis results using the equation below. A weighting factor of 2.0 is applied to the MSB mid-center and mid-edge temperatures to account for radial and axial temperature gradients.

$$T_{Avg} = \frac{\left(T_{Top.Cen} + T_{Top.Edge}\right) + 2\cdot\left(T_{Mid.Cen} + T_{Mid.Edge}\right) + \left(T_{Bot.Cen} + T_{Bot.Edge}\right)}{8}$$

where

T_{Avg} = average basket gas temperature
$T_{Top.Cen}$ = temperature at MSB centerline and bottom of shield lid elevation
$T_{Top.Edge}$ = MSB shell temperature at bottom of shield lid elevation
$T_{Mid.Cen}$ = peak fuel temperature (near center of MSB)
$T_{Mid.Edge}$ = peak MSB shell temperature at or near mid height
$T_{Bot.Cen}$ = temperature at MSB centerline and bottom of fuel elevation
$T_{Bot.Edge}$ = MSB shell temperature at bottom of fuel elevation

Note:

The MSB top center and top edge temperatures are taken from the top of the MSB internal cavity. The MSB bottom center and bottom shell temperatures are taken at the elevation of the bottom of the active fuel region. This is because the thermal finite element analysis model has an insulating helium gas region below the fuel that is included for modeling simplicity, however, the gas layer does not exist in the actual MSB. With respect to peak shell and peak fuel temperatures, using the insulating gas layer in the finite element model is conservative. However, the gas insulating region leads to underprediction of the MSB bottom center plate temperatures. Therefore, in this calculation, the temperatures for the bottom of the MSB cavity are conservatively assumed to equal those of the bottom of the fuel region.

5. CALCULATION METHODOLOGY

5.1 Design Basis

The purpose of this analysis is to calculate the bounding (maximum and minimum) MSB internal pressures for normal, off-normal, and hypothetical accident conditions.

Six fuel assembly types are considered in this analysis: The B&W 15x15 BPRA fuel assembly used at ANO-1, the CE 16x16 non-BPRA fuel assembly used at ANO-2, the CE 15x15 BPRA fuel assembly used at Palisades, the Westinghouse 14x14 BPRA fuel assembly used at Point Beach, the Westinghouse 15x15 non-BRPA fuel assembly, and the Westinghouse 17x17 BPRA fuel assembly. Matrices are used in this calculation to input data and calculate design pressure for each of the six fuel assembly types. The values in the matrices correspond to the fuel assembly types in the order listed below:

$$f \equiv \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The basket interior volume is based upon worst case basket dimensional and material thickness tolerances. Thus, the minimum possible basket interior volume is used.

Previous 2D thermal analysis results for several cases are summarized in Table 5-1 [References 3.1.2 and 3.1.6].

Table 5-1. Thermal Analysis Results

MSB Inside of	VCC	VCC	VCC	VCC	VCC	VCC	MTC
Amb. Temp. (°F)	75	-40	100	125	75	75	75
MSB Gas	He	He	He	He	He	He	He
Inlets Blocked	none	none	none	none	1/2	All	NA
Peak Clad (°F)	684	595	705	726	690	707	765
Peak Shell (°F)	269	162	294	320	276	297	404

He: Helium
Amb: Ambient temperature (24-hour daily average)

The thermal analysis cases considered for each pressure calculation are identified in the table below. The percent fuel rod failures postulated for each thermal case are also indicated.

Table 5-2. Conditions Considered for Pressure Analyses

MSB Inside of	VCC	VCC	VCC	VCC	VCC	VCC	MTC
Amb. Temp. (°F)	75	-40	100	125	75	75	75
MSB Gas	He	He	He	He	He	He	He
Inlets Blocked	none	none	none	none	1/2	All	NA
Normal Max Press	1%						1%
Off-Normal Max Press			10%		10%		10%
Off-Normal Min Press		0%					
Accident Max Press							
--Fuel Failure	100%						100%
--Other				1%		1%	

Based on Table 5-1, the limiting condition for the pressure calculations can be selected as follows:

Normal Maximum Pressure

The maximum pressure occurs when the MSB is in the MTC with a 75°F ambient temperature.

Off-Normal Maximum Pressure

The maximum pressure occurs when the MSB is in the MTC with a 75°F ambient temperature.

Off-Normal Minimum Pressure

The minimum pressure is calculated assuming a -40°F ambient temperature and no internal heat generation by the fuel, i.e., the gas in the MSB is assumed to be -40°F.

Accident Maximum Pressure

The limiting accident pressure condition is 100% postulated fuel rod failures for the MSB in the MTC with a 75°F ambient temperature. The pressure for this case bounds the maximum pressure for 1% fuel rod failures with a 125°F day (Section 7.0 results show that postulated fuel rod failures lead to much higher MSB pressures than postulated high ambient temperatures).

5.2 Normal Conditions

5.2.1 Maximum Pressure Case

The following assumptions are used to calculate the maximum normal operating pressure inside the MSB:

- 1% of the fuel rods fail
- 30% of the generated fission gas is released from the fuel pellets to the interior gas region. This is conservative in light of a more realistic number of 8% (Ref. 3.2.2, p. 3-1).
- 30% of the generated fission gas is released from the BPRAs to the interior gas region. This is an upper bound release rate (Ref. 3.2.8, Section 4.1.1).
- 100% of the rod fill gas escapes each failed fuel rod.
- The basket is stored at steady state in the transfer cask with a 75°F ambient temperature. This is the storage condition that yields the maximum basket temperature.
- The effects of minimum material condition and fuel rod irradiation growth are applied to obtain the smallest free volume.
- Basket component thermal expansion effects on the free volume are neglected since expansion of basket internals is offset by basket shell thermal effects.

5.2.2 Minimum Pressure Case

The minimum pressure normal storage case is bounded by the minimum pressure off-normal storage condition case defined below.

5.3 Off-Normal Conditions

5.3.1 Maximum Pressure Case

For off-normal conditions, 10% of the fuel rods are assumed to fail. The basket is stored at steady state in the transfer cask with a 75°F ambient temperature. Other assumptions are the same as those used to calculate the maximum normal operating pressure.

5.3.2 Minimum Pressure Case

The following assumptions are used to calculate the minimum off-normal operating pressure inside the MSB:

- The Helium gas is at the maximum temperature for the normal storage condition when the MSB is filled. This minimizes the gas moles in the MSB.
- No fuel rod failures occur. This minimizes the gas moles in the MSB.
- The design basis fuel heat generation rate decays to 0 kW and the basket gas volume reaches steady state at the minimum ambient condition (-40°F). In reality, the design basis heat load would not decay to 0 kW for thousands of years. Per ANS-57.9, the conservative decay heat generation rates for design basis PWR fuel would reach 30% of the original value after 50 years cooling time. Steady state helium temperatures would be much higher than assumed.
- Basket fabrication tolerances and fuel rod irradiation growth do no impact the free volume since the effects are identical for initial and final conditions and the moles of gas are constant.
- Basket component thermal effects are neglected since expansion or contraction of basket internals tends to change the free volume in the opposite direction of basket shell thermal effects. The relative impacts are negligible and off-setting.

5.4 Accident Conditions

5.4.1 Maximum Pressure Case

For accident conditions, 100% of the fuel rods are assumed to fail. The basket is stored at steady state in the transfer cask with a 75°F ambient temperature. Other assumptions are the same as those used to calculate the maximum normal operating pressure.

5.4.2 Minimum Pressure Case

The minimum pressure accident case is bounded by the minimum pressure off-normal storage condition case defined above due to the extreme cold conditions used.

5.5 Gas Analysis

5.5.1 MSB and Fuel Rod Fill Gases

The basket pressure analysis is performed using the Ideal Gas Law. First, the equation is used to calculate the moles of fill gas in the basket cavity.

$$N_i = P_i V_i / R T_i$$

where
- the Universal Gas Constant, R = 0.082056 atm-liters/gm-mole °K,
- Number of Gas Moles, N_i,
- Pressure, P_i
- Volume, V_i
- Temperature, T_i

The ideal gas law is also used to calculate the moles of fuel rod fill gas based on the rod fill gas pressure, absolute temperature, and rod free volume. The fill gas released to the MSB cavity is based on the assumed rod failure fraction.

5.5.2 Fuel Rod Fission Gasses

The amount of fission gas produced by the fuel over the assumed fuel burnup is obtained from the following:

$$N_{Fuel.Fission} = [\text{Fuel Burnup MWd/MTU}] \times [0.303 \text{ gas atoms/fission}] \times [2.70 \times 10^{21} \text{fissions/MWd}] \times [\text{MTU/assembly}] \times [24 \text{ assemblies/MSB}] / [6.02 \times 10^{23} \text{ atoms/mole}]$$

where Avogadro's Number is:

$$Avogadro := 6.02 \cdot 10^{23} \frac{atoms}{mole}$$

This total molar quantity of fission gas is multiplied by 0.30 to yield the fission gas moles released to the fuel rod internal gas volume. This quantity is then multiplied by the appropriate rod failure fraction to yield the total fuel fission gas moles released into the basket interior.

5.5.3 BPRA Fission Gasses

Helium produced from neutron reactions with the Boron-10 in the burnable poison rod assemblies (BPRAs) is also included in the pressure calculations. It is conservatively assumed that every Boron-10 atom present in the BPRAs absorbs a neutron, fissions, and creates a helium atom. Testing on BPRA pellets showed that less than 5% of the helium generated within the pellets escapes (Ref. 3.2.8). However, 30% of the generated helium gas is conservatively assumed to be released to the BPRA internal gas region. This quantity is then multiplied by the appropriate rod failure fraction to yield the total moles of helium released into the basket interior.

5.5.4 MSB Final Basket Pressure

The released fission gas and fill gas moles from the failed fuel rods and BPRA are added to the MSB fill gas moles to obtain the total gas mole quantity for the basket interior.

The MSB internal pressure is computed, using the Ideal Gas Law again, from the total molar gas quantity, storage condition temperature, and the total basket interior volume that is connected (e.g., basket free volume plus the volume of any failed rods and BPRA).

$$P_i = N_i R T_i / V_i$$

6.0 CALCULATIONS

6.1 Gas Volumes

6.1.1 MSB Gas Volume

The nominal MSB gas volume is calculated below.

Free Volume = Total MSB Vol. - Vol. of Basket - Vol. of Fuel Assembly

Total Volume

The total volume of the MSB is:

$$V_{MSB} := \overrightarrow{\left(\frac{\pi}{4} \cdot IDmin_{MSB}^{2} \cdot Lmin_{cav}\right)}$$

$$V_{MSB} = \begin{bmatrix} 5.016 \cdot 10^{5} \\ 5.016 \cdot 10^{5} \\ 4.228 \cdot 10^{5} \\ 4.681 \cdot 10^{5} \\ 4.697 \cdot 10^{5} \\ 4.754 \cdot 10^{5} \end{bmatrix} \cdot in^{3} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Basket Volume

The basket volume is calculated by adding the volume of the basket guide sleeves with the volume of the basket supports.

The volume of the basket guide sleeves is:

$$V_{sleeve} := \overrightarrow{\left[\left[width_{tube}^{2} - \left(width_{tube} - 2 \cdot t_{tube}\right)^{2}\right] \cdot L_{tube} \cdot No_{fuel.assem}\right]}$$

$$V_{sleeve} = \begin{bmatrix} 27475 \\ 27475 \\ 25488 \\ 28270 \\ 28270 \\ 28270 \end{bmatrix} \cdot in^{3} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The volume of the basket supports is the sum of the volumes of the curved support plates, the wall support plates, and the support bars:

$$V_{curved.plates} := \left[Dia_{bas.sup}^2 - \left(Dia_{bas.sup} - 2 \cdot t_{curv.supp.plts}\right)^2\right] \cdot \frac{\pi}{4} \cdot h_{curv.supp.plts} \cdot No_{curv.supp.plts}$$

$$V_{curved.plates} = 7745 \cdot in^3$$

$$V_{wall.plates} := w_{wall.supp.plts} \cdot t_{wall.supp.plts} \cdot h_{wall.supp.plts} \cdot No_{wall.supp.plts}$$

$$V_{wall.plates} = 1468 \cdot in^3$$

$$V_{support.bars} := w_{supp.bars} \cdot t_{supp.bars} \cdot h_{supp.bars} \cdot No_{supp.bars}$$

$$V_{support.bars} = 974.4 \cdot in^3$$

$$V_{basket.supports} := V_{curved.plates} + V_{wall.plates} + V_{support.bars}$$

$$V_{basket.supports} = 10188 \cdot in^3$$

Therefore the basket volume is:

$$V_{basket} := \overrightarrow{\left(V_{sleeve} + V_{basket.supports}\right)}$$

$$V_{basket} = \begin{bmatrix} 37663 \\ 37663 \\ 35676 \\ 38458 \\ 38458 \\ 38458 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The basket internals volume is assumed to be $V_{increase} = 10\cdot\%$ larger than the nominal volume to account for possible maximum dimensional tolerances.

$$V_{basket.max} := \overrightarrow{\left[\left(1 + V_{increase}\right)\cdot V_{basket}\right]}$$

$$V_{basket.max} = \begin{bmatrix} 41430 \\ 41430 \\ 39244 \\ 42304 \\ 42304 \\ 42304 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Fuel Volume

The fuel volume is the sum of the volume of the fuel rods, the volume of the BPRAs, the volume of the BPRA hold-down, and the volumes of the fuel assembly end fittings and other miscellaneous parts of the fuel assembly.

The volume of the fuel rods is calculated as:

$$V_{fuel.rod} := \overrightarrow{\left(\frac{\pi}{4}\cdot OD_{FlRd.max}{}^2\cdot L_{FlRd.irr.max}\cdot No_{FlRd}\cdot No_{fuel.assem}\right)}$$

$$V_{fuel.rod} = \begin{bmatrix} 1.125\cdot10^5 \\ 1.056\cdot10^5 \\ 9.686\cdot10^4 \\ 9.249\cdot10^4 \\ 1.050\cdot10^5 \\ 1.066\cdot10^5 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

BPRA Volume

The volume of the BPRA is (this calculation assumes that the diameter and length of a BPRA is the same as the diameter and length of a fuel rod):

$$V_{BPRA} := \overrightarrow{\left(\frac{\pi}{4} \cdot OD_{FlRd.max}{}^{2} \cdot No_{BPRA} \cdot L_{FlRd.irr.max} \cdot No_{fuel.assem}\right)}$$

$$V_{BPRA} = \begin{bmatrix} 8656 \\ 0 \\ 3726 \\ 8267 \\ 0 \\ 9692 \end{bmatrix} \cdot in^{3} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Fuel Assembly End Fittings and Miscellaneous Parts

The volume of the fuel assembly end fittings and other miscellaneous parts is estimated with the mass of the miscellaneous parts. The mass of the parts is the total fuel assembly mass minus the mass of the fuel rods.

$$m_{misc} := \overrightarrow{\left[\left(m_{max.woBPRA} - No_{FlRd} \cdot m_{rod.max}\right) \cdot No_{fuel.assem}\right]}$$

$$m_{misc} = \begin{bmatrix} 1416 \\ 2035 \\ 3686 \\ 3223 \\ 1982 \\ 1856 \end{bmatrix} \text{lb} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The volume is the mass divided by the density.

$$V_{misc} := \overrightarrow{\frac{m_{misc}}{\rho_{stl}}}$$

$$V_{misc} = \begin{bmatrix} 4883 \\ 7018 \\ 12712 \\ 11113 \\ 6836 \\ 6399 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

BPRA Hold-down

The volume of the BPRA hold-down is the mass divided by the density.

$$V_{BPRA.hold} := \overrightarrow{\left(\frac{m_{BPRA.hold}}{\rho_{stl}} \cdot No_{fuel.assem}\right)}$$

$$V_{BPRA.hold} = \begin{bmatrix} 828 \\ 0 \\ 828 \\ 828 \\ 0 \\ 828 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Total Fuel Assembly

Therefore the volume of the fuel is:

$$V_{fuel} := \overrightarrow{\left(V_{fuel.rod} + V_{misc} + V_{BPRA} + V_{BPRA.hold}\right)}$$

$$V_{fuel} = \begin{bmatrix} 1.269 \cdot 10^5 \\ 1.126 \cdot 10^5 \\ 1.141 \cdot 10^5 \\ 1.127 \cdot 10^5 \\ 1.119 \cdot 10^5 \\ 1.235 \cdot 10^5 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Free Volume

The minimum free volume of the MSB is:

$$V_{MSB.free.min} := \overrightarrow{\left(V_{MSB} - V_{basket.max} - V_{fuel}\right)}$$

$$V_{MSB.free.min} = \begin{bmatrix} 3.333 \cdot 10^5 \\ 3.476 \cdot 10^5 \\ 2.695 \cdot 10^5 \\ 3.131 \cdot 10^5 \\ 3.156 \cdot 10^5 \\ 3.095 \cdot 10^5 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

6.1.2 Fuel Rod Gas Volume

The fuel rod gas volume consists of the gas plenum (less the plenum spring gas displacement) plus the fuel pellet/clad gap region.

Plenum Volume, V_1:

The plenum volume is:

$$V_1 := \overrightarrow{\left(\frac{\pi}{4} \cdot ID_{FlRd.max}{}^{2} \cdot L_{plenum}\right)}$$

$$V_1 = \begin{bmatrix} 1.31 \\ 0.83 \\ 0.84 \\ 0.78 \\ 0.90 \\ 0.54 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

Plenum Spring Volume, V_2

The plenum spring volume is:

$$V_2 := \overrightarrow{\frac{m_{spring}}{\rho_{spring}}}$$

$$V_2 = \begin{bmatrix} 0.1400 \\ 0.3333 \\ 0.1667 \\ 0.2333 \\ 0.1467 \\ 0.1233 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

<u>Pellet/Clad Gap Volume, V_3:</u>

$$V_3 := \overrightarrow{\left[\frac{\pi}{4}\cdot\left(ID_{FlRd.max}{}^2 - OD_{FlPel.min}{}^2\right)\cdot L_{fuel}\right]}$$

$$V_3 = \begin{bmatrix} 0.7467 \\ 0.5418 \\ 0.6005 \\ 1.0985 \\ 0.6440 \\ 0.4789 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The total fuel rod gas volume for a single fuel rod is:

$$V_{fuel.Rod.gas} := \overrightarrow{\left[\left(V_1 - V_2\right) + V_3\right]}$$

$$V_{fuel.Rod.gas} = \begin{bmatrix} 1.915 \\ 1.033 \\ 1.275 \\ 1.645 \\ 1.396 \\ 0.891 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The total fuel rod gas volume inside the 24 assemblies in the MSB is:

$$V_{Total.Fuel.Rod.Gas} := \overrightarrow{\left(V_{fuel.Rod.gas}\cdot No_{FlRd}\cdot No_{fuel.assem}\right)}$$

$$V_{Total.Fuel.Rod.Gas} = \begin{bmatrix} 9560 \\ 5854 \\ 6367 \\ 7069 \\ 6836 \\ 5647 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

6.1.3 <u>BPRA Gas Volume</u>

The BPRA gas volume is

$$V_{Total.BPRA.Gas} := \overrightarrow{\left(V_{BPRA.rod} \cdot No_{BPRA} \cdot No_{fuel.assem}\right)}$$

$$V_{Total.BPRA.Gas} = \begin{bmatrix} 614.4 \\ 0.0 \\ 307.2 \\ 614.4 \\ 0.0 \\ 921.6 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

6.2 Gas Mole Quantities

6.2.1 MSB, Fuel Rod, and BPRA

The maximum initial moles of helium in the MSB is calculated with the minimum initial gas temperature when the MSB is backfilled with helium. Finite element thermal analysis was used in Reference 3.1.5 to calculate the minimum possible initial gas temperature. Results for key locations were as follows:

	MSB Peak	MSB Shell	
	104	89	MSB Top
	385	172	MSB Middle
	329	126	MSB Bottom

$$T_{MTC.load.He} = \begin{bmatrix} 104 & 89 \\ 385 & 172 \\ 329 & 126 \end{bmatrix} \cdot F$$

The equation to determine the average gas temperature from Assumption 4.3.19 is

$$T_{Avg} = \frac{T_{Top.Cen} + T_{Top.Edge} + 2\cdot\left(T_{Mid.Cen} + T_{Mid.Edge}\right) + T_{Bot.Cen} + T_{Bot.Edge}}{8}$$

where

T_{Avg} = average basket gas temperature
$T_{Top.Cen}$ = temperature at MSB centerline and bottom of shield lid elevation
$T_{Top.Edge}$ = MSB shell temperature at bottom of shield lid elevation
$T_{Mid.Cen}$ = peak fuel temperature (near center of MSB)
$T_{Mid.Edge}$ = peak MSB shell temperature at or near mid height
$T_{Bot.Cen}$ = temperature at MSB centerline and bottom of fuel elevation
$T_{Bot.Edge}$ = MSB shell temperature at bottom of fuel elevation

Define a function to calculate the average temperature with the above formula.

$$T_{avg}\left(T_{matrix}\right) := \frac{T_{matrix_{1,1}} + T_{matrix_{1,2}} + 2\cdot\left(T_{matrix_{2,1}} + T_{matrix_{2,2}}\right) + T_{matrix_{3,1}} + T_{matrix_{3,2}}}{8}$$

The minimum basket fill temperature is

$$T_{basket.min} := T_{avg}\left(T_{MTC.load.He}\right)$$

$$T_{basket.min} = 220.5 \cdot F$$

The total moles of MSB helium back fill gas is:

$$R_{gas} \equiv 0.082056 \frac{atm \cdot liter}{mole \cdot K} \qquad T_{abs} \equiv 459.67 \cdot R$$

$$N_{MSB.Fill} := \overrightarrow{\frac{P_{bask.bkfl} \cdot V_{MSB.free.min}}{R_{gas} \cdot \left(T_{basket.min} + T_{abs}\right)}}$$

$$N_{MSB.Fill} = \begin{bmatrix} 176.2 \\ 183.7 \\ 142.4 \\ 165.5 \\ 166.8 \\ 163.6 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The total moles of fuel rod helium back fill gas is:

$$N_{Fuel.Rod.Fill} := \overrightarrow{\frac{P_{rod.bkfl} \cdot V_{Total.Fuel.Rod.Gas}}{R_{gas} \cdot \left(T_{He.init} + T_{abs}\right)}}$$

$$N_{Fuel.Rod.Fill} = \begin{bmatrix} 190.4 \\ 126.1 \\ 137.2 \\ 155.6 \\ 155.2 \\ 134.7 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The total moles of BPRA helium back fill gas is:

$$N_{BPRA.Fill} := \overrightarrow{\frac{P_{BPRA.bkfl} \cdot V_{Total.BPRA.Gas}}{R_{gas} \cdot \left(T_{He.init} + T_{abs}\right)}}$$

$$N_{BPRA.Fill} = \begin{bmatrix} 11.81 \\ 0.00 \\ 6.62 \\ 13.52 \\ 0.00 \\ 21.99 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

6.2.2 <u>Fuel Rod Fission Gas</u>

The number of moles of fission gas produced by the fuel for the assumed fuel burnup is calculated as follows:

$$N_{Fuel.Fission.MTU} := \frac{No_{atoms.fission} \cdot No_{fissions.MWd} \cdot Fuel_{burn}}{Avogadro}$$

$$N_{Fuel.Fission.MTU} = 70.30 \cdot \frac{mole}{MT}$$

$$N_{Fuel.Fission} := \overrightarrow{\left(N_{Fuel.Fission.MTU} \cdot m_{ur.assem} \cdot No_{fuel.assem}\right)}$$

$$N_{Fuel.Fission} = \begin{bmatrix} 782.90 \\ 696.85 \\ 696.85 \\ 686.73 \\ 791.34 \\ 718.78 \end{bmatrix} \cdot mole \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The fission gas moles released from the fuel pellets to the internal gas region is:

$$Rod_{release} = 30\cdot\%$$

$$N_{FISSION.Fuel} := \overrightarrow{\left(Rod_{release}\cdot N_{Fuel.Fission}\right)}$$

$$N_{FISSION.Fuel} = \begin{bmatrix} 234.9 \\ 209.1 \\ 209.1 \\ 206.0 \\ 237.4 \\ 215.6 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

6.2.3 BPRA Fission Gas

The molecular weight of Boron-10 is (Reference 3.2.1, p. B-248)

$$MW_{boron} := 10.0129\cdot\frac{gm}{mole}$$

The number of moles of helium produced by fission of the Boron-10 is:

$$N_{BPRA.Fission} := \overrightarrow{\frac{m_{BPRA.boron}\cdot No_{BPRA}\cdot No_{fuel.assem}}{MW_{boron}}}$$

$$N_{BPRA.Fission} = \begin{bmatrix} 100.1 \\ 0.0 \\ 50.0 \\ 110.2 \\ 0.0 \\ 165.3 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The fission gas moles released from the burnable poison to the internal gas region is:

$$BPRA_{release} = 30 \cdot \%$$

$$N_{FISSION.bpra} := \overrightarrow{\left(BPRA_{release} \cdot N_{BPRA.Fission}\right)}$$

$$N_{FISSION.bpra} = \begin{bmatrix} 30.03 \\ 0.00 \\ 15.01 \\ 33.05 \\ 0.00 \\ 49.58 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

6.3 Normal Conditions

6.3.1 Maximum Pressure Case

The total gas moles in the basket is:

$Rod\_fail_1 = 1 \cdot \%$

$N_{total} := \overrightarrow{\left[N_{MSB.Fill} + Rod\_fail_1 \cdot \left(N_{Fuel.Rod.Fill} + N_{BPRA.Fill} + N_{FISSION.Fuel} + N_{FISSION.bpra}\right)\right]}$

$$N_{total} = \begin{bmatrix} 180.8 \\ 187.1 \\ 146.1 \\ 169.5 \\ 170.7 \\ 167.8 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The maximum basket pressure under normal conditions is calculated with the maximum average basket gas temperature. The finite element results for the normal storage maximum temperature condition are:

	MSB Peak	MSB Shell	
MSB Top	265	159	
MSB Middle	765	404	
MSB Bottom	424	284	

$$T_{MTC.75.He} = \begin{bmatrix} 265 & 159 \\ 765 & 404 \\ 424 & 284 \end{bmatrix} \cdot F$$

The average temperature for the normal storage condition in the MTC is

$T_{Avg} := T_{avg}\left(T_{MTC.75.He}\right)$

$T_{Avg} = 433.8 \cdot F$

For conservatism, BNFL will calculate the maximum basket pressure under normal storage conditions with the gas mixture at a bulk temperature of

$T_{bulk.nor} := 439\ F$

The free volume available for the gases released to the MSB and the MSB fill gas is:

$$V_{Gas} := \overrightarrow{\left[V_{MSB.free.min} + Rod\_fail_1 \cdot \left(V_{Total.Fuel.Rod.Gas} + V_{Total.BPRA.Gas}\right)\right]}$$

$$V_{Gas} = \begin{bmatrix} 3.334 \cdot 10^5 \\ 3.477 \cdot 10^5 \\ 2.695 \cdot 10^5 \\ 3.131 \cdot 10^5 \\ 3.156 \cdot 10^5 \\ 3.096 \cdot 10^5 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The maximum basket pressure for normal storage conditions is:

$$p_{total} := \overrightarrow{\frac{N_{total} \cdot R_{gas} \cdot \left(T_{bulk.nor} + T_{abs}\right)}{V_{Gas}}} \qquad p_{total.psig} := p\left(p_{total}\right)$$

$$p_{total} = \begin{bmatrix} 19.93 \\ 19.77 \\ 19.91 \\ 19.89 \\ 19.87 \\ 19.91 \end{bmatrix} \cdot psia \qquad p_{total.psig} = \begin{bmatrix} 5.23 \\ 5.07 \\ 5.21 \\ 5.19 \\ 5.17 \\ 5.21 \end{bmatrix} \cdot psig \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The maximum pressure is

$$P_{normal} := max\left(p_{total.psig}\right)$$

$$P_{normal} = 5.23 \cdot psig$$

6.3.2 <u>Minimum Pressure Case</u>

The minimum pressure for normal storage conditions is bounded by the minimum pressure case for off-normal conditions, since the latter case involves the basket gas equilibrating at the severe cold weather condition of -40°F.

6.4 Off-Normal Conditions

6.4.1 Maximum Pressure Case

The free volume is MSB minimum free volume plus the volume inside the failed rods and BPRAs.

$$Rod\_fail_{10} = 10 \cdot \%$$

$$V_{free.MSB} := \overrightarrow{\left[V_{MSB.free.min} + Rod\_fail_{10} \cdot \left(V_{Total.Fuel.Rod.Gas} + V_{Total.BPRA.Gas}\right)\right]}$$

$$V_{free.MSB} = \begin{bmatrix} 3.343 \cdot 10^5 \\ 3.482 \cdot 10^5 \\ 2.701 \cdot 10^5 \\ 3.138 \cdot 10^5 \\ 3.162 \cdot 10^5 \\ 3.102 \cdot 10^5 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The total moles in the basket, taking account of 10% fuel rod failures, is:

$$N_{total} := \overrightarrow{\left[N_{MSB.Fill} + Rod\_fail_{10} \cdot \left(N_{Fuel.Rod.Fill} + N_{BPRA.Fill} + N_{FISSION.Fuel} + N_{FISSION.bpra}\right)\right]}$$

$$N_{total} = \begin{bmatrix} 222.9 \\ 217.2 \\ 179.2 \\ 206.3 \\ 206.0 \\ 205.8 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

For this off-normal case, the release of fission gases from the failed fuel rods causes a minor reduction in the conductivity of the basket interior gas. This, in turn, affects the average basket temperature. The change in thermal conductivity depends on the gas composition. The percent of the gas that is helium, including helium from Boron-10 fission, is:

$$P_{He} := \frac{\overrightarrow{N_{MSB.Fill} + Rod\_fail_{10} \cdot \left(N_{Fuel.Rod.Fill} + N_{BPRA.Fill} + N_{FISSION.bpra}\right)}}{N_{total}}$$

$$P_{He} = \begin{bmatrix} 89 \\ 90 \\ 88 \\ 90 \\ 88 \\ 90 \end{bmatrix} \cdot \% \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The average helium gas concentration the fuel assemblies is

$$P_{He.avg} := mean\left(P_{He}\right)$$

$$P_{He.avg} = 89 \cdot \%$$

The balance of the gas is primarily the fission gases xenon and krypton. From Reference 3.2.5, Figure 1(b), the gas mixture thermal conductivity is 80% of the pure helium value.

The dependence of the basket interior temperatures on the basket gas conductivity is determined through linear interpolation between the helium and vacuum case thermal analysis results.

$$\Delta T_{Mix} = \left(1 - \frac{k_{Mix}}{k_{He}}\right) \cdot \left(T_{MTC.vac} - T_{MTC.He}\right)$$

where T_{Mix} is the temperature for the gas mixture case, T_{Vac} is the temperature for the vacuum case, T_{He} is the temperature for the pure helium gas case, k_{Mix} is the thermal conductivity of the gas mixture, and k_{He} is the thermal conductivity of pure helium gas.

Calculate the average gas temperature for the helium and vacuum cases.

$$T_{MTC.He} := T_{avg}\left(T_{MTC.75.He}\right)$$

$$T_{MTC.He} = 433.8 \cdot F$$

$$T_{MTC.vac} := T_{avg}\left(T_{MTC.75.vac}\right)$$

$$T_{MTC.vac} = 443.3 \cdot F$$

Since the conductivity of the gas mixture (helium plus fission gases) is 80% of the pure helium gas value, the temperature increase due to the decrease in thermal conductivity is:

$$\Delta T_{Mix.80percent} := (1 - 0.80) \cdot \left(T_{MTC.vac} - T_{MTC.He}\right)$$

$$\Delta T_{Mix.80percent} = 1.9 \cdot F$$

The temperature for the off-normal storage maximum pressure accounting for the temperature increase due to fission gases is

$$T_{Avg} := T_{avg}\left(T_{MTC.75.He}\right) + \Delta T_{Mix.80percent}$$

$$T_{Avg} = 435.7 \cdot F$$

For conservatism, BNFL will calculate the maximum basket pressure under off-normal storage conditions with the gas mixture at a bulk temperature of

$$T_{bulk} := 445\ F$$

$$P_{total} := \overrightarrow{\frac{N_{total} \cdot R_{gas} \cdot \left(T_{bulk} + T_{abs}\right)}{V_{free.MSB}}} \qquad P_{total.psig} := P\left(P_{total}\right)$$

$$P_{total} = \begin{bmatrix} 24.66 \\ 23.07 \\ 24.54 \\ 24.31 \\ 24.10 \\ 24.54 \end{bmatrix} \cdot psia \qquad P_{total.psig} = \begin{bmatrix} 9.96 \\ 8.37 \\ 9.84 \\ 9.61 \\ 9.40 \\ 9.84 \end{bmatrix} \cdot psig \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The maximum pressure is

$$P_{offnormal} := max(p_{total.psig})$$

$$P_{offnormal} = 9.96 \cdot psig$$

6.4.2 Minimum Pressure Case

The average MSB gas temperature for equilibrium conditions with an ambient temperature of 75°F is

$$T_{Avg} := T_{avg}(T_{VCC.75})$$

$$T_{Avg} = 362.1 \cdot F$$

Therefore it is conservative to use a maximum average gas temperature at backfill of

$$T_{bkfl.max.avg} := 400\ F$$

This high helium backfill gas temperature minimizes the initial moles of gas in the MSB at the initial backfill pressure of:

$$p_{bask.bkfl} = 1.00 \cdot atm$$

The minimum basket pressure is calculated assuming that the MSB temperature is the same as the minimum ambient storage temperature.

$$T_{VCC.minus40} = -40.00 \cdot F$$

The minimum MSB pressure is calculated with the ideal gas law.

$$p_{off.norm.min} := p_{bask.bkfl} \cdot \frac{T_{VCC.minus40} + T_{abs}}{T_{bkfl.max.avg} + T_{abs}} \qquad p_{offnorm\_min} := p(p_{off.norm.min})$$

$$p_{off.norm.min} = 7.17 \cdot psia \qquad p_{offnorm\_min} = -7.53 \cdot psig$$

6.5 Accident Conditions

6.5.1 Maximum Pressure Case

The free volume includes the basket free volume and the free volume inside the failed fuel rods and BPRAs.

$$Rod\_fail_{100} = 100 \cdot \%$$

$$V_{MSB.free} := \overrightarrow{\left[V_{MSB.free.min} + Rod\_fail_{100} \cdot \left(V_{Total.Fuel.Rod.Gas} + V_{Total.BPRA.Gas}\right)\right]}$$

$$V_{MSB.free} = \begin{bmatrix} 3.435 \cdot 10^5 \\ 3.535 \cdot 10^5 \\ 2.761 \cdot 10^5 \\ 3.207 \cdot 10^5 \\ 3.224 \cdot 10^5 \\ 3.161 \cdot 10^5 \end{bmatrix} \cdot in^3 \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The total gas moles in the basket is:

$$N_{Total} := \overrightarrow{\left[N_{MSB.Fill} + Rod\_fail_{100} \cdot \left(N_{Fuel.Rod.Fill} + N_{BPRA.Fill} + N_{FISSION.Fuel} + N_{FISSION.bpra}\right)\right]}$$

$$N_{Total} = \begin{bmatrix} 643.3 \\ 518.9 \\ 510.3 \\ 573.6 \\ 559.4 \\ 585.5 \end{bmatrix} \text{mole} \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

For the accident case, the release of fission gases from the fuel rods causes a reduction in the conductivity of the basket interior gas, which in turn affects the average basket temperature. The percent of the gas that is helium, including helium from Boron-10 fission, is:

$$P_{He} := \overrightarrow{\frac{N_{MSB.Fill} + N_{Fuel.Rod.Fill} + N_{BPRA.Fill} + N_{FISSION.bpra}}{N_{Total}}}$$

$$P_{He} = \begin{bmatrix} 63 \\ 60 \\ 59 \\ 64 \\ 58 \\ 63 \end{bmatrix} \cdot \% \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The average helium gas concentration the fuel assemblies is

$$P_{He.avg} := mean\left(P_{He}\right)$$

$$P_{He.avg} = 61 \cdot \%$$

The remaining gas is that produced by fission, primarily xenon and krypton. The basket gas conductivity is about 30% of the pure helium value (Ref. 3.2.5, Figure 1(b), assuming the fission gas is 100% Xenon, which is conservative, since Xenon has a lower thermal conductivity than Krypton).

The dependence of the basket interior temperatures on the basket gas conductivity is determined through linear interpolation between the Helium and vacuum case thermal analysis results.

$$\Delta T_{Mix} = \left(1 - \frac{k_{Mix}}{k_{He}}\right) \cdot \left(T_{MTC.vac} - T_{MTC.He}\right)$$

where T_{Mix} is the temperature for the gas mixture case, T_{Vac} is the temperature for the vacuum case, T_{He} is the temperature for the pure He gas case, k_{Mix} is the thermal conductivity of the gas mixture, and k_{He} is the thermal conductivity of pure He gas.

Since the conductivity of the gas mixture (helium plus fission gases) is 30% of the pure helium gas value, the temperature increase due to the decrease in thermal conductivity is:

$$\Delta T_{Mix.30percent} := (1 - 0.30)\cdot\left(T_{MTC.vac} - T_{MTC.He}\right)$$

$$\Delta T_{Mix.30percent} = 6.65\cdot F$$

The temperature for the accident maximum pressure accounting for the temperature increase due to fission gases is

$$T_{Avg} := T_{avg}\left(T_{MTC.75.He}\right) + \Delta T_{Mix.30percent}$$

$$T_{Avg} = 440.4\cdot F$$

For conservatism, BNFL will calculate the maximum basket pressure under accident storage conditions with the gas mixture at a bulk temperature of

$$T_{bulk.acc} := 460\ F$$

$$p_{total} := \overrightarrow{\frac{N_{Total}\cdot R_{gas}\cdot\left(T_{bulk.acc} + T_{abs}\right)}{V_{MSB.free}}} \qquad p_{total.psig} := p\left(p_{total}\right)$$

$$p_{total} = \begin{bmatrix} 70.42 \\ 55.19 \\ 69.48 \\ 67.24 \\ 65.24 \\ 69.65 \end{bmatrix}\cdot psia \qquad p_{total.psig} = \begin{bmatrix} 55.72 \\ 40.49 \\ 54.78 \\ 52.54 \\ 50.54 \\ 54.95 \end{bmatrix}\cdot psig \qquad f = \begin{bmatrix} \text{"B\&W 15x15 BPRA"} \\ \text{"CE 16x16 non-BPRA"} \\ \text{"CE 15x15 BPRA"} \\ \text{"W 14x14 BPRA"} \\ \text{"W 15x15 non-BPRA"} \\ \text{"W 17x17 BPRA"} \end{bmatrix}$$

The maximum pressure is

$$P_{accident} := max\left(p_{total.psig}\right)$$

$$P_{accident} = 55.72\cdot psig$$

6.5.2 Minimum Pressure Case

The minimum pressure for accident storage conditions is bounded by the minimum pressure case for off-normal conditions, since the latter case involves the basket gas equilibrating at the severe cold weather condition of -40°F.

7.0 CONCLUSIONS

Results are as follows:

Table 7-1. Summary of Calculated Pressures

	Maximum	Minimum
Normal Storage Conditions	$P_{normal} = 5.23 \cdot psig$	see off-normal case
Off-Normal Storage Conditions	$P_{offnormal} = 10.0 \cdot psig$	$P_{offnorm\_min} = -7.53 \cdot psig$
Accident Conditions	$P_{accident} = 55.7 \cdot psig$	see off-normal case

The fuel assembly that has the maximum calculated pressure for each condition is:

Normal—$f_{i_{nor}}$ = "B&W 15x15 BPRA"
Off-normal—$f_{i_{off}}$ = "B&W 15x15 BPRA"
Accident—$f_{i_{acc}}$ = "B&W 15x15 BPRA"

This calculation is conservative due to the following:

- At higher pressure the heat transfer rate will increase, thus lowering the temperature in the MSB from the steady state temperature used for the calculation.
- Nominal fission gas release fractions from the fuel and BPRA are less than the 30% assumed for the calculation.
- The free volume is calculated conservatively.
- The off-normal and accident maximum average basket gas temperatures are chosen to bound the actual calculated temperatures.

8.0 ELECTRONIC FILES

8.1 Computer Runs

None

8.2 Other Electronic Files

None

BNFL Fuel Solutions	**CALCULATION PACKAGE**	Calc. Pkg No. VSC02.6.2.3.06 File No.: VSC02.6.2.3.06 Revision: 2

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

MSB-24 Corrosion Calculation

SCOPE:

Product:	☐ FuelSolutions™	☐ TranStor™	☒ VSC-24	☐ Other ________
Service:	☒ Storage	☐ Transportation		☐ Other ________
Conditions:	☐ Normal	☐ Off-Normal	☒ Accident	☐ Other ________

Component(s):

MSB shell and bottom plate

Prepared by:

Name: Michelle Heinz

Signature: Michelle Heinz

Date: 2/16/01

Verified by:

Name: James Moroney

Signature: [signature]

Date: 2/16/01

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: R Srinivasan

Date: 3/26/01

Form QAP 3.2-1, Revision 1

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1-30	None	Replaces Calculation WEP109-002.6 Rev. 4	J.L. Hibbard	M. Heinz
1	All	CDROM	Incorporated changes due to alternative support of MSB by ceramic tiles, as per ECN No. VSC02-ECN-003 Calculation re-written	Warren Price	Soo Bee Kok
2	All pages in general		Revised limiting load combinations and design margins in Section 2.0. Scaled bottom plate stresses in Section 3.2 based on off-normal pressure. Updated References in Section 5.0. Revised each '1' in the 'Cat' column on p. 19 to '2'. (VSC02-ECN-008)	M. Heinz	J. Moroney

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-427.

RECORD OF VERIFICATION

	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	(YES)	NO	N/A
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	(YES)	NO	N/A
(i) Computer calculations are properly identified.	(YES)	NO	N/A
(j) Computer codes used are under configuration control.	(YES)	NO	N/A
(k) Computer codes used are applicable to the calculation.	(YES)	NO	N/A
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

See Verification memorandum for comments.

Verifier: James Moroney [signature] 2/16/01

Name/Signature/Date

TABLE OF CONTENTS

1. INTRODUCTION

This calculation determines whether the MSB shell and base can withstand normal operating and accident condition load combinations after 50 years of postulated corrosion. Revision 1 of this calculation has incorporated the results of an alternative support configuration of the MSB base by ceramic tiles.

2. DESIGN INPUT AND ASSUMPTIONS

The most onerous loading condition for both the MSB shell and MSB base is determined from the load case combination calculations (Reference 3). Each of the membrane (P_m), and membrane plus bending ($P_L + P_b$) stresses are addressed. The worst conditions, as identified by lowest design margins, are summarized as follows.

Component	Stress Type	Limiting Load Combination	Limitng Design Margin
MSB Shell	P_m	Vertical Drop + Pressure	0.03
	$P_L + P_b$	Vertical Drop + Pressure	0.23
MSB Base	P_m	Horizontal Drop + Pressure	0.48
	$P_L + P_b$	Dead Weight + Off-Normal Pressure + Off-Normal Handling	0.02

The corrosion rate is based on the conservative assumption that the steel is not coated and the steel is in a marine environment. This assumption is highly conservative for the following reasons:

a) The MSB is coated.

b) High surface temperatures will keep it dry.

c) Storage facilities are typically not located in a marine environment.

d) The MSB is sealed inside the storage cask and hence not open to the effects of a corroding atmosphere.

To allow for manufacturing tolerances it has been assumed in this calculation that the nominal thickness of the MSB wall may be under size from the nominal thickness of 1 inch (Reference 5) by up to 0.03 inches. Hence, the calculation conservatively considers the wall thickness to be 0.97 inches before corrosion. Additional reduction of wall thickness due to corrosion is included in the analysis, as described below.

3. CALCULATIONS

From Figure 3-1 (Figure 8.1, in Reference 1), the corrosion rate for a marine atmosphere is 3 mpy.

$$50 \text{ years} \times 0.003 \cdot \text{in}/\text{year} = 0.15 \text{ in}$$

From Figure 3-2 (graphs for ASTM A-588 and A-242 steels from Reference 2), a conservative value for corrosion in a marine environment over 50 years is 400 μm. ASTM G101 (Reference 2) also states that the corrosion rate of weather-resistant steels such as A-588 and A-242 is 1/4 that of regular carbon steels such as A-516 Gr70. Therefore, the penetration for A-516 Gr 70 shell and base material (Reference 5) can be estimated as follows:

$$t = (400 \times 10^{-6} \text{ m})\ (39.4 \text{ in/m}) \times 4 = .063 \text{ in}$$

For conservatism, use the higher value of 0.15 in.

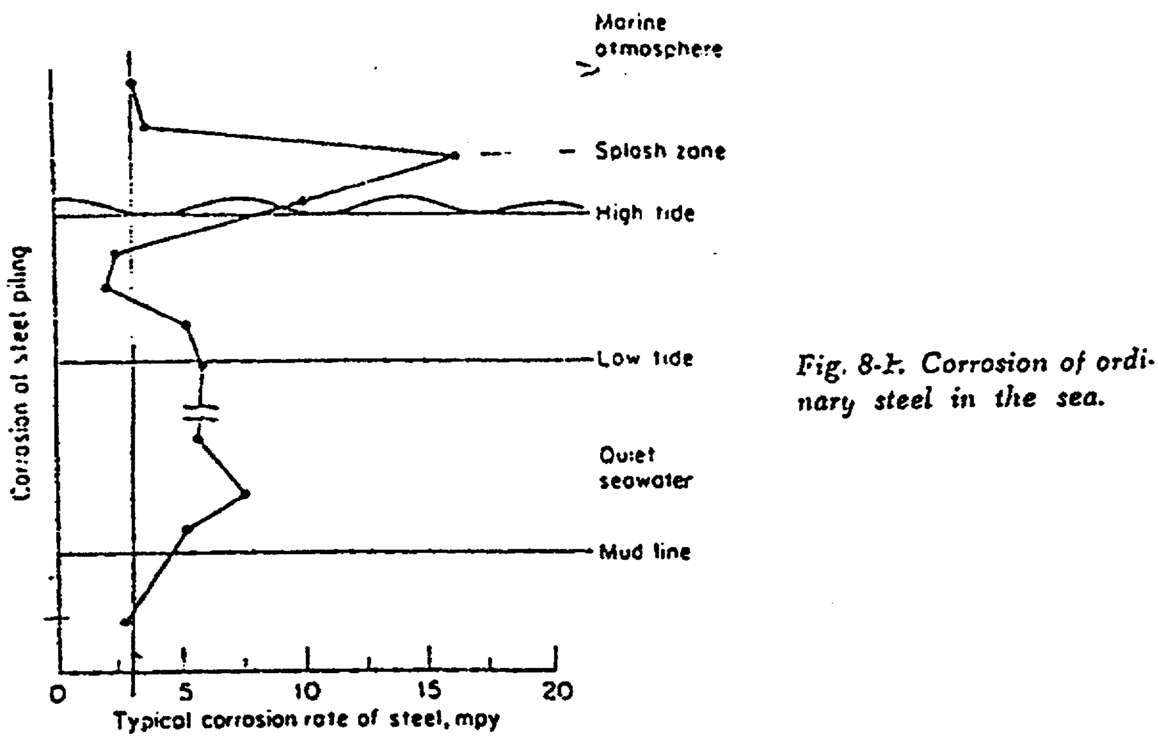

Figure 3-1 . Corrosion of Steel in a Marine Atmosphere (Reference 1)

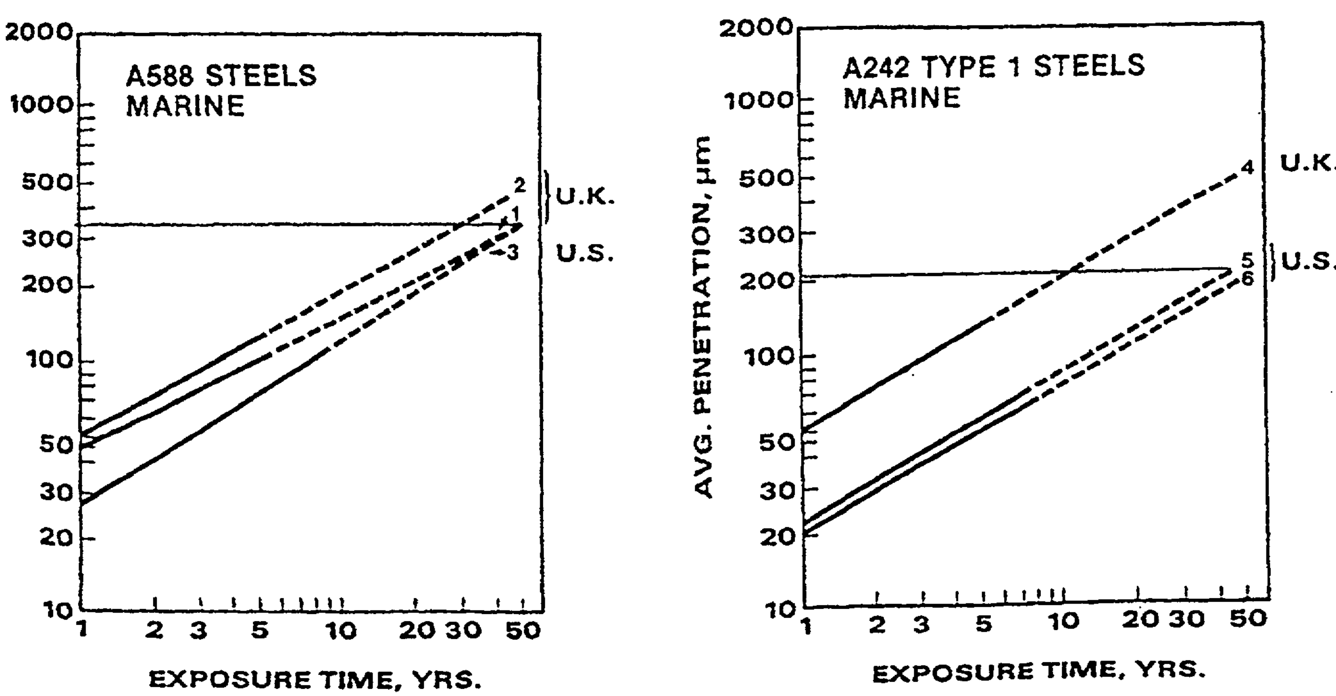

Figure 3-2 Corrosion of Steel in a Marine Atmosphere (Reference 2)

3.1. MSB Shell

As noted above in section 2, the vertical drop load combination produces the lowest design margin for the MSB shell. Since the vertical drop analysis was non-linear, direct scaling of stresses to account for the corroded wall thickness is not valid. For this reason the analysis of Reference 6 was repeated with the following changes.

- Normal operating pressure of 8.9 psig (bounds the value from Reference 9) was applied to both the base and shell walls of the finite element model.
- The MSB shell was modeled with a nominal thickness of 0.97 inches to allow for lower bound manufacturing tolerance.
- Both MSB wall and MSB base thicknesses were reduced by 0.15 inches to account for the effect of 50 years of corrosion.

The combined effect of vertical drop, internal pressure and corroded walls was then determined by running the finite element model. The ANSYS input for this analysis is included as Attachment 1 of this calculation.

Allowable stresses are taken from Reference 3.

Plots of distribution of stress intensity are shown in Figure 3-3, Figure 3-4, and Figure 3-5 for shell top, middle and bottom respectively.

It is noted that the highest stresses concentrate in the region of the ceramic tiles. By observation of the figures and tables noted above it can be seen that virtually all of the stress in the shell is membrane stress. This is to be expected since the support provided by the ceramic tiles is directly underneath the MSB wall, giving rise to the high bearing stress. The bearing stress is discernable as membrane stress in the finite element analysis. Since a plastic systems analysis is being performed to the requirements of Service Level D, the rules of Appendix F (Reference 10) of the ASME code apply. Paragraph F-1341.6 of Reference 10 specifies that "bearing stresses need not be evaluated for loads for which Level D Service limits apply." Hence, for this reason, the local regions in which the bearing stress occurs has not been evaluated in this analysis. Values of membrane (P_m) stress and membrane+bending ($P_L + P_b$) stress are conservatively evaluated at a location of one node up vertically from the support location. This approach is conservative since the reported stress is still mainly due to membrane (bearing) effects. Stress summaries for shell top, middle and bottom locations are recorded in Table 3-1.

The results of the above analysis are summarized below. (See Table 3-1 for results)

P_m	=	45.2 ksi	<	49.0 ksi	acceptable.
P_L+P_b	=	45.4 ksi	<	63.0 ksi	acceptable.

3.2. MSB Bottom Plate

As noted above in section 2, the lowest design margins for the MSB base come from two load conditions. The lowest P_m design margin comes from the horizontal drop load combination, and the lowest $P_L + P_b$ design margin from the dead load + off-normal pressure + off-normal handling load combination.

The values of allowable stress are taken from Reference 3.

3.2.1 Evaluation of Pm

Since the horizontal drop analysis is a linear analysis, the value of P_m with corroded MSB base can be calculated by scaling the uncorroded P_m stress by the ratio of the nominal to corroded wall thicknesses (since membrane stress is inversely proportional to wall thickness). The pressure stress is added to this revised drop stress. The horizontal drop and pressure stresses are from Reference 3.

Hence,

$$P_m \text{ corroded} = \frac{0.75}{0.75-0.15}\cdot\sigma_{horiz\_drop} + \frac{0.75}{0.75-0.15}\cdot\sigma_{pressure}$$

$$= (1.25 \text{ x } 32.6) + (1.25 \text{ x } 0.40)$$

$$= 41.25 \text{ ksi} \quad < \quad 49.0 \quad \text{acceptable.}$$

3.2.2 Evaluation of $P_L + P_b$

The lowest design margin for this condition comes from the combination of the dead weight stress with MSB supported on ceramic tiles, off-normal internal pressure, and off-normal handling loads. Since the evaluation of the bending stress $P_L + P_b$ for this condition is calculated by adding stress intensity for different load cases, no account is made for the way the different loads would interact with each when considered to act simultaneously. In order to quantify the combined effect, the dead weight finite element analysis (Ref 6) was re-run with the following changes.

- A normal pressure of 8.9 psig was applied to both the base and shell walls of the finite element model.
- The MSB shell was modeled with a nominal thickness of 0.97 inches to allow for lower bound manufacturing tolerance.
- Both MSB wall and MSB base thicknesses were reduced by 0.15 inches to account for the effect of 50 years of corrosion.
- The off-normal handling acceleration for the lowering of the MSB at 0.75 ft/sec into the storage cask, identified in Ref 8 to be 1g, was applied in addition to the 1g due to dead weight.

The combined effect of dead weight, internal pressure, corroded walls, and handling acceleration was then determined by running the finite element model. The ANSYS input for this analysis is included as Attachment 2 of this calculation.

Plots of distribution of stress intensity are shown in Figure 3-6 and Figure 3-7 for shell element top and bottom, respectively. Stress summaries for shell element top and bottom locations are recorded in Table 3-2. As permitted by the ASME code (Ref 7), local stresses at the structural discontinuity caused by the ceramic tiles have been discounted.

The off-normal internal pressure from Reference 9 is 10.9 psig. Results from the finite element analysis are scaled by a factor of 10.9/8.9 to account for the difference between the pressure applied to the MSB in the analysis and the actual off-normal pressure.

The final value of $P_L + P_b$ is then,

$$P_L + P_b = 30.6*(10.9/8.9) = 37.5 \text{ ksi} \quad < \quad 40.5 \text{ ksi} \quad \text{acceptable.}$$

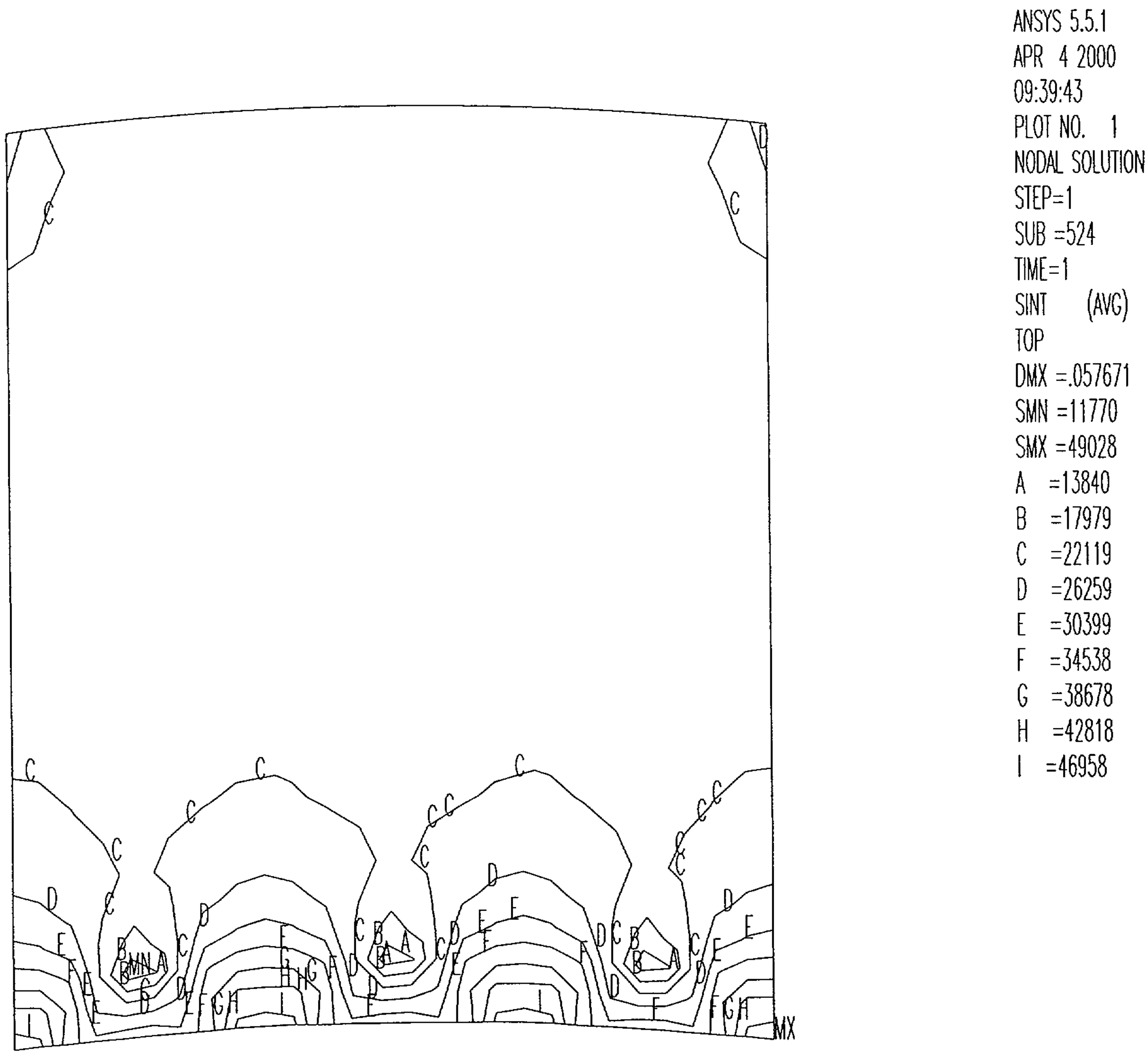

Figure 3-3 STRESS INTENSITY IN MSB SHELL TOP SURFACE LOCATION. VERTICAL DROP + NORMAL PRESSURE + CORRODED WALLS

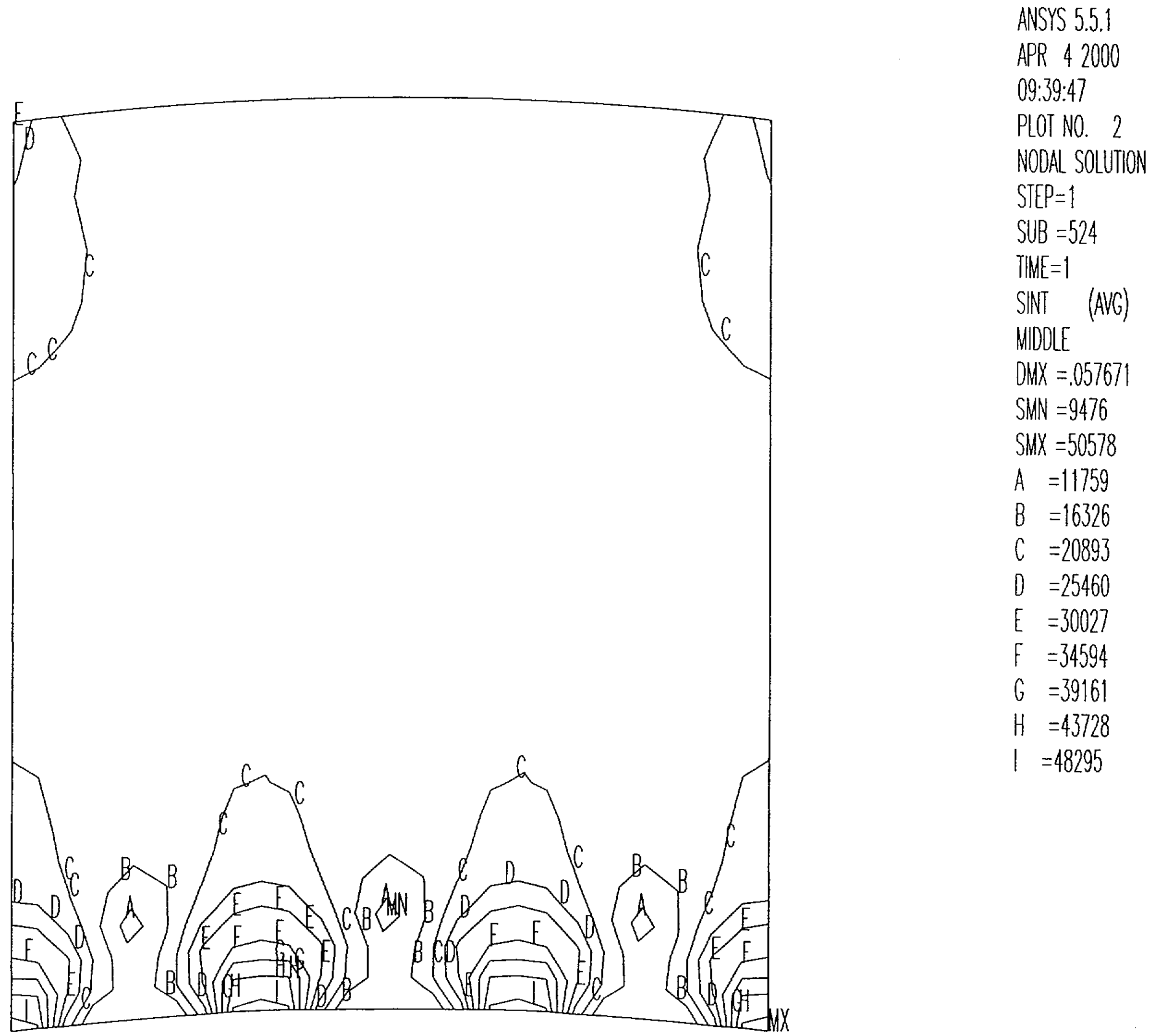

Figure 3-4 STRESS INTENSITY IN MSB SHELL MID SURFACE LOCATION. VERTICAL DROP + NORMAL PRESSURE + CORRODED WALLS

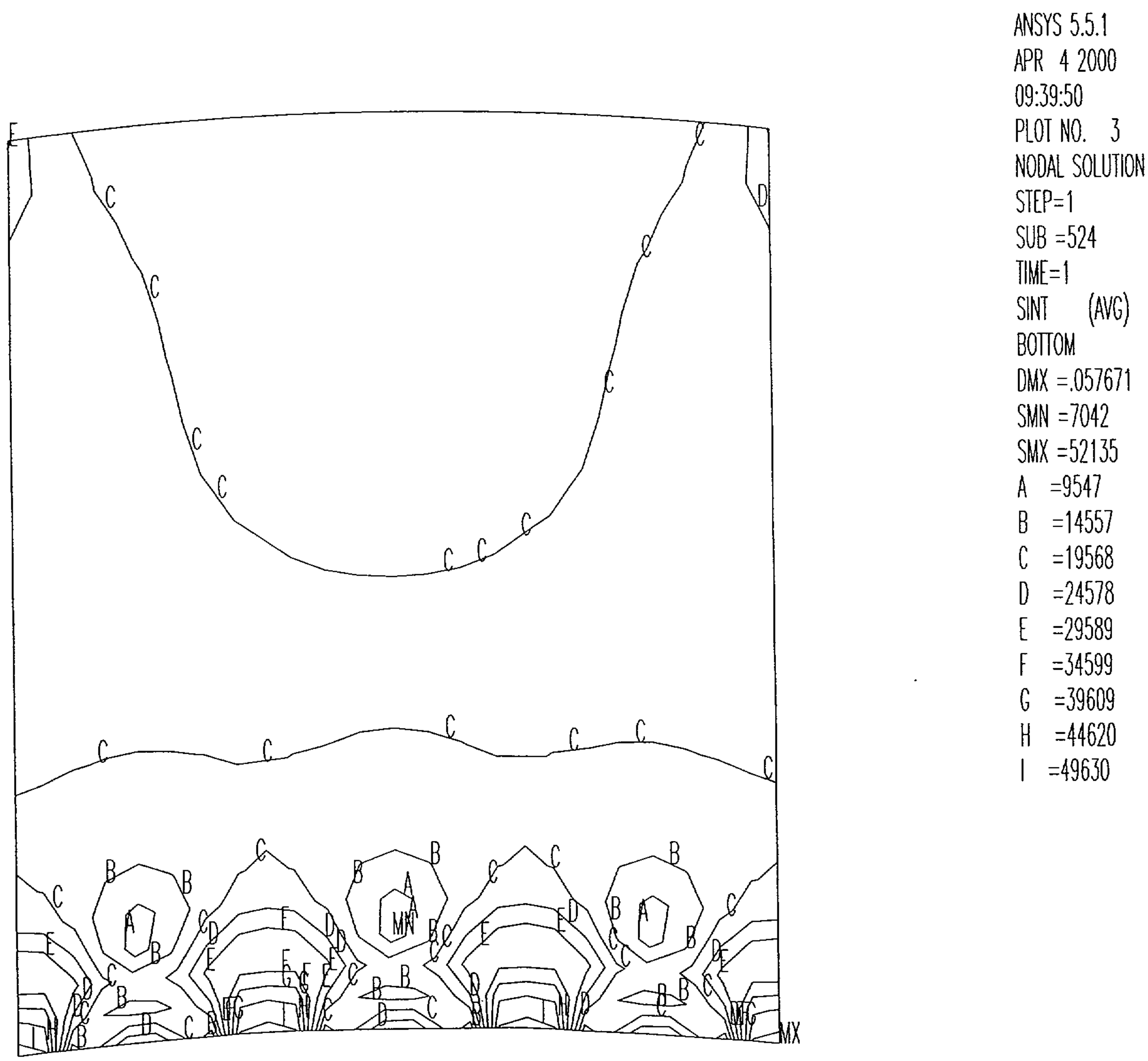

Figure 3-5 STRESS INTENSITY IN MSB SHELL BOTTOM SURFACE LOCATION. VERTICAL DROP + NORMAL PRESSURE + CORRODED WALLS

Table 3-1 Summary of Stress Intensity in MSB Shell

Vertical Drop + Normal Pressure + Corroded Walls

Shell Top

NODE	S1	S2	S3	SINT	SEQV
2	10.817	-24438.	-49017.	49028.	42459.
11	-1.4807	-24463.	-48977.	48976.	42414.
20	-1.4792	-24459.	-48973.	48972.	42411.
.					
.					
.					
597	-4.6338	-16837.	-45135.	45130.	39502.
776	-4.5406	-16716.	-45105.	45101.	39492.
609	-9.9830	-17643.	-44380.	44370.	38694.
719	-9.8950	-17637.	-44378.	44368.	38693.
661	-9.8655	-17629.	-44376.	44366.	38692.

Shell Middle

NODE	S1	S2	S3	SINT	SEQV
2	10.902	-25253.	-50567.	50578.	43802.
20	-0.42785	-25302.	-50533.	50532.	43762.
11	-0.42859	-25307.	-50532.	50532.	43762.
.					
.					
.					
597	-1.2640	-16810.	-45246.	45245.	39612.
776	-1.1885	-16730.	-45226.	45225.	39606.
662	-7.8249	-17566.	-44460.	44452.	38778.
720	-7.8222	-17567.	-44459.	44452.	38778.
719	-5.3514	-16332.	-43905.	43900.	38432.

Shell Bottom

NODE	S1	S2	S3	SINT	SEQV
2	11.664	-26063.	-52124.	52135.	45151.
20	1.1869	-26145.	-52093.	52094.	45115.
597	2.3779	-16784.	-45358.	45360.	39723.
776	2.4259	-16744.	-45348.	45350.	39719.
662	-4.8413	-17560.	-44593.	44588.	38904.
720	-4.8401	-17560.	-44592.	44587.	38903.
621	-1.0016	-15270.	-43441.	43440.	38169.

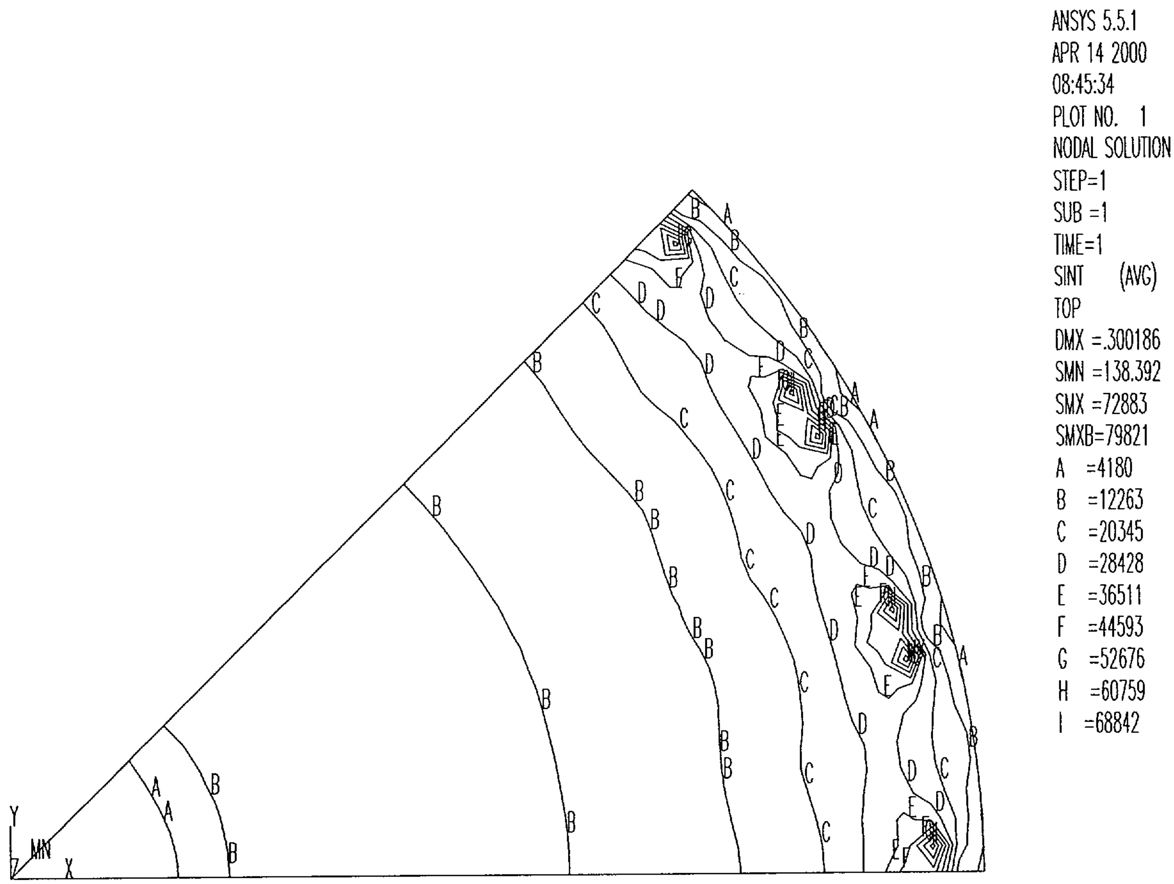

Figure 3-6 STRESS INTENSITY IN MSB BASE TOP SURFACE LOCATION

Dead Weight + Normal Pressure + Corroded Walls + Off-Normal Handling

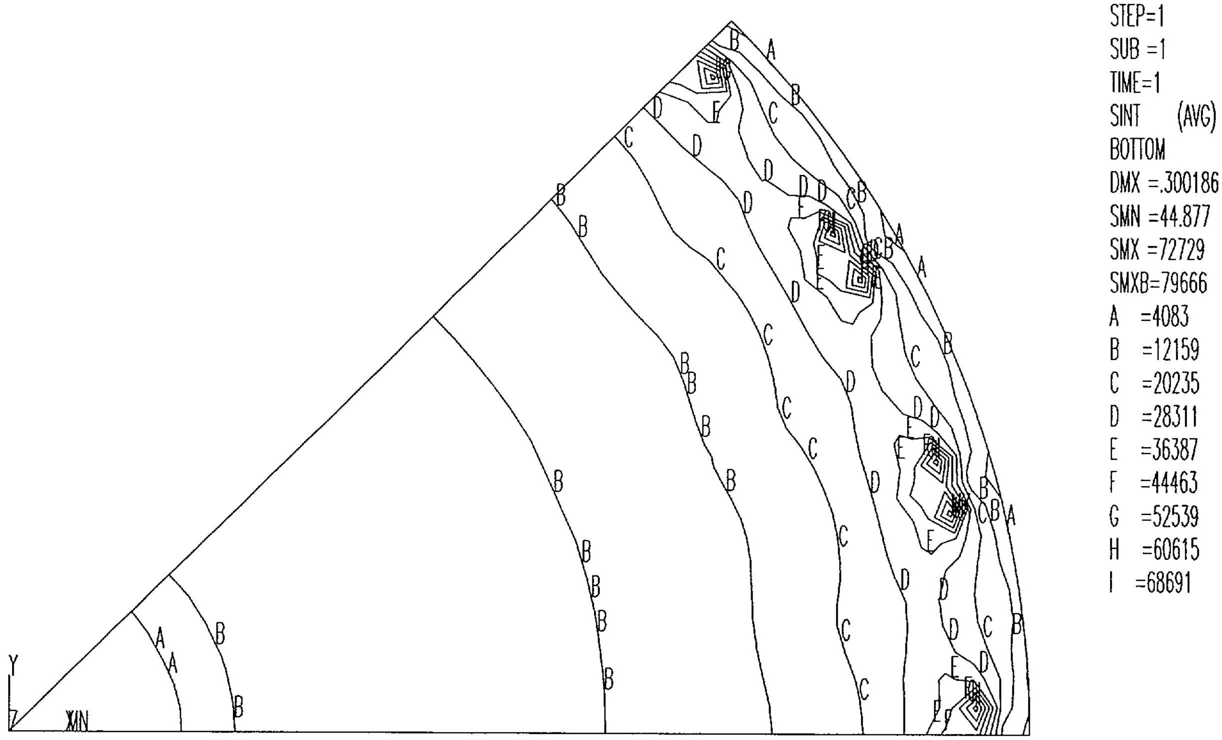

Figure 3-7 STRESS INTENSITY IN MSB BASE BOTTOM SURFACE LOCATION

Dead Weight + Normal Pressure + Corroded Walls + Off-Normal Handling

Table 3-2 Summary of Bending Stress Intensity in MSB Base

Dead Weight + Normal Pressure + Corroded Walls + Off-Normal Handling

Shell Top

NODE	S1	S2	S3	SINT	SEQV
7	72847.	42515.	-35.972	72883.	63414.
16	72794.	42489.	-35.972	72830.	63368.
12	72781.	42470.	-35.972	72817.	63355.
.					
.					
.					
263	30525.	2422.0	-35.972	30561.	29409.
271	30482.	2288.3	-35.972	30518.	29425.
276	30466.	2141.7	-35.972	30501.	29473.
268	30378.	2051.3	-35.972	30414.	29426.
279	30191.	1934.0	-35.972	30227.	29292.

Shell Bottom

NODE	S1	S2	S3	SINT	SEQV
7	0.0000	-42239.	-72729.	72729.	63259.
16	0.0000	-42213.	-72676.	72676.	63213.
12	0.0000	-42194.	-72662.	72662.	63200.
.					
.					
.					
263	0.0000	-2213.9	-30268.	30268.	29224.
271	0.0000	-2081.5	-30224.	30224.	29238.
276	0.0000	-1936.0	-30206.	30206.	29286.
268	0.0000	-1846.3	-30117.	30117.	29238.
279	0.0000	-1729.6	-29930.	29930.	29104.

4 CONCLUSION

Based on conservative corrosion calculation the thickness of the MSB shell and base are reduced by 0.15 inches over a 50 year period. The maximum shell and base plate membrane (P_m) and membrane plus bending ($P_L + P_b$) stresses for the most onerous design margins have been recalculated with the reduced wall thicknesses. All values of stress are acceptable, demonstrating that adequate margin has been provided for corrosion in the MSB over 50 years.

5 REFERENCES

1. M. G. Fontana, "Corrosion Engineering," McGraw-Hill Book Company, 3rd Edition.
2. ASTM G101, "Standard Guide for Estimating the Atomspheric Corrosion Resistance of Low-Allow Steels," 1989.
3. BNFL Calculation No. VSC02.6.2.3.02, Revision 3, "MSB-24 Load Combination Evaluation."
4. Deleted.
5. BNFL Calculation No. VSC02.6.2.5.03, Rev. 0, "VSC-24 Design Parameters."
6. BNFL Calculation No. VSC02.6.2.3.25, Revision 2, "MSB Dead Weight and Vertical Drop Bottom Plate Bending Stress Analysis".
7. ASME American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code, *Rules for Construction of Nuclear Power Plant Components*," Section III, Division 1, Subsection NC, "*Class 2 Components*," 1992 Edition, 1994 Addenda.
8. BNFL Calculation No. VSC02.6.2.3.21, Revision 2, "Normal and Off-normal Handling Analysis."
9. BNFL Calculation No. VSC02.6.2.3.05, Revision 2, "MSB-24 Normal, Off-normal, and Accident Pressure in the MSB."
10. American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code, *Rules for Construction of Nuclear Power Plant Components*, Section III, Division 1, Appendix F, "*Rules for Evaluation of Service Loadings with Level D Service Limits*", 1992 Edition, 1994 Addenda.

6.0 ELECTRONIC FILES

Filename	File Date	Code	Cat	Version	Platform	Machine
Vsccorr+press.inp	3/22/00	ANSYS	2	5.5	NT	8834BW323307
Vsccorr+press.out	3/22/00	ANSYS	2	5.5	NT	8834BW323307
Vsccorr+press.db	3/22/00	ANSYS	2	5.5	NT	8834BW323307
Vsccorr+press.rst	3/22/00	ANSYS	2	5.5	NT	8834BW323307
Vsccorr+press-pp.inp	4/11/00	ANSYS	2	5.5	NT	8834BW323307
Vsccorr+press-pp.out	4/11/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+pr+co+vh.inp	4/14/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+ pr+co+vh.out	4/14/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+ pr+co+vh.db	4/14/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+ pr+co+vh.rst	4/14/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+ pr+co+vh-pp.inp	4/14/00	ANSYS	2	5.5	NT	8834BW323307
Vscnorm+ pr+co+vh-pp.out	4/14/00	ANSYS	2	5.5	NT	8834BW323307

File Description

Vsccorr+press.inp	ANSYS input data file. Vertical Drop (108g) + Normal press (8.9 psig), corroded walls.
Vsccorr+press.out	ANSYS output data file. Vertical Drop (108g) + Normal press (8.9 psig), corroded walls.
Vsccorr+press.db	ANSYS database file. Vertical Drop (108g) + Normal press (8.9 psig), corroded walls.
Vsccorr+press.rst	ANSYS results file. Vertical Drop (108g) + Normal press (8.9 psig), corroded walls.
Vsccorr+press-pp.inp	ANSYS post processing input file. Vertical Drop (108g) + Normal press (8.9 psig), corroded walls.
Vsccorr+press-pp.out	ANSYS post processing output file. Vertical Drop (108g) + Normal press (8.9 psig), corroded walls.

Vsccnorm+pr+co+vh.inp	ANSYS input data file. Dead weight (1g) + Normal press (8.9 psig) + off-normal handling (1g), corroded walls.
Vscnorm+ pr+co+vh.out	ANSYS output data file. Dead weight (1g) + Normal press (8.9 psig) + off-normal handling (1g), corroded walls
Vscnorm+ pr+co+vh.db	ANSYS database file. Dead weight (1g) + Normal press (8.9 psig) + off-normal handling (1g), corroded walls
Vscnorm+ pr+co+vh.rst	ANSYS results file. Dead weight (1g) + Normal press (8.9 psig) + off-normal handling (1g), corroded walls
Vscnorm+ pr+co+vh -pp.inp	ANSYS post processing input file. Dead weight (1g) + Normal press (8.9 psig) + off-normal handling (1g), corroded walls
Vscnorm+ pr+co+vh -pp.out	ANSYS post processing output file. Dead weight (1g) + Normal press (8.9 psig) + off-normal handling (1g), corroded walls

ATTACHMENT 1

VERTICAL DROP + NORMAL PRESSURE + CORRODED WALLS

```
!
! * 3D ANALYSIS OF BASE PLATE STRESS WITH
! * MSB BASE SUPPORTED BY CERAMIC TILES AROUND EDGE
! * END DROP ACCELERATION OF 108g
! * CALCULATION BASED THINNEST SHELL OF 0.97 INCHES
! * MINUS CORRODED THICKNESSES OF 0.15 INCHES

/filname,vsccor+press

/Prep7
/Title,VSC Base Plate Stress Analysis

! Element Types
et,1,shell143            ! Plastic Shell elements
et,2,contac52            ! 3-D Point to Point Gap Elements
keyopt,2,3,1             ! Use soft spring across open gap
keyopt,2,7,1             ! Use reasonable time increment

!*** CHECK MATERIAL PROPERTIES
! Material Properties
! SA-516, Grade 70 Ferritic Carbon Steel, 300 deg.F
dens,1,0.284
nuxy,1,0.29
ex,1,28.3E6
tb,bkin,1,1
tbdata,1,33.7E3,355.1E3   ! Yield Stress and Tangent Modulus

*afun,deg                 ! Angles in degrees as default

!*****************
!*** Parameters ***
!*****************
OD  = 62.5                ! Outside diameter
ID  = 60.5                ! Inside diameter
WTH = 0.97                ! Wall thickness
BRAD = ID/2+WTH/2         ! C/L radius of basket
BTH = 0.75                ! Base plate thickness
LET = 1.7                 ! Length of ceramic tile
TTH = 0.30                ! Ceramic tile thickness
TR1 = 30.0                ! C/L radius ceramic tiles
THETA = asin((LET/2)/TR1) ! Angle between center & edge of tiles
VLE = 30.0                ! Length of modeled vertical portion of vessel
ACC = 108                 ! Acceleration due to end drop
TOL = 0.001               ! Select tolerance

! Real constants
r,1,BTH-0.15              ! Thickness of base plate (non tile regions)
r,2,BTH-0.15              ! Thickness of base plate (tiles region)
r,3,WTH-0.15              ! Thickness of basket wall
r,4,1e6,TTH,3             ! Contact stiffness, MSB to base

!*****************
!*** Keypoints ***
!*****************
csys,1
```

```
k,1,
k,2,TR1-LET/2,0,0
k,3,BRAD,0,0
k,4,TR1-LET/2,THETA,0
k,5,BRAD,THETA,0
k,6,TR1-LET/2,15-THETA,0
k,7,BRAD,15-THETA,0
k,8,TR1-LET/2,15+THETA,0
k,9,BRAD,15+THETA,0
k,10,TR1-LET/2,30-THETA,0
k,11,BRAD,30-THETA,0
k,12,TR1-LET/2,30+THETA,0
k,13,BRAD,30+THETA,0
k,14,TR1-LET/2,45-THETA,0
k,15,BRAD,45-THETA,0
k,16,TR1-LET/2,45,0
k,17,BRAD,45,0

ksel,s,loc,x,BRAD
kgen,2,all,,,,,VLE/4,100
ksel,s,loc,z,VLE/4
kgen,2,all,,,,,VLE*3/4,100
ksel,all

! Areas
! Tile areas first
csys,1
a,2,3,5,4
a,6,7,9,8
a,10,11,13,12
a,14,15,17,16
type,1
mat,1
real,2
esize,0.9
amesh,1,4

! Rest of Base
a,1,2,4,6,8,10,12,14,16
a,4,5,7,6
a,8,9,11,10
a,12,13,15,14

lsel,s,line,,22,24
lesize,all,,,7
lsel,all
real,1
amesh,5,8

! Basket shell
numstr,area,21
a,3,103,105,5
a,5,105,107,7
a,7,107,109,9
a,9,109,111,11
```

```
a,11,111,113,13
a,13,113,115,15
a,15,115,117,17

a,103,203,205,105
a,105,205,207,107
a,107,207,209,109
a,109,209,211,111
a,111,211,213,113
a,113,213,215,115
a,115,215,217,117

esize,1.2
real,3
amesh,21,27
esize,2.0
amesh,28,34

!****************
!*** Contacts ***
!****************
! Contact between basket base & cask
! Select nodes on ceramic tile elements
esel,s,real,,1
nsle,s
! Generate coincident set of nodes
ngen,2,2000,all,,,0,0,-TTH
! Generate contact elements
esel,s,real,,1
nsle,s
*get,numnodes,node,,count
nsel,a,node,,1999,3999
*get,nextnode,node,,num,min
type,2
real,4
*do,i,1,numnodes
  *if,i,eq,1,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *elseif,i,ge,2,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *endif
*enddo

! Remove contacts on periphery of tiles
asel,s,area,,1,4
esla,s
nsle,s,ext
esln,s
esel,r,type,,2
edel,all
nall
eall
```

```
!*******************
!*** Constraints ***
!*******************
! Symmetry BC's
esel,s,type,,1
nsle,s
csys,1
nsel,s,loc,y,45
nrotat,all
dsym,symm,y,1
esel,s,type,,1
nsle,s
nsel,s,loc,y,0
dsym,symm,y

! Contacts at ground
esel,s,type,,2
nsle,s
nsel,r,,,1999,3999
d,all,all,0
nall

! Base of tiles
esel,s,real,,2
nsle
d,all,uz,0

!*********************
!*** Applied Loads ***
!*********************
! Pressure on basket base due to contents + Normal Operating
esel,s,real,,1,2
nsle,s
sfe,all,2,pres,,(13.536*ACC) + 8.9
nall
eall

! Normal Operating Pressure on walls of MSB
esel,s,real,,3
nsle,s
sfe,all,2,pres,,8.9
nall
eall

! Force on side wall due to part of
! Basket not included in model.
! Interior nodes first
FORCE = 3442.5*ACC   ! Calculated mass missing in 1/8 model
csys,1
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
*get,NUMNODES,node,,count
nsel,r,loc,y,1,44
NODEFORC = FORCE/(NUMNODES-1)
f,all,fz,-NODEFORC
```

```
nall
! Exterior nodes (half the load)
csys,1
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
nsel,r,loc,y,0
f,all,fz,-NODEFORC/2
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
nsel,r,loc,y,45
f,all,fz,-NODEFORC/2
nall

! Drop Acceleration
acel,,,ACC            ! Body load acceleration

allsel

!****************
!*** Solution ***
!****************
/solu
nlgeom,on             ! Include large deformation effects
autots,on             ! Automatic time stepping
nsubst,50,1000,10     ! 50 substeps 1000max 10min for load step
solcon,on,on
cnvtol,f,,0.01        ! Convergence for force at 1%
cnvtol,m,,0.01        ! Convergence for moment at 1%

solve

finish

/post1
set
prrsol
fini
/exit
```

ATTACHMENT 2

Dead Weight + Normal Pressure + Corroded Walls + Off-Normal Handling

```
!
! * 3D ANALYSIS OF BASE PLATE STRESS WITH
! * MSB BASE SUPPORTED BY CERAMIC TILES AROUND EDGE
! * NORMAL OPERATING CONDITION 1g + normal pressure 8.9 psi
! * CORRODED SHELL AND BASE (THICKNESSES REDUCED BY 0.15")
! * WALL THICKNESS OF SHELL AT 0.97"
! * VERTICAL HANDLING COMPONENT 0.5g x 2 DLF = 1.0g ADDED

/filname,vscnorm+pr+co+vh

/Prep7
/Title,VSC Base Plate Stress Analysis

! Element Types
et,1,shell63              ! Elastic Shell elements
et,2,contac52             ! 3-D Point to Point Gap Elements
keyopt,2,3,1              ! Use soft spring across open gap
keyopt,2,7,1              ! Use reasonable time increment

!*** CHECK MATERIAL PROPERTIES
! Material Properties
! SA-516, Grade 70 Ferritic Carbon Steel, 300 deg.F
dens,1,0.284
nuxy,1,0.29
ex,1,28.3E6

*afun,deg                   ! Angles in degrees as default

!*****************
!*** Parameters ***
!*****************
OD  = 62.5                  ! Outside diameter
ID  = 60.5                  ! Inside diameter
WTH = 0.97                  ! Wall thickness
BRAD = ID/2+WTH/2           ! C/L radius of basket
BTH = 0.75                  ! Base plate thickness
LET = 1.7                   ! Length of ceramic tile
TTH = 0.30                  ! Ceramic tile thickness
TR1 = 30.0                  ! C/L radius ceramic tiles
THETA = asin((LET/2)/TR1)   ! Angle between center & edge of tiles
VLE = 30.0                  ! Length of modeled vertical portion of vessel
TOL = 0.001                 ! Select tolerance

! Real constants
r,1,BTH-0.15                ! Thickness of base plate (non tile regions)
r,2,BTH-0.15                ! Thickness of base plate (tiles region)
r,3,WTH-0.15                ! Thickness of basket wall
r,4,1e6,TTH,3               ! Contact stiffness, MSB to base

!****************
!*** Keypoints ***
!****************
csys,1
k,1,
k,2,TR1-LET/2,0,0
```

```
k,3,BRAD,0,0
k,4,TR1-LET/2,THETA,0
k,5,BRAD,THETA,0
k,6,TR1-LET/2,15-THETA,0
k,7,BRAD,15-THETA,0
k,8,TR1-LET/2,15+THETA,0
k,9,BRAD,15+THETA,0
k,10,TR1-LET/2,30-THETA,0
k,11,BRAD,30-THETA,0
k,12,TR1-LET/2,30+THETA,0
k,13,BRAD,30+THETA,0
k,14,TR1-LET/2,45-THETA,0
k,15,BRAD,45-THETA,0
k,16,TR1-LET/2,45,0
k,17,BRAD,45,0

ksel,s,loc,x,BRAD
kgen,2,all,,,,,VLE/4,100
ksel,s,loc,z,VLE/4
kgen,2,all,,,,,VLE*3/4,100
ksel,all

! Areas
! Tile areas first
csys,1
a,2,3,5,4
a,6,7,9,8
a,10,11,13,12
a,14,15,17,16
type,1
mat,1
real,2
esize,0.9
amesh,1,4

! Rest of Base
a,1,2,4,6,8,10,12,14,16
a,4,5,7,6
a,8,9,11,10
a,12,13,15,14

lsel,s,line,,22,24
lesize,all,,,7
lsel,all
real,1
amesh,5,8

! Basket shell
numstr,area,21
a,3,103,105,5
a,5,105,107,7
a,7,107,109,9
a,9,109,111,11
a,11,111,113,13
a,13,113,115,15
```

```
a,15,115,117,17

a,103,203,205,105
a,105,205,207,107
a,107,207,209,109
a,109,209,211,111
a,111,211,213,113
a,113,213,215,115
a,115,215,217,117

esize,1.2
real,3
amesh,21,27
esize,2.0
amesh,28,34

!****************
!*** Contacts ***
!****************
! Contact between basket base & cask
! Select nodes on ceramic tile elements
esel,s,real,,1
nsle,s
! Generate coincident set of nodes
ngen,2,2000,all,,,0,0,-TTH
! Generate contact elements
esel,s,real,,1
nsle,s
*get,numnodes,node,,count
nsel,a,node,,1999,3999
*get,nextnode,node,,num,min
type,2
real,4
*do,i,1,numnodes
  *if,i,eq,1,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *elseif,i,ge,2,then
     e,nextnode,nextnode+2000
     *get,nextnode,node,nextnode,nxth
  *endif
*enddo

! Remove contacts on periphery of tiles
asel,s,area,,1,4
esla,s
nsle,s,ext
esln,s
esel,r,type,,2
edel,all
nall
eall

!******************
!*** Constraints ***
```

```
!*******************
! Symmetry BC's
esel,s,type,,1
nsle,s
csys,1
nsel,s,loc,y,45
nrotat,all
dsym,symm,y,1
esel,s,type,,1
nsle,s
nsel,s,loc,y,0
dsym,symm,y

! Contacts at ground
esel,s,type,,2
nsle,s
nsel,r,,,1999,3999
d,all,all,0
nall

! Base of tiles
esel,s,real,,2
nsle
d,all,uz,0

!********************
!*** Applied Loads ***
!********************
! Pressure on basket base due to contents
esel,s,real,,1,2
nsle,s
sfe,all,2,pres,,13.536*2 + 8.9
nall
eall
! Normal pressure on MSB wall
esel,s,real,,3
nsle,s
sfe,all,2,pres,,8.9
nall
eall

! Force on side wall due to part of
! Basket not included in model.
! Interior nodes first
FORCE = 3442.5*2     ! Calculated mass missing in 1/8 model
csys,1
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
*get,NUMNODES,node,,count
nsel,r,loc,y,1,44
NODEFORC = FORCE/(NUMNODES-1)
f,all,fz,-NODEFORC
nall
! Exterior nodes (half the load)
csys,1
```

```
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
nsel,r,loc,y,0
f,all,fz,-NODEFORC/2
nsel,s,loc,x,BRAD
nsel,r,loc,z,VLE
nsel,r,loc,y,45
f,all,fz,-NODEFORC/2
nall

! Drop Acceleration
acel,,,1+1      ! 1.0g Body load acceleration + 1.0g vertical handling acceleration

allsel

!****************
!*** Solution ***
!****************
/solu

solve

finish

/post1
set
prrsol
fini
/exit
```

February 16, 2001

MEMORANDUM

To: BFS File No. VSC02.6.2.3.06

From: J. Moroney

Subject: Verification Memorandum

The purpose of this memorandum is to document that I have verified BNFL Calculation No. VSC02.6.2.3.06, Revision 1.

My comments are as follows:

1. Page 5 – Missing period at the end of item (c).
2. General – Change "Ref" to Reference.
3. It does not appear that References 4 and 8 are called out in the calculation. If not, they should be deleted.
4. The bottom plate Pl+Pb value is not the limiting case in the reference.

I verified this calculation in accordance with BNFL Procedure No. QAP 3.2, Revision 9, except as noted in BFS Memorandum 00-427. Specifically, the calculation includes the first three cover pages required by QAP 3.2, and includes other format requirements where this could be readily accomplished.

My verification of the calculation as being complete and correct is as documented in the Record of Verification cover sheet for the calculation.

James E. Moroney

BNFL Fuel Solutions	**CALCULATION PACKAGE**	Calc. Pkg No. VSC02.6.2.3.07 File No.: VSC02.6.2.3.07 Revision: 2

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

MSB Thermal Stress Analysis

SCOPE:

Product:	☐ FuelSolutions™	☐ TranStor™	☒ VSC-24	☐ Other ______
Service:	☒ Storage	☐ Transportation		☐ Other ______
Conditions:	☒ Normal	☐ Off-Normal	☐ Accident	☐ Other ______

Component(s):

MSB Shell and Sleeve

Prepared by:	Verified by:
Name: Michelle Heinz	*Name:* James E. Moroney
Signature: Michelle Heinz	*Signature:* [signature]
Date: 1/23/01	*Date:* 1/23/01

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: R Srinivasan

Date: 3/26/01

Form QAP 3.2-1, Revision 1

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1 – 23 Attachments A1 to A9, B1 to B9, and C1 to C59	None	This calculation supercedes SNC Calculation WEP-109-002.07 (Reference 3.1.3).	R. Keating	M. Heinz
1	1, 2, 3, 6, 7, 9, 10, 20, 21, & 22	None	Revised coefficient of thermal expansion factors in Table 4.1-3 and affected calculations. Corrected dimensions on p. 9 & 20. Corrected References 2.1.1 & 3.2.5. Minor revision of cover pages 1 and 2 (VSC02-ECN-005).	J. Hibbard	M. Heinz
2	1, 2, 3, 7, 8, 11	None	Removed BNFL drawing Refs., and added the Design Parameter Ref. on p. 7. On p. 8, stated that the temp. dist. are from Ref. 3.1.3 and constitute a typical example. Changed all BNFL drawing Refs. to the Design Parameter Ref. and added Note 2 on p. 9.On p. 11, stated that the temp. dist. used in the anlayses are bounding, and that the temp. profile in Table 4.1-4 is for the MSB shell rather than the sleeve assembly. Added assumption 4.3.5 on p. 12. (VSC02-ECN-008)	M. Heinz	J. Moroney

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-427.

RECORD OF VERIFICATION

	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	(YES)	NO	N/A
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	(YES)	NO	N/A
(i) Computer calculations are properly identified.	(YES)	NO	N/A
(j) Computer codes used are under configuration control.	(YES)	NO	N/A
(k) Computer codes used are applicable to the calculation.	(YES)	NO	N/A
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

Comments documented on Verification memorandum.

Verifier: James E. Moroney [signature] 1/23/01

Name/Signature/Date

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

The purpose/objective of this calculation is to perform a thermal stress analysis of the MSB. The scope of the analysis includes the MSB shell and sleeves.

This package calculates stresses in the MSB components due to the thermal gradients that the MSB may experience during its lifetime. These stresses are evaluated in combination with stresses due to dead, live and other loads in BNFL VSC02.6.2.3.02, "MSB-24 Load Combination Evaluation."

This Calculation supercedes SNC Calculation WEP-109-002.07, "MSB-24 Thermal Stress Analysis", Revision 2 (Reference 3.1.3). Revision 0 of this calculation was performed to correct inconsistencies in the temperature properties. Revision 0 was also performed to update the analysis to new calculation format requirements. Revision 0 of this calculation addressed Item No. 6 in CAR 98-50.

2. REQUIREMENTS

2.1 Design Inputs

2.1.1 ASME Boiler and Pressure Vessel Code, Section III, Appendices, 1986 Edition with the 1988 Addenda.
(Provides Material Properties).

2.2 Regulatory Commitments

None.

3. REFERENCES

3.1 BFS Calculation Packages

3.1.1 SNC Calculation WEP-109.003.04, "VCC Thermal-Hydraulic Analysis", Revision 2. *(Provides the temperature profile used in the thermal stress analysis).*

3.1.2 SNC Calculation WEP 109.003.05, "MSB-24 Thermal-Hydraulic Analysis", Revision 5. *(Provides the temperature profile used in the thermal stress analysis).*

3.1.3 SNC Calculation WEP-109.002.07, "MSB Thermal Stress Analysis", Revision 2. *(Provides the ANSYS computer run results).*

3.1.4 SNC Calculation WEP 109.003.028, "Additional Thermal Analysis of MSB Bottom", Revision 1 *(Provides thermal stresses for MSB bottom).*

3.1.5 BNFL Calculation VSC02.6.2.3.24, "MSB Shield Lid Weld Analysis", Revision 0. *(Provides thermal stresses for MSB shield lid weld).*

3.1.6 BNFL Calculation VSC02.6.2.5.03, "VSC-24 Design Parameters", Revision 0. *(Provides design input parameters).*

3.2 General References

3.2.1 Marks, Standard Handbook for Mechanical Engineers , Fourth Edition. *(Provides Material Properties for the MTC finite element model).*

3.2.2 Deleted

3.2.3 Deleted.

3.2.4 Deleted.

3.2.5 ASME Boiler and Pressure Vessel Code, Section III, Division 1, Appendices, 1986 Edition with 1988 Addenda. *(Provides Material Properties).*

4. ASSUMPTIONS

4.1 Design Configuration

The MSB limiting temperature gradients were determined by comparison of the temperature gradients determined in the VCC and MSB-24 Thermal-Hydraulic Calculations. As a typical example, the temperature distributions presented in Reference 3.1.3 are provided in Table 4.1-1 for three different ambient temperature conditions.

Table 4.1-1. Temperature Profiles Versus Ambient Conditions

	Shell Maximum Temp (°F)	Sleeve Maximum Temp (°F)	MSB Top (°F)	MSB Bottom (°F)	Radial ΔT (°F)	Axial ΔT (°F)
-40 °F	166	589	22	40	423	144
75 °F	274	678	147	157	404	127
100 °F	299	699	184	185	400	115

It can be seen that the axial and radial gradients are higher for the -40°F case. In general, it is clear that since the heat is generated inside the MSB, the worst gradient occurs when the outside surface is subjected to the coldest possible temperature. Therefore, only the -40°F case was considered for the thermal stress analysis.

The design configuration of the MSB used in the analysis is outlined in Table 4.1-2. MSB material properties are provided in Table 4.1-3.

Table 4.1-2. Summary of Design Parameters

Item	Variable	Value	Reference
MSB Shell			
Outside Diameter	OD_{shell}	62.5 in	3.1.6
Thickness	t_{shell}	1.00[1]	3.1.6
Height[2]	H	181 in	3.1.6
MSB Base			
Outside Diameter (=OD_{shell})	OD_{base}	62.5 in	3.1.6
Thickness	t_{base}	0.75 in	3.1.6
MSB Structural Lid			
Outside Diameter	OD_{lid}	60 in	3.1.6
Thickness	t_{lid}	3.0 in	3.1.6
MSB Shell Material		SA-516-70	3.1.6
Storage Sleeve Material		SA-516-70	3.1.6
Storage Sleeve			
Gap between sleeve and shell	Gap	0.65 in	Section 6.1
Radius of Sleeve Assembly	$R_{sl,ass}$	29.6 in	3.1.6
Length of Sleeve[2]	L_{sleeve}	160 in	3.1.6
Thickness of Sleeve	t_{sleeve}	0.2 in	3.1.6
Curved Support Plate Thickness	t_{plate}	0.5 in	3.1.6
Support Wall Plate Thickness	t_{wall}	0.5 in	3.1.6
Width of Sleeve	W_{sleeve}	9.2 in	3.1.6

Notes:

1. The shell is modeled as 0.75 inches in the model while the actual thickness is 1.0 inches (Reference 3.1.6).

2. Several MSB shell heights and storage sleeve lengths are provided in Reference 3.1.6. The values in the above table were chosen for input to the ANSYS analysis. See Calculation Assumption 4.3.5. for justification of the values used.

Table 4.1-3. Summary of Material Properties

Analysis	Material Property	Temperature	Analysis Value	ASME Code Value	Correction	Average Correction
MSB Shell	Expansion	70	5.53E-06	5.42E-06	0.98	
		100	5.53E-06	5.53E-06	1.00	
		200	5.89E-06	5.89E-06	1.00	0.99
MSB Shell	Elasticity	70	29.2E+06	29.5E+06	1.01	
		100	29.2E+06	29.4E+06	1.01	
		200	29.2E+06	28.8E+06	0.99	1.00
MSB Sleeve	Expansion	70	5.53E-06	5.42E-06	0.98	
		100	5.53E-06	5.53E-06	1.00	
		200	5.89E-06	5.89E-06	1.00	
		300	6.26E-06	6.26E-06	1.00	
		400	6.61E-06	6.61E-06	1.00	
		500	6.91E-06	6.91E-06	1.00	
		600	7.10E-06	7.17E-06	1.01	1.00
MSB Shell	Elasticity	70	28.0E+06	29.5E+06	1.05	
		100	28.0E+06	29.4E+06	1.05	
		200	28.0E+06	28.8E+06	1.03	
		300	28.0E+06	28.3E+06	1.01	
		400	28.0E+06	27.7E+06	0.99	
		500	28.0E+06	27.3E+06	0.98	
		600	28.0E+06	26.7E+06	0.95	1.01

The two-dimensional axisymmetric model from Reference 3.1.3 was used for the MSB shell analysis. The shell temperature distribution used in the analysis is provided in Table 4.1-4. This temperature distribution bounds that in Reference 3.1.1. The nodes/elements diagram for the model is shown in Figure 5.1-1.

The ANSYS model for the sleeve assembly is also from Reference 3.1.3. The temperature distribution used in the model bounds that from Reference 3.1.2. The axial profile is generated using the MSB axial profile: it is assumed that all heat is transferred radially so that the gradient through the MTC wall is proportional to the gradient through the MSB at the same elevation.

Table 4.1-4. MSB Shell Temperature Profile

Node Number	Position (inches from Bottom)	Inside Surface Temperature
1	Center of Base	58.5
7	0	40.0
8	3	70.0
10	15	98.9
12	27	119.5
14	39	139.1
16	51	155.6
18	63	160.0
20	75	163.5
22	87	165.0
24	99	161.0
26	111	157.0
28	123	144.3
30	135	122.5
32	147	100.8
34	159	57.0
36	171	18.5
38	181	4.6
43	Center of Lid	5.1

4.2 Design Criteria

The results of this analysis are combined with other stresses and the Design Criteria is applicable to the total stress. Therefore, this calculation does not have any applied Design Criteria.

4.3 Calculation Assumptions

4.3.1 Temperature distribution is axisymmetric and an axisymmetric model was used for the MSB.

4.3.2 The MSB model is based on the original cask design. The shell is modeled as 0.75 in thick while it is 1.00 in thick in the final design. The as-modeled stresses are adjusted to account for this difference in thickness.

4.3.3 It is assumed that the fuel storage sleeve and the MSB shell are free to grow thermally without interfering. This is confirmed in the calculation portion of this analysis.

4.3.4 The material properties used in the ANSYS model differ from those provided in the ASME Code. The calculation adjusts the stresses from the ANSYS model to account for the material property differences.

4.3.5 Because thermal stresses are controlled largely by thickness rather than by length, varying the length of the MSB and the length of the storage sleeve from the values used in the ANSYS analysis in this calculation will have minimal effect on resulting thermal stresses. The calculated stress for the MSB shell is small (1.4 ksi), and variations in length would not cause the stress to exceed the allowable. While calculated stress for the sleeve assembly is larger (52 ksi), variations in length would also not be expected to cause the stress to exceed the allowable.

5. CALCULATION METHODOLOGY

The shell and sleeve assembly analyses are performed independently because there are sufficient clearances to provide their expansion without interfering with each other.

5.1 MSB Shell Analysis

ANSYS/PC Version 4.3A-2 finite element code was used for the analysis of the MSB shell. The axisymmetric model used is shown in Fig. 5.1-1. The model is a 2-D axisymmetric model of the shell, bottom and structural lid. The model is constructed of plate elements.

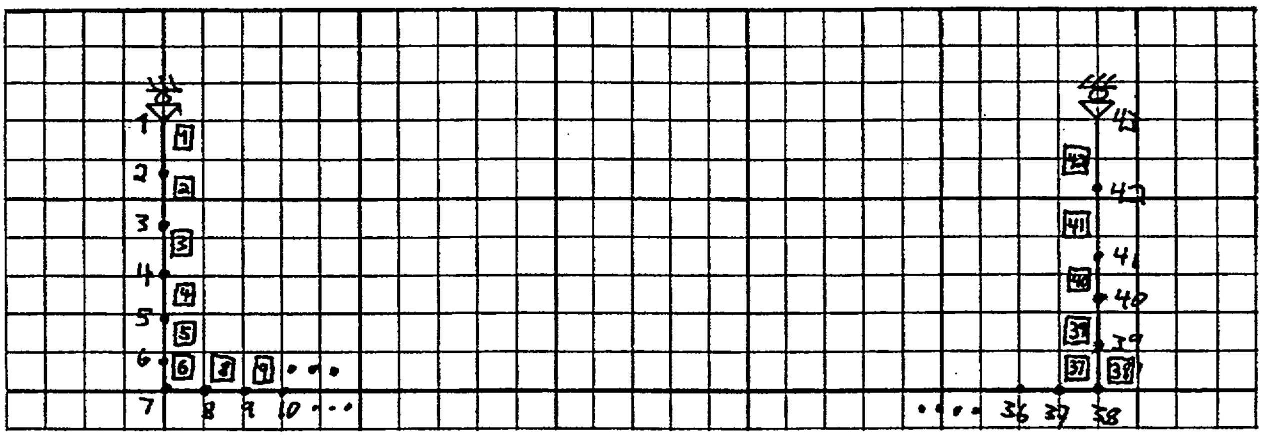

Figure 5.1-1. Finite Element Model of MSB Shell

5.2 Storage Sleeve Assembly

ANSYS/PC Version 4.3A-2 finite element code was also used for the analysis of the storage sleeve assembly. The 3-D model and analysis of a $\pi/4$ sector of the assembly from Reference 3.1.3 was used in this analysis. Symmetry conditions exist at the $\gamma = 0°$ and $\gamma = 45°$ sides of the assembly. The model is shown in Figures 5.2-1 and 5.2-2.

Figure 5.2-2 presents nodes/elements diagram for the finite element analysis. Coupling of some of the node degrees of freedom in both radial and axial direction was used to model welding between sleeves.

It must be noted that the temperature distribution for the sleeve assembly is known only for the hottest section (See MSB thermal-hydraulic analysis, Reference 3.1.2). The axial temperature distribution for the sleeve assembly was found based on this data and the axial distribution for the MSB shell. The axial temperature distribution for the MSB shell used to calculate the distribution for the sleeve assembly that is used in the analysis bounds the distribution from Reference 3.1.1.

Formulas used for approximate sleeve assembly temperatures:

$$T_{mid}(z) = T_{sh}(z) + \Delta T(z_0)\frac{T_{sh}(z) - (-40)}{T_{sh}(z_0) - (-40)}$$

$$T(z,R) = T_{mid}(z) + \Delta T(z_0,R)\frac{T_{sh}(z) - (-40)}{T_{sh}(z0) - (-40)}$$

Where: z_o = Axial Coordinate of the Hottest Section

-40°F = Assumed Zero Point for Scaling

$T_{sh}(z)$ = Obtained from Figure 5.2-3 (Data from Reference 3.1.3)

Thus,

$$T(z,R) = T_{mid}(z) + (\Delta T(z_0) - \Delta T(z_0,R))\frac{T_{sh}(z) - (-40)}{T_{sh}(z0) - (-40)}$$

Figure 5.2-4 presents the results for the hottest section (MSB Thermal Hydraulic Analysis, Reference 3.1.7). Lotus 123 was used to generate the temperature field using the above formula. The printout of the Lotus 123 program is presented in Attachment B.

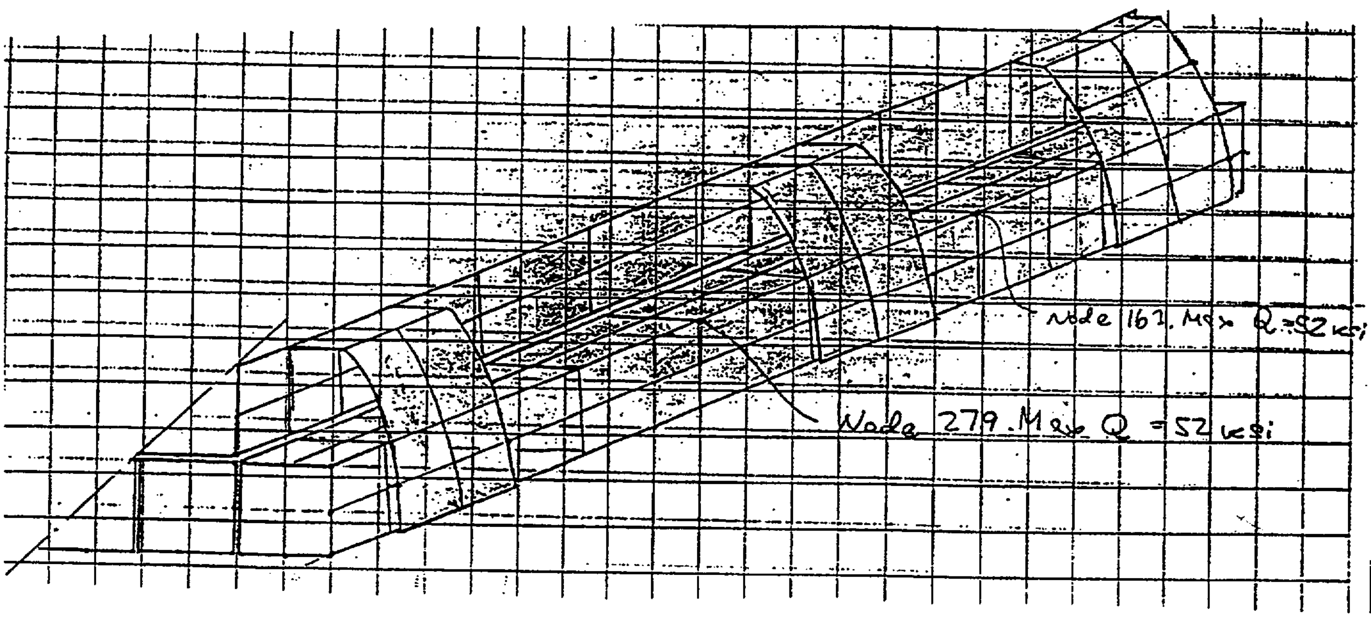

Figure 5.2-1. Finite Element Model of Thermal Sleeve

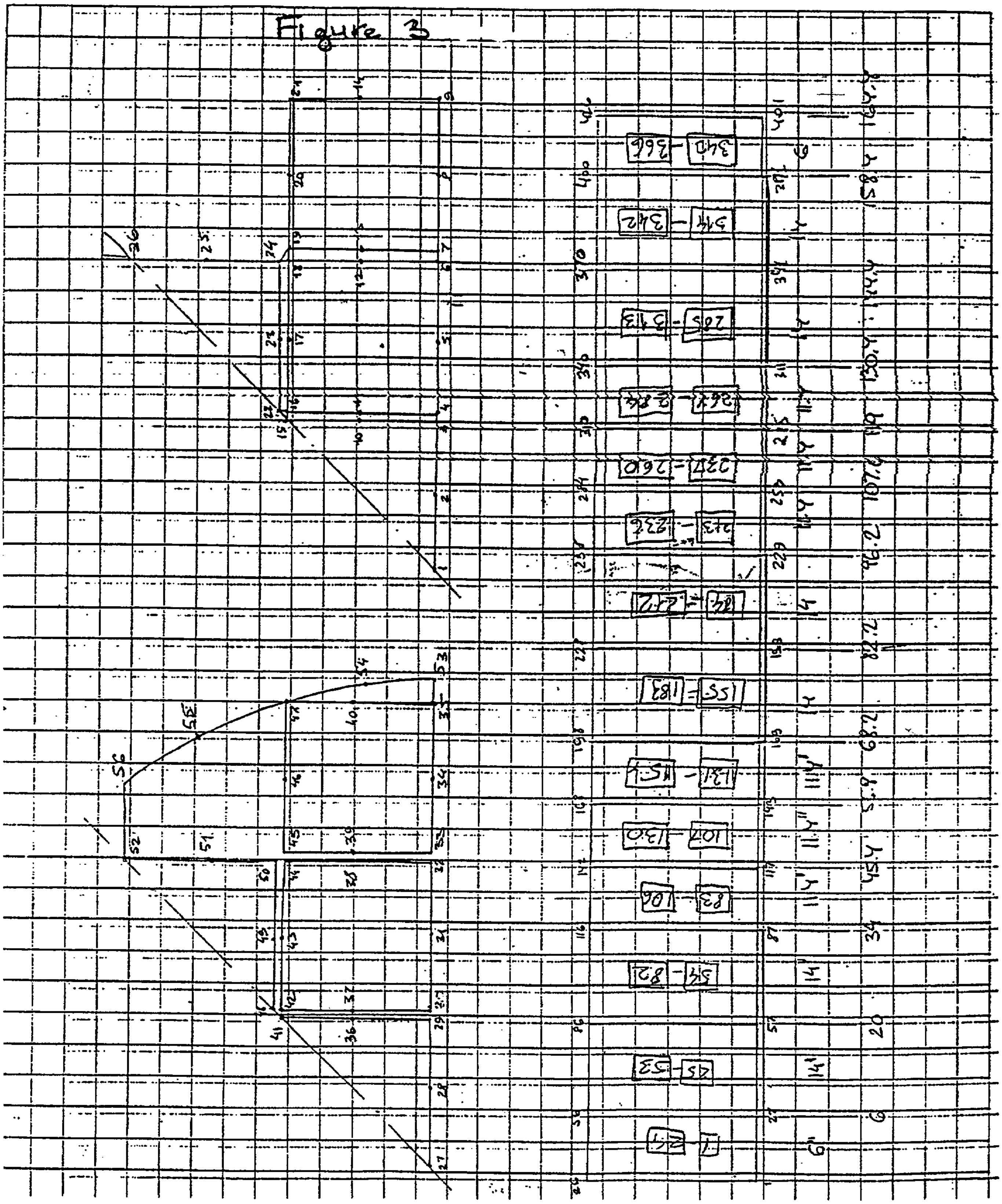

Figure 5.2-2. Nodes and Elements of Thermal Sleeve

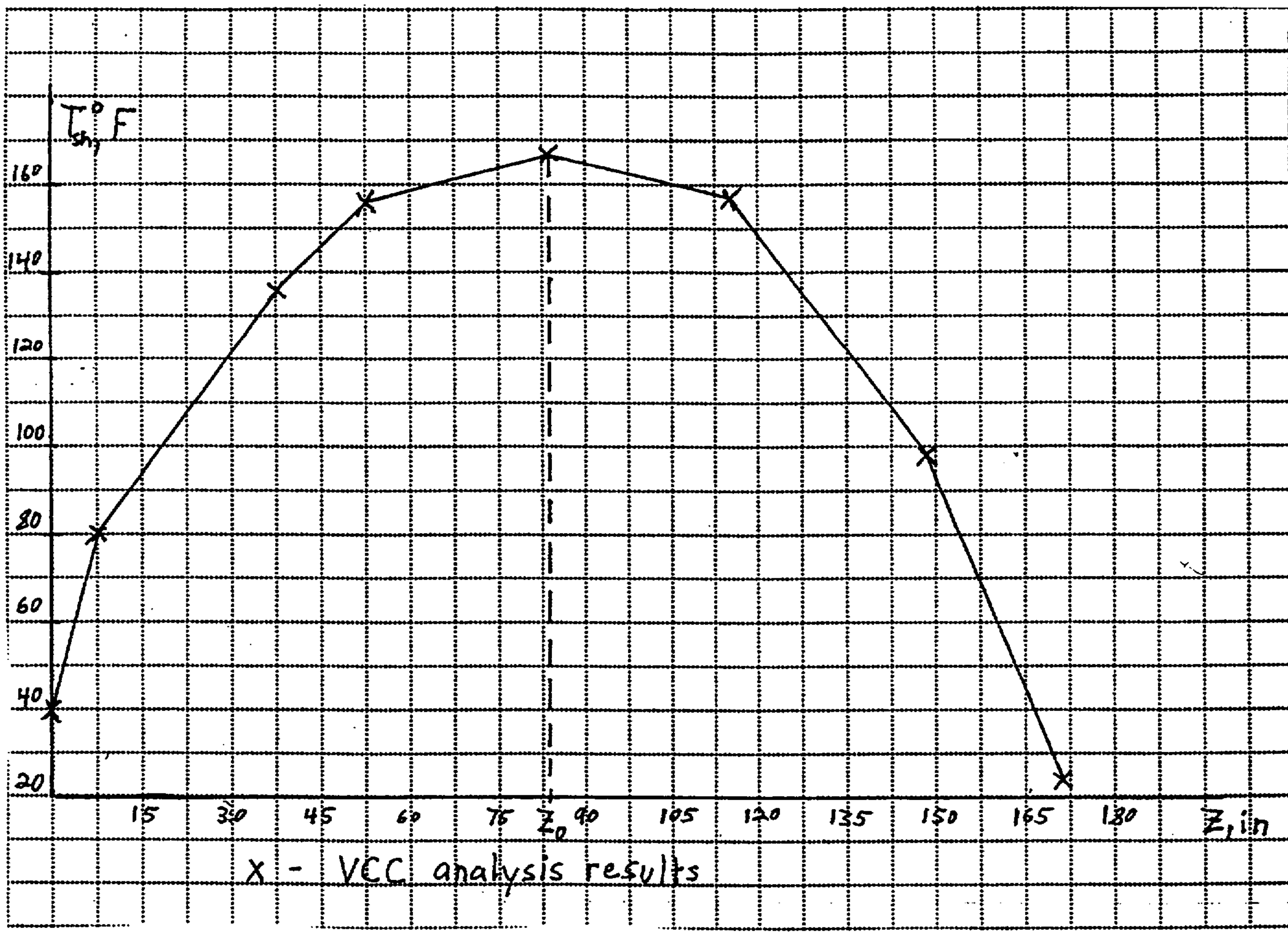

Figure 5.2-3. Axial Temperature Profile in the MSB Shell

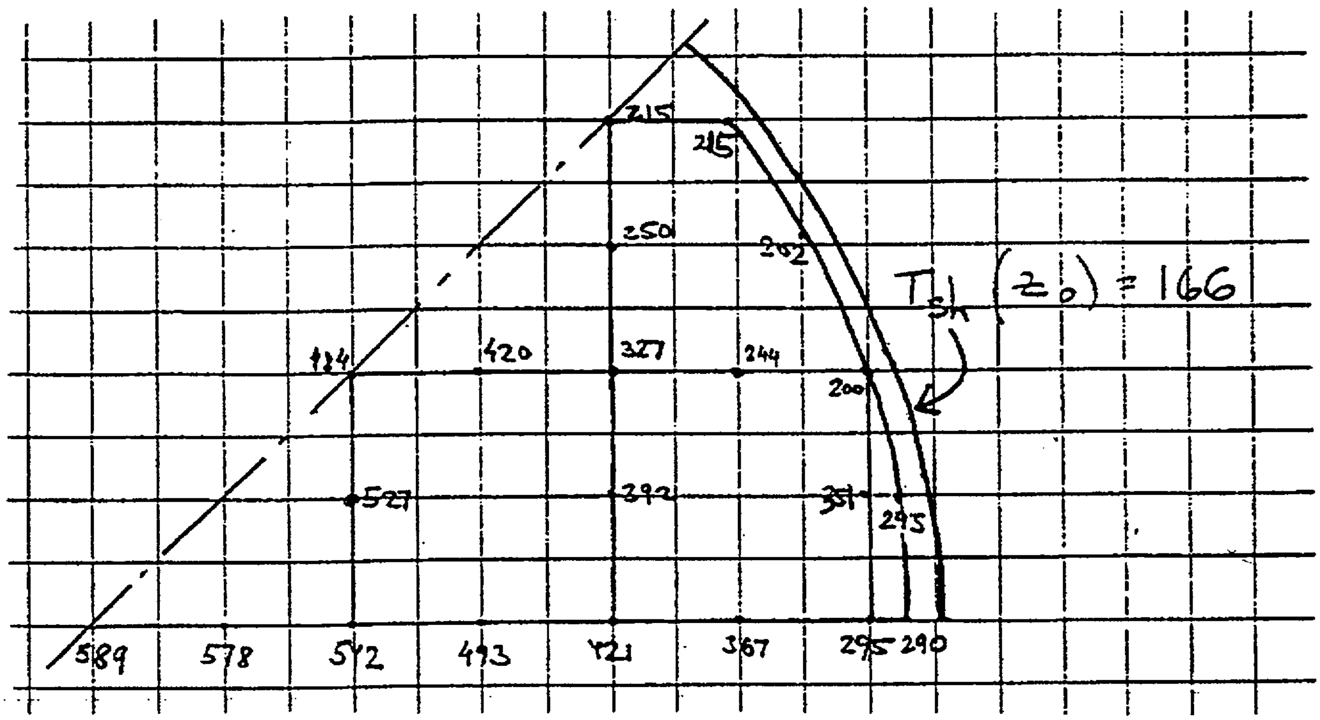

Figure 5.2-4. Temperature Distribution in the Hottest Section

6. CALCULATIONS

6.1 Gap calculation

First, it must be demonstrated that there is no interference between the shell and sleeve assembly so that the analyses may be performed independently.

A temperature 589°F bounds the hottest sleeve assembly temperature from Reference 3.1.2. A temperature of 22°F bounds the coolest MSB shell temperature from Reference 3.1.1. Assuming (very conservatively) that the whole sleeve assembly expands at 589°F, and the whole MSB expands at 22°F we find the relative displacement as:

δ = Sleeve Expansion - Shell Expansion

$= R_{sl,ass}\ \alpha_{sl}\ (T_{sl} - T_o) - R_{sh}\ \alpha_{sh}\ (T_{sh} - T_o) =\ 0.118$ in

Where:	$R_{sl,ass} = 59.2/2 = 29.6$ in	*Nominal Radius Of Sleeve Assembly*
	$R_{sh} = 30.25$ in	*Nominal Shell Inside Radius*
	$\alpha_{sl} = 7.14 \times 10^{-6}$ in/in°F	*Sleeve expansion coefficient at 589°F*
	$\alpha_{sh} = 5.42 \times 10^{-6}$ in/in°F	*Shell expansion coefficient at.conservative 70°F*
	$T_{sl} = 589$ °F	*Final Sleeve Temperature*
	$T_{sh} = 22$ °F	*Final Shell Temperature*
	$T_o = 70$ °F	*Initial (reference) Temperature*
	$\delta_n = 30.25$ in - 29.60 in $= 0.65$ in	*Nominal Gap Between Shell and Sleeve*

From the nominal gap between the shell and sleeve assembly, it can be seen that the relative radial displacement is much smaller than this gap and, therefore, the MSB shell and sleeve assembly can be analyzed separately.

6.2 Thermal Stresses in the MSB Shell

The highest stresses in the steel components of the MSB are shown in Table 6.2-1. The ANSYS input/output data are presented in Attachment A and the results are summarized below. For the bottom plate and shield lid weld, additional analyses were performed (Ref. 3.1.4 and 3.1.5 respectively). The stresses from these calculations are also used here for conservatism.

The ANSYS model was based on a shell thickness of 0.75 inches versus the actual wall thickness of 1.0 inches. Since the stresses are primarily the result of thermal growth (i.e., fixed displacement), the stresses in the shell will increase directly proportional to the increase in the wall thickness. The shell thickness correction is 1.0/0.75 = 1.333.

Table 6.2-1. Thermal Stress Results for MSB Shell

Location	ANSYS Calculated Stress	Thickness Correction	Alpha Correction	Final Stress	Ref.
Bottom	19,400			19,400	3.1.4
Shell (El. 8)	1,031	1.333	1.000	1,374	
Structural Lid (El. 38)	184		1.000	184	
Bottom Weld	19,400			19,400	3.1.4
Shield Lid Weld	1300			1300	3.1.5
Top Weld (El. 37)	498		1.000	498	

6.3 Thermal Stresses for Storage Sleeve Assembly

The ANSYS input/output is presented in Attachment C. The maximum thermal stress intensities are calculated in nodes 279 and 163 as shown in Table 6.2-2. These stresses are secondary (Q) and are added to the stresses due to other loads in accordance with the ASME Code in the MSB Load Combination Calculation.

Table 6.2-2. Thermal Stress Results for the Storage Sleeves

Location	ANSYS Calculated Stress	Alpha Correction	Final Stress
Shell (Node 163)	52,000	1.000	52,000
Shell (Node 279)	52,000	1.000	52,000

7. CONCLUSIONS

It can be seen that the gap between the storage sleeves and the MSB shell wall is adequate to ensure the sleeve and the shell will act independently. The thermal stresses calculated in this calculation will be combined with other stresses and evaluated as part of a load combination.

8. ELECTRONIC FILES

8.1 Computer Runs

For convenience, copies of the computer run results are provided in Attachments A and C. The computer results are from the original analysis provided in Reference 3.1.3.

8.2 Other Electronic Files

None.

9. ATTACHMENT A – ANSYS OUTPUT

NODE	X	Y	Z	THXY	THYZ	THXZ
1	0.00000E+00	0.00000E+00	0.00000E+00	0.00	0.00	0.00
2	8.0000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
3	16.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
4	24.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
5	28.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
6	30.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
7	31.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
8	31.000	3.0000	0.00000E+00	0.00	0.00	0.00
9	31.000	9.0000	0.00000E+00	0.00	0.00	0.00
10	31.000	15.000	0.00000E+00	0.00	0.00	0.00
11	31.000	21.000	0.00000E+00	0.00	0.00	0.00
12	31.000	27.000	0.00000E+00	0.00	0.00	0.00
13	31.000	33.000	0.00000E+00	0.00	0.00	0.00
14	31.000	39.000	0.00000E+00	0.00	0.00	0.00
15	31.000	45.000	0.00000E+00	0.00	0.00	0.00
16	31.000	51.000	0.00000E+00	0.00	0.00	0.00
17	31.000	57.000	0.00000E+00	0.00	0.00	0.00
18	31.000	63.000	0.00000E+00	0.00	0.00	0.00
19	31.000	69.000	0.00000E+00	0.00	0.00	0.00
20	31.000	75.000	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
21	31.000	81.000	0.00000E+00	0.00	0.00	0.00
22	31.000	87.000	0.00000E+00	0.00	0.00	0.00
23	31.000	93.000	0.00000E+00	0.00	0.00	0.00
24	31.000	99.000	0.00000E+00	0.00	0.00	0.00
25	31.000	105.00	0.00000E+00	0.00	0.00	0.00
26	31.000	111.00	0.00000E+00	0.00	0.00	0.00
27	31.000	117.00	0.00000E+00	0.00	0.00	0.00
28	31.000	123.00	0.00000E+00	0.00	0.00	0.00
29	31.000	129.00	0.00000E+00	0.00	0.00	0.00
30	31.000	135.00	0.00000E+00	0.00	0.00	0.00
31	31.000	141.00	0.00000E+00	0.00	0.00	0.00
32	31.000	147.00	0.00000E+00	0.00	0.00	0.00
33	31.000	153.00	0.00000E+00	0.00	0.00	0.00
34	31.000	159.00	0.00000E+00	0.00	0.00	0.00
35	31.000	165.00	0.00000E+00	0.00	0.00	0.00
36	31.000	171.00	0.00000E+00	0.00	0.00	0.00
37	31.000	176.00	0.00000E+00	0.00	0.00	0.00
38	31.000	181.00	0.00000E+00	0.00	0.00	0.00
39	29.000	181.00	0.00000E+00	0.00	0.00	0.00
40	25.000	181.00	0.00000E+00	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
41	17.000	181.00	0.00000E+00	0.00	0.00	0.00
42	9.0000	181.00	0.00000E+00	0.00	0.00	0.00
43	0.00000E+00	181.00	0.00000E+00	0.00	0.00	0.00

1	1	1	1	1	2
2	1	1	1	2	3
3	1	1	1	3	4
4	1	1	1	4	5
5	1	1	1	5	6
6	1	1	1	6	7
7	1	1	1	7	8
8	1	1	1	8	9
9	1	1	1	9	10
10	1	1	1	10	11
11	1	1	1	11	12
12	1	1	1	12	13
13	1	1	1	13	14
14	1	1	1	14	15
15	1	1	1	15	16
16	1	1	1	16	17
17	1	1	1	17	18
18	1	1	1	18	19
19	1	1	1	19	20
20	1	1	1	20	21

ELEM	MAT	TYP	REL		NODES
21	1	1	1	21	22
22	1	1	1	22	23
23	1	1	1	23	24
24	1	1	1	24	25
25	1	1	1	25	26
26	1	1	1	26	27
27	1	1	1	27	28
28	1	1	1	28	29
29	1	1	1	29	30
30	1	1	1	30	31
31	1	1	1	31	32
32	1	1	1	32	33
33	1	1	1	33	34
34	1	1	1	34	35
35	1	1	1	35	36
36	1	1	1	36	37
37	1	1	1	37	38
38	1	1	3	38	39
39	1	1	2	39	40
40	1	1	2	40	41

ELEM	MAT	TYP	REL		NODES
41	1	1	2	41	42
42	1	1	2	42	43

```
REAL CONSTANT SET    1  ITEMS    1 TO    6
 0.75000         0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00

REAL CONSTANT SET    2  ITEMS    1 TO    6
 3.0000          0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00

REAL CONSTANT SET    3  ITEMS    1 TO    6
 0.75000          3.0000      0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

70.000	29200.	100.00	29200.
200.00	29200.		

PROPERTY TABLE ALPX MAT= 1 NUM. POINTS= 3

TEMPERATURE	DATA	TEMPERATURE	DATA
70.000	0.55300E-05	100.00	0.55300E-05
200.00	0.58900E-05		

2	53.500	0.00000E+00
3	48.500	0.00000E+00
4	44.000	0.00000E+00
5	41.700	0.00000E+00
6	40.600	0.00000E+00
7	40.000	0.00000E+00
8	70.000	0.00000E+00
9	88.600	0.00000E+00
10	98.900	0.00000E+00
11	109.20	0.00000E+00
12	119.50	0.00000E+00
13	129.80	0.00000E+00
14	139.10	0.00000E+00
15	147.40	0.00000E+00
16	155.60	0.00000E+00
17	158.40	0.00000E+00
18	160.00	0.00000E+00
19	161.80	0.00000E+00
20	163.50	0.00000E+00

NODE	TEMPERATURE	FLUENCE
21	165.10	0.00000E+00
22	165.00	0.00000E+00
23	163.00	0.00000E+00
24	161.00	0.00000E+00
25	159.00	0.00000E+00
26	157.00	0.00000E+00
27	155.00	0.00000E+00
28	144.30	0.00000E+00
29	133.40	0.00000E+00
30	122.50	0.00000E+00
31	111.70	0.00000E+00
32	100.80	0.00000E+00
33	80.000	0.00000E+00
34	57.000	0.00000E+00
35	34.200	0.00000E+00
36	18.500	0.00000E+00
37	8.0000	0.00000E+00
38	4.6000	0.00000E+00
39	5.0000	0.00000E+00
40	5.5000	0.00000E+00

NODE	TEMPERATURE	FLUENCE
41	6.4000	0.00000E+00
42	5.8000	0.00000E+00
43	5.2000	0.00000E+00

PRINT ELEMENT STRESS ITEMS PER ELEMENT

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
IME= 0.00000E+00 LOAD CASE= 1

ELEM	Q
1	0.33122102
2	0.40369000
3	0.84324196
4	1.2034220
5	1.3845015
6	1.4753769
7	0.18735827
8	1.0315863
9	0.33608688
10	0.48117278E-01
11	0.22033741E-01
12	0.25122956E-01
13	0.48638334E-01
14	0.47312766E-01

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	Q
15	0.17076335
16	0.20570861
17	0.45994719E-01
18	0.10926665E-01
19	0.72778753E-02
20	0.60121295E-01
21	0.11485653
22	0.62677556E-01
23	0.58742443E-02
24	0.13821334E-01
25	0.38503098E-01
26	0.27295692
27	0.27393770
28	0.35366859E-01

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

ELEM	Q
29	0.34306923E-01
30	0.32532294E-01
31	0.27941340
32	0.35000119
33	0.63769595E-01
34	0.20930819
35	0.31571331
36	0.42859198
37	0.49881912

39	0.10723476
40	0.15500941E-01
41	0.50548760E-01
42	0.45287384E-01

10. ATTACHMENT B – STORAGE SLEEVE TEMPERATURE DISTRIBUTION

GENERATION OF THE TEMP-S
FOR THE SLEEVE ASSEMBLY

NODES	T,F	DTR	T SHELL	DTMAX
1	204		40	
2	200		40	
3	186		40	
4	186		40	
5	167		40	
6	139		40	
7	139		40	
8	118		40	
9	90		40	
10	180		40	
11	180		40	
12	128		40	
13	128		40	
14	73		40	
15	163		40	
16	163		40	
17	139		40	
18	103		40	
19	103		40	
20	70		40	
21	53		40	
22	163		40	
23	139		40	
24	103		40	
25	73		40	
26	59		40	
27	311		75	
28	305		75	
29	285		75	
30	285		75	
31	258		75	
32	217		75	
33	217		75	
34	187		75	
35	147		75	
36	277		75	
37	277		75	
38	201		75	
39	201		75	
40	122		75	
41	253		75	
42	253		75	
43	217		75	
44	165		75	
45	165		75	
46	119		75	
47	94		75	

49	217	75
50	165	75
51	122	75
52	102	75
53	144	75
54	119	75
55	98	75
56	102	75
57	403	105
58	395	105
59	370	105
60	370	105
61	335	105
62	284	105
63	284	105
64	246	105
65	196	105
66	359	105
67	359	105
68	264	105
69	264	105
70	165	105
71	329	105
72	329	105
73	284	105
74	218	105
75	218	105
76	160	105
77	129	105
78	329	105
79	284	105
80	218	105
81	164	105
82	139	105
83	192	105
84	161	105
85	135	105
86	139	105
87	482	131
88	473	131
89	443	131
90	443	131
91	402	131
92	343	131
93	343	131
94	298	131
95	238	131
96	431	131
97	431	131

100	202	131
101	395	131
102	395	131
103	342	131
104	265	131
105	265	131
106	196	131
107	159	131
108	395	131
109	342	131
110	265	131
111	201	131
112	172	131
113	234	131
114	197	131
115	166	131
116	172	131
117	528	146
118	518	146
119	485	146
120	485	146
121	441	146
122	376	146
123	376	146
124	327	146
125	262	146
126	472	146
127	472	146
128	350	146
129	350	146
130	223	146
131	433	146
132	433	146
133	375	146
134	291	146
135	291	146
136	216	146
137	177	146
138	433	146
139	375	146
140	291	146
141	222	146
142	190	146
143	565	158
144	554	158
145	519	158
146	519	158
147	472	158

149	403	158
150	351	158
151	282	158
152	505	158
153	505	158
154	375	158
155	375	158
156	240	158
157	464	158
158	464	158
159	402	158
160	313	158
161	313	158
162	233	158
163	191	158
164	464	158
165	402	158
166	313	158
167	239	158
168	205	158
169	577	162
170	566	162
171	531	162
172	531	162
173	483	162
174	412	162
175	412	162
176	359	162
177	288	162
178	516	162
179	516	162
180	384	162
181	384	162
182	245	162
183	474	162
184	474	162
185	411	162
186	320	162
187	320	162
188	238	162
189	195	162
190	474	162
191	411	162
192	320	162
193	244	162
194	210	162
195	284	162
196	239	162
197	203	162

199	589	0	166
200	578	11	166
201	542	47	166
202	542	47	166
203	493	96	166
204	421	168	166
205	421	168	166
206	367	222	166
207	295	294	166
208	527	62	166
209	527	62	166
210	392	197	166
211	392	197	166
212	251	338	166
213	484	105	166
214	484	105	166
215	420	169	166
216	327	262	166

217	327	262	166
218	244	345	166
219	200	389	166
220	484	105	166
221	420	169	166
222	327	262	166
223	250	339	166
224	215	374	166
225	290	299	166
226	245	344	166
227	208	381	166
228	215	374	166
229	580		163
230	569		163
231	534		163
232	534		163
233	485		163
234	414		163
235	414		163
236	361		163
237	290		163
238	519		163
239	519		163
240	386		163
241	386		163
242	247		163
243	476		163
244	476		163
245	413		163
246	322		163
247	322		163

249	197	163
250	476	163
251	413	163
252	315	159
253	240	159
254	206	159
255	279	159
256	235	159
257	200	159
258	206	159
259	568	159
260	557	159
261	522	159
262	522	159
263	475	159
264	405	159
265	405	159
266	353	159
267	284	159
268	508	159
269	508	159
270	377	159
271	377	159
272	241	159

273	466	159
274	466	159
275	404	159
276	315	159
277	315	159
278	222	150
279	181	150
280	443	150
281	384	150
282	298	150
283	227	150
284	195	150
285	540	150
286	530	150
287	497	150
288	497	150
289	452	150
290	385	150
291	385	150
292	335	150
293	269	150
294	483	150
295	483	150
296	358	150
297	358	150

299	443	150
300	443	150
301	384	150
302	298	150
303	298	150
304	222	150
305	181	150
306	443	150
307	384	150
308	298	150
309	227	150
310	195	150
311	488	133
312	479	133
313	449	133
314	449	133
315	408	133
316	347	133
317	347	133
318	302	133
319	241	133
320	436	133
321	436	133
322	323	133
323	323	133
324	204	133
325	400	133
326	400	133
327	346	133
328	268	133
329	268	133
330	199	133
331	162	133
332	400	133
333	346	133
334	268	133
335	204	133
336	174	133
337	237	133
338	199	133
339	168	133
340	174	133
341	412	108
342	404	108
343	378	108
344	378	108
345	343	108
346	291	108
347	291	108

349	201	108
350	367	108
351	367	108
352	270	108
353	270	108
354	169	108
355	336	108
356	336	108
357	290	108
358	224	108
359	224	108
360	164	108
361	132	108
362	336	108
363	290	108
364	224	108
365	168	108
366	143	108
367	197	108
368	165	108
369	138	108
370	143	108
371	299	71
372	293	71
373	274	71
374	274	71
375	247	71
376	208	71
377	208	71
378	179	71
379	141	71
380	266	71
381	266	71
382	193	71
383	193	71
384	117	71
385	242	71
386	242	71
387	208	71
388	158	71
389	158	71
390	113	71
391	89	71
392	242	71
393	208	71
394	158	71
395	116	71
396	97	71
397	138	71

11. ATTACHMENT C – ANSYS OUTPUT

LIST ALL SELECTED NODE DSYS= 0

NODE	X	Y	Z	THXY	THYZ	THXZ
1	0.00000E+00	0.00000E+00	0.00000E+00	0.00	0.00	0.00
2	4.6000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
3	9.2000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
4	9.3000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
5	13.900	0.00000E+00	0.00000E+00	0.00	0.00	0.00
6	18.500	0.00000E+00	0.00000E+00	0.00	0.00	0.00
7	18.600	0.00000E+00	0.00000E+00	0.00	0.00	0.00
8	23.200	0.00000E+00	0.00000E+00	0.00	0.00	0.00
9	27.800	0.00000E+00	0.00000E+00	0.00	0.00	0.00
10	9.2000	4.6000	0.00000E+00	0.00	0.00	0.00
11	9.3000	4.6000	0.00000E+00	0.00	0.00	0.00
12	18.500	4.6000	0.00000E+00	0.00	0.00	0.00
13	18.600	4.6000	0.00000E+00	0.00	0.00	0.00
14	27.600	4.6000	0.00000E+00	0.00	0.00	0.00
15	9.2000	9.2000	0.00000E+00	45.00	0.00	0.00
16	9.3000	9.2000	0.00000E+00	44.69	0.00	0.00
17	13.900	9.2000	0.00000E+00	0.00	0.00	0.00
18	18.500	9.2000	0.00000E+00	0.00	0.00	0.00
19	18.600	9.2000	0.00000E+00	0.00	0.00	0.00
20	23.200	9.2000	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
21	27.800	9.2000	0.00000E+00	0.00	0.00	0.00
22	9.3000	9.3000	0.00000E+00	45.00	0.00	0.00
23	13.900	9.3000	0.00000E+00	0.00	0.00	0.00
24	18.500	9.3000	0.00000E+00	0.00	0.00	0.00
25	18.500	13.900	0.00000E+00	0.00	0.00	0.00
26	18.500	18.400	0.00000E+00	44.84	0.00	0.00
27	0.00000E+00	0.00000E+00	6.0000	0.00	0.00	0.00
28	4.6000	0.00000E+00	6.0000	0.00	0.00	0.00
29	9.2000	0.00000E+00	6.0000	0.00	0.00	0.00
30	9.3000	0.00000E+00	6.0000	0.00	0.00	0.00
31	13.900	0.00000E+00	6.0000	0.00	0.00	0.00
32	18.500	0.00000E+00	6.0000	0.00	0.00	0.00
33	18.600	0.00000E+00	6.0000	0.00	0.00	0.00
34	23.200	0.00000E+00	6.0000	0.00	0.00	0.00
35	27.800	0.00000E+00	6.0000	0.00	0.00	0.00
36	9.2000	4.6000	6.0000	0.00	0.00	0.00
37	9.3000	4.6000	6.0000	0.00	0.00	0.00
38	18.500	4.6000	6.0000	0.00	0.00	0.00
39	18.600	4.6000	6.0000	0.00	0.00	0.00
40	27.600	4.6000	6.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
41	9.2000	9.2000	6.0000	45.00	0.00	0.00
42	9.3000	9.2000	6.0000	44.69	0.00	0.00
43	13.900	9.2000	6.0000	0.00	0.00	0.00
44	18.500	9.2000	6.0000	0.00	0.00	0.00
45	18.600	9.2000	6.0000	0.00	0.00	0.00
46	23.200	9.2000	6.0000	0.00	0.00	0.00
47	27.800	9.2000	6.0000	0.00	0.00	0.00
48	9.3000	9.3000	6.0000	0.00	0.00	0.00
49	13.900	9.3000	6.0000	45.00	0.00	0.00
50	18.500	9.3000	6.0000	0.00	0.00	0.00
51	18.500	13.900	6.0000	0.00	0.00	0.00

53	29.283	0.00000E+00	6.0000	0.00	0.00	0.00
54	28.914	4.6313	6.0000	0.00	0.00	0.00
55	25.360	14.641	6.0000	0.00	0.00	0.00
56	22.699	18.500	6.0000	0.00	0.00	0.00
57	0.00000E+00	0.00000E+00	20.000	0.00	0.00	0.00
58	4.6000	0.00000E+00	20.000	0.00	0.00	0.00
59	9.2000	0.00000E+00	20.000	0.00	0.00	0.00
60	9.3000	0.00000E+00	20.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
61	13.900	0.00000E+00	20.000	0.00	0.00	0.00
62	18.500	0.00000E+00	20.000	0.00	0.00	0.00
63	18.600	0.00000E+00	20.000	0.00	0.00	0.00
64	23.200	0.00000E+00	20.000	0.00	0.00	0.00
65	27.800	0.00000E+00	20.000	0.00	0.00	0.00
66	9.2000	4.6000	20.000	0.00	0.00	0.00
67	9.3000	4.6000	20.000	0.00	0.00	0.00
68	18.500	4.6000	20.000	0.00	0.00	0.00
69	18.600	4.6000	20.000	0.00	0.00	0.00
70	27.600	4.6000	20.000	0.00	0.00	0.00
71	9.2000	9.2000	20.000	45.00	0.00	0.00
72	9.3000	9.2000	20.000	44.69	0.00	0.00
73	13.900	9.2000	20.000	0.00	0.00	0.00
74	18.500	9.2000	20.000	0.00	0.00	0.00
75	18.600	9.2000	20.000	0.00	0.00	0.00
76	23.200	9.2000	20.000	0.00	0.00	0.00
77	27.800	9.2000	20.000	0.00	0.00	0.00
78	9.3000	9.3000	20.000	45.00	0.00	0.00
79	13.900	9.3000	20.000	0.00	0.00	0.00
80	18.500	9.3000	20.000	0.00	0.00	0.00

DE	X	Y	Z	THXY	THYZ	THXZ
81	18.500	13.900	20.000	0.00	0.00	0.00
82	18.500	18.400	20.000	44.84	0.00	0.00
83	29.283	0.00000E+00	20.000	0.00	0.00	0.00
84	28.914	4.6313	20.000	0.00	0.00	0.00
85	25.360	14.641	20.000	0.00	0.00	0.00
86	22.699	18.500	20.000	0.00	0.00	0.00
87	0.00000E+00	0.00000E+00	34.000	0.00	0.00	0.00
88	4.6000	0.00000E+00	34.000	0.00	0.00	0.00
89	9.2000	0.00000E+00	34.000	0.00	0.00	0.00
90	9.3000	0.00000E+00	34.000	0.00	0.00	0.00
91	13.900	0.00000E+00	34.000	0.00	0.00	0.00
92	18.500	0.00000E+00	34.000	0.00	0.00	0.00
93	18.600	0.00000E+00	34.000	0.00	0.00	0.00
94	23.200	0.00000E+00	34.000	0.00	0.00	0.00
95	27.800	0.00000E+00	34.000	0.00	0.00	0.00
96	9.2000	4.6000	34.000	0.00	0.00	0.00
97	9.3000	4.6000	34.000	0.00	0.00	0.00
98	18.500	4.6000	34.000	0.00	0.00	0.00
99	18.600	4.6000	34.000	0.00	0.00	0.00
100	27.600	4.6000	34.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
101	9.2000	9.2000	34.000	45.00	0.00	0.00
102	9.3000	9.2000	34.000	44.69	0.00	0.00
03	13.900	9.2000	34.000	0.00	0.00	0.00
104	18.500	9.2000	34.000	0.00	0.00	0.00
105	18.600	9.2000	34.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
107	27.800	9.2000	34.000	0.00	0.00	0.00
108	9.3000	9.3000	34.000	45.00	0.00	0.00
109	13.900	9.3000	34.000	0.00	0.00	0.00
110	18.500	9.3000	34.000	0.00	0.00	0.00
111	18.500	13.900	34.000	0.00	0.00	0.00
112	18.500	18.400	34.000	44.84	0.00	0.00
113	29.283	0.00000E+00	34.000	0.00	0.00	0.00
114	28.914	4.6313	34.000	0.00	0.00	0.00
115	25.360	14.641	34.000	0.00	0.00	0.00
116	22.699	18.500	34.000	0.00	0.00	0.00
117	0.00000E+00	0.00000E+00	45.400	0.00	0.00	0.00
118	4.6000	0.00000E+00	45.400	0.00	0.00	0.00
119	9.2000	0.00000E+00	45.400	0.00	0.00	0.00
120	9.3000	0.00000E+00	45.400	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
121	13.900	0.00000E+00	45.400	0.00	0.00	0.00
122	18.500	0.00000E+00	45.400	0.00	0.00	0.00
123	18.600	0.00000E+00	45.400	0.00	0.00	0.00
124	23.200	0.00000E+00	45.400	0.00	0.00	0.00
125	27.800	0.00000E+00	45.400	0.00	0.00	0.00
126	9.2000	4.6000	45.400	0.00	0.00	0.00
127	9.3000	4.6000	45.400	0.00	0.00	0.00
128	18.500	4.6000	45.400	0.00	0.00	0.00
129	18.600	4.6000	45.400	0.00	0.00	0.00
130	27.600	4.6000	45.400	0.00	0.00	0.00
131	9.2000	9.2000	45.400	45.00	0.00	0.00
132	9.3000	9.2000	45.400	44.69	0.00	0.00
133	13.900	9.2000	45.400	0.00	0.00	0.00
134	18.500	9.2000	45.400	0.00	0.00	0.00
135	18.600	9.2000	45.400	0.00	0.00	0.00
136	23.200	9.2000	45.400	0.00	0.00	0.00
137	27.800	9.2000	45.400	0.00	0.00	0.00
138	9.3000	9.3000	45.400	45.00	0.00	0.00
139	13.900	9.3000	45.400	0.00	0.00	0.00
140	18.500	9.3000	45.400	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
141	18.500	13.900	45.400	0.00	0.00	0.00
142	18.500	18.400	45.400	44.84	0.00	0.00
143	0.00000E+00	0.00000E+00	56.800	0.00	0.00	0.00
144	4.6000	0.00000E+00	56.800	0.00	0.00	0.00
145	9.2000	0.00000E+00	56.800	0.00	0.00	0.00
146	9.3000	0.00000E+00	56.800	0.00	0.00	0.00
147	13.900	0.00000E+00	56.800	0.00	0.00	0.00
148	18.500	0.00000E+00	56.800	0.00	0.00	0.00
149	18.600	0.00000E+00	56.800	0.00	0.00	0.00
150	23.200	0.00000E+00	56.800	0.00	0.00	0.00
151	27.800	0.00000E+00	56.800	0.00	0.00	0.00
152	9.2000	4.6000	56.800	0.00	0.00	0.00
153	9.3000	4.6000	56.800	0.00	0.00	0.00
154	18.500	4.6000	56.800	0.00	0.00	0.00
155	18.600	4.6000	56.800	0.00	0.00	0.00
156	27.600	4.6000	56.800	0.00	0.00	0.00
157	9.2000	9.2000	56.800	0.00	0.00	0.00
158	9.3000	9.2000	56.800	45.00	0.00	0.00
59	13.900	9.2000	56.800	44.69	0.00	0.00
160	18.500	9.2000	56.800	0.00	0.00	0.00

161	18.600	9.2000	56.800	0.00	0.00	0.00
162	23.200	9.2000	56.800	0.00	0.00	0.00
163	27.800	9.2000	56.800	0.00	0.00	0.00
164	9.3000	9.3000	56.800	45.00	0.00	0.00
165	13.900	9.3000	56.800	0.00	0.00	0.00
166	18.500	9.3000	56.800	0.00	0.00	0.00
167	18.500	13.900	56.800	0.00	0.00	0.00
168	18.500	18.400	56.800	44.84	0.00	0.00
169	0.00000E+00	0.00000E+00	68.200	0.00	0.00	0.00
170	4.6000	0.00000E+00	68.200	0.00	0.00	0.00
171	9.2000	0.00000E+00	68.200	0.00	0.00	0.00
172	9.3000	0.00000E+00	68.200	0.00	0.00	0.00
173	13.900	0.00000E+00	68.200	0.00	0.00	0.00
174	18.500	0.00000E+00	68.200	0.00	0.00	0.00
175	18.600	0.00000E+00	68.200	0.00	0.00	0.00
176	23.200	0.00000E+00	68.200	0.00	0.00	0.00
177	27.800	0.00000E+00	68.200	0.00	0.00	0.00
178	9.2000	4.6000	68.200	0.00	0.00	0.00
179	9.3000	4.6000	68.200	0.00	0.00	0.00
180	18.500	4.6000	68.200	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
181	18.600	4.6000	68.200	0.00	0.00	0.00
182	27.600	4.6000	68.200	0.00	0.00	0.00
183	9.2000	9.2000	68.200	45.00	0.00	0.00
184	9.3000	9.2000	68.200	44.69	0.00	0.00
185	13.900	9.2000	68.200	0.00	0.00	0.00
186	18.500	9.2000	68.200	0.00	0.00	0.00
187	18.600	9.2000	68.200	0.00	0.00	0.00
188	23.200	9.2000	68.200	0.00	0.00	0.00
189	27.800	9.2000	68.200	0.00	0.00	0.00
190	9.3000	9.3000	68.200	45.00	0.00	0.00
191	13.900	9.3000	68.200	0.00	0.00	0.00
192	18.500	9.3000	68.200	0.00	0.00	0.00
193	18.500	13.900	68.200	0.00	0.00	0.00
194	18.500	18.400	68.200	44.84	0.00	0.00
195	29.283	0.00000E+00	68.200	0.00	0.00	0.00
196	28.914	4.6313	68.200	0.00	0.00	0.00
197	25.360	14.641	68.200	0.00	0.00	0.00
198	22.699	18.500	68.200	0.00	0.00	0.00
199	0.00000E+00	0.00000E+00	82.200	0.00	0.00	0.00
200	4.6000	0.00000E+00	82.200	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
201	9.2000	0.00000E+00	82.200	0.00	0.00	0.00
202	9.3000	0.00000E+00	82.200	0.00	0.00	0.00
203	13.900	0.00000E+00	82.200	0.00	0.00	0.00
204	18.500	0.00000E+00	82.200	0.00	0.00	0.00
205	18.600	0.00000E+00	82.200	0.00	0.00	0.00
206	23.200	0.00000E+00	82.200	0.00	0.00	0.00
207	27.800	0.00000E+00	82.200	0.00	0.00	0.00
208	9.2000	4.6000	82.200	0.00	0.00	0.00
209	9.3000	4.6000	82.200	0.00	0.00	0.00
210	18.500	4.6000	82.200	0.00	0.00	0.00
211	18.600	4.6000	82.200	0.00	0.00	0.00
212	27.600	4.6000	82.200	0.00	0.00	0.00
213	9.2000	9.2000	82.200	0.00	0.00	0.00
214	9.3000	9.2000	82.200	45.00	0.00	0.00
215	13.900	9.2000	82.200	44.69	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
217	18.600	9.2000	82.200	0.00	0.00	0.00
218	23.200	9.2000	82.200	0.00	0.00	0.00
219	27.800	9.2000	82.200	0.00	0.00	0.00
220	9.3000	9.3000	82.200	45.00	0.00	0.00
ODE	X	Y	Z	THXY	THYZ	THXZ
221	13.900	9.3000	82.200	0.00	0.00	0.00
222	18.500	9.3000	82.200	0.00	0.00	0.00
223	18.500	13.900	82.200	0.00	0.00	0.00
224	18.500	18.400	82.200	44.84	0.00	0.00
225	29.283	0.00000E+00	82.200	0.00	0.00	0.00
226	28.914	4.6313	82.200	0.00	0.00	0.00
227	25.360	14.641	82.200	0.00	0.00	0.00
228	22.699	18.500	82.200	0.00	0.00	0.00
229	0.00000E+00	0.00000E+00	96.200	0.00	0.00	0.00
230	4.6000	0.00000E+00	96.200	0.00	0.00	0.00
231	9.2000	0.00000E+00	96.200	0.00	0.00	0.00
232	9.3000	0.00000E+00	96.200	0.00	0.00	0.00
233	13.900	0.00000E+00	96.200	0.00	0.00	0.00
234	18.500	0.00000E+00	96.200	0.00	0.00	0.00
235	18.600	0.00000E+00	96.200	0.00	0.00	0.00
236	23.200	0.00000E+00	96.200	0.00	0.00	0.00
237	27.800	0.00000E+00	96.200	0.00	0.00	0.00
238	9.2000	4.6000	96.200	0.00	0.00	0.00
239	9.3000	4.6000	96.200	0.00	0.00	0.00
240	18.500	4.6000	96.200	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
241	18.600	4.6000	96.200	0.00	0.00	0.00
242	27.600	4.6000	96.200	0.00	0.00	0.00
243	9.2000	9.2000	96.200	45.00	0.00	0.00
244	9.3000	9.2000	96.200	44.69	0.00	0.00
245	13.900	9.2000	96.200	0.00	0.00	0.00
246	18.500	9.2000	96.200	0.00	0.00	0.00
247	18.600	9.2000	96.200	0.00	0.00	0.00
248	23.200	9.2000	96.200	0.00	0.00	0.00
249	27.800	9.2000	96.200	0.00	0.00	0.00
250	9.3000	9.3000	96.200	45.00	0.00	0.00
251	13.900	9.3000	96.200	0.00	0.00	0.00
252	18.500	9.3000	96.200	0.00	0.00	0.00
253	18.500	13.900	96.200	0.00	0.00	0.00
254	18.500	18.400	96.200	44.84	0.00	0.00
255	29.283	0.00000E+00	96.200	0.00	0.00	0.00
256	28.914	4.6313	96.200	0.00	0.00	0.00
257	25.360	14.641	96.200	0.00	0.00	0.00
258	22.699	18.500	96.200	0.00	0.00	0.00
259	0.00000E+00	0.00000E+00	107.60	0.00	0.00	0.00
260	4.6000	0.00000E+00	107.60	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
261	9.2000	0.00000E+00	107.60	0.00	0.00	0.00
262	9.3000	0.00000E+00	107.60	0.00	0.00	0.00
263	13.900	0.00000E+00	107.60	0.00	0.00	0.00
264	18.500	0.00000E+00	107.60	0.00	0.00	0.00
265	18.600	0.00000E+00	107.60	0.00	0.00	0.00
266	23.200	0.00000E+00	107.60	0.00	0.00	0.00
267	27.800	0.00000E+00	107.60	0.00	0.00	0.00
268	9.2000	4.6000	107.60	0.00	0.00	0.00
269	9.3000	4.6000	107.60	0.00	0.00	0.00

271	18.600	4.6000	107.60	0.00	0.00	0.00
272	27.600	4.6000	107.60	0.00	0.00	0.00
273	9.2000	9.2000	107.60	45.00	0.00	0.00
274	9.3000	9.2000	107.60	44.69	0.00	0.00
275	13.900	9.2000	107.60	0.00	0.00	0.00
276	18.500	9.2000	107.60	0.00	0.00	0.00
277	18.600	9.2000	107.60	0.00	0.00	0.00
278	23.200	9.2000	107.60	0.00	0.00	0.00
279	27.800	9.2000	107.60	0.00	0.00	0.00
280	9.3000	9.3000	107.60	45.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
281	13.900	9.3000	107.60	0.00	0.00	0.00
282	18.500	9.3000	107.60	0.00	0.00	0.00
283	18.500	13.900	107.60	0.00	0.00	0.00
284	18.500	18.400	107.60	44.84	0.00	0.00
285	0.00000E+00	0.00000E+00	119.00	0.00	0.00	0.00
286	4.6000	0.00000E+00	119.00	0.00	0.00	0.00
287	9.2000	0.00000E+00	119.00	0.00	0.00	0.00
288	9.3000	0.00000E+00	119.00	0.00	0.00	0.00
289	13.900	0.00000E+00	119.00	0.00	0.00	0.00
290	18.500	0.00000E+00	119.00	0.00	0.00	0.00
291	18.600	0.00000E+00	119.00	0.00	0.00	0.00
292	23.200	0.00000E+00	119.00	0.00	0.00	0.00
293	27.800	0.00000E+00	119.00	0.00	0.00	0.00
294	9.2000	4.6000	119.00	0.00	0.00	0.00
295	9.3000	4.6000	119.00	0.00	0.00	0.00
296	18.500	4.6000	119.00	0.00	0.00	0.00
297	18.600	4.6000	119.00	0.00	0.00	0.00
298	27.600	4.6000	119.00	0.00	0.00	0.00
299	9.2000	9.2000	119.00	45.00	0.00	0.00
300	9.3000	9.2000	119.00	44.69	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
301	13.900	9.2000	119.00	0.00	0.00	0.00
302	18.500	9.2000	119.00	0.00	0.00	0.00
303	18.600	9.2000	119.00	0.00	0.00	0.00
304	23.200	9.2000	119.00	0.00	0.00	0.00
305	27.800	9.2000	119.00	0.00	0.00	0.00
306	9.3000	9.3000	119.00	45.00	0.00	0.00
307	13.900	9.3000	119.00	0.00	0.00	0.00
308	18.500	9.3000	119.00	0.00	0.00	0.00
309	18.500	13.900	119.00	0.00	0.00	0.00
310	18.500	18.400	119.00	44.84	0.00	0.00
311	0.00000E+00	0.00000E+00	130.40	0.00	0.00	0.00
312	4.6000	0.00000E+00	130.40	0.00	0.00	0.00
313	9.2000	0.00000E+00	130.40	0.00	0.00	0.00
314	9.3000	0.00000E+00	130.40	0.00	0.00	0.00
315	13.900	0.00000E+00	130.40	0.00	0.00	0.00
316	18.500	0.00000E+00	130.40	0.00	0.00	0.00
317	18.600	0.00000E+00	130.40	0.00	0.00	0.00
318	23.200	0.00000E+00	130.40	0.00	0.00	0.00
319	27.800	0.00000E+00	130.40	0.00	0.00	0.00
320	9.2000	4.6000	130.40	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
321	9.3000	4.6000	130.40	0.00	0.00	0.00
322	18.500	4.6000	130.40	0.00	0.00	0.00
323	18.600	4.6000	130.40	0.00	0.00	0.00

325	9.2000	9.2000	130.40	45.00	0.00	0.00
326	9.3000	9.2000	130.40	44.69	0.00	0.00
327	13.900	9.2000	130.40	0.00	0.00	0.00
328	18.500	9.2000	130.40	0.00	0.00	0.00
329	18.600	9.2000	130.40	0.00	0.00	0.00
330	23.200	9.2000	130.40	0.00	0.00	0.00
331	27.800	9.2000	130.40	0.00	0.00	0.00
332	9.3000	9.3000	130.40	45.00	0.00	0.00
333	13.900	9.3000	130.40	0.00	0.00	0.00
334	18.500	9.3000	130.40	0.00	0.00	0.00
335	18.500	13.900	130.40	0.00	0.00	0.00
336	18.500	18.400	130.40	44.84	0.00	0.00
337	29.283	0.00000E+00	130.40	0.00	0.00	0.00
338	28.914	4.6313	130.40	0.00	0.00	0.00
339	25.360	14.641	130.40	0.00	0.00	0.00
340	22.699	18.500	130.40	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
341	0.00000E+00	0.00000E+00	144.40	0.00	0.00	0.00
342	4.6000	0.00000E+00	144.40	0.00	0.00	0.00
343	9.2000	0.00000E+00	144.40	0.00	0.00	0.00
344	9.3000	0.00000E+00	144.40	0.00	0.00	0.00
345	13.900	0.00000E+00	144.40	0.00	0.00	0.00
346	18.500	0.00000E+00	144.40	0.00	0.00	0.00
347	18.600	0.00000E+00	144.40	0.00	0.00	0.00
348	23.200	0.00000E+00	144.40	0.00	0.00	0.00
349	27.800	0.00000E+00	144.40	0.00	0.00	0.00
350	9.2000	4.6000	144.40	0.00	0.00	0.00
351	9.3000	4.6000	144.40	0.00	0.00	0.00
352	18.500	4.6000	144.40	0.00	0.00	0.00
353	18.600	4.6000	144.40	0.00	0.00	0.00
354	27.600	4.6000	144.40	0.00	0.00	0.00
355	9.2000	9.2000	144.40	45.00	0.00	0.00
356	9.3000	9.2000	144.40	44.69	0.00	0.00
357	13.900	9.2000	144.40	0.00	0.00	0.00
358	18.500	9.2000	144.40	0.00	0.00	0.00
359	18.600	9.2000	144.40	0.00	0.00	0.00
360	23.200	9.2000	144.40	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
361	27.800	9.2000	144.40	0.00	0.00	0.00
362	9.3000	9.3000	144.40	45.00	0.00	0.00
363	13.900	9.3000	144.40	0.00	0.00	0.00
364	18.500	9.3000	144.40	0.00	0.00	0.00
365	18.500	13.900	144.40	0.00	0.00	0.00
366	18.500	18.400	144.40	44.84	0.00	0.00
367	29.283	0.00000E+00	144.40	0.00	0.00	0.00
368	28.914	4.6313	144.40	0.00	0.00	0.00
369	25.360	14.641	144.40	0.00	0.00	0.00
370	22.699	18.500	144.40	0.00	0.00	0.00
371	0.00000E+00	0.00000E+00	158.40	0.00	0.00	0.00
372	4.6000	0.00000E+00	158.40	0.00	0.00	0.00
373	9.2000	0.00000E+00	158.40	0.00	0.00	0.00
374	9.3000	0.00000E+00	158.40	0.00	0.00	0.00
375	13.900	0.00000E+00	158.40	0.00	0.00	0.00
376	18.500	0.00000E+00	158.40	0.00	0.00	0.00
377	18.600	0.00000E+00	158.40	0.00	0.00	0.00
378	23.200	0.00000E+00	158.40	0.00	0.00	0.00
379	27.800	0.00000E+00	158.40	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
381	9.3000	4.6000	158.40	0.00	0.00	0.00
382	18.500	4.6000	158.40	0.00	0.00	0.00
383	18.600	4.6000	158.40	0.00	0.00	0.00
384	27.600	4.6000	158.40	0.00	0.00	0.00
385	9.2000	9.2000	158.40	45.00	0.00	0.00
386	9.3000	9.2000	158.40	44.69	0.00	0.00
387	13.900	9.2000	158.40	0.00	0.00	0.00
388	18.500	9.2000	158.40	0.00	0.00	0.00
389	18.600	9.2000	158.40	0.00	0.00	0.00
390	23.200	9.2000	158.40	0.00	0.00	0.00
391	27.800	9.2000	158.40	0.00	0.00	0.00
392	9.3000	9.3000	158.40	45.00	0.00	0.00
393	13.900	9.3000	158.40	0.00	0.00	0.00
394	18.500	9.3000	158.40	0.00	0.00	0.00
395	18.500	13.900	158.40	0.00	0.00	0.00
396	18.500	18.400	158.40	44.84	0.00	0.00
397	29.283	0.00000E+00	158.40	0.00	0.00	0.00
398	28.914	4.6313	158.40	0.00	0.00	0.00
399	25.360	14.641	158.40	0.00	0.00	0.00
400	22.699	18.500	158.40	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
401	0.00000E+00	0.00000E+00	164.40	0.00	0.00	0.00
402	4.6000	0.00000E+00	164.40	0.00	0.00	0.00
403	9.2000	0.00000E+00	164.40	0.00	0.00	0.00
404	9.3000	0.00000E+00	164.40	0.00	0.00	0.00
405	13.900	0.00000E+00	164.40	0.00	0.00	0.00
406	18.500	0.00000E+00	164.40	0.00	0.00	0.00
407	18.600	0.00000E+00	164.40	0.00	0.00	0.00
408	23.200	0.00000E+00	164.40	0.00	0.00	0.00
409	27.800	0.00000E+00	164.40	0.00	0.00	0.00
410	9.2000	4.6000	164.40	0.00	0.00	0.00
411	9.3000	4.6000	164.40	0.00	0.00	0.00
412	18.500	4.6000	164.40	0.00	0.00	0.00
413	18.600	4.6000	164.40	0.00	0.00	0.00
414	27.600	4.6000	164.40	0.00	0.00	0.00
415	9.2000	9.2000	164.40	45.00	0.00	0.00
416	9.3000	9.2000	164.40	44.69	0.00	0.00
417	13.900	9.2000	164.40	0.00	0.00	0.00
418	18.500	9.2000	164.40	0.00	0.00	0.00
419	18.600	9.2000	164.40	0.00	0.00	0.00
420	23.200	9.2000	164.40	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
421	27.800	9.2000	164.40	0.00	0.00	0.00
422	9.3000	9.3000	164.40	45.00	0.00	0.00
423	13.900	9.3000	164.40	0.00	0.00	0.00
424	18.500	9.3000	164.40	0.00	0.00	0.00
425	18.500	13.900	164.40	0.00	0.00	0.00
426	18.500	18.400	164.40	44.84	0.00	0.00

LIST ALL ELEMENT TYPES

```
NO. STIF         KEYOPT VALUES        INOTPR
 1   63   0  0  0   0  0  0   0  0  0    0  QUAD. FLAT SHELL
```

LIST ALL SELECTED ELEMENTS. (LIST NODES)

ELEM	MAT	TYP	REL	NODES			
1	1	1	1	1	2	28	27
2	1	1	1	2	3	29	28
3	1	1	1	4	5	31	30
4	1	1	1	5	6	32	31
5	1	1	1	7	8	34	33
6	1	1	1	8	9	35	34
7	1	1	1	3	10	36	29
8	1	1	1	4	11	37	30
9	1	1	1	6	12	38	32
10	1	1	1	7	13	39	33
11	1	1	1	9	14	40	35
12	1	1	1	10	15	41	36
13	1	1	1	11	16	42	37
14	1	1	1	12	18	44	38
15	1	1	1	13	19	45	39
16	1	1	1	14	21	47	40
17	1	1	1	16	17	43	42
18	1	1	1	17	18	44	43
19	1	1	1	19	20	46	45
20	1	1	1	20	21	47	46

ELEM	MAT	TYP	REL	NODES			
21	1	1	1	22	23	49	48
22	1	1	1	23	24	50	49
23	1	1	1	24	25	51	50
24	1	1	1	25	26	52	51
25	1	1	1	27	28	58	57
26	1	1	1	28	29	59	58
27	1	1	1	30	31	61	60
28	1	1	1	31	32	62	61
29	1	1	1	33	34	64	63
30	1	1	1	34	35	65	64
31	1	1	1	29	36	66	59
32	1	1	1	30	37	67	60
33	1	1	1	32	38	68	62
34	1	1	1	33	39	69	63
35	1	1	1	35	40	70	65
36	1	1	1	36	41	71	66
37	1	1	1	37	42	72	67
38	1	1	1	38	44	74	68
39	1	1	1	39	45	75	69
40	1	1	1	40	47	77	70

ELEM	MAT	TYP	REL	NODES			
41	1	1	1	42	43	73	72
42	1	1	1	43	44	74	73
43	1	1	1	45	46	76	75
44	1	1	1	46	47	77	76
45	1	1	1	48	49	79	78
46	1	1	1	49	50	80	79
47	1	1	1	50	51	81	80
48	1	1	1	51	52	82	81
49	1	1	2	53	54	84	83

51	1	1	2	47	55	85	77
52	1	1	2	55	56	86	85
53	1	1	2	56	52	82	86
54	1	1	1	57	58	88	87
55	1	1	1	58	59	89	88
56	1	1	1	60	61	91	90
57	1	1	1	61	62	92	91
58	1	1	1	63	64	94	93
59	1	1	1	64	65	95	94
60	1	1	1	59	66	96	89

ELEM	MAT	TYP	REL	NODES			
61	1	1	1	60	67	97	90
62	1	1	1	62	68	98	92
63	1	1	1	63	69	99	93
64	1	1	1	65	70	100	95
65	1	1	1	66	71	101	96
66	1	1	1	67	72	102	97
67	1	1	1	68	74	104	98
68	1	1	1	69	75	105	99
69	1	1	1	70	77	107	100
70	1	1	1	72	73	103	102
71	1	1	1	73	74	104	103
72	1	1	1	75	76	106	105
73	1	1	1	76	77	107	106
74	1	1	1	78	79	109	108
75	1	1	1	79	80	110	109
76	1	1	1	80	81	111	110
77	1	1	1	81	82	112	111
78	1	1	2	83	84	114	113
79	1	1	2	84	77	107	114
80	1	1	2	77	85	115	107

ELEM	MAT	TYP	REL	NODES			
81	1	1	2	85	86	116	115
82	1	1	2	86	82	112	116
83	1	1	1	87	88	118	117
84	1	1	1	88	89	119	118
85	1	1	1	90	91	121	120
86	1	1	1	91	92	122	121
87	1	1	1	93	94	124	123
88	1	1	1	94	95	125	124
89	1	1	1	89	96	126	119
90	1	1	1	90	97	127	120
91	1	1	1	92	98	128	122
92	1	1	1	93	99	129	123
93	1	1	1	95	100	130	125
94	1	1	1	96	101	131	126
95	1	1	1	97	102	132	127
96	1	1	1	98	104	134	128
97	1	1	1	99	105	135	129
98	1	1	1	100	107	137	130
99	1	1	1	102	103	133	132
100	1	1	1	103	104	134	133

ELEM MAT TYP REL NODES

102	1	1	1	106	107	137	136
103	1	1	1	108	109	139	138
104	1	1	1	109	110	140	139
105	1	1	1	110	111	141	140
106	1	1	1	111	112	142	141
107	1	1	1	117	118	144	143
108	1	1	1	118	119	145	144
109	1	1	1	120	121	147	146
110	1	1	1	121	122	148	147
111	1	1	1	123	124	150	149
112	1	1	1	124	125	151	150
113	1	1	1	119	126	152	145
114	1	1	1	120	127	153	146
115	1	1	1	122	128	154	148
116	1	1	1	123	129	155	149
117	1	1	1	125	130	156	151
118	1	1	1	126	131	157	152
119	1	1	1	127	132	158	153
120	1	1	1	128	134	160	154

ELEM	MAT	TYP	REL	NODES			
121	1	1	1	129	135	161	155
122	1	1	1	130	137	163	156
123	1	1	1	132	133	159	158
124	1	1	1	133	134	160	159
125	1	1	1	135	136	162	161
126	1	1	1	136	137	163	162
127	1	1	1	138	139	165	164
128	1	1	1	139	140	166	165
129	1	1	1	140	141	167	166
130	1	1	1	141	142	168	167
131	1	1	1	143	144	170	169
132	1	1	1	144	145	171	170
133	1	1	1	146	147	173	172
134	1	1	1	147	148	174	173
135	1	1	1	149	150	176	175
136	1	1	1	150	151	177	176
137	1	1	1	145	152	178	171
138	1	1	1	146	153	179	172
139	1	1	1	148	154	180	174
140	1	1	1	149	155	181	175

ELEM	MAT	TYP	REL	NODES			
141	1	1	1	151	156	182	177
142	1	1	1	152	157	183	178
143	1	1	1	153	158	184	179
144	1	1	1	154	160	186	180
145	1	1	1	155	161	187	181
146	1	1	1	156	163	189	182
147	1	1	1	158	159	185	184
148	1	1	1	159	160	186	185
149	1	1	1	161	162	188	187
150	1	1	1	162	163	189	188
151	1	1	1	164	165	191	190
152	1	1	1	165	166	192	191
153	1	1	1	166	167	193	192
154	1	1	1	167	168	194	193

156	1	1	1	170	171	201	200
157	1	1	1	172	173	203	202
158	1	1	1	173	174	204	203
159	1	1	1	175	176	206	205
160	1	1	1	176	177	207	206

ELEM	MAT	TYP	REL	NODES			
161	1	1	1	171	178	208	201
162	1	1	1	172	179	209	202
163	1	1	1	174	180	210	204
164	1	1	1	175	181	211	205
165	1	1	1	177	182	212	207
166	1	1	1	178	183	213	208
167	1	1	1	179	184	214	209
168	1	1	1	180	186	216	210
169	1	1	1	181	187	217	211
170	1	1	1	182	189	219	212
171	1	1	1	184	185	215	214
172	1	1	1	185	186	216	215
173	1	1	1	187	188	218	217
174	1	1	1	188	189	219	218
175	1	1	1	190	191	221	220
176	1	1	1	191	192	222	221
177	1	1	1	192	193	223	222
178	1	1	1	193	194	224	223
179	1	1	2	195	196	226	225
180	1	1	2	196	189	219	226

ELEM	MAT	TYP	REL	NODES			
181	1	1	2	189	197	227	219
182	1	1	2	197	198	228	227
183	1	1	2	198	194	224	228
184	1	1	1	199	200	230	229
185	1	1	1	200	201	231	230
186	1	1	1	202	203	233	232
187	1	1	1	203	204	234	233
188	1	1	1	205	206	236	235
189	1	1	1	206	207	237	236
190	1	1	1	201	208	238	231
191	1	1	1	202	209	239	232
192	1	1	1	204	210	240	234
193	1	1	1	205	211	241	235
194	1	1	1	207	212	242	237
195	1	1	1	208	213	243	238
196	1	1	1	209	214	244	239
197	1	1	1	210	216	246	240
198	1	1	1	211	217	247	241
199	1	1	1	212	219	249	242
200	1	1	1	214	215	245	244

ELEM	MAT	TYP	REL	NODES			
201	1	1	1	215	216	246	245
202	1	1	1	217	218	248	247
203	1	1	1	218	219	249	248
204	1	1	1	220	221	251	250
205	1	1	1	221	222	252	251

207	1	1	1	223	224	254	253
208	1	1	2	225	226	256	255
209	1	1	2	226	219	249	256
210	1	1	2	219	227	257	249
211	1	1	2	227	228	258	257
212	1	1	2	228	224	254	258
213	1	1	1	229	230	260	259
214	1	1	1	230	231	261	260
215	1	1	1	232	233	263	262
216	1	1	1	233	234	264	263
217	1	1	1	235	236	266	265
218	1	1	1	236	237	267	266
219	1	1	1	231	238	268	261
220	1	1	1	232	239	269	262

ELEM	MAT	TYP	REL	NODES			
221	1	1	1	234	240	270	264
222	1	1	1	235	241	271	265
223	1	1	1	237	242	272	267
224	1	1	1	238	243	273	268
225	1	1	1	239	244	274	269
226	1	1	1	240	246	276	270
227	1	1	1	241	247	277	271
228	1	1	1	242	249	279	272
229	1	1	1	244	245	275	274
230	1	1	1	245	246	276	275
231	1	1	1	247	248	278	277
232	1	1	1	248	249	279	278
233	1	1	1	250	251	281	280
234	1	1	1	251	252	282	281
235	1	1	1	252	253	283	282
236	1	1	1	253	254	284	283
237	1	1	1	259	260	286	285
238	1	1	1	260	261	287	286
239	1	1	1	262	263	289	288
240	1	1	1	263	264	290	289

ELEM	MAT	TYP	REL	NODES			
241	1	1	1	265	266	292	291
242	1	1	1	266	267	293	292
243	1	1	1	261	268	294	287
244	1	1	1	262	269	295	288
245	1	1	1	264	270	296	290
246	1	1	1	265	271	297	291
247	1	1	1	267	272	298	293
248	1	1	1	268	273	299	294
249	1	1	1	269	274	300	295
250	1	1	1	270	276	302	296
251	1	1	1	271	277	303	297
252	1	1	1	272	279	305	298
253	1	1	1	274	275	301	300
254	1	1	1	275	276	302	301
255	1	1	1	277	278	304	303
256	1	1	1	278	279	305	304
257	1	1	1	280	281	307	306
258	1	1	1	281	282	308	307
259	1	1	1	282	283	309	308

ELEM	MAT	TYP	REL	NODES			
261	1	1	1	285	286	312	311
262	1	1	1	286	287	313	312
263	1	1	1	288	289	315	314
264	1	1	1	289	290	316	315
265	1	1	1	291	292	318	317
266	1	1	1	292	293	319	318
267	1	1	1	287	294	320	313
268	1	1	1	288	295	321	314
269	1	1	1	290	296	322	316
270	1	1	1	291	297	323	317
271	1	1	1	293	298	324	319
272	1	1	1	294	299	325	320
273	1	1	1	295	300	326	321
274	1	1	1	296	302	328	322
275	1	1	1	297	303	329	323
276	1	1	1	298	305	331	324
277	1	1	1	300	301	327	326
278	1	1	1	301	302	328	327
279	1	1	1	303	304	330	329
280	1	1	1	304	305	331	330

ELEM	MAT	TYP	REL	NODES			
281	1	1	1	306	307	333	332
282	1	1	1	307	308	334	333
283	1	1	1	308	309	335	334
284	1	1	1	309	310	336	335
285	1	1	1	311	312	342	341
286	1	1	1	312	313	343	342
287	1	1	1	314	315	345	344
288	1	1	1	315	316	346	345
289	1	1	1	317	318	348	347
290	1	1	1	318	319	349	348
291	1	1	1	313	320	350	343
292	1	1	1	314	321	351	344
293	1	1	1	316	322	352	346
294	1	1	1	317	323	353	347
295	1	1	1	319	324	354	349
296	1	1	1	320	325	355	350
297	1	1	1	321	326	356	351
298	1	1	1	322	328	358	352
299	1	1	1	323	329	359	353
300	1	1	1	324	331	361	354

ELEM	MAT	TYP	REL	NODES			
301	1	1	1	326	327	357	356
302	1	1	1	327	328	358	357
303	1	1	1	329	330	360	359
304	1	1	1	330	331	361	360
305	1	1	1	332	333	363	362
306	1	1	1	333	334	364	363
307	1	1	1	334	335	365	364
308	1	1	1	335	336	366	365
309	1	1	2	337	338	368	367
310	1	1	2	338	331	361	368

312	1	1	2	339	340	370	369
313	1	1	2	340	336	366	370
314	1	1	1	341	342	372	371
315	1	1	1	342	343	373	372
316	1	1	1	344	345	375	374
317	1	1	1	345	346	376	375
318	1	1	1	347	348	378	377
319	1	1	1	348	349	379	378
320	1	1	1	343	350	380	373

ELEM	MAT	TYP	REL	NODES			
321	1	1	1	344	351	381	374
322	1	1	1	346	352	382	376
323	1	1	1	347	353	383	377
324	1	1	1	349	354	384	379
325	1	1	1	350	355	385	380
326	1	1	1	351	356	386	381
327	1	1	1	352	358	388	382
328	1	1	1	353	359	389	383
329	1	1	1	354	361	391	384
330	1	1	1	356	357	387	386
331	1	1	1	357	358	388	387
332	1	1	1	359	360	390	389
333	1	1	1	360	361	391	390
334	1	1	1	362	363	393	392
335	1	1	1	363	364	394	393
336	1	1	1	364	365	395	394
337	1	1	1	365	366	396	395
338	1	1	2	367	368	398	397
339	1	1	2	368	361	391	398
340	1	1	2	361	369	399	391

ELEM	MAT	TYP	REL	NODES			
341	1	1	2	369	370	400	399
342	1	1	2	370	366	396	400
343	1	1	1	371	372	402	401
344	1	1	1	372	373	403	402
345	1	1	1	374	375	405	404
346	1	1	1	375	376	406	405
347	1	1	1	377	378	408	407
348	1	1	1	378	379	409	408
349	1	1	1	373	380	410	403
350	1	1	1	374	381	411	404
351	1	1	1	376	382	412	406
352	1	1	1	377	383	413	407
353	1	1	1	379	384	414	409
354	1	1	1	380	385	415	410
355	1	1	1	381	386	416	411
356	1	1	1	382	388	418	412
357	1	1	1	383	389	419	413
358	1	1	1	384	391	421	414
359	1	1	1	386	387	417	416
360	1	1	1	387	388	418	417

ELEM	MAT	TYP	REL	NODES			
361	1	1	1	389	390	420	419

363	1	1	1	392	393	423	422
364	1	1	1	393	394	424	423
365	1	1	1	394	395	425	424
366	1	1	1	395	396	426	425

LIST ALL REAL SETS

```
REAL CONSTANT SET    1   ITEMS    1 TO    6
 0.20000         0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00

 EAL CONSTANT SET    2   ITEMS    1 TO    6
 0.50000         0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000  0
```

LIST ALL MATERIALS PROPERTY= ALL

PROPERTY TABLE EX MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	28000.	2300.0	28000.

PROPERTY TABLE ALPX MAT= 1 NUM. POINTS= 7

TEMPERATURE	DATA	TEMPERATURE	DATA
70.000	0.55300E-05	100.00	0.55300E-05
200.00	0.58900E-05	300.00	0.62600E-05
400.00	0.66100E-05	500.00	0.69100E-05
600.00	0.71000E-05		

PROPERTY TABLE NUXY MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.30000	2300.0	0.30000

LIST DISPLACEMENTS FOR ALL SELECTED NODES

NODE	LABEL	DISP	CDISP
15	UY	0.000000000E+00	0.000000000E+00
16	UY	0.000000000E+00	0.000000000E+00
22	UY	0.000000000E+00	0.000000000E+00
26	UY	0.000000000E+00	0.000000000E+00
41	UY	0.000000000E+00	0.000000000E+00
42	UY	0.000000000E+00	0.000000000E+00
48	UY	0.000000000E+00	0.000000000E+00
52	UY	0.000000000E+00	0.000000000E+00
71	UY	0.000000000E+00	0.000000000E+00
72	UY	0.000000000E+00	0.000000000E+00
78	UY	0.000000000E+00	0.000000000E+00
82	UY	0.000000000E+00	0.000000000E+00
101	UY	0.000000000E+00	0.000000000E+00
102	UY	0.000000000E+00	0.000000000E+00
108	UY	0.000000000E+00	0.000000000E+00
112	UY	0.000000000E+00	0.000000000E+00
131	UY	0.000000000E+00	0.000000000E+00
132	UY	0.000000000E+00	0.000000000E+00
138	UY	0.000000000E+00	0.000000000E+00
142	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
157	UY	0.000000000E+00	0.000000000E+00
158	UY	0.000000000E+00	0.000000000E+00
164	UY	0.000000000E+00	0.000000000E+00
168	UY	0.000000000E+00	0.000000000E+00
183	UY	0.000000000E+00	0.000000000E+00
[illegible]84	UY	0.000000000E+00	0.000000000E+00
[illegible]30	UY	0.000000000E+00	0.000000000E+00
194	UY	0.000000000E+00	0.000000000E+00
213	UY	0.000000000E+00	0.000000000E+00
214	UY	0.000000000E+00	0.000000000E+00
220	UY	0.000000000E+00	0.000000000E+00
224	UY	0.000000000E+00	0.000000000E+00
243	UY	0.000000000E+00	0.000000000E+00
244	UY	0.000000000E+00	0.000000000E+00
250	UY	0.000000000E+00	0.000000000E+00
254	UY	0.000000000E+00	0.000000000E+00
273	UY	0.000000000E+00	0.000000000E+00
274	UY	0.000000000E+00	0.000000000E+00
280	UY	0.000000000E+00	0.000000000E+00
284	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
299	UY	0.000000000E+00	0.000000000E+00
300	UY	0.000000000E+00	0.000000000E+00
306	UY	0.000000000E+00	0.000000000E+00
310	UY	0.000000000E+00	0.000000000E+00
325	UY	0.000000000E+00	0.000000000E+00
326	UY	0.000000000E+00	0.000000000E+00
332	UY	0.000000000E+00	0.000000000E+00
336	UY	0.000000000E+00	0.000000000E+00
355	UY	0.000000000E+00	0.000000000E+00
[illegible]6	UY	0.000000000E+00	0.000000000E+00
[illegible]62	UY	0.000000000E+00	0.000000000E+00
366	UY	0.000000000E+00	0.000000000E+00

386	UY	0.000000000E+00	0.000000000E+00
392	UY	0.000000000E+00	0.000000000E+00
396	UY	0.000000000E+00	0.000000000E+00
415	UY	0.000000000E+00	0.000000000E+00
416	UY	0.000000000E+00	0.000000000E+00
422	UY	0.000000000E+00	0.000000000E+00
426	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
401	ROTY	0.000000000E+00	0.000000000E+00
371	ROTY	0.000000000E+00	0.000000000E+00
341	ROTY	0.000000000E+00	0.000000000E+00
311	ROTY	0.000000000E+00	0.000000000E+00
285	ROTY	0.000000000E+00	0.000000000E+00
259	ROTY	0.000000000E+00	0.000000000E+00
229	ROTY	0.000000000E+00	0.000000000E+00
199	ROTY	0.000000000E+00	0.000000000E+00
169	ROTY	0.000000000E+00	0.000000000E+00
143	ROTY	0.000000000E+00	0.000000000E+00
117	ROTY	0.000000000E+00	0.000000000E+00
87	ROTY	0.000000000E+00	0.000000000E+00
57	ROTY	0.000000000E+00	0.000000000E+00
27	ROTY	0.000000000E+00	0.000000000E+00
1	ROTY	0.000000000E+00	0.000000000E+00
26	UZ	0.000000000E+00	0.000000000E+00
25	UZ	0.000000000E+00	0.000000000E+00
24	UZ	0.000000000E+00	0.000000000E+00
23	UZ	0.000000000E+00	0.000000000E+00
22	UZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
21	UZ	0.000000000E+00	0.000000000E+00
20	UZ	0.000000000E+00	0.000000000E+00
19	UZ	0.000000000E+00	0.000000000E+00
18	UZ	0.000000000E+00	0.000000000E+00
17	UZ	0.000000000E+00	0.000000000E+00
16	UZ	0.000000000E+00	0.000000000E+00
15	UZ	0.000000000E+00	0.000000000E+00
14	UZ	0.000000000E+00	0.000000000E+00
13	UZ	0.000000000E+00	0.000000000E+00
12	UZ	0.000000000E+00	0.000000000E+00
11	UZ	0.000000000E+00	0.000000000E+00
10	UZ	0.000000000E+00	0.000000000E+00
9	UZ	0.000000000E+00	0.000000000E+00
8	UZ	0.000000000E+00	0.000000000E+00
7	UZ	0.000000000E+00	0.000000000E+00
6	UZ	0.000000000E+00	0.000000000E+00
5	UZ	0.000000000E+00	0.000000000E+00
4	UZ	0.000000000E+00	0.000000000E+00
3	UZ	0.000000000E+00	0.000000000E+00
2	UZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
1	UZ	0.000000000E+00	0.000000000E+00
401	UX	0.000000000E+00	0.000000000E+00
371	UX	0.000000000E+00	0.000000000E+00
341	UX	0.000000000E+00	0.000000000E+00
311	UX	0.000000000E+00	0.000000000E+00
285	UX	0.000000000E+00	0.000000000E+00

229	UX	0.000000000E+00	0.000000000E+00
199	UX	0.000000000E+00	0.000000000E+00
169	UX	0.000000000E+00	0.000000000E+00
143	UX	0.000000000E+00	0.000000000E+00
117	UX	0.000000000E+00	0.000000000E+00
87	UX	0.000000000E+00	0.000000000E+00
57	UX	0.000000000E+00	0.000000000E+00
27	UX	0.000000000E+00	0.000000000E+00
1	UX	0.000000000E+00	0.000000000E+00
409	ROTZ	0.000000000E+00	0.000000000E+00
408	ROTZ	0.000000000E+00	0.000000000E+00
407	ROTZ	0.000000000E+00	0.000000000E+00
406	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
15	ROTZ	0.000000000E+00	0.000000000E+00
16	ROTZ	0.000000000E+00	0.000000000E+00
22	ROTZ	0.000000000E+00	0.000000000E+00
26	ROTZ	0.000000000E+00	0.000000000E+00
41	ROTZ	0.000000000E+00	0.000000000E+00
42	ROTZ	0.000000000E+00	0.000000000E+00
48	ROTZ	0.000000000E+00	0.000000000E+00
52	ROTZ	0.000000000E+00	0.000000000E+00
71	ROTZ	0.000000000E+00	0.000000000E+00
72	ROTZ	0.000000000E+00	0.000000000E+00
78	ROTZ	0.000000000E+00	0.000000000E+00
82	ROTZ	0.000000000E+00	0.000000000E+00
101	ROTZ	0.000000000E+00	0.000000000E+00
102	ROTZ	0.000000000E+00	0.000000000E+00
108	ROTZ	0.000000000E+00	0.000000000E+00
112	ROTZ	0.000000000E+00	0.000000000E+00
131	ROTZ	0.000000000E+00	0.000000000E+00
132	ROTZ	0.000000000E+00	0.000000000E+00
138	ROTZ	0.000000000E+00	0.000000000E+00
142	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
157	ROTZ	0.000000000E+00	0.000000000E+00
158	ROTZ	0.000000000E+00	0.000000000E+00
164	ROTZ	0.000000000E+00	0.000000000E+00
168	ROTZ	0.000000000E+00	0.000000000E+00
183	ROTZ	0.000000000E+00	0.000000000E+00
184	ROTZ	0.000000000E+00	0.000000000E+00
190	ROTZ	0.000000000E+00	0.000000000E+00
194	ROTZ	0.000000000E+00	0.000000000E+00
213	ROTZ	0.000000000E+00	0.000000000E+00
214	ROTZ	0.000000000E+00	0.000000000E+00
220	ROTZ	0.000000000E+00	0.000000000E+00
224	ROTZ	0.000000000E+00	0.000000000E+00
243	ROTZ	0.000000000E+00	0.000000000E+00
244	ROTZ	0.000000000E+00	0.000000000E+00
250	ROTZ	0.000000000E+00	0.000000000E+00
254	ROTZ	0.000000000E+00	0.000000000E+00
273	ROTZ	0.000000000E+00	0.000000000E+00
274	ROTZ	0.000000000E+00	0.000000000E+00
280	ROTZ	0.000000000E+00	0.000000000E+00
34	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP

300	ROTZ	0.000000000E+00	0.000000000E+00
306	ROTZ	0.000000000E+00	0.000000000E+00
310	ROTZ	0.000000000E+00	0.000000000E+00
325	ROTZ	0.000000000E+00	0.000000000E+00
326	ROTZ	0.000000000E+00	0.000000000E+00
332	ROTZ	0.000000000E+00	0.000000000E+00
336	ROTZ	0.000000000E+00	0.000000000E+00
355	ROTZ	0.000000000E+00	0.000000000E+00
356	ROTZ	0.000000000E+00	0.000000000E+00
362	ROTZ	0.000000000E+00	0.000000000E+00
366	ROTZ	0.000000000E+00	0.000000000E+00
385	ROTZ	0.000000000E+00	0.000000000E+00
386	ROTZ	0.000000000E+00	0.000000000E+00
392	ROTZ	0.000000000E+00	0.000000000E+00
396	ROTZ	0.000000000E+00	0.000000000E+00
415	ROTZ	0.000000000E+00	0.000000000E+00
416	ROTZ	0.000000000E+00	0.000000000E+00
422	ROTZ	0.000000000E+00	0.000000000E+00
426	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
1	UY	0.000000000E+00	0.000000000E+00
2	UY	0.000000000E+00	0.000000000E+00
3	UY	0.000000000E+00	0.000000000E+00
4	UY	0.000000000E+00	0.000000000E+00
5	UY	0.000000000E+00	0.000000000E+00
6	UY	0.000000000E+00	0.000000000E+00
7	UY	0.000000000E+00	0.000000000E+00
8	UY	0.000000000E+00	0.000000000E+00
9	UY	0.000000000E+00	0.000000000E+00
27	UY	0.000000000E+00	0.000000000E+00
28	UY	0.000000000E+00	0.000000000E+00
29	UY	0.000000000E+00	0.000000000E+00
30	UY	0.000000000E+00	0.000000000E+00
31	UY	0.000000000E+00	0.000000000E+00
32	UY	0.000000000E+00	0.000000000E+00
33	UY	0.000000000E+00	0.000000000E+00
34	UY	0.000000000E+00	0.000000000E+00
35	UY	0.000000000E+00	0.000000000E+00
53	UY	0.000000000E+00	0.000000000E+00
57	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
58	UY	0.000000000E+00	0.000000000E+00
59	UY	0.000000000E+00	0.000000000E+00
60	UY	0.000000000E+00	0.000000000E+00
61	UY	0.000000000E+00	0.000000000E+00
62	UY	0.000000000E+00	0.000000000E+00
63	UY	0.000000000E+00	0.000000000E+00
64	UY	0.000000000E+00	0.000000000E+00
65	UY	0.000000000E+00	0.000000000E+00
83	UY	0.000000000E+00	0.000000000E+00
87	UY	0.000000000E+00	0.000000000E+00
88	UY	0.000000000E+00	0.000000000E+00
89	UY	0.000000000E+00	0.000000000E+00
90	UY	0.000000000E+00	0.000000000E+00
91	UY	0.000000000E+00	0.000000000E+00
92	UY	0.000000000E+00	0.000000000E+00
93	UY	0.000000000E+00	0.000000000E+00

95	UY	0.000000000E+00	0.000000000E+00
113	UY	0.000000000E+00	0.000000000E+00
117	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
118	UY	0.000000000E+00	0.000000000E+00
119	UY	0.000000000E+00	0.000000000E+00
120	UY	0.000000000E+00	0.000000000E+00
121	UY	0.000000000E+00	0.000000000E+00
122	UY	0.000000000E+00	0.000000000E+00
123	UY	0.000000000E+00	0.000000000E+00
124	UY	0.000000000E+00	0.000000000E+00
125	UY	0.000000000E+00	0.000000000E+00
143	UY	0.000000000E+00	0.000000000E+00
144	UY	0.000000000E+00	0.000000000E+00
145	UY	0.000000000E+00	0.000000000E+00
146	UY	0.000000000E+00	0.000000000E+00
147	UY	0.000000000E+00	0.000000000E+00
148	UY	0.000000000E+00	0.000000000E+00
149	UY	0.000000000E+00	0.000000000E+00
150	UY	0.000000000E+00	0.000000000E+00
151	UY	0.000000000E+00	0.000000000E+00
169	UY	0.000000000E+00	0.000000000E+00
170	UY	0.000000000E+00	0.000000000E+00
171	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
172	UY	0.000000000E+00	0.000000000E+00
173	UY	0.000000000E+00	0.000000000E+00
174	UY	0.000000000E+00	0.000000000E+00
175	UY	0.000000000E+00	0.000000000E+00
176	UY	0.000000000E+00	0.000000000E+00
177	UY	0.000000000E+00	0.000000000E+00
195	UY	0.000000000E+00	0.000000000E+00
199	UY	0.000000000E+00	0.000000000E+00
200	UY	0.000000000E+00	0.000000000E+00
201	UY	0.000000000E+00	0.000000000E+00
202	UY	0.000000000E+00	0.000000000E+00
203	UY	0.000000000E+00	0.000000000E+00
204	UY	0.000000000E+00	0.000000000E+00
205	UY	0.000000000E+00	0.000000000E+00
206	UY	0.000000000E+00	0.000000000E+00
207	UY	0.000000000E+00	0.000000000E+00
225	UY	0.000000000E+00	0.000000000E+00
229	UY	0.000000000E+00	0.000000000E+00
230	UY	0.000000000E+00	0.000000000E+00
231	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
232	UY	0.000000000E+00	0.000000000E+00
233	UY	0.000000000E+00	0.000000000E+00
234	UY	0.000000000E+00	0.000000000E+00
235	UY	0.000000000E+00	0.000000000E+00
236	UY	0.000000000E+00	0.000000000E+00
237	UY	0.000000000E+00	0.000000000E+00
255	UY	0.000000000E+00	0.000000000E+00
:59	UY	0.000000000E+00	0.000000000E+00
260	UY	0.000000000E+00	0.000000000E+00
261	UY	0.000000000E+00	0.000000000E+00

263	UY	0.000000000E+00	0.000000000E+00
264	UY	0.000000000E+00	0.000000000E+00
265	UY	0.000000000E+00	0.000000000E+00
266	UY	0.000000000E+00	0.000000000E+00
267	UY	0.000000000E+00	0.000000000E+00
285	UY	0.000000000E+00	0.000000000E+00
286	UY	0.000000000E+00	0.000000000E+00
287	UY	0.000000000E+00	0.000000000E+00
288	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
289	UY	0.000000000E+00	0.000000000E+00
290	UY	0.000000000E+00	0.000000000E+00
291	UY	0.000000000E+00	0.000000000E+00
292	UY	0.000000000E+00	0.000000000E+00
293	UY	0.000000000E+00	0.000000000E+00
311	UY	0.000000000E+00	0.000000000E+00
312	UY	0.000000000E+00	0.000000000E+00
313	UY	0.000000000E+00	0.000000000E+00
314	UY	0.000000000E+00	0.000000000E+00
315	UY	0.000000000E+00	0.000000000E+00
316	UY	0.000000000E+00	0.000000000E+00
317	UY	0.000000000E+00	0.000000000E+00
318	UY	0.000000000E+00	0.000000000E+00
319	UY	0.000000000E+00	0.000000000E+00
337	UY	0.000000000E+00	0.000000000E+00
341	UY	0.000000000E+00	0.000000000E+00
342	UY	0.000000000E+00	0.000000000E+00
343	UY	0.000000000E+00	0.000000000E+00
344	UY	0.000000000E+00	0.000000000E+00
345	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
346	UY	0.000000000E+00	0.000000000E+00
347	UY	0.000000000E+00	0.000000000E+00
348	UY	0.000000000E+00	0.000000000E+00
349	UY	0.000000000E+00	0.000000000E+00
367	UY	0.000000000E+00	0.000000000E+00
371	UY	0.000000000E+00	0.000000000E+00
372	UY	0.000000000E+00	0.000000000E+00
373	UY	0.000000000E+00	0.000000000E+00
374	UY	0.000000000E+00	0.000000000E+00
375	UY	0.000000000E+00	0.000000000E+00
376	UY	0.000000000E+00	0.000000000E+00
377	UY	0.000000000E+00	0.000000000E+00
378	UY	0.000000000E+00	0.000000000E+00
379	UY	0.000000000E+00	0.000000000E+00
397	UY	0.000000000E+00	0.000000000E+00
401	UY	0.000000000E+00	0.000000000E+00
402	UY	0.000000000E+00	0.000000000E+00
403	UY	0.000000000E+00	0.000000000E+00
404	UY	0.000000000E+00	0.000000000E+00
405	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
406	UY	0.000000000E+00	0.000000000E+00
107	UY	0.000000000E+00	0.000000000E+00
408	UY	0.000000000E+00	0.000000000E+00
409	UY	0.000000000E+00	0.000000000E+00

404	ROTZ	0.000000000E+00	0.000000000E+00
403	ROTZ	0.000000000E+00	0.000000000E+00
402	ROTZ	0.000000000E+00	0.000000000E+00
401	ROTZ	0.000000000E+00	0.000000000E+00
397	ROTZ	0.000000000E+00	0.000000000E+00
379	ROTZ	0.000000000E+00	0.000000000E+00
378	ROTZ	0.000000000E+00	0.000000000E+00
377	ROTZ	0.000000000E+00	0.000000000E+00
376	ROTZ	0.000000000E+00	0.000000000E+00
375	ROTZ	0.000000000E+00	0.000000000E+00
374	ROTZ	0.000000000E+00	0.000000000E+00
373	ROTZ	0.000000000E+00	0.000000000E+00
372	ROTZ	0.000000000E+00	0.000000000E+00
371	ROTZ	0.000000000E+00	0.000000000E+00
367	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
349	ROTZ	0.000000000E+00	0.000000000E+00
348	ROTZ	0.000000000E+00	0.000000000E+00
347	ROTZ	0.000000000E+00	0.000000000E+00
346	ROTZ	0.000000000E+00	0.000000000E+00
345	ROTZ	0.000000000E+00	0.000000000E+00
344	ROTZ	0.000000000E+00	0.000000000E+00
343	ROTZ	0.000000000E+00	0.000000000E+00
342	ROTZ	0.000000000E+00	0.000000000E+00
341	ROTZ	0.000000000E+00	0.000000000E+00
337	ROTZ	0.000000000E+00	0.000000000E+00
319	ROTZ	0.000000000E+00	0.000000000E+00
318	ROTZ	0.000000000E+00	0.000000000E+00
317	ROTZ	0.000000000E+00	0.000000000E+00
316	ROTZ	0.000000000E+00	0.000000000E+00
315	ROTZ	0.000000000E+00	0.000000000E+00
314	ROTZ	0.000000000E+00	0.000000000E+00
313	ROTZ	0.000000000E+00	0.000000000E+00
312	ROTZ	0.000000000E+00	0.000000000E+00
311	ROTZ	0.000000000E+00	0.000000000E+00
293	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
292	ROTZ	0.000000000E+00	0.000000000E+00
291	ROTZ	0.000000000E+00	0.000000000E+00
290	ROTZ	0.000000000E+00	0.000000000E+00
289	ROTZ	0.000000000E+00	0.000000000E+00
288	ROTZ	0.000000000E+00	0.000000000E+00
287	ROTZ	0.000000000E+00	0.000000000E+00
286	ROTZ	0.000000000E+00	0.000000000E+00
285	ROTZ	0.000000000E+00	0.000000000E+00
267	ROTZ	0.000000000E+00	0.000000000E+00
266	ROTZ	0.000000000E+00	0.000000000E+00
265	ROTZ	0.000000000E+00	0.000000000E+00
264	ROTZ	0.000000000E+00	0.000000000E+00
263	ROTZ	0.000000000E+00	0.000000000E+00
262	ROTZ	0.000000000E+00	0.000000000E+00
261	ROTZ	0.000000000E+00	0.000000000E+00
260	ROTZ	0.000000000E+00	0.000000000E+00
259	ROTZ	0.000000000E+00	0.000000000E+00
255	ROTZ	0.000000000E+00	0.000000000E+00
237	ROTZ	0.000000000E+00	0.000000000E+00
236	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
235	ROTZ	0.000000000E+00	0.000000000E+00
234	ROTZ	0.000000000E+00	0.000000000E+00
233	ROTZ	0.000000000E+00	0.000000000E+00
232	ROTZ	0.000000000E+00	0.000000000E+00
231	ROTZ	0.000000000E+00	0.000000000E+00
230	ROTZ	0.000000000E+00	0.000000000E+00
229	ROTZ	0.000000000E+00	0.000000000E+00
225	ROTZ	0.000000000E+00	0.000000000E+00
207	ROTZ	0.000000000E+00	0.000000000E+00
206	ROTZ	0.000000000E+00	0.000000000E+00
205	ROTZ	0.000000000E+00	0.000000000E+00
204	ROTZ	0.000000000E+00	0.000000000E+00
203	ROTZ	0.000000000E+00	0.000000000E+00
202	ROTZ	0.000000000E+00	0.000000000E+00
201	ROTZ	0.000000000E+00	0.000000000E+00
200	ROTZ	0.000000000E+00	0.000000000E+00
199	ROTZ	0.000000000E+00	0.000000000E+00
195	ROTZ	0.000000000E+00	0.000000000E+00
177	ROTZ	0.000000000E+00	0.000000000E+00
176	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
175	ROTZ	0.000000000E+00	0.000000000E+00
174	ROTZ	0.000000000E+00	0.000000000E+00
173	ROTZ	0.000000000E+00	0.000000000E+00
172	ROTZ	0.000000000E+00	0.000000000E+00
171	ROTZ	0.000000000E+00	0.000000000E+00
170	ROTZ	0.000000000E+00	0.000000000E+00
169	ROTZ	0.000000000E+00	0.000000000E+00
151	ROTZ	0.000000000E+00	0.000000000E+00
150	ROTZ	0.000000000E+00	0.000000000E+00
149	ROTZ	0.000000000E+00	0.000000000E+00
148	ROTZ	0.000000000E+00	0.000000000E+00
147	ROTZ	0.000000000E+00	0.000000000E+00
146	ROTZ	0.000000000E+00	0.000000000E+00
145	ROTZ	0.000000000E+00	0.000000000E+00
144	ROTZ	0.000000000E+00	0.000000000E+00
143	ROTZ	0.000000000E+00	0.000000000E+00
125	ROTZ	0.000000000E+00	0.000000000E+00
124	ROTZ	0.000000000E+00	0.000000000E+00
123	ROTZ	0.000000000E+00	0.000000000E+00
122	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
121	ROTZ	0.000000000E+00	0.000000000E+00
120	ROTZ	0.000000000E+00	0.000000000E+00
119	ROTZ	0.000000000E+00	0.000000000E+00
118	ROTZ	0.000000000E+00	0.000000000E+00
117	ROTZ	0.000000000E+00	0.000000000E+00
113	ROTZ	0.000000000E+00	0.000000000E+00
95	ROTZ	0.000000000E+00	0.000000000E+00
94	ROTZ	0.000000000E+00	0.000000000E+00
93	ROTZ	0.000000000E+00	0.000000000E+00
92	ROTZ	0.000000000E+00	0.000000000E+00
91	ROTZ	0.000000000E+00	0.000000000E+00
90	ROTZ	0.000000000E+00	0.000000000E+00
89	ROTZ	0.000000000E+00	0.000000000E+00
88	ROTZ	0.000000000E+00	0.000000000E+00

83	ROTZ	0.000000000E+00	0.000000000E+00
65	ROTZ	0.000000000E+00	0.000000000E+00
64	ROTZ	0.000000000E+00	0.000000000E+00
63	ROTZ	0.000000000E+00	0.000000000E+00
62	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
61	ROTZ	0.000000000E+00	0.000000000E+00
60	ROTZ	0.000000000E+00	0.000000000E+00
59	ROTZ	0.000000000E+00	0.000000000E+00
58	ROTZ	0.000000000E+00	0.000000000E+00
57	ROTZ	0.000000000E+00	0.000000000E+00
53	ROTZ	0.000000000E+00	0.000000000E+00
35	ROTZ	0.000000000E+00	0.000000000E+00
34	ROTZ	0.000000000E+00	0.000000000E+00
33	ROTZ	0.000000000E+00	0.000000000E+00
32	ROTZ	0.000000000E+00	0.000000000E+00
31	ROTZ	0.000000000E+00	0.000000000E+00
30	ROTZ	0.000000000E+00	0.000000000E+00
29	ROTZ	0.000000000E+00	0.000000000E+00
28	ROTZ	0.000000000E+00	0.000000000E+00
27	ROTZ	0.000000000E+00	0.000000000E+00
9	ROTZ	0.000000000E+00	0.000000000E+00
8	ROTZ	0.000000000E+00	0.000000000E+00
7	ROTZ	0.000000000E+00	0.000000000E+00
6	ROTZ	0.000000000E+00	0.000000000E+00
5	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
4	ROTZ	0.000000000E+00	0.000000000E+00
3	ROTZ	0.000000000E+00	0.000000000E+00
2	ROTZ	0.000000000E+00	0.000000000E+00
1	ROTZ	0.000000000E+00	0.000000000E+00

LIST ALL COUPLED SETS

```
COUPLED SET=       1   DIRECTION= UX     TOTAL NODES=      2
NODES=      3      4

OUPLED SET=        2   DIRECTION= UX     TOTAL NODES=      2
NODES=      6      7

COUPLED SET=       3   DIRECTION= UX     TOTAL NODES=      2
NODES=     10     11

COUPLED SET=       4   DIRECTION= UX     TOTAL NODES=      2
NODES=     12     13

COUPLED SET=       5   DIRECTION= UX     TOTAL NODES=      3
NODES=     15     16     22

COUPLED SET=       6   DIRECTION= UZ     TOTAL NODES=      3
NODES=     15     16     22

COUPLED SET=       7   DIRECTION= UY     TOTAL NODES=      2
NODES=     17     23

COUPLED SET=       8   DIRECTION= UX     TOTAL NODES=      3
NODES=     18     19     24

COUPLED SET=       9   DIRECTION= UY     TOTAL NODES=      3
NODES=     18     19     24

COUPLED SET=      10   DIRECTION= UZ     TOTAL NODES=      3
  DES=     18     19     24

OUPLED SET=       11   DIRECTION= UX     TOTAL NODES=      2
 ODES=     29     30

COUPLED SET=      12   DIRECTION= UX     TOTAL NODES=      2
NODES=     32     33

COUPLED SET=      13   DIRECTION= UX     TOTAL NODES=      2
NODES=     36     37

COUPLED SET=      14   DIRECTION= UX     TOTAL NODES=      2
NODES=     38     39

COUPLED SET=      15   DIRECTION= UX     TOTAL NODES=      3
NODES=     41     42     48

COUPLED SET=      16   DIRECTION= UZ     TOTAL NODES=      3
NODES=     41     42     48

COUPLED SET=      17   DIRECTION= UY     TOTAL NODES=      2
NODES=     43     49

COUPLED SET=      18   DIRECTION= UX     TOTAL NODES=      3
NODES=     44     45     50

  JPLED SET=      19   DIRECTION= UY     TOTAL NODES=      3
  DES=     44     45     50
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NODES=      44      45      50

COUPLED SET=      21   DIRECTION= UX      TOTAL NODES=      2
NODES=      35      53

COUPLED SET=      22   DIRECTION= UZ      TOTAL NODES=      2
NODES=      35      53

COUPLED SET=      23   DIRECTION= UX      TOTAL NODES=      2
NODES=      59      60

COUPLED SET=      24   DIRECTION= UX      TOTAL NODES=      2
NODES=      89      90

COUPLED SET=      25   DIRECTION= UX      TOTAL NODES=      2
NODES=      62      63

COUPLED SET=      26   DIRECTION= UX      TOTAL NODES=      2
NODES=      92      93

COUPLED SET=      27   DIRECTION= UX      TOTAL NODES=      2
NODES=      66      67

COUPLED SET=      28   DIRECTION= UX      TOTAL NODES=      2
NODES=      96      97

COUPLED SET=      29   DIRECTION= UX      TOTAL NODES=      2
NODES=      68      69

COUPLED SET=      30   DIRECTION= UX      TOTAL NODES=      2
NODES=      98      99

COUPLED SET=      31   DIRECTION= UX      TOTAL NODES=      3
NODES=      71      72      78

COUPLED SET=      32   DIRECTION= UX      TOTAL NODES=      3
NODES=     101     102     108

COUPLED SET=      33   DIRECTION= UZ      TOTAL NODES=      3
NODES=      71      72      78

COUPLED SET=      34   DIRECTION= UZ      TOTAL NODES=      3
NODES=     101     102     108

COUPLED SET=      35   DIRECTION= UY      TOTAL NODES=      2
NODES=      73      79

COUPLED SET=      36   DIRECTION= UY      TOTAL NODES=      2
NODES=     103     109

COUPLED SET=      37   DIRECTION= UX      TOTAL NODES=      3
NODES=      74      75      80

COUPLED SET=      38   DIRECTION= UX      TOTAL NODES=      3
NODES=     104     105     110

COUPLED SET=      39   DIRECTION= UY      TOTAL NODES=      3
NODES=      74      75      80
```

```
NODES=   104    105    110

 COUPLED SET=     41   DIRECTION= UZ      TOTAL NODES=        3
NODES=    74     75     80

   UPLED SET=     42   DIRECTION= UZ      TOTAL NODES=        3
 NODES=  104    105    110

 COUPLED SET=     43   DIRECTION= UX      TOTAL NODES=        2
NODES=    65     83

 COUPLED SET=     44   DIRECTION= UX      TOTAL NODES=        2
NODES=    95    113

 COUPLED SET=     45   DIRECTION= UZ      TOTAL NODES=        2
NODES=    65     83

 COUPLED SET=     46   DIRECTION= UZ      TOTAL NODES=        2
NODES=    95    113

 COUPLED SET=     47   DIRECTION= UX      TOTAL NODES=        2
NODES=   119    120

 COUPLED SET=     48   DIRECTION= UX      TOTAL NODES=        2
NODES=   122    123

 COUPLED SET=     49   DIRECTION= UX      TOTAL NODES=        2
NODES=   126    127

 COUPLED SET=     50   DIRECTION= UX      TOTAL NODES=        2
 DES=    128    129

   IPLED SET=     51   DIRECTION= UX      TOTAL NODES=        3
  DES=   131    132    138

 COUPLED SET=     52   DIRECTION= UZ      TOTAL NODES=        3
NODES=   131    132    138

 COUPLED SET=     53   DIRECTION= UY      TOTAL NODES=        2
NODES=   133    139

 COUPLED SET=     54   DIRECTION= UX      TOTAL NODES=        3
NODES=   134    135    140

 COUPLED SET=     55   DIRECTION= UY      TOTAL NODES=        3
NODES=   134    135    140

 COUPLED SET=     56   DIRECTION= UZ      TOTAL NODES=        3
NODES=   134    135    140

 COUPLED SET=     57   DIRECTION= UX      TOTAL NODES=        2
NODES=   145    146

 COUPLED SET=     58   DIRECTION= UX      TOTAL NODES=        2
NODES=   148    149

 C  PLED SET=     59   DIRECTION= UX      TOTAL NODES=        2
  DES=   152    153
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```
NODES=     154     155

COUPLED  SET=      61   DIRECTION= UX      TOTAL NODES=        3
NODES=     157     158     164

  UPLED  SET=      62   DIRECTION= UZ      TOTAL NODES=        3
NODES=     157     158     164

COUPLED  SET=      63   DIRECTION= UY      TOTAL NODES=        2
NODES=     159     165

COUPLED  SET=      64   DIRECTION= UX      TOTAL NODES=        3
NODES=     160     161     166

COUPLED  SET=      65   DIRECTION= UY      TOTAL NODES=        3
NODES=     160     161     166

COUPLED  SET=      66   DIRECTION= UZ      TOTAL NODES=        3
NODES=     160     161     166

COUPLED  SET=      67   DIRECTION= UX      TOTAL NODES=        2
NODES=     171     172

COUPLED  SET=      68   DIRECTION= UX      TOTAL NODES=        2
NODES=     174     175

COUPLED  SET=      69   DIRECTION= UX      TOTAL NODES=        2
NODES=     178     179

COUPLED  SET=      70   DIRECTION= UX      TOTAL NODES=        2
   DES=    180     181

COUPLED  SET=      71   DIRECTION= UX      TOTAL NODES=        3
NODES=     183     184     190

COUPLED  SET=      72   DIRECTION= UZ      TOTAL NODES=        3
NODES=     183     184     190

COUPLED  SET=      73   DIRECTION= UY      TOTAL NODES=        2
NODES=     185     191

COUPLED  SET=      74   DIRECTION= UX      TOTAL NODES=        3
NODES=     186     187     192

COUPLED  SET=      75   DIRECTION= UY      TOTAL NODES=        3
NODES=     186     187     192

COUPLED  SET=      76   DIRECTION= UZ      TOTAL NODES=        3
NODES=     186     187     192

COUPLED  SET=      77   DIRECTION= UX      TOTAL NODES=        2
NODES=     177     195

COUPLED  SET=      78   DIRECTION= UZ      TOTAL NODES=        2
NODES=     177     195

   JPLED  SET=     79   DIRECTION= UX      TOTAL NODES=        2
NODES=     201     202
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```
NODES=    204    205

COUPLED SET=      81   DIRECTION= UX     TOTAL NODES=       2
NODES=    208    209

COUPLED SET=      82   DIRECTION= UX     TOTAL NODES=       2
NODES=    210    211

COUPLED SET=      83   DIRECTION= UX     TOTAL NODES=       3
NODES=    213    214    220

COUPLED SET=      84   DIRECTION= UZ     TOTAL NODES=       3
NODES=    213    214    220

COUPLED SET=      85   DIRECTION= UY     TOTAL NODES=       2
NODES=    215    221

COUPLED SET=      86   DIRECTION= UX     TOTAL NODES=       3
NODES=    216    217    222

COUPLED SET=      87   DIRECTION= UY     TOTAL NODES=       3
NODES=    216    217    222

COUPLED SET=      88   DIRECTION= UZ     TOTAL NODES=       3
NODES=    216    217    222

COUPLED SET=      89   DIRECTION= UX     TOTAL NODES=       2
NODES=    207    225

COUPLED SET=      90   DIRECTION= UZ     TOTAL NODES=       2
NODES=    207    225

COUPLED SET=      91   DIRECTION= UX     TOTAL NODES=       2
NODES=    231    232

COUPLED SET=      92   DIRECTION= UX     TOTAL NODES=       2
NODES=    234    235

COUPLED SET=      93   DIRECTION= UX     TOTAL NODES=       2
NODES=    238    239

COUPLED SET=      94   DIRECTION= UX     TOTAL NODES=       2
NODES=    240    241

COUPLED SET=      95   DIRECTION= UX     TOTAL NODES=       3
NODES=    243    244    250

COUPLED SET=      96   DIRECTION= UZ     TOTAL NODES=       3
NODES=    243    244    250

COUPLED SET=      97   DIRECTION= UY     TOTAL NODES=       2
NODES=    245    251

COUPLED SET=      98   DIRECTION= UX     TOTAL NODES=       3
NODES=    246    247    252

COUPLED SET=      99   DIRECTION= UY     TOTAL NODES=       3
NODES=    246    247    252
```

NODES= 246 247 252

COUPLED SET= 101 DIRECTION= UX TOTAL NODES= 2
NODES= 237 255

UPLED SET= 102 DIRECTION= UZ TOTAL NODES= 2
NODES= 237 255

COUPLED SET= 103 DIRECTION= UX TOTAL NODES= 2
NODES= 261 262

COUPLED SET= 104 DIRECTION= UX TOTAL NODES= 2
NODES= 264 265

COUPLED SET= 105 DIRECTION= UX TOTAL NODES= 2
NODES= 268 269

COUPLED SET= 106 DIRECTION= UX TOTAL NODES= 2
NODES= 270 271

COUPLED SET= 107 DIRECTION= UX TOTAL NODES= 3
NODES= 273 274 280

COUPLED SET= 108 DIRECTION= UZ TOTAL NODES= 3
NODES= 273 274 280

COUPLED SET= 109 DIRECTION= UY TOTAL NODES= 2
NODES= 275 281

COUPLED SET= 110 DIRECTION= UX TOTAL NODES= 3
DES= 276 277 282

COUPLED SET= 111 DIRECTION= UY TOTAL NODES= 3
NODES= 276 277 282

COUPLED SET= 112 DIRECTION= UZ TOTAL NODES= 3
NODES= 276 277 282

COUPLED SET= 113 DIRECTION= UX TOTAL NODES= 2
NODES= 287 288

COUPLED SET= 114 DIRECTION= UX TOTAL NODES= 2
NODES= 290 291

COUPLED SET= 115 DIRECTION= UX TOTAL NODES= 2
NODES= 294 295

COUPLED SET= 116 DIRECTION= UX TOTAL NODES= 2
NODES= 296 297

COUPLED SET= 117 DIRECTION= UX TOTAL NODES= 3
NODES= 299 300 306

COUPLED SET= 118 DIRECTION= UZ TOTAL NODES= 3
NODES= 299 300 306

PLED SET= 119 DIRECTION= UY TOTAL NODES= 2
NODES= 301 307

```
NODES=     302    303    308

COUPLED SET=      121   DIRECTION= UY     TOTAL NODES=     3
NODES=     302    303    308

COUPLED SET=      122   DIRECTION= UZ     TOTAL NODES=     3
NODES=     302    303    308

COUPLED SET=      123   DIRECTION= UX     TOTAL NODES=     2
NODES=     313    314

COUPLED SET=      124   DIRECTION= UX     TOTAL NODES=     2
NODES=     316    317

COUPLED SET=      125   DIRECTION= UX     TOTAL NODES=     2
NODES=     320    321

COUPLED SET=      126   DIRECTION= UX     TOTAL NODES=     2
NODES=     322    323

COUPLED SET=      127   DIRECTION= UX     TOTAL NODES=     3
NODES=     325    326    332

COUPLED SET=      128   DIRECTION= UZ     TOTAL NODES=     3
NODES=     325    326    332

COUPLED SET=      129   DIRECTION= UY     TOTAL NODES=     2
NODES=     327    333

COUPLED SET=      130   DIRECTION= UX     TOTAL NODES=     3
NODES=     328    329    334

COUPLED SET=      131   DIRECTION= UY     TOTAL NODES=     3
NODES=     328    329    334

COUPLED SET=      132   DIRECTION= UZ     TOTAL NODES=     3
NODES=     328    329    334

COUPLED SET=      133   DIRECTION= UX     TOTAL NODES=     2
NODES=     319    337

COUPLED SET=      134   DIRECTION= UZ     TOTAL NODES=     2
NODES=     319    337

COUPLED SET=      135   DIRECTION= UX     TOTAL NODES=     2
NODES=     343    344

COUPLED SET=      136   DIRECTION= UX     TOTAL NODES=     2
NODES=     346    347

COUPLED SET=      137   DIRECTION= UX     TOTAL NODES=     2
NODES=     350    351

COUPLED SET=      138   DIRECTION= UX     TOTAL NODES=     2
NODES=     352    353

COUPLED SET=      139   DIRECTION= UX     TOTAL NODES=     3
NODES=     355    356    362
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PLED SET= 140 DIRECTION= ..
ES= 355 356 362

PLED SET= 141 DIRECTION= UY TOTAL NODES= 2
ES= 357 363

PLED SET= 142 DIRECTION= UX TOTAL NODES= 3
ES= 358 359 364

JPLED SET= 143 DIRECTION= UY TOTAL NODES= 3
DES= 358 359 364

JPLED SET= 144 DIRECTION= UZ TOTAL NODES= 3
DES= 358 359 364

UPLED SET= 145 DIRECTION= UX TOTAL NODES= 2
DES= 349 367

UPLED SET= 146 DIRECTION= UZ TOTAL NODES= 2
DES= 349 367

UPLED SET= 147 DIRECTION= UX TOTAL NODES= 2
DDES= 373 374

OUPLED SET= 148 DIRECTION= UX TOTAL NODES= 2
ODES= 376 377

OUPLED SET= 149 DIRECTION= UX TOTAL NODES= 2
ODES= 380 381

OUPLED SET= 150 DIRECTION= UX TOTAL NODES= 2
ES= 382 383

COUPLED SET= 151 DIRECTION= UX TOTAL NODES= 3
NODES= 385 386 392

COUPLED SET= 152 DIRECTION= UZ TOTAL NODES= 3
NODES= 385 386 392

COUPLED SET= 153 DIRECTION= UY TOTAL NODES= 2
NODES= 387 393

COUPLED SET= 154 DIRECTION= UX TOTAL NODES= 3
NODES= 388 389 394

COUPLED SET= 155 DIRECTION= UY TOTAL NODES= 3
NODES= 388 389 394

COUPLED SET= 156 DIRECTION= UZ TOTAL NODES= 3
NODES= 388 389 394

COUPLED SET= 157 DIRECTION= UX TOTAL NODES= 2
NODES= 379 397

COUPLED SET= 158 DIRECTION= UZ TOTAL NODES= 2
NODES= 379 397

C PLED SET= 159 DIRECTION= UX TOTAL NODES= 2
NODES= 403 404

NODES= 406 407

COUPLED SET= 161 DIRECTION= UX TOTAL NODES= 2
NODES= 410 411

UPLED SET= 162 DIRECTION= UX TOTAL NODES= 2
NODES= 412 413

COUPLED SET= 163 DIRECTION= UX TOTAL NODES= 3
NODES= 415 416 422

COUPLED SET= 164 DIRECTION= UZ TOTAL NODES= 3
NODES= 415 416 422

COUPLED SET= 165 DIRECTION= UY TOTAL NODES= 2
NODES= 417 423

COUPLED SET= 166 DIRECTION= UX TOTAL NODES= 3
NODES= 418 419 424

COUPLED SET= 167 DIRECTION= UY TOTAL NODES= 3
NODES= 418 419 424

COUPLED SET= 168 DIRECTION= UZ TOTAL NODES= 3
NODES= 418 419 424

COUPLED SET= 169 DIRECTION= UZ TOTAL NODES= 2
NODES= 3 4

COUPLED SET= 170 DIRECTION= UZ TOTAL NODES= 2
DES= 6 7

UPLED SET= 171 DIRECTION= UZ TOTAL NODES= 2
ODES= 29 30

COUPLED SET= 172 DIRECTION= UZ TOTAL NODES= 2
NODES= 32 33

COUPLED SET= 173 DIRECTION= UZ TOTAL NODES= 2
NODES= 59 60

COUPLED SET= 174 DIRECTION= UZ TOTAL NODES= 2
NODES= 89 90

COUPLED SET= 175 DIRECTION= UZ TOTAL NODES= 2
NODES= 119 120

COUPLED SET= 176 DIRECTION= UZ TOTAL NODES= 2
NODES= 62 63

COUPLED SET= 177 DIRECTION= UZ TOTAL NODES= 2
NODES= 92 93

COUPLED SET= 178 DIRECTION= UZ TOTAL NODES= 2
NODES= 122 123

JPLED SET= 179 DIRECTION= UZ TOTAL NODES= 2
DES= 145 146

```
NODES=    148     149

 COUPLED SET=     183   DIRECTION= UZ     TOTAL NODES=      2
NODES=    171     172

   JPLED SET=     184   DIRECTION= UZ     TOTAL NODES=      2
NODES=    174     175

 COUPLED SET=     185   DIRECTION= UZ     TOTAL NODES=      2
NODES=    201     202

 COUPLED SET=     186   DIRECTION= UZ     TOTAL NODES=      2
NODES=    231     232

 COUPLED SET=     187   DIRECTION= UZ     TOTAL NODES=      2
NODES=    261     262

 COUPLED SET=     188   DIRECTION= UZ     TOTAL NODES=      2
NODES=    204     205

 COUPLED SET=     189   DIRECTION= UZ     TOTAL NODES=      2
NODES=    234     235

 COUPLED SET=     190   DIRECTION= UZ     TOTAL NODES=      2
NODES=    264     265

 COUPLED SET=     191   DIRECTION= UZ     TOTAL NODES=      2
NODES=    287     288

 COUPLED SET=     192   DIRECTION= UZ     TOTAL NODES=      2
J  'ES=   290     291

 COUPLED SET=     202   DIRECTION= UZ     TOTAL NODES=      2
NODES=    313     314

 COUPLED SET=     203   DIRECTION= UZ     TOTAL NODES=      2
NODES=    316     317

 COUPLED SET=     204   DIRECTION= UZ     TOTAL NODES=      2
NODES=    343     344

 COUPLED SET=     205   DIRECTION= UZ     TOTAL NODES=      2
NODES=    373     374

 COUPLED SET=     206   DIRECTION= UZ     TOTAL NODES=      2
NODES=    403     404

 COUPLED SET=     207   DIRECTION= UZ     TOTAL NODES=      2
NODES=    346     347

 COUPLED SET=     208   DIRECTION= UZ     TOTAL NODES=      2
NODES=    376     377

 COUPLED SET=     209   DIRECTION= UZ     TOTAL NODES=      2
NODES=    406     407

M. .IMUM COUPLED SET NUMBER= 209
```

LIST TEMPERATURES FOR ALL SELECTED NODES

NODE	TEMPERATURE
1	204.00
2	200.00
3	186.00
4	186.00
5	167.00
6	139.00
7	139.00
8	118.00
9	90.000
10	180.00
11	180.00
12	128.00
13	128.00
14	73.000
15	163.00
16	163.00
17	139.00
18	103.00
19	103.00
20	70.000

NODE	TEMPERATURE
21	53.000
22	163.00
23	139.00
24	103.00
25	73.000
26	59.000
27	311.00
28	305.00
29	285.00
30	285.00
31	258.00
32	217.00
33	217.00
34	187.00
35	147.00
36	277.00
37	277.00
38	201.00
39	201.00
40	122.00

NODE	TEMPERATURE
41	253.00
42	253.00
43	217.00
44	165.00
45	165.00
46	119.00
47	94.000
48	253.00
49	217.00
50	165.00
51	122.00
52	102.00

54	119.00
55	98.000
56	102.00
57	403.00
58	395.00
59	370.00
60	370.00

NODE	TEMPERATURE
61	335.00
62	284.00
63	284.00
64	246.00
65	196.00
66	359.00
67	359.00
68	264.00
69	264.00
70	165.00
71	329.00
72	329.00
73	284.00
74	218.00
75	218.00
76	160.00
77	129.00
78	329.00
79	284.00
80	218.00

NODE	TEMPERATURE
81	164.00
82	139.00
83	192.00
84	161.00
85	135.00
86	139.00
87	482.00
88	473.00
89	443.00
90	443.00
91	402.00
92	343.00
93	343.00
94	298.00
95	238.00
96	431.00
97	431.00
98	319.00
99	319.00
100	202.00

NODE	TEMPERATURE
101	395.00
102	395.00
103	342.00
104	265.00
105	265.00
106	196.00

108	395.00
109	342.00
110	265.00
111	201.00
112	172.00
13	234.00
114	197.00
15	166.00
116	172.00
117	528.00
118	518.00
119	485.00
120	485.00

NODE	TEMPERATURE
121	441.00
122	376.00
123	376.00
124	327.00
125	262.00
126	472.00
127	472.00
128	350.00
129	350.00
130	223.00
131	433.00
132	433.00
133	375.00
134	291.00
135	291.00
36	216.00
37	177.00
38	433.00
39	375.00
140	291.00

NODE	TEMPERATURE
141	222.00
142	190.00
143	565.00
144	554.00
145	519.00
146	519.00
147	472.00
148	403.00
149	403.00
150	351.00
151	282.00
152	505.00
153	505.00
154	375.00
155	375.00
156	240.00
157	464.00
158	464.00
59	402.00
50	313.00

DE TEMPERATURE

162	233.00
163	191.00
164	464.00
165	402.00
166	313.00
167	239.00
168	205.00
169	577.00
170	566.00
171	531.00
172	531.00
173	483.00
174	412.00
175	412.00
176	359.00
177	288.00
178	516.00
179	516.00
180	384.00

NODE	TEMPERATURE
181	384.00
182	245.00
183	474.00
184	474.00
185	411.00
186	320.00
187	320.00
188	238.00
189	195.00
190	474.00
191	411.00
192	320.00
193	244.00
194	210.00
195	284.00
196	239.00
197	203.00
198	210.00
199	589.00
200	578.00

NODE	TEMPERATURE
201	542.00
202	542.00
203	493.00
204	421.00
205	421.00
206	367.00
207	295.00
208	527.00
209	527.00
210	392.00
211	392.00
212	251.00
213	484.00
214	484.00
215	420.00
216	327.00

218	244.00
219	200.00
220	484.00

NODE	TEMPERATURE
221	420.00
222	327.00
223	250.00
224	215.00
225	290.00
226	245.00
227	208.00
228	215.00
229	580.00
230	569.00
231	534.00
232	534.00
233	485.00
234	414.00
235	414.00
236	361.00
237	290.00
238	519.00
239	519.00
240	386.00

NODE	TEMPERATURE
241	386.00
242	247.00
243	476.00
244	476.00
245	413.00
246	322.00
247	322.00
248	240.00
249	197.00
250	476.00
251	413.00
252	315.00
253	240.00
254	206.00
255	279.00
256	235.00
257	200.00
258	206.00
259	568.00
260	557.00

NODE	TEMPERATURE
261	522.00
262	522.00
263	475.00
264	405.00
265	405.00
266	353.00
267	284.00
268	508.00
269	508.00
270	377.00

272	241.00
273	466.00
274	466.00
275	404.00
276	315.00
277	315.00
278	222.00
279	181.00
280	443.00

NODE	TEMPERATURE
281	384.00
282	298.00
283	227.00
284	195.00
285	540.00
286	530.00
287	497.00
288	497.00
289	452.00
290	385.00
291	385.00
292	335.00
293	269.00
294	483.00
295	483.00
296	358.00
297	358.00
298	228.00
299	443.00
300	443.00

NODE	TEMPERATURE
301	384.00
302	298.00
303	298.00
304	222.00
305	181.00
306	443.00
307	384.00
308	298.00
309	227.00
310	195.00
311	488.00
312	479.00
313	449.00
314	449.00
315	408.00
316	347.00
317	347.00
318	302.00
319	241.00
320	436.00

NODE	TEMPERATURE
321	436.00
322	323.00
323	323.00
324	204.00

326	400.00
327	346.00
328	268.00
329	268.00
330	199.00
331	162.00
332	400.00
333	346.00
334	268.00
335	204.00
336	174.00
337	237.00
338	199.00
339	168.00
340	174.00

NODE	TEMPERATURE
341	412.00
342	404.00
343	378.00
344	378.00
345	343.00
346	291.00
347	291.00
348	252.00
349	201.00
350	367.00
351	367.00
352	270.00
353	270.00
354	169.00
355	336.00
356	336.00
357	290.00
358	224.00
359	224.00
360	164.00

NODE	TEMPERATURE
361	132.00
362	336.00
363	290.00
364	224.00
365	168.00
366	143.00
367	197.00
368	165.00
369	138.00
370	143.00
371	299.00
372	293.00
373	274.00
374	274.00
375	247.00
376	208.00
377	208.00
378	179.00
379	141.00
380	266.00

NODE	TEMPERATURE
381	266.00
382	193.00
383	193.00
384	117.00
385	242.00
386	242.00
387	208.00
388	158.00
389	158.00
390	113.00
391	89.000
392	242.00
393	208.00
394	158.00
395	116.00
396	97.000
397	138.00
398	114.00
399	94.000
400	97.000

NODE	TEMPERATURE
401	235.00
402	230.00
403	214.00
404	214.00
405	193.00
406	161.00
407	161.00
08	138.00
409	106.00
410	208.00
411	208.00
412	149.00
413	149.00
414	87.000
415	189.00
416	189.00
417	161.00
418	120.00
419	120.00
420	84.000

NODE	TEMPERATURE
421	65.000
422	189.00
423	161.00
424	120.00
425	87.000
426	71.000

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
1	23.036260	0.00000000E+00	-18.393518	41.429778	35.95
2	22.325522	0.00000000E+00	-17.175123	39.500645	34.30
3	20.341918	0.00000000E+00	-13.280708	33.622626	29.33
4	18.962199	0.00000000E+00	-13.463896	32.426095	28.21
5	17.489235	0.00000000E+00	-8.8019377	26.291173	23.18
6	13.715762	0.00000000E+00	-2.4409574	16.156720	15.09
7	11.572155	0.00000000E+00	-2.8116366	14.383792	13.20
8	9.4461927	0.83751501	-0.68721007	10.133403	9.464
9	9.9817928	3.5715710	0.00000000E+00	9.9817928	8.978
10	18.308289	0.00000000E+00	-11.719785	30.028074	26.21
11	18.070517	0.00000000E+00	-11.801944	29.872461	26.06
12	10.829990	0.12444977	0.00000000E+00	10.829990	10.76
13	10.829990	0.12444977	0.00000000E+00	10.829990	10.76

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
14	11.209322	3.2046320	0.00000000E+00	11.209322	10.191
15	17.559483	0.00000000E+00	-7.4643684	25.023851	22.251
16	15.876277	0.00000000E+00	-7.7105489	23.586826	20.838
17	12.694662	0.00000000E+00	-2.2731325	14.967795	13.977
18	10.680404	3.7849466	0.00000000E+00	10.680404	9.3881
19	12.511558	4.0797485	0.00000000E+00	12.511558	11.073
20	16.565850	7.0516968	0.00000000E+00	16.565850	14.976
21	28.641176	2.7075262	0.00000000E+00	28.641176	27.404
22	14.659787	0.00000000E+00	-7.8106921	22.470479	19.759
23	12.927598	0.00000000E+00	-2.1878675	15.115466	14.155
24	13.518417	4.3544246	0.00000000E+00	13.518417	11.951
25	17.818380	6.6742647	-0.26521943E-03	17.818645	16.938
26	34.457415	1.5504983	0.00000000E+00	34.457415	33.708

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
27	5.2439097	0.00000000E+00	-20.329349	25.573259	23.456
28	5.0297209	0.00000000E+00	-19.110294	24.140015	22.116
29	4.0810508	0.00000000E+00	-15.065168	19.146218	17.533
30	3.5360736	0.00000000E+00	-15.190119	18.726192	17.278
31	3.7229793	0.00000000E+00	-10.777137	14.500116	13.073
32	2.5966773	0.00000000E+00	-4.0031929	6.5998702	5.8247
33	2.0616228	0.00000000E+00	-4.1149920	6.1766148	5.4759
34	4.8213172	0.00000000E+00	-3.9835007	8.8048179	7.7446

[illegible]	[illegible]	0.22195922	-1.9131789	9.0504905	8.319
36	3.1721444	0.00000000E+00	-13.287164	16.459309	15.175
37	2.9218409	0.00000000E+00	-13.374141	16.295982	15.099
38	1.3581576	0.30442714E-02	-0.27070882	1.6288664	1.542
39	1.3581576	0.30442714E-02	-0.27070882	1.6288664	1.542

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
40	10.116077	0.54950209	-0.79895026	10.915027	10.317
41	3.1359525	0.00000000E+00	-9.0300919	12.166044	10.995
42	2.7404383	0.00000000E+00	-9.2248628	11.965301	10.893
43	3.0338882	0.00000000E+00	-4.1023627	7.1362509	6.2281
44	6.0907845	0.62361680	-0.34081202	6.4315965	6.0252
45	6.7865018	0.59570105	-0.46446870	7.2509705	6.0252
46	14.835362	0.38202618	-1.3628773	16.198239	15.449
47	16.330552	1.1533485	-1.2476313	17.578183	16.590
48	2.8268224	0.00000000E+00	-9.2460311	12.072854	10.953
49	3.2443012	0.00000000E+00	-3.9773100	7.2216111	6.2914
50	7.2697316	1.3603165	-0.28433198	7.5540636	6.9340
51	15.829162	3.7736479	0.00000000E+00	15.829162	14.321
52	19.369422	3.8885692	0.00000000E+00	19.369422	17.750

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
53	6.8694428	1.3496572	0.00000000E+00	6.8694428	6.3039
54	7.6593582	2.3800269	0.00000000E+00	7.6593582	6.7923
55	3.4121064	0.14754591	-0.24732900	3.6594354	3.4809
56	3.2762843	0.00000000E+00	-0.78002206	4.0563064	3.7343
57	0.30530241	-2.0694195	-26.025427	26.330730	25.261
58	0.33256218	-1.9090423	-24.669221	25.001784	23.988
59	0.24606445	-1.7731847	-19.897748	20.143813	19.249
60	0.19299227	-1.6733439	-19.877864	20.070857	19.242
61	0.67006281	-0.54802056	-15.071895	15.741958	15.177
62	1.4274400	-1.3562609	-6.9553122	8.3827521	7.5327
63	1.0347765	-1.3562609	-6.0094548	7.0442312	6.3405
64	4.6035773	0.00000000E+00	-4.6618297	9.2654070	8.1181
65	5.8809209	0.00000000E+00	-3.8443064	9.7252273	8.6554

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

Attachment C
Calculation VSC02.6.2.3.07, Revision 2
Pg. C49 of C59

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
66	0.10301519	-1.6827081	-17.516989	17.620004	16.843
67	0.00000000E+00	-1.9016439	-17.620742	17.620742	16.809
68	0.34214220	-0.55519337E-01	-3.8902357	4.2323779	4.[illegible]7
69	0.34214220	-0.55519337E-01	-3.8902357	4.2323779	4.0[illegible]7
70	12.915877	0.00000000E+00	-4.1723923	17.088269	15.494

72	0.11098164	-1.1931223	-12.691484	[illegible]	[illegible]
73	1.3982123	0.00000000E+00	-7.0070527	12.802465	12.23
74	8.1818077	0.00000000E+00	-3.9879705	8.4052650	7.819
75	8.4745053	0.00000000E+00	-4.9258034	12.169778	10.74
76	16.263651	0.00000000E+00	-3.8360876	13.400309	11.75
77	11.367586	0.00000000E+00	-2.3821144	20.099739	18.60
78	0.29407175	-0.72600390	-12.487007	13.749701	12.79
				12.781079	12.30

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
79	1.6141798	0.00000000E+00	-6.7996376	8.4138174	7.7535
80	8.6735558	0.00000000E+00	-6.7828104	15.456366	13.567
81	15.617805	0.00000000E+00	-9.3616188	24.979424	21.893
82	11.223886	0.00000000E+00	-5.6745502	16.898436	15.097
83	6.8737170	0.00000000E+00	-3.7431613	10.616878	9.3534
84	6.0487718	0.00000000E+00	-2.7011678	8.7499395	7.7979
85	2.7324361	0.43112026	-1.1584837	3.8909198	3.4064
86	2.0762006	0.30543733	-1.5668537	3.6430544	3.2041
87	0.00000000E+00	-2.4989877	-33.213935	33.213935	32.080
88	0.99484987E-02	-2.2251578	-31.460760	31.470708	30.457
89	0.55848974E-01	-1.7650465	-25.472439	25.528288	24.706
90	0.16783337	-1.6893604	-25.176754	25.344588	24.493
91	0.77265872	-0.80640585	-18.159822	18.932481	18.201

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
92	1.4753672	-0.17790889	-6.8966618	8.3720290	7.7081
93	0.89973070	-0.17790889	-5.2337548	6.1334855	5.6893
94	5.7462563	0.77869206E-01	-2.3578715	8.1041278	7.3063
95	17.661293	0.74754769	-1.5710639	19.232357	18.305
96	0.12581174	-1.4615947	-22.463946	22.589758	21.865
97	0.28196430E-02	-1.7589203	-22.589185	22.592004	21.802
98	1.2294354	0.00000000E+00	-0.78042563	2.0098611	1.8011
99	1.2294354	0.00000000E+00	-0.78042563	2.0098611	1.8011
100	21.297616	1.6368568	-1.3906412	22.688257	21.341
101	0.30554051	-1.2356493	-16.008326	16.313867	15.617
102	0.21969960	-1.1636544	-15.746352	15.966052	15.344
103	1.5132355	-0.35002023E-01	-6.9232449	8.4364804	7.8166
104	11.045431	0.00000000E+00	-1.3797691	12.425200	11.843

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

DE	SIG1	SIG2	SIG3	SI	SI
105	11.446409	0.00000000E+00	-0.95172991	12.398139	11.996
06	22.489720	0.48480140	-1.9980402	24.487760	23.399

108	0.52991838	-0.68069664	-15.199994	15.729912	15.16
109	1.7839580	0.00000000E+00	-6.6860855	8.4700435	7.780
110	12.061111	0.71254580	-1.1454216	13.206533	12.41
111	21.028157	2.8536377	0.00000000E+00	21.028157	19.83
112	23.624375	3.3537674	0.00000000E+00	23.624375	22.14
113	10.142385	3.5060410	0.00000000E+00	10.142385	8.921
114	6.8438236	2.4047133	0.00000000E+00	6.8438236	[illegible]
115	3.2599811	0.28958761	-0.17520623	3.4351874	[illegible]
116	2.4971391	0.28482425	-0.19115191	2.6882911	2.520
117	0.17630480E-01	-1.1239131	-38.846054	38.863684	38.31

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
118	0.18153375	-1.0196442	-36.689679	36.871212	36.29
119	0.54954936	-0.67200132	-29.720428	30.269978	29.68
120	0.62365054	-0.59134041	-29.209987	29.833638	29.24
121	1.2091469	-0.22085293	-20.010733	21.219880	20.55
122	2.2687688	0.00000000E+00	-5.9246300	8.1933988	7.354
123	1.9033525	0.00000000E+00	-4.6054996	6.5088521	5.802
124	9.6684951	0.37344071E-01	-0.41641952	10.084915	9.870
125	26.180041	0.50501630	-0.80834949E-01	26.260876	25.97
126	0.80582359	-0.31161867	-26.310317	27.116140	26.57
127	0.56036141	-0.55988838	-26.453726	27.014087	26.47
128	2.0849311	0.73845485	0.00000000E+00	2.0849311	1.919
129	2.0849311	0.73845485	0.00000000E+00	2.0849311	1.919
130	34.059993	0.46004193	-0.13363950	34.193633	33.90

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
131	0.93249492	-0.16652448	-18.540681	19.473176	18.96
132	0.84094119	-0.20724368	-18.001827	18.842769	18.35
133	2.0601441	0.00000000E+00	-5.9690039	8.0291481	7.265
134	13.609026	0.65814056	-0.41026661E-01	13.650052	13.32
135	14.521612	1.1221619	0.00000000E+00	14.521612	14.00
136	32.335803	0.86891211	0.00000000E+00	32.335803	31.91
137	44.629125	0.30210838	-0.84760303E-01	44.713885	44.52
138	1.4728189	0.00000000E+00	-17.155460	18.628279	17.95
139	2.4833541	0.00000000E+00	-5.7606314	8.2439855	7.365
140	14.623680	0.66856025	0.00000000E+00	14.623680	14.30
141	30.215432	0.52741312	-0.18159932	30.397031	30.05
142	38.752950	0.43382995E-01	-0.31753257	39.070483	38.89
143	0.00000000E+00	-1.6243778	-42.083949	42.083949	41.29

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

144	0.00000000E+00	-1.3933113	-39.678518	39.678518	39.004
145	0.91687027E-01	-0.75231184	-32.183303	32.274990	31.864
146	0.10656282	-0.62194666	-31.661020	31.767583	31.411
147	0.54036554	-0.26622713	-21.300968	21.841334	21.455
148	1.6647121	0.00000000E+00	-5.9079494	7.5726615	6.9474
149	2.0825478	0.00000000E+00	-5.1533728	7.2359206	6.4766
150	10.575070	0.15649486	-0.70640568	11.281475	10.879
151	29.734705	0.68096854	-0.11002302	29.844728	29.461
152	0.30263551	-0.27917316	-28.574388	28.877023	28.591
153	0.76208467E-01	-0.59151194	-28.730082	28.806291	28.480
154	2.3294063	0.77662533	-0.78179620E-01	2.4075860	2.1383
155	2.3294063	0.77662533	-0.78179620E-01	2.4075860	2.1383
156	36.647877	0.81879933	-0.22676984	36.874647	36.364

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
157	0.43835456	-0.20484393	-20.196601	20.634955	20.322
158	0.33572853	-0.27778171	-19.485226	19.820955	19.524
159	1.1983958	-0.29091372E-01	-5.7634485	6.9618442	6.4831
160	13.876057	1.2647267	0.00000000E+00	13.876057	13.301
161	15.464359	1.7166788	0.00000000E+00	15.464359	14.697
162	35.275831	1.2865458	-0.17876099	35.454592	34.753
163	51.504017	0.63100444	-0.40566985	51.909687	51.399
164	0.96175231	0.00000000E+00	-18.451245	19.412997	18.957
165	1.6772239	0.00000000E+00	-5.5635868	7.2408107	6.6172
166	15.401275	1.4140995	0.00000000E+00	15.401275	14.765
167	33.118318	1.0092441	-0.78649554	33.904814	33.051
168	45.963276	0.50843477E-01	-1.2237326	47.187009	46.585
169	0.00000000E+00	-1.8739850	-43.413197	43.413197	42.507

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
170	0.00000000E+00	-1.8252529	-40.901702	40.901702	40.020
171	0.00000000E+00	-1.3661250	-33.157389	33.157389	32.498
172	0.00000000E+00	-1.5128378	-32.693641	32.693641	31.964
173	0.00000000E+00	-1.3441110	-22.007518	22.007518	21.368
174	0.32367422	-0.54968324	-6.5807012	6.9043754	6.5192
175	0.66739944	-0.19139476	-5.8848355	6.5522349	6.1739
176	6.6301614	0.00000000E+00	-2.0293247	8.6594861	7.9854
177	23.003891	1.0090517	-1.8614492	24.865340	23.673
178	0.00000000E+00	-0.88839517	-29.448871	29.448871	29.015
179	0.00000000E+00	-1.4400468	-29.611661	29.611661	28.919
180	1.2019932	0.24774554	-0.28482255	1.4868157	1.3225
181	1.2019932	0.24774554	-0.28482255	1.4868157	1.3225
182	27.043816	1.9023497	-1.6953663	28.739182	27.126

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

LOAD STEP 1 ITERATION= 1 SECTION= 1

SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
183	0.00000000E+00	-0.81900078	-20.882540	20.882540	20.486
184	0.00000000E+00	-1.2645568	-20.121437	20.121437	19.520
185	0.00000000E+00	-0.93219183	-6.0130980	6.0130980	5.6150
186	12.355156	0.61673475	-0.45976805	12.814924	1[illegible]15
187	13.705565	0.61673475	-0.27901044	13.984575	13.[illegible]66
188	28.871232	0.45736199	-1.9860557	30.857288	29.801
189	34.686336	2.4939062	-2.0656433	36.751979	34.832
190	0.00000000E+00	-0.63369706	-19.031616	19.031616	18.723
191	0.60226524E-01	-0.45870157	-5.8938697	5.9540962	5.7153
192	13.728868	2.4233093	-0.18142968	13.910298	12.962
193	27.260089	5.9226661	0.00000000E+00	27.260089	24.879
194	32.713939	5.7903441	0.00000000E+00	32.713939	30.237
195	15.876724	4.3082664	0.00000000E+00	15.876724	14.220

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
196	13.041653	3.7966841	0.00000000E+00	13.041653	11.639
197	5.7273514	0.42120699E-02	-0.55937118E-01	5.7832886	5.7538
198	4.8708107	0.00000000E+00	-0.65779841	5.5286091	5.2313
199	0.00000000E+00	-3.9951609	-43.750872	43.750872	41.896
200	0.00000000E+00	-4.0311734	-41.220167	41.220167	39.359
201	0.00000000E+00	-3.7030006	-33.398396	33.398396	31.710
202	0.00000000E+00	-4.0511387	-32.944688	32.944688	31.117
203	0.00000000E+00	-4.2887421	-22.255706	22.255706	2[illegible]2
204	0.00000000E+00	-4.9292506	-7.1975726	7.1975726	6.[illegible]10
205	0.00000000E+00	-4.6383340	-6.3919949	6.3919949	5.7666
206	4.4365665	0.00000000E+00	-3.7130765	8.1496430	7.2027
207	10.425417	0.00000000E+00	-4.5663873	14.991804	13.421
208	0.00000000E+00	-3.3890921	-29.646208	29.646208	28.105

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
209	0.00000000E+00	-3.9403339	-29.811657	29.811657	28.049
210	0.32473238	-0.38155743	-6.1327608	6.4574932	6.1364
211	0.32473238	-0.38155743	-6.1327608	6.4574932	6.1364
212	23.095428	0.00000000E+00	-6.1742036	29.269632	26.729
213	0.00000000E+00	-3.4390749	-20.960204	20.960204	19.469
214	0.00000000E+00	-4.0629196	-20.229562	20.229562	18.536
215	0.00000000E+00	-4.1774364	-6.3687960	6.3687960	5.6662
216	11.264925	0.00000000E+00	-5.3576780	16.622603	14.711
217	12.186543	0.00000000E+00	-7.1539658	19.340508	16.938
218	25.628592	0.00000000E+00	-5.5109638	31.139556	28.856
219	19.521734	0.00000000E+00	-3.7616926	23.283427	21.677
220	0.00000000E+00	-3.4585862	-19.118386	19.118386	17.[illegible]
221	0.00000000E+00	-3.4927375	-5.8450506	5.8450506	5.1[illegible]8

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

IODE	SIG1	SIG2	SIG3	SI	S:
222	12.242251	0.00000000E+00	-9.6059989	21.848250	19.24
223	24.526035	0.00000000E+00	-15.006337	39.532372	34.57
224	17.810704	0.00000000E+00	-9.1911491	27.001853	24.08
225	14.023508	0.00000000E+00	-6.2648088	20.288316	17.99
226	11.343878	0.00000000E+00	-4.6666812	16.010559	14.31
227	4.7943442	0.72941171	-1.9174927	6.7118369	5.857
228	3.5405787	0.49343210	-2.6861708	6.2267495	5.429
229	0.00000000E+00	-2.3143889	-43.535341	43.535341	42.42
230	0.00000000E+00	-2.2425669	-41.047965	41.047965	39.97
231	0.00000000E+00	-1.7255601	-33.364203	33.364203	32.53
232	0.00000000E+00	-1.8448283	-32.883409	32.883409	32.00
233	0.00000000E+00	-1.6356699	-22.219667	22.219667	21.44
234	0.26234471	-0.66990323	-6.8242312	7.0865759	6.680

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S:
235	0.54786479	-0.23880360	-6.1090986	6.6569634	6.305
236	6.3881104	0.00000000E+00	-2.1770415	8.5651519	7.843
237	22.596658	0.87233104	-1.9529592	24.549617	23.39
238	0.00000000E+00	-1.2418950	-29.664284	29.664284	29.06
239	0.00000000E+00	-1.7953236	-29.827633	29.827633	28.97
240	1.0799411	0.13245373	-0.43021124	1.5101524	1.366
241	1.0799411	0.13245373	-0.43021124	1.5101524	1.366
242	26.759912	1.7019769	-1.8835610	28.643473	27.03
243	0.00000000E+00	-1.2016968	-21.018912	21.018912	20.44
244	0.00000000E+00	-1.8992689	-20.381056	20.381056	19.50
245	0.00000000E+00	-1.7648641	-6.4972990	6.4972990	5.826
246	11.887998	0.55179852	-0.86914986	12.757148	12.11
247	13.433348	0.55179852	-0.46608631	13.899435	13.42

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

Attachment C
Calculation VSC02.6.2.3.07, Revision 2
Pg. C54 of C59

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
248	29.166100	0.36882202	-2.1151303	31.281230	30.209
249	34.722352	2.4244741	-2.1381369	36.860489	34.950
250	0.86749316E-01	-0.56502678	-17.615970	17.702719	17.390
251	0.33579446	-0.45740173	-4.8239248	5.1597192	4.8265
252	15.058785	2.4276296	-0.18475166	15.243537	14.235
253	27.998638	5.7791136	0.00000000E+00	27.998638	25.647
254	32.993149	5.7670952	0.00000000E+00	32.993149	30.521
255	16.095673	4.5092217	0.00000000E+00	16.095673	14.381
256	12.958922	3.8459360	0.00000000E+00	12.958922	11.549
257	5.6725282	0.11478018E-01	-0.83646134E-01	5.7561743	5.7099
258	4.9114788	0.00000000E+00	-0.75136268	5.6628415	5.3271

NODE	SIG1	SIG2	SIG3	SI	SI
260	0.00000000E+00	-1.9362966	-39.655302	39.655302	38.727

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
261	0.83686241E-01	-0.98536907	-32.365756	32.449442	31.934
262	0.22485766E-01	-0.68749836	-31.848843	31.871329	31.525
263	0.44775102	-0.34927315	-21.733077	22.180828	21.800
264	1.7519590	0.00000000E+00	-6.4223009	8.1742599	7.5140
265	2.2634202	0.00000000E+00	-5.6020377	7.8654579	7.0365
266	10.206838	0.10425173E-01	-0.77048785	10.977325	10.617
267	29.314174	0.65724988	-0.14731993	29.461494	29.070
268	0.36070720	-0.19964779	-28.747858	29.108566	28.834
269	0.14102582	-0.52349825	-28.904121	29.045147	28.720
270	2.4205858	0.63539299	-0.16361086	2.5841966	2.3023
271	2.4205858	0.63539299	-0.16361086	2.5841966	2.3023
272	35.788332	0.83272989	-0.22251700	36.010849	35.495
273	0.57886633	-0.71303557E-01	-20.505173	21.084039	20.771

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
274	0.15418119	-0.94286346	-19.978207	20.132388	19.615
275	0.32229621	-0.82741596	-6.5468924	6.8691886	6.[illegible]79
276	13.184368	1.0657586	-0.68727217	13.871640	13[illegible]0
277	15.142020	2.0714372	0.00000000E+00	15.142020	14.233
278	35.612757	1.6084616	-0.13842069	35.751178	34.924
279	51.638952	0.70265511	-0.36104736	51.999999	51.476
280	3.8309794	0.00000000E+00	-15.731732	19.562711	17.964
281	4.5695928	0.00000000E+00	-3.8738484	8.4434411	7.3799
282	17.246423	3.0528565	0.00000000E+00	17.246423	15.987
283	33.897295	1.2593397	-0.75027887	34.647574	33.697
284	46.615823	0.92561360E-01	-1.1855298	47.801353	47.194
285	0.00000000E+00	-3.9141015	-37.743995	37.743995	35.960
286	0.00000000E+00	-3.4483911	-35.872042	35.872042	34.297

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
287	0.00000000E+00	-2.3088829	-29.393407	29.393407	28.336
288	0.38212449E-01	-1.8961917	-28.944689	28.982902	28.090
289	0.73775811	-1.0069982	-20.801973	21.539731	20.738
290	1.7371722	0.00000000E+00	-7.0877415	8.8249137	8.1482
291	1.6173701	0.00000000E+00	-5.6177631	7.2351333	6.5966
292	9.5208937	0.00000000E+00	-2.0114920	11.532386	10.[illegible]75
293	24.628930	0.35755132	-0.41438902	25.043319	24[illegible]8
294	0.63197613E-01	-1.4478621	-25.915069	25.978266	25.275

296	1.7678395	0.14678660	-0.84045712E-01	1.8518852	1.760
297	1.7678395	0.14678660	-0.84045712E-01	1.8518852	1.760
298	32.584402	0.44666887	-0.34355985	32.927961	32.54
299	0.23244682	-1.1575735	-18.477543	18.709990	18.07

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
300	0.17266421	-1.1969486	-18.065616	18.238280	17.61
301	1.6552290	-0.27829319	-7.1775523	8.8327814	8.074
302	13.694045	0.24199827	-1.0633579	14.757403	14.16
303	14.727624	0.24199827	-0.49703147	15.224656	14.88
304	32.125519	0.15375201	-0.40445202	32.529971	32.26
305	43.365667	0.97171462E-01	-0.17739095	43.543058	43.40
306	0.70312912	-0.88887674E-01	-15.818801	16.521930	16.14
307	2.6293243	0.00000000E+00	-5.5881932	8.2175176	7.311
308	15.686869	0.20469228	-0.71843329	16.405302	15.96
309	30.313371	0.26361152	-0.43491204	30.748283	30.40
310	37.984442	0.00000000E+00	-0.24991532	38.234357	38.11
311	0.00000000E+00	-4.8210340	-29.585550	29.585550	27.54
312	0.00000000E+00	-4.0237235	-28.564867	28.564867	26.86

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
313	0.00000000E+00	-3.0116436	-23.683653	23.683653	22.41
314	0.41784323	-2.7160558	-23.620946	24.038789	22.67
315	1.9015481	-0.97542549	-19.346963	21.248511	20.00
316	2.5699786	-0.22493643	-8.8148359	11.384814	10.33
317	1.9804254	-0.22493643	-6.7591749	8.7396003	7.909
318	6.8612716	0.00000000E+00	-4.9848888	11.846160	10.43
319	15.959678	0.61106217	-2.3832363	18.342914	17.33
320	0.11882986	-2.4740715	-20.726303	20.845133	19.73
321	0.20877529E-01	-2.7857104	-20.856163	20.877041	19.69
322	1.2060025	0.00000000E+00	-1.3677738	2.5737763	2.263
323	1.2060025	0.00000000E+00	-1.3677738	2.5737763	2.263
324	19.458302	1.6369519	-1.3736325	20.831934	19.50
325	0.48467459	-1.7846732	-15.470508	15.955183	14.98

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
326	0.74708954	-1.5314084	-15.467133	16.214222	15.235
327	3.2183594	0.00000000E+00	-8.8403945	12.058754	10.914
328	11.772804	0.00000000E+00	-2.6528098	14.425614	13.387
329	12.197190	0.00000000E+00	-2.3220947	14.519285	13.602
330	22.238618	0.39044586	-2.9849253	25.223544	23.783

332	1.3491642	-0.70605018	-15.201172	16.550336	15.635
333	3.7151442	0.00000000E+00	-8.3138475	12.028992	10.724
334	13.060831	0.29942188	-2.7912354	15.852066	14.603
335	20.770404	1.5630477	-0.61579673	21.386200	20.426
336	22.013862	2.1449393	-0.28644592	22.300308	21.191
337	7.5827107	3.4300418	0.00000000E+00	7.5827107	6.5767
338	5.1020807	1.3660887	0.00000000E+00	5.1020807	4 [illegible]90

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
339	2.5029524	0.18050185	-0.31970229	2.8226547	2.6210
340	1.5087148	0.12226539	-0.22543829	1.7341531	1.5903
341	0.00000000E+00	-4.2743210	-17.555943	17.555943	15.985
342	0.62973039	-3.4415717	-17.964019	18.593749	17.009
343	0.73682326	-3.1820732	-15.432123	16.168946	14.677
344	1.2090742	-2.6346851	-15.982368	17.191442	15.753
345	3.9580346	-0.19760121	-16.399387	20.357422	18.777
346	3.6784957	-0.94140343	-10.119422	13.797918	12.241
347	2.7194293	-0.94140343	-8.2810102	11.000439	9.7571
348	6.7087338	0.00000000E+00	-8.4840250	15.192759	13.237
349	5.2325355	-0.24416292	-6.2670133	11.499549	10.114
350	0.49676441	-3.0426033	-13.670745	14.167509	12.858
351	0.43722214	-3.2618070	-13.800304	14.237526	12.891

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

.OAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
352	0.52433979	-0.26131351E-01	-5.2103144	5.7346542	5.4869
353	0.52433979	-0.26131351E-01	-5.2103144	5.7346542	5.4869
354	8.6923159	0.00000000E+00	-4.6755666	13.367883	12.151
355	1.3508032	-1.7231511	-12.074754	13.425557	12.183
356	1.8246116	-1.0159874	-12.751475	14.576087	13.461
357	5.0358845	0.00000000E+00	-10.367959	15.403843	13.654
358	8.2421284	0.00000000E+00	-6.1402932	14.382422	12.546
359	8.4992165	0.00000000E+00	-6.5225168	15.021733	13.126
360	14.492928	0.17513881	-5.5763295	20.069257	18.203
361	8.3974461	0.74050817E-01	-2.5814588	10.978905	10.089
362	2.5153514	-0.82928036E-01	-13.074207	15.589558	14.628
363	5.1969093	0.00000000E+00	-10.169628	15.366537	13.590
364	9.6881514	0.00000000E+00	-9.1102904	18.798442	16.400

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

⁄DE	SIG1	SIG2	SIG3	SI	SI
365	13.252235	0.00000000E+00	-9.0466073	22.298842	19 [illegible]7
366	8.5804471	0.00000000E+00	-4.5899111	13.170358	11.[illegible]39

368	3.9557538	0.00000000E+00	-2.5717623	6.5275161	5.773
369	1.9915362	0.27881290	-0.96035827	2.9518945	2.577
370	1.3923165	0.16351532	-0.97579703	2.3681135	2.077
371	12.976530	0.00000000E+00	-5.9925584	18.969088	17.17
372	13.028196	0.00000000E+00	-6.3212700	19.349466	17.45
373	11.130626	0.00000000E+00	-5.2984413	16.429067	14.85
374	10.445108	0.00000000E+00	-5.9706709	16.415779	14.67
375	11.837385	0.00000000E+00	-6.8594642	18.696849	16.60
376	7.5494896	0.00000000E+00	-4.2255926	11.775082	10.43
377	5.3405226	0.00000000E+00	-3.6952018	9.0357244	7.929

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
378	6.7329063	0.00000000E+00	-5.8196045	12.552511	10.985
379	4.1440373	0.00000000E+00	-4.7769457	8.9209831	7.8093
380	9.2061060	0.00000000E+00	-4.8947597	14.100866	12.682
381	8.9686008	0.00000000E+00	-4.9586571	13.927258	12.514
382	3.3701913	0.00000000E+00	-1.3112153	4.6814066	4.2094
383	3.3701913	0.00000000E+00	-1.3112153	4.6814066	4.2094
384	2.8371656	0.00000000E+00	-2.0928687	4.9300343	4.3089
385	9.4986821	0.00000000E+00	-4.0934099	13.592092	12.305
386	9.0807775	0.00000000E+00	-4.9865900	14.067367	12.536
387	8.7211059	0.00000000E+00	-4.7023773	13.423483	11.890
388	6.5880366	0.46761992E-01	-2.2545060	8.8425426	7.9823
389	7.3404191	0.46761992E-01	-2.1946256	9.5350447	8.6659
390	9.3600878	0.00000000E+00	-2.8123261	12.172414	11.055

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
391	5.6935471	0.71933702	-1.2247639	6.9183110	6.2842
392	9.1057923	0.00000000E+00	-5.6707528	14.776545	13.026
393	8.9208847	0.00000000E+00	-4.5925039	13.513389	11.992
394	10.169245	0.00000000E+00	-3.5898626	13.759108	12.378
395	10.952517	0.61422969E-01	-1.8214650	12.773982	12.000
396	9.6466412	1.3500137	-0.20238728	9.8490285	9.2125
397	6.3653596	0.00000000E+00	-1.1446629	7.5100225	7.0081
398	6.4798778	2.8115406	0.00000000E+00	6.4798778	5.7017
399	2.8263208	0.34973986	-0.85446243E-01	2.9117670	2.7288
400	2.5919609	0.00000000E+00	-0.36090815	2.9528691	2.7913
401	35.446447	0.00000000E+00	-1.5736112	37.020058	36.258
402	33.468021	0.00000000E+00	-1.6584155	35.126437	34.330
403	30.444971	0.00000000E+00	-1.1260704	31.571041	31.023

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

OAD STEP 1 ITERATION= 1 SECTION= 1
IME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT MIDDLE

404	27.092402	0.00000000E+00	-1.7572750	28.849677	28.01
405	21.273018	0.00000000E+00	-1.9217479	23.194765	22.32
406	17.346352	0.00000000E+00	-1.0464425	18.392795	17.89
407	13.291768	0.00000000E+00	-1.2776890	14.569457	14.00
408	7.4185328	0.00000000E+00	-1.9639212	9.3824540	8.669
409	7.2509234	0.00000000E+00	-1.2471554	8.4980789	8.000
410	27.361207	0.00000000E+00	-1.2043114	28.565519	[illegible]
411	27.080299	0.00000000E+00	-1.2243779	28.304677	27.71
412	15.214564	0.11085955	-0.12040883	15.334972	15.22
413	15.214564	0.11085955	-0.12040883	15.334972	15.22
414	5.8785376	0.00000000E+00	-0.69205196	6.5705895	6.275
415	25.344788	0.00000000E+00	-0.46343348	25.808222	25.57
416	21.981565	0.00000000E+00	-1.1944819	23.176046	22.61

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
417	15.552842	0.00000000E+00	-1.0003599	16.553201	16.101
418	12.719169	0.00000000E+00	-1.1102998	13.829469	13.320
419	12.016037	0.00000000E+00	-1.4574923	13.473529	12.839
420	7.6059090	0.00000000E+00	-0.50678316	8.1126922	7.885
421	4.9498845	0.77365548	0.00000000E+00	4.9498845	4.617
422	19.208634	0.00000000E+00	-1.7587787	20.967413	20.145
423	15.820742	0.00000000E+00	-0.97641732	16.797159	16.355
424	14.574615	0.00000000E+00	-1.9020514	16.476667	15.612
425	10.779332	0.00000000E+00	-2.4897059	13.269038	12.383
426	9.9759154	0.00000000E+00	-0.32471577	10.300631	10.142

MAXIMUMS					
NODE	279	20	199	279	279
VALUE	51.638952	7.0516968	-43.750872	51.999999	51.47

BNFL Fuel Solutions	**CALCULATION PACKAGE**	Calc. Pkg No. VSC02.6.2.3.08 File No.: VSC02.6.2.3.08 Revision: 2

PROJECT/CUSTOMER:

VSC02/BNFL Fuel Solutions

TITLE:

MSB-24 Drop Analysis

SCOPE:

Product:	☐ FuelSolutions™	☐ TranStor™	☒ VSC-24	☐ Other ______
Service:	☒ Storage	☐ Transportation		☐ Other ______
Conditions:	☐ Normal	☐ Off-Normal	☒ Accident	☐ Other ______

Component(s):

MSB-24 components.

Prepared by:

Name: ROBERT KEATING

Signature: [signature]

Date: 2/9/01

Verified by:

Name: James Morancy

Signature: [signature]

Date: 2/9/01

Engineering Manager Approval:

Name: RAM SRINIVASAN

Signature: [signature]

Date: 3/26/01

RECORD OF REVISIONS

REV.	AFFECTED PAGES	AFFECTED MEDIA	DESCRIPTION	NAMES (print or type)	
				PREPARER	CHECKER
0	1 –27 Appendix Pages A1-A59, B1-B60, & C1-C94	None	Replaces Calculation WEP109-002.8, Rev. 2	J. Hibbard	M. Heinz
1	1 – 4, 6, 9, 19, 22, 25, 26, 27	None	Incorporated changes due to alternative support of MSB by ceramic tiles, as per ECN No. VSC02-ECN-003 Explanation of why revision is being made. Notes added to calculated stresses. Updates vertical drop results table. Correct value of stress used. Updates References. Minor editing.	W. Price	G. Mukhim
2	All pages in general	None	Revised Reference list and updated calculations based on the revised References. Incorporated ECN VSC02-ECN-008.	R. Keating	J. Moroney

Note: This calculation has been prepared in accordance with QAP 3.2, Revision 9, except that because this calculation is a revision of an existing calculation, the format is essentially based on the superceded calculation. The title page, record of revision page, and record of verification page are per QAP 3.2, Revision 9. Other format requirements of QAP 3.2 have been included where this could be readily accomplished. This approach was approved in BFS Memorandum 00-427.

RECORD OF VERIFICATION

	Circle:		
(a) The objective is clear and consistent with the analysis.	(YES)	NO	
(b) The inputs are correctly selected and incorporated into the design.	(YES)	NO	N/A
(c) References are complete, accurate, and retrievable.	(YES)	NO	N/A
(d) Basis for engineering judgments is adequately documented.	(YES)	NO	N/A
(e) The assumptions necessary to perform the design activity are adequately described and reasonable.	(YES)	NO	N/A
(f) Assumptions and references, which are preliminary, are noted as being preliminary.	YES	NO	(N/A)
(g) Methods and units are clearly identified.	(YES)	NO	N/A
(h) Any limits of applicability are identified.	(YES)	NO	N/A
(i) Computer calculations are properly identified.	(YES)	NO	N/A
(j) Computer codes used are under configuration control.	(YES)	NO	N/A
(k) Computer codes used are applicable to the calculation.	(YES)	NO	N/A
(l) Input parameters and boundary conditions are appropriate and correct.	(YES)	NO	
(m) An appropriate design method is used.	(YES)	NO	
(n) The output is reasonable compared to the inputs.	(YES)	NO	
(o) Conclusions are clear and consistent with analysis results.	(YES)	NO	

COMMENTS:

See Verification memo.

Verifier: James Maroney [signature] 2/9/01

Name/Signature/Date

1.0 INTRODUCTION

This analysis calculates stresses in the MSB components due to the postulated drop accident. The acceleration levels for both vertical and horizontal drops have been determined based on tip-over and 5-foot drop accidents. These stresses are further combined with stresses due to other loads in a separate calculation.

For revision 1 this calculation was updated to incorporate results from the vertical drop analysis performed in Ref 4. This analysis considered the effect of the alternative ceramic tile support configuration on the lower MSB shell, MSB bottom plate, bottom plate weld. No other design changes were made.

This calculation supersedes WEP109.002.08, Revision 2. Revision 0 of this calculation incorporated comments from CAR 98-50.

The principal differences between Revision 0 of this calculation and calculation WEP109.002.08, Rev. 2 are as follows:

- Scaled ANSYS results to account for changes in the MSB dimensions and the applied deceleration.
- Removed the square root of two from the stress calculation for the shield lid support ring weld. Deleted the assumption that the shield lid support ring weld carries the mass of the structural lid.
- Added calculations for (1) the vertical drop shield lid membrane and bending stress, (2) the structural lid membrane stress, and (3) the shield lid weld stress.
- Corrected the temperature used for the sleeve assembly material yield and ultimate strength.
- Deleted the comparison of calculated stresses to allowable stresses, since the stresses are combined with stresses due to other loads and compared to allowable stresses in a separate calculation.
- Updated the masses used for the stress calculations. Updated the stresses used from Reference 4.

2.0 DESIGN INPUT AND ASSUMPTIONS

Using the results from calculation Reference 2, the statically applied accelerations are (with the maximum dynamic amplification factor of 2):

For horizontal drop - 44 g's

For vertical drop - 120 g's

Only the vertical and horizontal drop orientations are considered. All other orientations are assumed to be bounded by these two cases.

The following component weights bound those in Reference 3.

$P_{str.lid}$ = 2,500 lbs
$P_{sh.lid}$ = 6,500 lbs (including the support plate)
$P_{MSB\ shell}$ = 10,800 lbs
P_{sleeve} = 350 lbs
$P_{sl.assy}$ = 10,780 lbs
$P_{fuel\ assy}$ = 1,600 lbs – weight of one fuel assembly
P_{fuel} = 38,400 lbs – total fuel weight (1,600 lb x 24 fuel assemblies)
L_{fuel} = 179 in (bounding fuel assembly length from Reference 12)
$Sleeve_{ID}$ = 8.8"
$Sleeve_{OD}$ = 9.2"

All plate thicknesses, weld sizes, diameters, etc. are from the Design Parameter Document [Ref. 12].

The structural criteria for the sleeve assembly are that (1) there is no structural failure and (2) there is no deformation that would prevent fuel removal. The storage sleeve assembly does not have to meet ASME Code stress limits, and accordingly, some plastic deformation is allowed.

The sleeve length used in the storage sleeve finite element analysis is 164", which is the maximum sleeve length from Reference 12. The unsupported span length of this sleeve length is 34.75". The unsupported span lengths of shorter sleeves are assumed to be less than 34.75". The finite element analysis is therefore conservative for all fuel assembly sleeve lengths provided in Reference 12 because the model uses the longest sleeve length and the longest unsupported span length.

The actual dimension of the shield lid support ring weld per Reference 12 is 0.5". In this calculation, the weld size is conservatively assumed to be 0.375".

3.0 CALCULATIONS AND RESULTS

3.1 Vertical Drop

The assumption in this calculation is that the MSB is uniformly supported on its base. For the support condition where the MSB is supported on ceramic tiles see Ref 4.

MSB Shell

Load on the MSB Shell

$$P_v = 120 \cdot P = 120 \cdot [P_{sh.lid} + P_{MSB.shell} + P_{str.lid}] = 120 \cdot [6{,}500 + 10{,}800 + 2{,}500] = 2{,}376\ kips$$

The maximum compressive stress is:

$$P_m = \frac{P_v}{\pi\, D\, \delta_{sh}} = 12.5\ ksi$$

where

$D = 60.5\ in$ - shell inside diameter [Ref. 12]
$\delta_{sh} = 1.00\ in$ - wall thickness [Ref. 12]

Since the shell membrane stress calculated above is less than the membrane stresses calculated in Ref 4 (MSB supported on ceramic tiles), the Ref 4 membrane stress is reported in the summary table.

Bottom Plate

The bearing stress on the bottom plate is:

$$P_m = 120 \cdot \frac{P_{sl.assy} + P_{fuel}}{\pi\,(30.25)^2}$$
$$= \frac{120}{\pi \cdot 30.25^2}[10.78 + 38.40] = 2.05\ ksi$$

Since the bottom plate membrane stress calculated above is less than the membrane stresses calculated in Ref 4 (MSB supported on ceramic tiles), the Ref 4 membrane stress is reported in the summary table.

Shield Lid Support Ring Weld

This is a partial penetration 1/2" weld [Ref. 12], however in this calculation the weld size is conservatively assumed to be 0.375". Assume that the load from the shield lid

and support plate are carried only by the support ring weld, i.e., no credit is taken for load carried by the shield lid weld. Note that the stress calculation for the shield lid weld below makes the opposite assumption. Also, assume that the load of the structural lid is carried by the structural lid weld and not by the support ring weld. The stress in the support ring weld is:

$$\tau = 120 \cdot 6{,}500 \frac{1}{\pi\, D(0.375)} = 10.94\ ksi$$

$$P_m = 2\tau = 21.89\ ksi$$

Shield Lid

The shield lid is one 2.5-inch steel plate and one 5.0-inch steel plate with a 2.0-inch neutron shield layer between them (Reference 12). Calculate the approximate thickness of a single steel plate that has a strength equivalent to two 2.5-inch steel plates in the shield lid (take no credit for the neutron shield). This approach is conservative considering the thickness of one of the steel plates is 5.0-inches. The approximate thickness is derived by setting the bending stress for a 2.5" plate equal to the bending stress in a plate of unknown thickness that has twice the load. Solving for the unknown plate thickness gives:

$$t = \sqrt{2} \cdot 2.5 = 3.54\ in$$

The shield lid membrane stress is:

$$\tau = 120 \cdot \frac{6{,}500 + 2{,}500}{\pi \cdot 60.25 \cdot 3.54} = 1.61\ ksi$$

(where 60.25" is the shield lid support plate OD from Ref. 12)

$$P_m = 2\tau = 3.21\ ksi$$

The maximum bending stress in the shield lid is (Reference 8, Table X, Case 1):

$$P_b = \frac{3 \cdot 120 \cdot g \cdot (P_{sh.lid} + P_{st.lid})}{8 \cdot \pi \cdot m \cdot t^2} \cdot (3 \cdot m + 1) = \frac{3 \cdot 120 \cdot g \cdot (6{,}500 + 2{,}500)}{8 \cdot \pi \cdot \frac{1}{0.27} \cdot 3.54^2} \cdot (3 \cdot \frac{1}{0.27} + 1) = 33.6\ ksi$$

where m = 1/ν Inverse of Poison's ratio

Shield Lid Weld

This is a partial penetration 1/4" weld. Assume that the load from the shield lid and support plate are carried only by the shield lid weld, i.e., no credit is taken for load

carried by the shield lid support ring weld. Note that the stress calculation for the shield lid support ring weld above makes the opposite assumption. Also, assume that the load of the structural lid is carried by the structural lid weld and not by the support ring weld. The stress in the shield lid weld is:

$$\tau = 120 \cdot 6{,}500 \frac{1}{\pi\, D(.25)} = 16.42\ ksi$$

$$P_m = 2\tau = 32.8\ ksi$$

Structural Lid Weld

The structural lid weld stress is:

$$\tau = 120 \cdot \frac{2{,}500}{\pi \cdot 60.5 \cdot 0.75} = 2.10\ ksi$$

$$P_m = 2\tau = 4.20\,ksi$$

Structural Lid

The structural lid membrane stress is:

$$\tau = 120 \cdot \frac{2{,}500}{\pi \cdot 60.5 \cdot 3.0} = 0.52\ ksi$$

$$P_m = 2\tau = 1.05\,ksi$$

Sleeve Assembly

The sleeve assembly supports only its own weight (Reference 12 for dimensions)

$$P_m = 120 \cdot 10{,}780 \cdot \frac{1}{24 \cdot (9.2^2 - 8.8^2)} = 7.49\ ksi$$

Vertical Drop Stress Summary

Additional analysis was performed to evaluate stresses in the structural lid, shell, and bottom plate (Reference 4). Reference 4 was done using finite element analysis. Stresses from the above evaluations and from Reference 4 are summarized in the table below.

Vertical Drop Stresses			
	P_m, ksi	P_b, ksi	$P_l + P_b$, ksi
Shell	46.5[1]	NA	47.0[1]
Bottom Plate	23.1[1]	NA	48.3[1]
Structural Lid	1.05	NA	4.9[1]
Bottom Weld	46.5[2]	NA	48.3[2]
Structural Lid Weld	4.2	NA	9.1[1]
Shield Lid	3.2	33.6	36.8
Shield Lid Weld	32.8	NA	32.8
Support Ring Weld	21.9	NA	21.9
Storage Sleeve	7.5	0	7.5

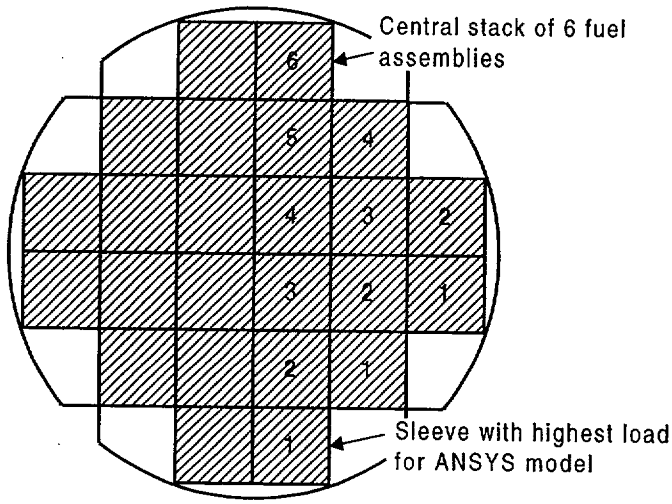
[1]Stress from Reference 4.
[2]Conservatively based on the larger of the shell or the bottom plate stress.

These stresses are combined with other stresses and compared to allowable stresses in a separate calculation.

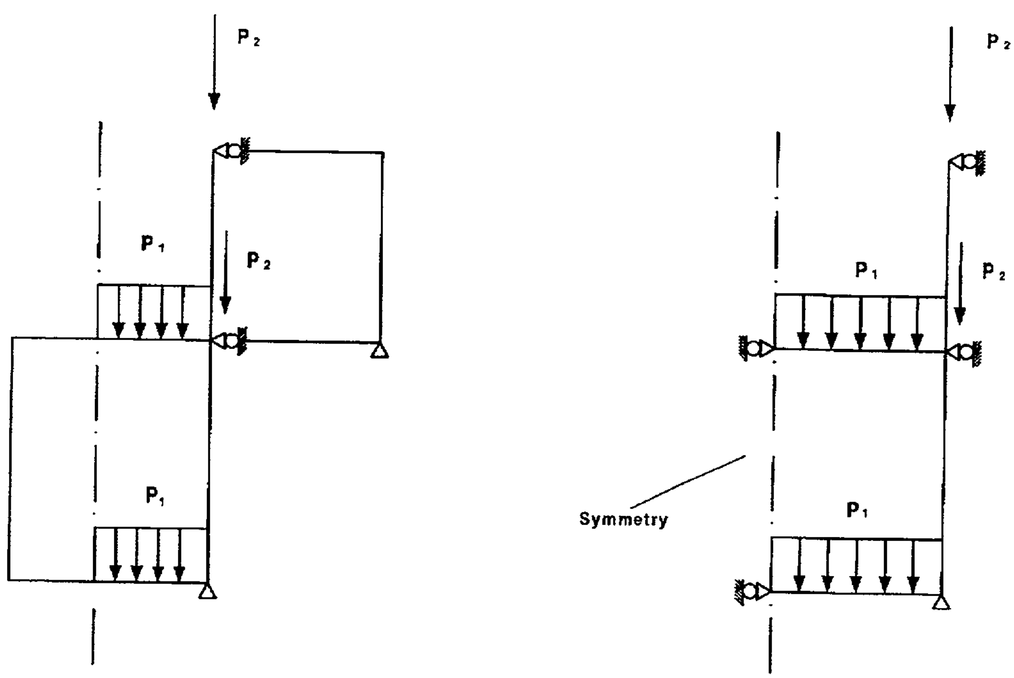
3.2 Horizontal Drop

3.2.1 Horizontal Drop for the Sleeve Assembly

The most loaded sleeve is the one at the bottom of the stack and only stresses in this sleeve were considered. The concept of analysis diagram is shown below. The model includes two bottom sleeves in the central package, which contains 6 sleeves. The loads at the attachment points represent all other sleeves that are supported by the bottom sleeve (four in the same stack and four in the adjacent stack).



Cross Section Through Basket for Fuel Assemblies



Cross Section Through Bottom Sleeve

The model and element diagram is presented on the following page. Only half of the sleeve length and half of the sleeve section are included in the model due to symmetry.

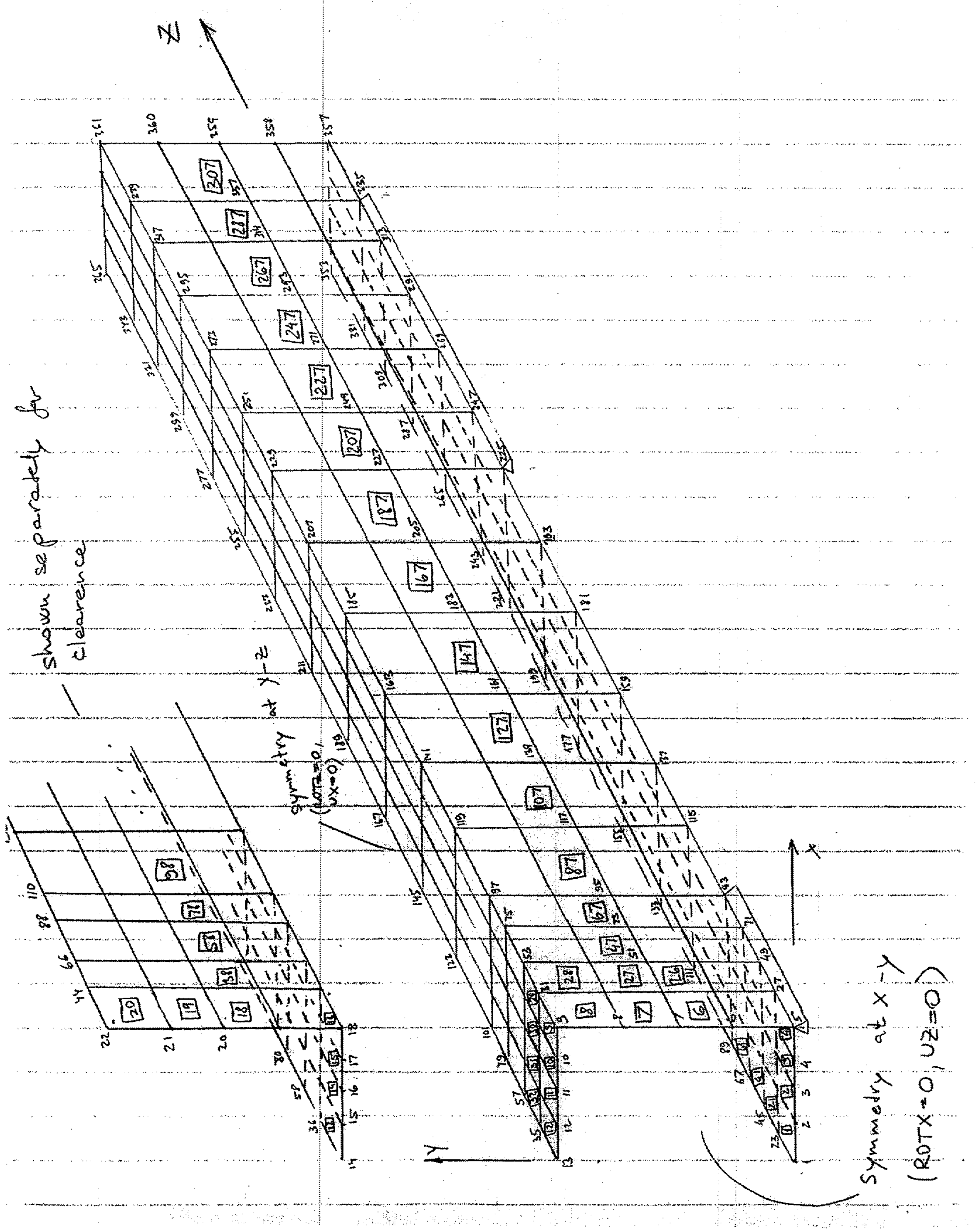
Pressure due to weight of the fuel assembly:

$$p_1 = 44 \cdot 1{,}600 \frac{1}{(9.2 - 2 \cdot 0.2) \cdot 164} = 48 \ psi = 0.048 \ ksi$$

Pressure on the sleeve wall edge due to 1/2 of the weight of four sleeves with fuel (load representing the sleeve stack above the modeled sleeves and the adjacent sleeve stack):

$$p_2 = 44 \cdot (350 + 1{,}600) \frac{1}{0.2 \cdot 164} \cdot \frac{1}{2} \cdot 4 = 5.24 \ ksi$$

6


Z
shown separately for clearance
symmetry at Y-Z
symmetry (ROTZ=0, UX=0)
Y
X
Symmetry at X-Y
(ROTX=0, UZ=0)

The ANSYS input/output printout from Reference 9 is attached (Attachment A). (The ANSYS analysis was based on an acceleration of 44 g). The analysis approach is as follows:

1. The stresses for evaluation are based on distortion-energy failure theory (equivalent Von Mises' stress).

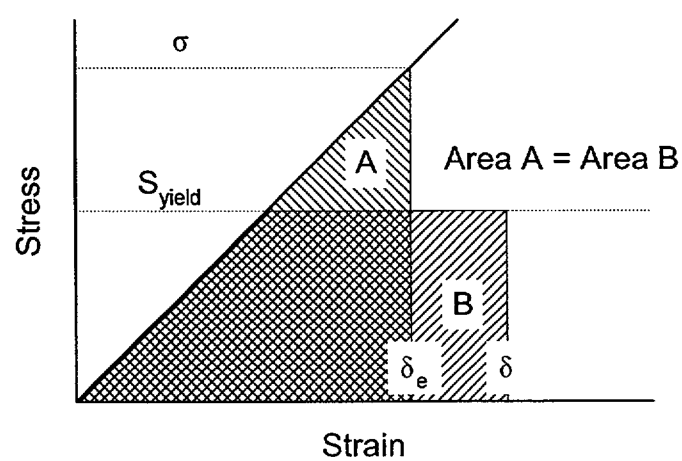
2. The equivalent stress shall not exceed ultimate strength of the material at any point.

3. Since the analysis is elastic, when the stress exceeds yield strength the equivalent plastic deformation is determined based on the absorbed energy.

The MSB storage sleeve material is SA-516 Gr. 70 (Reference 12). It can be seen from the ANSYS output that the maximum equivalent stress in the sleeve is 57.0 *ksi* (Node 225, bottom). This is lower than the material ultimate strength of 70 *ksi* (Reference 10, Table I-3.1), but is greater than the material yield strength of 28.1 *ksi* (Reference 10, Table I-2.1) at the maximum temperature of 600°F (bounds the temperature from Reference 11 at the outermost wall of the outermost sleeves, where the stresses and resulting deflection are the highest). The maximum elastic deflection from the analysis is 0.12 *in*, however, the actual deflection is somewhat greater.

The figure below illustrates the methodology used to calculate the actual sleeve deflection. The energy calculated to be absorbed in the plastic range must equal the energy absorbed by the elasto-plastic material. Since the energy is the area under the stress-strain curve, the cross-hatched areas A and B in the figure must be equal. The balance is:

$$\sigma \text{ x } \delta_e / 2 = S_y \times [S_y / \sigma] \times \delta_e / 2 + S_y \times (\delta - \delta_e \times [S_y / \sigma])$$



The approximate actual deflection is:

$$\delta = \delta_e + \frac{\left(\delta_e - \delta_e \frac{S_y}{\sigma}\right)(\sigma - S_y)\frac{1}{2}}{S_y} =$$

$$0.12 + \frac{\left(0.12 - 0.12\frac{28.1}{57}\right)(57 - 28.1)\frac{1}{2}}{28.1} = 0.15\ in$$

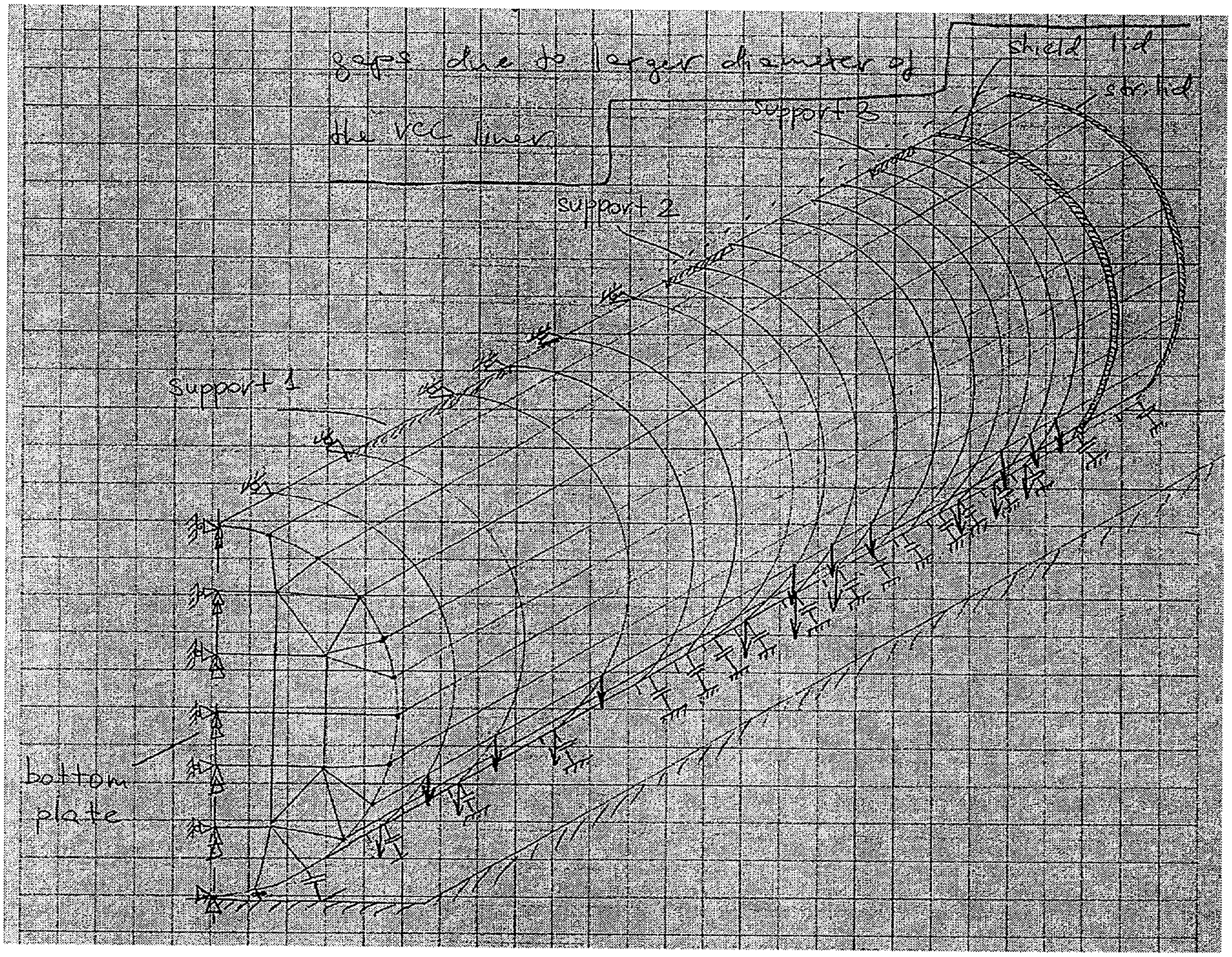
This is less than the 0.264" gap (Reference 12) between the storage sleeve and fuel assembly. Therefore, plastic deformation of the sleeve does not prevent removal of the fuel.

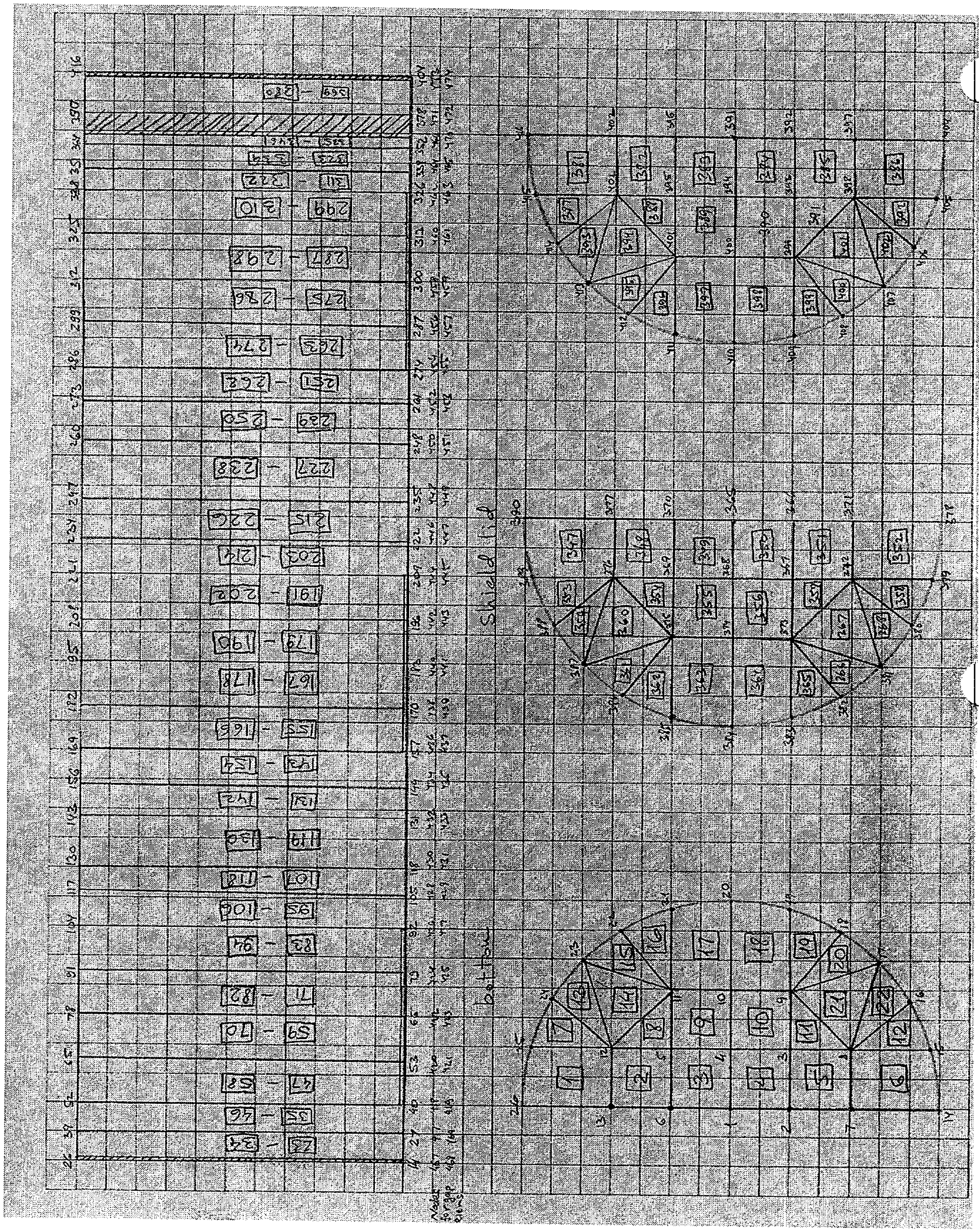
(It is noted that the calculation above conservatively assumes that the 0.15-inch deformation is entirely plastic, when the deformation is actually part elastic and part plastic. The elastic component of the deflection is $\frac{28.1ksi}{57.0ksi} \cdot 0.12in = 0.059in$, so accounting for elastic recovery, the actual plastic deformation is 0.15-0.059=0.09 inches).

See Reference 13 for a buckling evaluation of the MSB storage sleeve.

3.2.2 Horizontal Drop for the Shell

The sketch of the model used is presented on the following page. Element and node numbering is shown on Page 16.

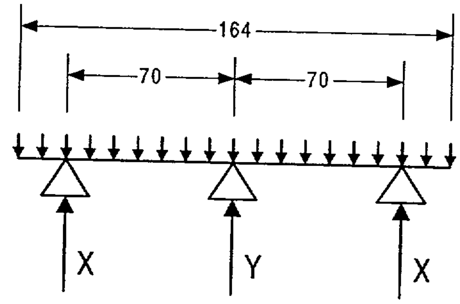

gaps due to larger diameter of
the VCC liner
shield lid
support 3
support 2
support 1
bottom
plate



The equivalent shell thickness at the sleeve assembly support locations is:

$$h = \sqrt{\frac{1.0^3 + 0.5^3}{1.0}} = 1.06\,in \qquad \text{(Dimensions from Reference 12)}$$

Horizontal deceleration - 44 g



The above figure shows support that was assumed for modeling the sleeve assembly. As shown, point supports were assumed, which is conservative, since the actual support condition is provided by three 28" wide support plates (Reference 12) around the sleeve assembly circumference. X and Y are the point supports at the approximate centerline of the support bands. Dimensions are from Reference 12, although it is noted that the 70-inch dimension is approximate and is not at the exact center of the support band.

The uniform load per unit length for one sleeve is:

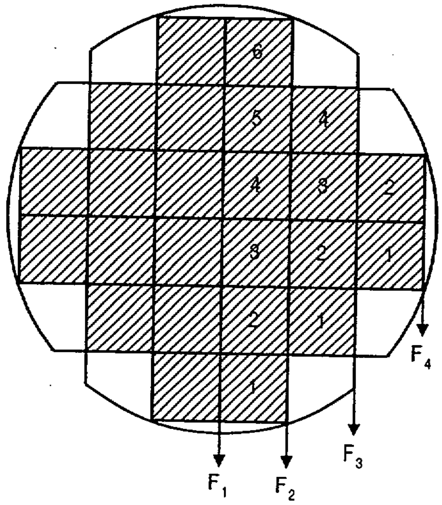
$$q_0 = (1.600 + 0.350) \cdot \frac{44}{164} = 0.52\ kips/in - 1\text{ sleeve}$$

It is noted that the ANSYS analysis used a value of $q_o = 0.50$. The ANSYS results are scaled by the ratio 0.52/0.50 later in this calculation.

The uniform load per unit length at each of the four reaction load locations shown on the figure on the following page is calculated below (the subscripts on q below correspond to the subscripts on F on the figure). The calculation determines the equivalent number of sleeves that are supported at each location.

$$q_1 = \frac{1}{2} \cdot (6)\, q_0 = 3 q_0 = 1.56 \cdot \frac{kip}{in} \qquad q_2 = \frac{1}{2} \cdot (6+4)\, q_0 = 5 q_0 = 2.6 \cdot \frac{kip}{in}$$

$$q_3 = \frac{1}{2} \cdot (4+2)\, q_0 = 3 q_0 = 1.56 \cdot \frac{kip}{in} \qquad q_4 = q_0 = 0.53 \cdot \frac{\text{kip}}{\text{in}}$$



The reaction load each node along the length is calculated below. The calculation multiplies the appropriate q by the length and divides by the number of nodes in that length.

$$F_i = \frac{(x \, or \, y)\, q_i}{5(=\text{number of the nodes along MSB axis})}$$

where $x = 47"$
$y = 70"$

$$F_1^x = \frac{(47)\, q_1}{5} = 14.7\, kips \qquad F_1^y = \frac{70\, q_1}{5} = 21.8\, kips$$

$$F_2^x = \frac{(47)\, q_2}{5} = 24.4\, kips \qquad F_2^y = \frac{70\, q_2}{5} = 36.4\, kips$$

$$F_3^x = \frac{(47)\, q_3}{5} = 14.7\, kips \qquad F_3^y = \frac{70\, q_3}{5} = 21.8\, kips$$

$$F_4^x = \frac{(47)\, q_4}{5} = 5.0\, kips \qquad F_4^y = \frac{70\, q_4}{5} = 7.4\, kips$$

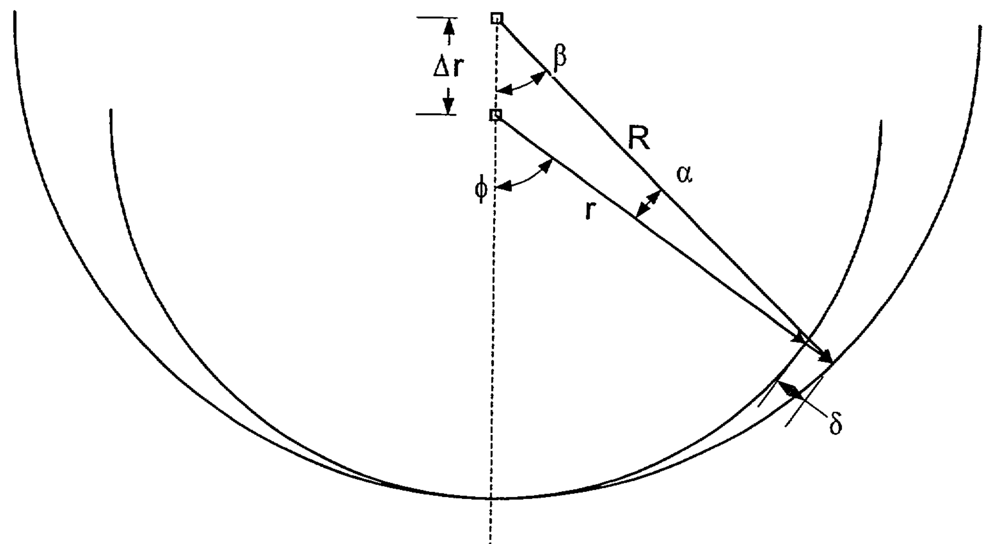
Determine gap sizes between the MSB shell OD and the VCC liner ID (dimensions from Ref. 12). The gap sizes are used to specify gap elements for the ANSYS analysis.

1) $R = 35.25"; \quad r = 31.25"; \quad \Delta r = 4"$

$\phi = 15° \quad 180° - \phi = 165°$

$$\sin\alpha = \frac{\sin 165°}{35.25} 4 = 0.02937 \quad \alpha = 1.683°; \beta = 13.317°$$

$$\delta = 35.25 \cdot \frac{\sin 13.317}{\sin 165} - 31.25 = 0.121"$$



2) $\phi = 30°; \quad \sin\alpha = \frac{\sin 150°}{35.25} 4 = 0.05674; \quad \alpha = 3.253°$

$$\beta = 26.747°; \ \delta = 35.25 \frac{\sin 26.7}{\sin 150} - 31.25 = 0.479 \ inch$$

Assume that the gap element stiffness is $0.9 \cdot 10^7$ *kips / in.*

The MSB nodes-elements diagram is shown on Page 15. ANSYS input/output is attached (Attachment B). Additional analysis was performed per NRC request to provide a finer mesh in the top welds areas. The model and results are presented in Attachment C. Attachment C calculates the gap size for the refined mesh using the above approach. However, there is an error in the gap calculation and thus in the gap used for the ANSYS analysis. A comparison of the actual to the correct gap sizes is provided in the table below.

Real Constant	Angle (Degrees)	Gap from Attachment C (in)	Correct Gap (in)
4	1.5	0.013	0.001
5	5	0.053	0.013
6	10	0.120	0.054
7	17.5	0.214	0.165

The gap sizes that were used in the ANSYS analysis were, in general, too large. It is concluded that this is a conservative error, since a smaller gap size would allow the liner to support the MSB with less deformation of the MSB shell. Accordingly, the ANSYS results of Attachment C are used as is, with no correction for the incorrect gap size.

Correction of ANSYS Results for Revised Dimensions, Masses, and Loads

The ANSYS analysis was run using some incorrect parameters. The output stresses are scaled in order to account for the discrepancies. The corrections are outlined below with a prime (') on a variable signifying the updated value. No prime signifies the value used in the ANSYS analysis.

Acceleration

The original ANSYS analysis used a deceleration for the MSB cask of 44 g's. There are no corrections required.

Mass of MSB and Fuel Assembly

The mass of the MSB is slightly larger than used in the ANSYS analysis due to the change in the MSB shell thickness (0.75 inches for ANSYS analysis vs. 1.0 inches actual). In addition, the fuel assembly loads are slightly smaller than applied in the ANSYS analysis. The ANSYS analysis in Attachment B was based on $q_o = 0.50$ rather than the correct value of $q'_o = 0.52$, while the ANYS analysis in Attachment C was based on $q_o = 0.49$. A correction factor based on $q_o = 0.50$ is calculated below and used for results from both Attachments B and C. This is a negligible error in the correction of the Attachment C stress results. The stresses are scaled as follows:

$$S' = S \cdot \frac{q_1' + q_2' + q_3' + q_4' + m_{msb}'}{q_1 + q_2 + q_3 + q_4 + m_{msb}} = S \cdot \frac{1.50 + 2.6 + 1.56 + 0.53 + 2.42}{1.5 + 2.5 + 1.5 + 0.5 + 1.80} = S \cdot 1.104$$

where $m'_{msb} = \rho \cdot 2 \cdot \pi \cdot r' \cdot t' \cdot 40 \cdot g = 0.28 \cdot 2 \cdot \pi \cdot 31.25 \cdot 1.0 \cdot 44 \cdot g = 2.42 \cdot \frac{kip}{in}$

$$m_{msb} = \rho \cdot 2 \cdot \pi \cdot r \cdot t \cdot 40 \cdot g = 0.28 \cdot 2 \cdot \pi \cdot 31 \cdot 0.75 \cdot 44 \cdot g = 1.80 \cdot \frac{kip}{in}$$

Shell/Plate Thickness

The membrane stresses in the shell or plates are assumed to be inversely proportional to the plate thickness. The bending stresses in the shell or plates are assumed to be inversely proportional to the square of the thickness at that location. The correct thickness as well as that used in the ANSYS model is given in the following table. All 'Correct Values' are from Reference 12 except the effective shell thickness.

Parameter	Description	Correct Value (in)	Used in ANSYS Analysis (in)
t_1	MSB shell thickness	1	0.75
t_2	Bottom plate thickness	0.75	0.75
t_3	Effective shell thickness at sleeve assembly support locations	1.06	0.82
t_4	Shield lid thickness	9.5	7.5
t_7	Structural lid thickness	3	3

The stresses are scaled as follows:

	Membrane	Bending
Shell:	$S' = S\frac{t_1}{t'_1} = S \cdot \frac{0.75}{1.0}$	$S' = S\frac{t_1^2}{t_1'^2} = S \cdot \frac{0.75^2}{1.0^2}$
Bottom Plate:	$S' = S\frac{t_2}{t'_2} = S \cdot 1.0$	$S' = S \cdot \frac{t_2^2}{t_2'^2} = S \cdot 1.0$
Shell at Support:	$S' = S\frac{t_3}{t'_3} = S \cdot \frac{0.82}{1.06}$	$S' = S \cdot \frac{t_3^2}{t_3'^2} = S \cdot \frac{0.82^2}{1.06^2}$
Shield Lid:	$S' = S\frac{t_4}{t'_4} = S \cdot \frac{7.5}{9.5}$	$S' = S \cdot \frac{t_4^2}{t_4'^2} = S \cdot \frac{7.5^2}{9.5^2}$
Structural Lid:	$S' = S\frac{t_7}{t'_7} = S \cdot 1.0$	$S' = S \cdot \frac{t_7^2}{t_7'^2} = S \cdot 1.0$

Combining all effects, the correction factors are:

	Membrane	Bending
Shell:	$S^{'} = 0.828\ S$	$S^{'} = 0.621\ S$
Bottom Plate:	$S^{'} = 1.104\ S$	$S^{'} = 1.104\ S$
Shell at Support:	$S^{'} = 0.854\ S$	$S^{'} = 0.661\ S$
Shield Lid:	$S^{'} = 0.789\ S$	$S^{'} = 0.623\ S$
Structural Lid:	$S^{'} = 1.104\ S$	$S^{'} = 1.104\ S$

The stresses listed below are taken from the ANSYS output, and the scale factors are applied as applicable. Additional analysis was performed per NRC request to provide a finer mesh in the top welds areas. The model and results are presented in Attachment C. The stresses below are the maximum of the stresses in Attachment B or Attachment C. Unless otherwise noted below, the stresses were taken from Attachment B.

MSB bottom plate:

P_m = max [nodes 1-13, middle (except node 14 – peak stress)]

$P_m = 29.5\ ksi \cdot 1.104 = 32.6\ ksi$ (Node 7, middle)

$P_l + P_b$ = max [1-26, top or bottom (except node 14 – peak stress)]

$P_l + P_b = 39.5\ ksi \cdot 1.104 = 43.6\ ksi$ (Node 15, bottom)

Between bottom plate/lower support:

P_m = max [nodes 27-39, middle]

$P_m = 22.2\ ksi \cdot 0.828 = 18.4\ ksi$ (Node 30, middle)

$P_l + P_b$ = max [14-52, top or bottom]

$P_l + P_b = (57.3\ ksi - 10.2\ ksi) \cdot 0.621 + 10.2\ ksi \cdot 0.828$

$P_l + P_b = 37.7\ ksi$ (Node 40, bottom)

Sleeve assembly lower support region:

P_m = max [nodes 53 – 91, middle]

$$P_m = 13.68\ ksi \cdot 0.854 = 11.7\ ksi \qquad \text{(Node 56, middle)}$$

$P_l + P_b$ = max [40-104, top or bottom]

$$P_l + P_b = (71.8\ ksi - 13.1\ ksi) \cdot 0.661 + 13.1\ ksi \cdot 0.854$$

$$P_l + P_b = 50.0\ ksi \qquad \text{(Node 53, bottom)}$$

Between lower/mid support:

P_m = max [105 – 156, middle]

$$P_m = 12.2\ ksi \cdot 0.828 = 10.1 ksi \qquad \text{(Node 150, middle)}$$

$P_l + P_b$ = max [92 – 169, top or bottom]

$$P_l + P_b = (66.3\ ksi - 11.3\ ksi) \cdot 0.621 + 11.3\ ksi \cdot 0.828$$

$$P_l + P_b = 43.5\ ksi \qquad \text{(Node 159, top)}$$

Middle Support:

P_m = max [nodes 170 – 208, middle]

$$P_m = 11.8\ ksi \cdot 0.854 = 10.1 ksi \qquad \text{(Node 176, middle)}$$

$P_l + P_b$ = max [157 – 221, top or bottom]

$$P_l + P_b = (66.6\ ksi - 10.9\ ksi) \cdot 0.661 + 10.9\ ksi \cdot 0.854$$

$$P_l + P_b = 46.1\ ksi \qquad \text{(Node 198, top)}$$

Between middle/upper supports:

P_m = max [nodes 222 – 273, middle]

$$P_m = 11.5\ ksi \cdot 0.828 = 9.5\ ksi \qquad \text{(Node 248, middle)}$$

$P_l + P_b$ = max [209 – 286, top or bottom]

$$P_l + P_b = (66.4\ ksi - 11.3\ ksi) \cdot 0.621 + 11.3\ ksi \cdot 0.828$$

$$P_l + P_b = 43.6\ ksi \qquad \text{(Node 211, top)}$$

Upper support region:

P_m = max [nodes 287 – 325, middle]

$P_m = 15.2\ ksi \cdot 0.854 = 13.0\ ksi$ (Node 316, middle)

$P_l + P_b$ = max [274 – 338, top or bottom]

$P_l + P_b = (67.6\ ksi - 10.1\ ksi) \cdot 0.661 + 10.1\ ksi \cdot 0.854$

$P_l + P_b = 46.6\ ksi$ (Node 313, bottom)

Between upper support/shield lid:

P_m = max [nodes 339 – 364, middle]

$P_m = 25.9\ ksi \cdot 0.828 = 21.4\ ksi$ (Node 342, middle)

$P_l + P_b$ = max [326 – 364, 378 – 390, top or bottom]

$P_l + P_b = (56.6\ ksi - 9.0\ ksi) \cdot 0.621 + 9.0\ ksi \cdot 0.828$

$P_l + P_b = 37.0\ ksi$ (Node 326, bottom)

Shield lid (from Attachment C):

P_m = max [214 – 294, middle]

$P_m = 18.04\ ksi \cdot 0.789 = 14.2\ ksi$ (Node 282, middle)

$P_l + P_b$ = max [156 – 294, 340 – 368, top or bottom]

$P_l + P_b = (31.4\ ksi - 21.1\ ksi) \cdot 0.789 + 21.1\ ksi \cdot 0.623$

$P_l + P_b = 21.3\ ksi$ (Node 340, bottom)

Between shield lid/structural lid (from Attachment C):

$P_l + P_b$ = max [nodes127 – 151, 156 – 180, top or bottom]

$P_l + P_b = (42.9\ ksi - 27.2\ ksi) \cdot 0.621 + 27.2\ ksi \cdot 0.828$

$P_l + P_b = 32.3\ ksi$ (Node 127, top)

Structural lid (from Attachment C):

P_m = max [nodes 1 – 126, middle]

$P_m = 20.0\ ksi \cdot 1.104 = 22.1\ ksi$ (Node 102, middle)

$P_l + P_b$ = max [nodes 1 – 151, top or bottom]

$P_l + P_b = 42.9\ ksi \cdot 1.104\ =\ 47.4\ ksi$ (Node 127, top)

Welds:

Bottom weld:

P_m = max [nodes 15 – 26, middle]

$P_m = 26.0\ ksi \cdot 1.104 = 28.7\ ksi$ (Node 15, middle)

$P_l + P_b$ = max [15 – 26, top or bottom]

$P_l + P_b = 39.5\ ksi \cdot 1.104 = 43.6\ ksi$ (Node 15, bottom)

Shield lid weld (from Attachment C):

Shield lid weld stresses from Attachment C are reported below. These are approximate stresses for the shield lid weld. The ANSYS model in Attachment C does not explicitly model the shield lid weld, rather the model connects the shield lid directly to the MSB shell nodes. Stress in the shield lid weld results from:

- bearing as the weld transfers the weight of the shield lid to the MSB shell (the bearing load is also transferred through the shim between the shield lid and MSB shell), and
- tension as the weld constrains the MSB shell from deforming to an oval shape.

The shield lid and weld are not required to constrain deformation of the MSB shell, since stresses in the MSB shell away from the shield lid are acceptable. Therefore, the shield lid weld is not required to remain intact for the horizontal drop postulated accident.

The stresses that are reported below for the shield lid weld are ANSYS stresses for the MSB shell adjacent to the weld. These are approximations of the actual shield lid weld stress, but they are considered sufficient for this analysis based on the discussion above. In addition, the vertical drop shield lid weld stresses are controlling. For conservatism, the correction factors do not account for the change in the MSB wall thickness.

P_m = max [nodes 157 – 180, middle]

$P_m = 9.2\ ksi \cdot 1.104 = 10.2\ ksi$ (Node 174, middle)

$P_l + P_b$ = max [156 – 180, top or bottom]

$P_l + P_b = 20.6\ ksi \cdot 1.104$

$P_l + P_b = 22.7\ ksi$ (Node 156, top)

Structural lid weld (from Attachment C):

The structural lid weld is not explicitly modeled in Attachments B or C. The shield lid weld is a ¾ inch partial penetration weld, which is the same as the MSB wall thickness. It is assumed that the stress in the MSB shell at the weld location approximates the stress in the weld.

P_m = max [nodes 129 – 151, middle]

$P_m = 9.4\ ksi \cdot 1.104 = 10.4\ ksi$ (Node 145, middle)

$P_l + P_b$ = max [127 – 151, top or bottom]

$P_l + P_b = 42.9\ ksi \cdot 1.104 = 47.4\ ksi$ (Node 127, top)

The following is a summary of stresses due to the horizontal drop. These stresses are combined with stresses due to other loads and compared to allowable stresses in a separate calculation.

Horizontal Drop Stresses		
Location	P_m (ksi)	P_l+P_b (ksi)
Shell	21.4	50.0
Bottom Plate	32.6	43.6
Bottom Weld	28.7	43.6
Shield Lid	14.2	21.3
Shield Lid Weld	10.2	22.7
Structural Lid	22.1	47.4
Structural Lid Weld	10.4	47.4

4.0 CONCLUSIONS

Stresses from the vertical drop, including results from Ref 4, are summarized in the table on p. 9. Stresses from the horizontal drop as summarized in the table on p. 26. The horizontal and vertical drop stresses are combined with stresses from other loads in a separate calculation.

The maximum equivalent stress in the sleeve is 57.0 *ksi*, which is lower than the ultimate strength of the material of 70 *ksi* (temperature of 600°F). The maximum plastic deflection of the sleeve assembly is 0.15 *in*, which is less than the 0.5" gap between the storage sleeve and the fuel assembly. Therefore, plastic deformation of the sleeve does not prevent removal of the fuel.

5.0 REFERENCES

1. ASME Boiler and Pressure Vessel Code, Section III, Subsection NC and Appendix F, 1986 Edition with the 1988 Addenda.
2. BNFL Calculation No. VSC02.6.2.3.15, "VSC-24 Hypothetical Tip-Over and 5-foot Drop Analyses," Revision 1.
3. BNFL Calculation VSC02.6.2.5.01, "Weight and Center of Gravity," Revision 1.
4. BNFL Calculation VSC02.6.2.3.25, "MSB Dead Weight & Vertical Drop Bottom Plate Bending Stress Analysis," Revision 2.
5. Deleted.
6. Deleted.
7. Deleted
8. Raymond J. Roark, "Formulas for Stress and Strain," McGraw-Hill Book Company, 4th Edition.
9. BNFL Calculation WEP-109-002.8, "MSB-24 30-foot Drop Analysis," Revision 2.
10. ASME B&PV Code, Section III, Division 1, Appendices, 1986 Edition with the 1988 Addenda.
11. BNFL Calculations WEP-109-003.5, "MSB-24 Thermal Hydraulic Analysis," Revision 5, and WEP-109-003.4, "VSC-24 Thermal Hydraulic Analysis", Revision 2.
12. BNFL Calculation VSC02.6.2.5.03, "VSC-24 Design Parameters", Revision 0.
13. BNFL Calculation VSC02.6.2.3.16, "MSB Storage Sleeve Buckling Evaluation", Revision 1.

ATTACHMENT A

FINITE ELEMENT ANALYSIS INPUT AND OUTPUT

SLEEVE ASSEMBLY

Note: A copy of the computer input and output for the ANSYS calculations is provided here for convenience. This computer input and output is from Reference 9.

Sleeve assembly.
Horizontal drop of 44 g's

LIST ALL SELECTED NODE DSYS= 0

NODE	X	Y	Z	THXY	THYZ	THXZ
1	0.00000E+00	0.00000E+00	0.00000E+00	0.00	0.00	0.00
2	1.0250	0.00000E+00	0.00000E+00	0.00	0.00	0.00
3	2.0500	0.00000E+00	0.00000E+00	0.00	0.00	0.00
4	3.0750	0.00000E+00	0.00000E+00	0.00	0.00	0.00
5	4.6000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
6	4.6000	2.3000	0.00000E+00	0.00	0.00	0.00
7	4.6000	4.6000	0.00000E+00	0.00	0.00	0.00
8	4.6000	6.9000	0.00000E+00	0.00	0.00	0.00
9	4.6000	9.2000	0.00000E+00	0.00	0.00	0.00
10	3.0750	9.2000	0.00000E+00	0.00	0.00	0.00
11	2.0500	9.2000	0.00000E+00	0.00	0.00	0.00
12	1.0250	9.2000	0.00000E+00	0.00	0.00	0.00
13	0.00000E+00	9.2000	0.00000E+00	0.00	0.00	0.00
14	0.00000E+00	9.4000	0.00000E+00	0.00	0.00	0.00
15	1.0250	9.4000	0.00000E+00	0.00	0.00	0.00
16	2.0500	9.4000	0.00000E+00	0.00	0.00	0.00
17	3.0750	9.4000	0.00000E+00	0.00	0.00	0.00
18	4.6000	9.4000	0.00000E+00	0.00	0.00	0.00
19	4.6000	11.700	0.00000E+00	0.00	0.00	0.00
20	4.6000	14.000	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
21	4.6000	16.300	0.00000E+00	0.00	0.00	0.00
22	4.6000	18.600	0.00000E+00	0.00	0.00	0.00
23	0.00000E+00	0.00000E+00	2.0000	0.00	0.00	0.00
24	1.0250	0.00000E+00	2.0000	0.00	0.00	0.00
25	2.0500	0.00000E+00	2.0000	0.00	0.00	0.00
26	3.0750	0.00000E+00	2.0000	0.00	0.00	0.00
27	4.6000	0.00000E+00	2.0000	0.00	0.00	0.00
28	4.6000	2.3000	2.0000	0.00	0.00	0.00
29	4.6000	4.6000	2.0000	0.00	0.00	0.00
30	4.6000	6.9000	2.0000	0.00	0.00	0.00
31	4.6000	9.2000	2.0000	0.00	0.00	0.00
32	3.0750	9.2000	2.0000	0.00	0.00	0.00
33	2.0500	9.2000	2.0000	0.00	0.00	0.00
34	1.0250	9.2000	2.0000	0.00	0.00	0.00
35	0.00000E+00	9.2000	2.0000	0.00	0.00	0.00
36	0.00000E+00	9.4000	2.0000	0.00	0.00	0.00
37	1.0250	9.4000	2.0000	0.00	0.00	0.00
38	2.0500	9.4000	2.0000	0.00	0.00	0.00
39	3.0750	9.4000	2.0000	0.00	0.00	0.00
40	4.6000	9.4000	2.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
41	4.6000	11.700	2.0000	0.00	0.00	0.00
42	4.6000	14.000	2.0000	0.00	0.00	0.00
43	4.6000	16.300	2.0000	0.00	0.00	0.00
44	4.6000	18.600	2.0000	0.00	0.00	0.00
45	0.00000E+00	0.00000E+00	6.0000	0.00	0.00	0.00
46	1.0250	0.00000E+00	6.0000	0.00	0.00	0.00
47	2.0500	0.00000E+00	6.0000	0.00	0.00	0.00
8	3.0750	0.00000E+00	6.0000	0.00	0.00	0.00
9	4.6000	0.00000E+00	6.0000	0.00	0.00	0.00
50	4.6000	2.3000	6.0000	0.00	0.00	0.00
51	4.6000	4.6000	6.0000	0.00	0.00	0.00

52	4.6000	6.9000	6.0000	0.00	0.00	0.00
53	4.6000	9.2000	6.0000	0.00	0.00	0.00
54	3.0750	9.2000	6.0000	0.00	0.00	0.00
55	2.0500	9.2000	6.0000	0.00	0.00	0.00
56	1.0250	9.2000	6.0000	0.00	0.00	0.00
57	0.00000E+00	9.2000	6.0000	0.00	0.00	0.00
58	0.00000E+00	9.4000	6.0000	0.00	0.00	0.00
59	1.0250	9.4000	6.0000	0.00	0.00	0.00
60	2.0500	9.4000	6.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
61	3.0750	9.4000	6.0000	0.00	0.00	0.00
62	4.6000	9.4000	6.0000	0.00	0.00	0.00
63	4.6000	11.700	6.0000	0.00	0.00	0.00
64	4.6000	14.000	6.0000	0.00	0.00	0.00
65	4.6000	16.300	6.0000	0.00	0.00	0.00
66	4.6000	18.600	6.0000	0.00	0.00	0.00
67	0.00000E+00	0.00000E+00	10.000	0.00	0.00	0.00
68	1.0250	0.00000E+00	10.000	0.00	0.00	0.00
69	2.0500	0.00000E+00	10.000	0.00	0.00	0.00
70	3.0750	0.00000E+00	10.000	0.00	0.00	0.00
71	4.6000	0.00000E+00	10.000	0.00	0.00	0.00
72	4.6000	2.3000	10.000	0.00	0.00	0.00
73	4.6000	4.6000	10.000	0.00	0.00	0.00
74	4.6000	6.9000	10.000	0.00	0.00	0.00
75	4.6000	9.2000	10.000	0.00	0.00	0.00
76	3.0750	9.2000	10.000	0.00	0.00	0.00
77	2.0500	9.2000	10.000	0.00	0.00	0.00
78	1.0250	9.2000	10.000	0.00	0.00	0.00
79	0.00000E+00	9.2000	10.000	0.00	0.00	0.00
80	0.00000E+00	9.4000	10.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
81	1.0250	9.4000	10.000	0.00	0.00	0.00
82	2.0500	9.4000	10.000	0.00	0.00	0.00
83	3.0750	9.4000	10.000	0.00	0.00	0.00
84	4.6000	9.4000	10.000	0.00	0.00	0.00
85	4.6000	11.700	10.000	0.00	0.00	0.00
86	4.6000	14.000	10.000	0.00	0.00	0.00
87	4.6000	16.300	10.000	0.00	0.00	0.00
88	4.6000	18.600	10.000	0.00	0.00	0.00
89	0.00000E+00	0.00000E+00	14.000	0.00	0.00	0.00
90	1.0250	0.00000E+00	14.000	0.00	0.00	0.00
91	2.0500	0.00000E+00	14.000	0.00	0.00	0.00
92	3.0750	0.00000E+00	14.000	0.00	0.00	0.00
93	4.6000	0.00000E+00	14.000	0.00	0.00	0.00
94	4.6000	2.3000	14.000	0.00	0.00	0.00
95	4.6000	4.6000	14.000	0.00	0.00	0.00
96	4.6000	6.9000	14.000	0.00	0.00	0.00
97	4.6000	9.2000	14.000	0.00	0.00	0.00
98	3.0750	9.2000	14.000	0.00	0.00	0.00
99	2.0500	9.2000	14.000	0.00	0.00	0.00
100	1.0250	9.2000	14.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
101	0.00000E+00	9.2000	14.000	0.00	0.00	0.00
102	0.00000E+00	9.4000	14.000	0.00	0.00	0.00
103	1.0250	9.4000	14.000	0.00	0.00	0.00
104	2.0500	9.4000	14.000	0.00	0.00	0.00
105	3.0750	9.4000	14.000	0.00	0.00	0.00

106	4.6000	9.4000	14.000	0.00	0.00	0.00
107	4.6000	11.700	14.000	0.00	0.00	0.00
108	4.6000	14.000	14.000	0.00	0.00	0.00
109	4.6000	16.300	14.000	0.00	0.00	0.00
110	4.6000	18.600	14.000	0.00	0.00	0.00
111	0.00000E+00	0.00000E+00	18.000	0.00	0.00	0.00
112	1.0250	0.00000E+00	18.000	0.00	0.00	0.00
113	2.0500	0.00000E+00	18.000	0.00	0.00	0.00
114	3.0750	0.00000E+00	18.000	0.00	0.00	0.00
115	4.6000	0.00000E+00	18.000	0.00	0.00	0.00
116	4.6000	2.3000	18.000	0.00	0.00	0.00
117	4.6000	4.6000	18.000	0.00	0.00	0.00
118	4.6000	6.9000	18.000	0.00	0.00	0.00
119	4.6000	9.2000	18.000	0.00	0.00	0.00
120	3.0750	9.2000	18.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
121	2.0500	9.2000	18.000	0.00	0.00	0.00
122	1.0250	9.2000	18.000	0.00	0.00	0.00
123	0.00000E+00	9.2000	18.000	0.00	0.00	0.00
124	0.00000E+00	9.4000	18.000	0.00	0.00	0.00
125	1.0250	9.4000	18.000	0.00	0.00	0.00
126	2.0500	9.4000	18.000	0.00	0.00	0.00
127	3.0750	9.4000	18.000	0.00	0.00	0.00
128	4.6000	9.4000	18.000	0.00	0.00	0.00
129	4.6000	9.4000	18.000	0.00	0.00	0.00
130	4.6000	11.700	18.000	0.00	0.00	0.00
131	4.6000	14.000	18.000	0.00	0.00	0.00
132	4.6000	16.300	18.000	0.00	0.00	0.00
133	4.6000	18.600	18.000	0.00	0.00	0.00
134	0.00000E+00	0.00000E+00	25.000	0.00	0.00	0.00
135	1.0250	0.00000E+00	25.000	0.00	0.00	0.00
136	2.0500	0.00000E+00	25.000	0.00	0.00	0.00
137	3.0750	0.00000E+00	25.000	0.00	0.00	0.00
138	4.6000	0.00000E+00	25.000	0.00	0.00	0.00
139	4.6000	2.3000	25.000	0.00	0.00	0.00
140	4.6000	4.6000	25.000	0.00	0.00	0.00
	4.6000	6.9000	25.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
141	4.6000	9.2000	25.000	0.00	0.00	0.00
142	3.0750	9.2000	25.000	0.00	0.00	0.00
143	2.0500	9.2000	25.000	0.00	0.00	0.00
144	1.0250	9.2000	25.000	0.00	0.00	0.00
145	0.00000E+00	9.2000	25.000	0.00	0.00	0.00
146	0.00000E+00	9.4000	25.000	0.00	0.00	0.00
147	1.0250	9.4000	25.000	0.00	0.00	0.00
148	2.0500	9.4000	25.000	0.00	0.00	0.00
149	3.0750	9.4000	25.000	0.00	0.00	0.00
150	4.6000	9.4000	25.000	0.00	0.00	0.00
151	4.6000	11.700	25.000	0.00	0.00	0.00
152	4.6000	14.000	25.000	0.00	0.00	0.00
153	4.6000	16.300	25.000	0.00	0.00	0.00
154	4.6000	18.600	25.000	0.00	0.00	0.00
155	0.00000E+00	0.00000E+00	33.100	0.00	0.00	0.00
156	1.0250	0.00000E+00	33.100	0.00	0.00	0.00
157	2.0500	0.00000E+00	33.100	0.00	0.00	0.00
	3.0750	0.00000E+00	33.100	0.00	0.00	0.00
	4.6000	0.00000E+00	33.100	0.00	0.00	0.00
160	4.6000	2.3000	33.100	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
161	4.6000	4.6000	33.100	0.00	0.00	0.00
162	4.6000	6.9000	33.100	0.00	0.00	0.00
163	4.6000	9.2000	33.100	0.00	0.00	0.00
164	3.0750	9.2000	33.100	0.00	0.00	0.00
165	2.0500	9.2000	33.100	0.00	0.00	0.00
166	1.0250	9.2000	33.100	0.00	0.00	0.00
167	0.00000E+00	9.2000	33.100	0.00	0.00	0.00
168	0.00000E+00	9.4000	33.100	0.00	0.00	0.00
169	1.0250	9.4000	33.100	0.00	0.00	0.00
170	2.0500	9.4000	33.100	0.00	0.00	0.00
171	3.0750	9.4000	33.100	0.00	0.00	0.00
172	4.6000	9.4000	33.100	0.00	0.00	0.00
173	4.6000	11.700	33.100	0.00	0.00	0.00
174	4.6000	14.000	33.100	0.00	0.00	0.00
175	4.6000	16.300	33.100	0.00	0.00	0.00
176	4.6000	18.600	33.100	0.00	0.00	0.00
177	0.00000E+00	0.00000E+00	39.650	0.00	0.00	0.00
178	1.0250	0.00000E+00	39.650	0.00	0.00	0.00
179	2.0500	0.00000E+00	39.650	0.00	0.00	0.00
180	3.0750	0.00000E+00	39.650	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
181	4.6000	0.00000E+00	39.650	0.00	0.00	0.00
182	4.6000	2.3000	39.650	0.00	0.00	0.00
183	4.6000	4.6000	39.650	0.00	0.00	0.00
184	4.6000	6.9000	39.650	0.00	0.00	0.00
185	4.6000	9.2000	39.650	0.00	0.00	0.00
186	3.0750	9.2000	39.650	0.00	0.00	0.00
187	2.0500	9.2000	39.650	0.00	0.00	0.00
188	1.0250	9.2000	39.650	0.00	0.00	0.00
189	0.00000E+00	9.2000	39.650	0.00	0.00	0.00
190	0.00000E+00	9.4000	39.650	0.00	0.00	0.00
191	1.0250	9.4000	39.650	0.00	0.00	0.00
192	2.0500	9.4000	39.650	0.00	0.00	0.00
193	3.0750	9.4000	39.650	0.00	0.00	0.00
194	4.6000	9.4000	39.650	0.00	0.00	0.00
195	4.6000	11.700	39.650	0.00	0.00	0.00
196	4.6000	14.000	39.650	0.00	0.00	0.00
197	4.6000	16.300	39.650	0.00	0.00	0.00
198	4.6000	18.600	39.650	0.00	0.00	0.00
199	0.00000E+00	0.00000E+00	45.000	0.00	0.00	0.00
200	1.0250	0.00000E+00	45.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
201	2.0500	0.00000E+00	45.000	0.00	0.00	0.00
202	3.0750	0.00000E+00	45.000	0.00	0.00	0.00
203	4.6000	0.00000E+00	45.000	0.00	0.00	0.00
204	4.6000	2.3000	45.000	0.00	0.00	0.00
205	4.6000	4.6000	45.000	0.00	0.00	0.00
206	4.6000	6.9000	45.000	0.00	0.00	0.00
207	4.6000	9.2000	45.000	0.00	0.00	0.00
208	3.0750	9.2000	45.000	0.00	0.00	0.00
209	2.0500	9.2000	45.000	0.00	0.00	0.00
210	1.0250	9.2000	45.000	0.00	0.00	0.00
211	0.00000E+00	9.2000	45.000	0.00	0.00	0.00
212	0.00000E+00	9.4000	45.000	0.00	0.00	0.00
213	1.0250	9.4000	45.000	0.00	0.00	0.00
214	2.0500	9.4000	45.000	0.00	0.00	0.00
215	3.0750	9.4000	45.000	0.00	0.00	0.00

216	4.6000	9.4000	45.000	0.00	0.00	0.00
217	4.6000	11.700	45.000	0.00	0.00	0.00
218	4.6000	14.000	45.000	0.00	0.00	0.00
219	4.6000	16.300	45.000	0.00	0.00	0.00
220	4.6000	18.600	45.000	0.00	0.00	0.00

ODE	X	Y	Z	THXY	THYZ	THXZ
221	0.00000E+00	0.00000E+00	48.750	0.00	0.00	0.00
222	1.0250	0.00000E+00	48.750	0.00	0.00	0.00
223	2.0500	0.00000E+00	48.750	0.00	0.00	0.00
224	3.0750	0.00000E+00	48.750	0.00	0.00	0.00
225	4.6000	0.00000E+00	48.750	0.00	0.00	0.00
226	4.6000	2.3000	48.750	0.00	0.00	0.00
227	4.6000	4.6000	48.750	0.00	0.00	0.00
228	4.6000	6.9000	48.750	0.00	0.00	0.00
229	4.6000	9.2000	48.750	0.00	0.00	0.00
230	3.0750	9.2000	48.750	0.00	0.00	0.00
231	2.0500	9.2000	48.750	0.00	0.00	0.00
232	1.0250	9.2000	48.750	0.00	0.00	0.00
233	0.00000E+00	9.2000	48.750	0.00	0.00	0.00
234	0.00000E+00	9.4000	48.750	0.00	0.00	0.00
235	1.0250	9.4000	48.750	0.00	0.00	0.00
236	2.0500	9.4000	48.750	0.00	0.00	0.00
237	3.0750	9.4000	48.750	0.00	0.00	0.00
238	4.6000	9.4000	48.750	0.00	0.00	0.00
239	4.6000	11.700	48.750	0.00	0.00	0.00
240	4.6000	14.000	48.750	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
241	4.6000	16.300	48.750	0.00	0.00	0.00
42	4.6000	18.600	48.750	0.00	0.00	0.00
43	0.00000E+00	0.00000E+00	51.750	0.00	0.00	0.00
44	1.0250	0.00000E+00	51.750	0.00	0.00	0.00
245	2.0500	0.00000E+00	51.750	0.00	0.00	0.00
246	3.0750	0.00000E+00	51.750	0.00	0.00	0.00
247	4.6000	0.00000E+00	51.750	0.00	0.00	0.00
248	4.6000	2.3000	51.750	0.00	0.00	0.00
249	4.6000	4.6000	51.750	0.00	0.00	0.00
250	4.6000	6.9000	51.750	0.00	0.00	0.00
251	4.6000	9.2000	51.750	0.00	0.00	0.00
252	3.0750	9.2000	51.750	0.00	0.00	0.00
253	2.0500	9.2000	51.750	0.00	0.00	0.00
254	1.0250	9.2000	51.750	0.00	0.00	0.00
255	0.00000E+00	9.2000	51.750	0.00	0.00	0.00
256	0.00000E+00	9.4000	51.750	0.00	0.00	0.00
257	1.0250	9.4000	51.750	0.00	0.00	0.00
258	2.0500	9.4000	51.750	0.00	0.00	0.00
259	3.0750	9.4000	51.750	0.00	0.00	0.00
260	4.6000	9.4000	51.750	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
261	4.6000	11.700	51.750	0.00	0.00	0.00
262	4.6000	14.000	51.750	0.00	0.00	0.00
263	4.6000	16.300	51.750	0.00	0.00	0.00
264	4.6000	18.600	51.750	0.00	0.00	0.00
65	0.00000E+00	0.00000E+00	56.750	0.00	0.00	0.00
6	1.0250	0.00000E+00	56.750	0.00	0.00	0.00
7	2.0500	0.00000E+00	56.750	0.00	0.00	0.00
268	3.0750	0.00000E+00	56.750	0.00	0.00	0.00
269	4.6000	0.00000E+00	56.750	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
270	4.6000	2.3000	56.750	0.00	0.00	0.00
271	4.6000	4.6000	56.750	0.00	0.00	0.00
272	4.6000	6.9000	56.750	0.00	0.00	0.00
273	4.6000	9.2000	56.750	0.00	0.00	0.00
274	3.0750	9.2000	56.750	0.00	0.00	0.00
275	2.0500	9.2000	56.750	0.00	0.00	0.00
276	1.0250	9.2000	56.750	0.00	0.00	0.00
277	0.00000E+00	9.2000	56.750	0.00	0.00	0.00
278	0.00000E+00	9.4000	56.750	0.00	0.00	0.00
279	1.0250	9.4000	56.750	0.00	0.00	0.00
280	2.0500	9.4000	56.750	0.00	0.00	0.00
281	3.0750	9.4000	56.750	0.00	0.00	0.00
282	4.6000	9.4000	56.750	0.00	0.00	0.00
283	4.6000	11.700	56.750	0.00	0.00	0.00
284	4.6000	14.000	56.750	0.00	0.00	0.00
285	4.6000	16.300	56.750	0.00	0.00	0.00
286	4.6000	18.600	56.750	0.00	0.00	0.00
287	0.00000E+00	0.00000E+00	64.750	0.00	0.00	0.00
288	1.0250	0.00000E+00	64.750	0.00	0.00	0.00
289	2.0500	0.00000E+00	64.750	0.00	0.00	0.00
290	3.0750	0.00000E+00	64.750	0.00	0.00	0.00
291	4.6000	0.00000E+00	64.750	0.00	0.00	0.00
292	4.6000	2.3000	64.750	0.00	0.00	0.00
293	4.6000	4.6000	64.750	0.00	0.00	0.00
294	4.6000	6.9000	64.750	0.00	0.00	0.00
295	4.6000	9.2000	64.750	0.00	0.00	0.00
296	3.0750	9.2000	64.750	0.00	0.00	0.00
297	2.0500	9.2000	64.750	0.00	0.00	0.00
[illegible]98	1.0250	9.2000	64.750	0.00	0.00	0.00
[illegible]99	0.00000E+00	9.2000	64.750	0.00	0.00	0.00
300	0.00000E+00	9.4000	64.750	0.00	0.00	0.00
301	1.0250	9.4000	64.750	0.00	0.00	0.00
302	2.0500	9.4000	64.750	0.00	0.00	0.00
303	3.0750	9.4000	64.750	0.00	0.00	0.00
304	4.6000	9.4000	64.750	0.00	0.00	0.00
305	4.6000	11.700	64.750	0.00	0.00	0.00
306	4.6000	14.000	64.750	0.00	0.00	0.00
307	4.6000	16.300	64.750	0.00	0.00	0.00
308	4.6000	18.600	64.750	0.00	0.00	0.00
309	0.00000E+00	0.00000E+00	71.750	0.00	0.00	0.00
310	1.0250	0.00000E+00	71.750	0.00	0.00	0.00
311	2.0500	0.00000E+00	71.750	0.00	0.00	0.00
312	3.0750	0.00000E+00	71.750	0.00	0.00	0.00
313	4.6000	0.00000E+00	71.750	0.00	0.00	0.00
314	4.6000	2.3000	71.750	0.00	0.00	0.00
315	4.6000	4.6000	71.750	0.00	0.00	0.00
316	4.6000	6.9000	71.750	0.00	0.00	0.00
317	4.6000	9.2000	71.750	0.00	0.00	0.00
318	3.0750	9.2000	71.750	0.00	0.00	0.00
319	2.0500	9.2000	71.750	0.00	0.00	0.00
320	1.0250	9.2000	71.750	0.00	0.00	0.00
[illegible]21	0.00000E+00	9.2000	71.750	0.00	0.00	0.00
322	0.00000E+00	9.4000	71.750	0.00	0.00	0.00
323	1.0250	9.4000	71.750	0.00	0.00	0.00

324	2.0500	9.4000	71.750	0.00	0.00	0.00
325	3.0750	9.4000	71.750	0.00	0.00	0.00
326	4.6000	9.4000	71.750	0.00	0.00	0.00
327	4.6000	11.700	71.750	0.00	0.00	0.00
[illegible]28	4.6000	14.000	71.750	0.00	0.00	0.00
[illegible]29	4.6000	16.300	71.750	0.00	0.00	0.00
[illegible]30	4.6000	18.600	71.750	0.00	0.00	0.00
331	0.00000E+00	0.00000E+00	76.750	0.00	0.00	0.00
332	1.0250	0.00000E+00	76.750	0.00	0.00	0.00
333	2.0500	0.00000E+00	76.750	0.00	0.00	0.00
334	3.0750	0.00000E+00	76.750	0.00	0.00	0.00
335	4.6000	0.00000E+00	76.750	0.00	0.00	0.00
336	4.6000	2.3000	76.750	0.00	0.00	0.00
337	4.6000	4.6000	76.750	0.00	0.00	0.00
338	4.6000	6.9000	76.750	0.00	0.00	0.00
339	4.6000	9.2000	76.750	0.00	0.00	0.00
340	3.0750	9.2000	76.750	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
341	2.0500	9.2000	76.750	0.00	0.00	0.00
342	1.0250	9.2000	76.750	0.00	0.00	0.00
343	0.00000E+00	9.2000	76.750	0.00	0.00	0.00
344	0.00000E+00	9.4000	76.750	0.00	0.00	0.00
345	1.0250	9.4000	76.750	0.00	0.00	0.00
346	2.0500	9.4000	76.750	0.00	0.00	0.00
347	3.0750	9.4000	76.750	0.00	0.00	0.00
348	4.6000	9.4000	76.750	0.00	0.00	0.00
349	4.6000	11.700	76.750	0.00	0.00	0.00
350	4.6000	14.000	76.750	0.00	0.00	0.00
351	4.6000	16.300	76.750	0.00	0.00	0.00
[illegible]2	4.6000	18.600	76.750	0.00	0.00	0.00
[illegible]3	0.00000E+00	0.00000E+00	81.750	0.00	0.00	0.00
354	1.0250	0.00000E+00	81.750	0.00	0.00	0.00
355	2.0500	0.00000E+00	81.750	0.00	0.00	0.00
356	3.0750	0.00000E+00	81.750	0.00	0.00	0.00
357	4.6000	0.00000E+00	81.750	0.00	0.00	0.00
358	4.6000	2.3000	81.750	0.00	0.00	0.00
359	4.6000	4.6000	81.750	0.00	0.00	0.00
360	4.6000	6.9000	81.750	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
361	4.6000	9.2000	81.750	0.00	0.00	0.00
362	3.0750	9.2000	81.750	0.00	0.00	0.00
363	2.0500	9.2000	81.750	0.00	0.00	0.00
364	1.0250	9.2000	81.750	0.00	0.00	0.00
365	0.00000E+00	9.2000	81.750	0.00	0.00	0.00
366	0.00000E+00	9.4000	81.750	0.00	0.00	0.00
367	1.0250	9.4000	81.750	0.00	0.00	0.00
368	2.0500	9.4000	81.750	0.00	0.00	0.00
369	3.0750	9.4000	81.750	0.00	0.00	0.00
370	4.6000	9.4000	81.750	0.00	0.00	0.00
371	4.6000	11.700	81.750	0.00	0.00	0.00
372	4.6000	14.000	81.750	0.00	0.00	0.00
373	4.6000	16.300	81.750	0.00	0.00	0.00
374	4.6000	18.600	81.750	0.00	0.00	0.00

ALL SELECTED ELEMENTS. (LIST NODES)

ELEM MAT TYP REL NODES

1	1	1	1	1	2	24	23
2	1	1	1	2	3	25	24
3	1	1	1	3	4	26	25
4	1	1	1	4	5	27	26
5	1	1	1	5	6	28	27
6	1	1	1	6	7	29	28
7	1	1	1	7	8	30	29
8	1	1	1	8	9	31	30
9	1	1	1	9	10	32	31
10	1	1	1	10	11	33	32
11	1	1	1	11	12	34	33
12	1	1	1	12	13	35	34
13	1	1	1	14	15	37	36
14	1	1	1	15	16	38	37
15	1	1	1	16	17	39	38
16	1	1	1	17	18	40	39
17	1	1	1	18	19	41	40
18	1	1	1	19	20	42	41
19	1	1	1	20	21	43	42
20	1	1	1	21	22	44	43
ELEM	MAT	TYP	REL	NODES			

ELEM	MAT	TYP	REL	NODES			
21	1	1	1	23	24	46	45
22	1	1	1	24	25	47	46
23	1	1	1	25	26	48	47
24	1	1	1	26	27	49	48
25	1	1	1	27	28	50	49
26	1	1	1	28	29	51	50
27	1	1	1	29	30	52	51
28	1	1	1	30	31	53	52
29	1	1	1	31	32	54	53
30	1	1	1	32	33	55	54
31	1	1	1	33	34	56	55
32	1	1	1	34	35	57	56
33	1	1	1	36	37	59	58
34	1	1	1	37	38	60	59
35	1	1	1	38	39	61	60
36	1	1	1	39	40	62	61
37	1	1	1	40	41	63	62
38	1	1	1	41	42	64	63
39	1	1	1	42	43	65	64
40	1	1	1	43	44	66	65

ELEM	MAT	TYP	REL	NODES			
41	1	1	1	45	46	68	67
42	1	1	1	46	47	69	68
43	1	1	1	47	48	70	69
44	1	1	1	48	49	71	70
45	1	1	1	49	50	72	71
46	1	1	1	50	51	73	72
47	1	1	1	51	52	74	73
48	1	1	1	52	53	75	74
49	1	1	1	53	54	76	75
50	1	1	1	54	55	77	76
51	1	1	1	55	56	78	77
52	1	1	1	56	57	79	78
53	1	1	1	58	59	81	80
54	1	1	1	59	60	82	81

55	1	1	1	60	61	83	82
56	1	1	1	61	62	84	83
57	1	1	1	62	63	85	84
58	1	1	1	63	64	86	85
59	1	1	1	64	65	87	86
60	1	1	1	65	66	88	87

ELEM	MAT	TYP	REL	NODES			
61	1	1	1	67	68	90	89
62	1	1	1	68	69	91	90
63	1	1	1	69	70	92	91
64	1	1	1	70	71	93	92
65	1	1	1	71	72	94	93
66	1	1	1	72	73	95	94
67	1	1	1	73	74	96	95
68	1	1	1	74	75	97	96
69	1	1	1	75	76	98	97
70	1	1	1	76	77	99	98
71	1	1	1	77	78	100	99
72	1	1	1	78	79	101	100
73	1	1	1	80	81	103	102
74	1	1	1	81	82	104	103
75	1	1	1	82	83	105	104
76	1	1	1	83	84	106	105
77	1	1	1	84	85	107	106
78	1	1	1	85	86	108	107
79	1	1	1	86	87	109	108
80	1	1	1	87	88	110	109

ELEM	MAT	TYP	REL	NODES			
81	1	1	1	89	90	112	111
82	1	1	1	90	91	113	112
83	1	1	1	91	92	114	113
84	1	1	1	92	93	115	114
85	1	1	1	93	94	116	115
86	1	1	1	94	95	117	116
87	1	1	1	95	96	118	117
88	1	1	1	96	97	119	118
89	1	1	1	97	98	120	119
90	1	1	1	98	99	121	120
91	1	1	1	99	100	122	121
92	1	1	1	100	101	123	122
93	1	1	1	102	103	125	124
94	1	1	1	103	104	126	125
95	1	1	1	104	105	127	126
96	1	1	1	105	106	128	127
97	1	1	1	106	107	129	128
98	1	1	1	107	108	130	129
99	1	1	1	108	109	131	130
100	1	1	1	109	110	132	131

ELEM	MAT	TYP	REL	NODES			
101	1	1	1	111	112	134	133
102	1	1	1	112	113	135	134
103	1	1	1	113	114	136	135
104	1	1	1	114	115	137	136
105	1	1	1	115	116	138	137

106	1	1	1	116	117	139	138
107	1	1	1	117	118	140	139
108	1	1	1	118	119	141	140
109	1	1	1	119	120	142	141
110	1	1	1	120	121	143	142
111	1	1	1	121	122	144	143
112	1	1	1	122	123	145	144
113	1	1	1	124	125	147	146
114	1	1	1	125	126	148	147
115	1	1	1	126	127	149	148
116	1	1	1	127	128	150	149
117	1	1	1	128	129	151	150
118	1	1	1	129	130	152	151
119	1	1	1	130	131	153	152
120	1	1	1	131	132	154	153

ELEM	MAT	TYP	REL	NODES			
121	1	1	1	133	134	156	155
122	1	1	1	134	135	157	156
123	1	1	1	135	136	158	157
124	1	1	1	136	137	159	158
125	1	1	1	137	138	160	159
126	1	1	1	138	139	161	160
127	1	1	1	139	140	162	161
128	1	1	1	140	141	163	162
129	1	1	1	141	142	164	163
130	1	1	1	142	143	165	164
131	1	1	1	143	144	166	165
132	1	1	1	144	145	167	166
133	1	1	1	146	147	169	168
134	1	1	1	147	148	170	169
135	1	1	1	148	149	171	170
136	1	1	1	149	150	172	171
137	1	1	1	150	151	173	172
138	1	1	1	151	152	174	173
139	1	1	1	152	153	175	174
140	1	1	1	153	154	176	175

ELEM	MAT	TYP	REL	NODES			
141	1	1	1	155	156	178	177
142	1	1	1	156	157	179	178
143	1	1	1	157	158	180	179
144	1	1	1	158	159	181	180
145	1	1	1	159	160	182	181
146	1	1	1	160	161	183	182
147	1	1	1	161	162	184	183
148	1	1	1	162	163	185	184
149	1	1	1	163	164	186	185
150	1	1	1	164	165	187	186
151	1	1	1	165	166	188	187
152	1	1	1	166	167	189	188
153	1	1	1	168	169	191	190
154	1	1	1	169	170	192	191
155	1	1	1	170	171	193	192
.56	1	1	1	171	172	194	193
157	1	1	1	172	173	195	194
158	1	1	1	173	174	196	195
159	1	1	1	174	175	197	196

160	1	1	1	175	176	198	197

ELEM	MAT	TYP	REL	NODES			
161	1	1	1	177	178	200	199
162	1	1	1	178	179	201	200
163	1	1	1	179	180	202	201
164	1	1	1	180	181	203	202
165	1	1	1	181	182	204	203
166	1	1	1	182	183	205	204
167	1	1	1	183	184	206	205
168	1	1	1	184	185	207	206
169	1	1	1	185	186	208	207
170	1	1	1	186	187	209	208
171	1	1	1	187	188	210	209
172	1	1	1	188	189	211	210
173	1	1	1	190	191	213	212
174	1	1	1	191	192	214	213
175	1	1	1	192	193	215	214
176	1	1	1	193	194	216	215
177	1	1	1	194	195	217	216
178	1	1	1	195	196	218	217
179	1	1	1	196	197	219	218
180	1	1	1	197	198	220	219

ELEM	MAT	TYP	REL	NODES			
181	1	1	1	199	200	222	221
182	1	1	1	200	201	223	222
183	1	1	1	201	202	224	223
184	1	1	1	202	203	225	224
185	1	1	1	203	204	226	225
186	1	1	1	204	205	227	226
187	1	1	1	205	206	228	227
188	1	1	1	206	207	229	228
189	1	1	1	207	208	230	229
190	1	1	1	208	209	231	230
191	1	1	1	209	210	232	231
192	1	1	1	210	211	233	232
193	1	1	1	212	213	235	234
194	1	1	1	213	214	236	235
195	1	1	1	214	215	237	236
196	1	1	1	215	216	238	237
197	1	1	1	216	217	239	238
198	1	1	1	217	218	240	239
199	1	1	1	218	219	241	240
200	1	1	1	219	220	242	241

ELEM	MAT	TYP	REL	NODES			
201	1	1	1	221	222	244	243
202	1	1	1	222	223	245	244
203	1	1	1	223	224	246	245
204	1	1	1	224	225	247	246
205	1	1	1	225	226	248	247
206	1	1	1	226	227	249	248
[illegible]7	1	1	1	227	228	250	249
[illegible]	1	1	1	228	229	251	250
209	1	1	1	229	230	252	251
210	1	1	1	230	231	253	252

211	1	1	1	231	232	254	253
212	1	1	1	232	233	255	254
213	1	1	1	234	235	257	256
214	1	1	1	235	236	258	257
215	1	1	1	236	237	259	258
216	1	1	1	237	238	260	259
217	1	1	1	238	239	261	260
218	1	1	1	239	240	262	261
219	1	1	1	240	241	263	262
220	1	1	1	241	242	264	263

ELEM	MAT	TYP	REL	NODES			
221	1	1	1	243	244	266	265
222	1	1	1	244	245	267	266
223	1	1	1	245	246	268	267
224	1	1	1	246	247	269	268
225	1	1	1	247	248	270	269
226	1	1	1	248	249	271	270
227	1	1	1	249	250	272	271
228	1	1	1	250	251	273	272
229	1	1	1	251	252	274	273
230	1	1	1	252	253	275	274
231	1	1	1	253	254	276	275
232	1	1	1	254	255	277	276
233	1	1	1	256	257	279	278
234	1	1	1	257	258	280	279
235	1	1	1	258	259	281	280
236	1	1	1	259	260	282	281
237	1	1	1	260	261	283	282
238	1	1	1	261	262	284	283
239	1	1	1	262	263	285	284
240	1	1	1	263	264	286	285

ELEM	MAT	TYP	REL	NODES			
241	1	1	1	265	266	288	287
242	1	1	1	266	267	289	288
243	1	1	1	267	268	290	289
244	1	1	1	268	269	291	290
245	1	1	1	269	270	292	291
246	1	1	1	270	271	293	292
247	1	1	1	271	272	294	293
248	1	1	1	272	273	295	294
249	1	1	1	273	274	296	295
250	1	1	1	274	275	297	296
251	1	1	1	275	276	298	297
252	1	1	1	276	277	299	298
253	1	1	1	278	279	301	300
254	1	1	1	279	280	302	301
255	1	1	1	280	281	303	302
256	1	1	1	281	282	304	303
257	1	1	1	282	283	305	304
258	1	1	1	283	284	306	305
259	1	1	1	284	285	307	306
260	1	1	1	285	286	308	307

ELEM	MAT	TYP	REL	NODES			
261	1	1	1	287	288	310	309

262	1	1	1	288	289	311	310
263	1	1	1	289	290	312	311
264	1	1	1	290	291	313	312
265	1	1	1	291	292	314	313
266	1	1	1	292	293	315	314
267	1	1	1	293	294	316	315
268	1	1	1	294	295	317	316
269	1	1	1	295	296	318	317
270	1	1	1	296	297	319	318
271	1	1	1	297	298	320	319
272	1	1	1	298	299	321	320
273	1	1	1	300	301	323	322
274	1	1	1	301	302	324	323
275	1	1	1	302	303	325	324
276	1	1	1	303	304	326	325
277	1	1	1	304	305	327	326
278	1	1	1	305	306	328	327
279	1	1	1	306	307	329	328
280	1	1	1	307	308	330	329

ELEM	MAT	TYP	REL	NODES			
281	1	1	1	309	310	332	331
282	1	1	1	310	311	333	332
283	1	1	1	311	312	334	333
284	1	1	1	312	313	335	334
285	1	1	1	313	314	336	335
286	1	1	1	314	315	337	336
287	1	1	1	315	316	338	337
288	1	1	1	316	317	339	338
289	1	1	1	317	318	340	339
290	1	1	1	318	319	341	340
291	1	1	1	319	320	342	341
292	1	1	1	320	321	343	342
293	1	1	1	322	323	345	344
294	1	1	1	323	324	346	345
295	1	1	1	324	325	347	346
296	1	1	1	325	326	348	347
297	1	1	1	326	327	349	348
298	1	1	1	327	328	350	349
299	1	1	1	328	329	351	350
300	1	1	1	329	330	352	351

ELEM	MAT	TYP	REL	NODES			
301	1	1	1	331	332	354	353
302	1	1	1	332	333	355	354
303	1	1	1	333	334	356	355
304	1	1	1	334	335	357	356
305	1	1	1	335	336	358	357
306	1	1	1	336	337	359	358
307	1	1	1	337	338	360	359
308	1	1	1	338	339	361	360
309	1	1	1	339	340	362	361
310	1	1	1	340	341	363	362
11	1	1	1	341	342	364	363
2	1	1	1	342	343	365	364
3	1	1	1	344	345	367	366
314	1	1	1	345	346	368	367
315	1	1	1	346	347	369	368

316	1	1	1	347	348	370	369
317	1	1	1	348	349	371	370
318	1	1	1	349	350	372	371
319	1	1	1	350	351	373	372
320	1	1	1	351	352	374	373

LIST PRESSURES FOR ALL SELECTED NODES

ELEM	FACE	VALUE(S)		FACE NODES			
20	4	4.9280	0.00000E+00	22	44		
40	4	4.9280	0.00000E+00	44	66		
60	4	4.9280	0.00000E+00	66	88		
80	4	4.9280	0.00000E+00	88	110		
100	4	4.9280	0.00000E+00	110	132		
120	4	4.9280	0.00000E+00	132	154		
140	4	4.9280	0.00000E+00	154	176		
160	4	4.9280	0.00000E+00	176	198		
180	4	4.9280	0.00000E+00	198	220		
200	4	4.9280	0.00000E+00	220	242		
220	4	4.9280	0.00000E+00	242	264		
240	4	4.9280	0.00000E+00	264	286		
260	4	4.9280	0.00000E+00	286	308		
280	4	4.9280	0.00000E+00	308	330		
300	4	4.9280	0.00000E+00	330	352		
320	4	4.9280	0.00000E+00	352	374		
1	1	0.44000E-01	0.00000E+00	1	2	24	23
21	1	0.44000E-01	0.00000E+00	23	24	46	45
41	1	0.44000E-01	0.00000E+00	45	46	68	67
61	1	0.44000E-01	0.00000E+00	67	68	90	89

ELEM	FACE	VALUE(S)		FACE NODES			
81	1	0.44000E-01	0.00000E+00	89	90	112	111
101	1	0.44000E-01	0.00000E+00	111	112	134	133
121	1	0.44000E-01	0.00000E+00	133	134	156	155
141	1	0.44000E-01	0.00000E+00	155	156	178	177
161	1	0.44000E-01	0.00000E+00	177	178	200	199
181	1	0.44000E-01	0.00000E+00	199	200	222	221
201	1	0.44000E-01	0.00000E+00	221	222	244	243
221	1	0.44000E-01	0.00000E+00	243	244	266	265
241	1	0.44000E-01	0.00000E+00	265	266	288	287
261	1	0.44000E-01	0.00000E+00	287	288	310	309
281	1	0.44000E-01	0.00000E+00	309	310	332	331
301	1	0.44000E-01	0.00000E+00	331	332	354	353
2	1	0.44000E-01	0.00000E+00	2	3	25	24
22	1	0.44000E-01	0.00000E+00	24	25	47	46
42	1	0.44000E-01	0.00000E+00	46	47	69	68
62	1	0.44000E-01	0.00000E+00	68	69	91	90
82	1	0.44000E-01	0.00000E+00	90	91	113	112
102	1	0.44000E-01	0.00000E+00	112	113	135	134
122	1	0.44000E-01	0.00000E+00	134	135	157	156
142	1	0.44000E-01	0.00000E+00	156	157	179	178

ELEM	FACE	VALUE(S)		FACE NODES			
162	1	0.44000E-01	0.00000E+00	178	179	201	200
182	1	0.44000E-01	0.00000E+00	200	201	223	222
202	1	0.44000E-01	0.00000E+00	222	223	245	244
222	1	0.44000E-01	0.00000E+00	244	245	267	266
242	1	0.44000E-01	0.00000E+00	266	267	289	288
262	1	0.44000E-01	0.00000E+00	288	289	311	310
282	1	0.44000E-01	0.00000E+00	310	311	333	332

302	1	0.44000E-01	0.00000E+00	332	333	355	354
3	1	0.44000E-01	0.00000E+00	3	4	26	25
23	1	0.44000E-01	0.00000E+00	25	26	48	47
43	1	0.44000E-01	0.00000E+00	47	48	70	69
63	1	0.44000E-01	0.00000E+00	69	70	92	91
83	1	0.44000E-01	0.00000E+00	91	92	114	113
103	1	0.44000E-01	0.00000E+00	113	114	136	135
123	1	0.44000E-01	0.00000E+00	135	136	158	157
143	1	0.44000E-01	0.00000E+00	157	158	180	179
163	1	0.44000E-01	0.00000E+00	179	180	202	201
183	1	0.44000E-01	0.00000E+00	201	202	224	223
203	1	0.44000E-01	0.00000E+00	223	224	246	245
223	1	0.44000E-01	0.00000E+00	245	246	268	267

ELEM	FACE	VALUE(S)		FACE NODES			
243	1	0.44000E-01	0.00000E+00	267	268	290	289
263	1	0.44000E-01	0.00000E+00	289	290	312	311
283	1	0.44000E-01	0.00000E+00	311	312	334	333
303	1	0.44000E-01	0.00000E+00	333	334	356	355
4	1	0.44000E-01	0.00000E+00	4	5	27	26
24	1	0.44000E-01	0.00000E+00	26	27	49	48
44	1	0.44000E-01	0.00000E+00	48	49	71	70
64	1	0.44000E-01	0.00000E+00	70	71	93	92
84	1	0.44000E-01	0.00000E+00	92	93	115	114
104	1	0.44000E-01	0.00000E+00	114	115	137	136
124	1	0.44000E-01	0.00000E+00	136	137	159	158
144	1	0.44000E-01	0.00000E+00	158	159	181	180
164	1	0.44000E-01	0.00000E+00	180	181	203	202
184	1	0.44000E-01	0.00000E+00	202	203	225	224
204	1	0.44000E-01	0.00000E+00	224	225	247	246
224	1	0.44000E-01	0.00000E+00	246	247	269	268
244	1	0.44000E-01	0.00000E+00	268	269	291	290
264	1	0.44000E-01	0.00000E+00	290	291	313	312
284	1	0.44000E-01	0.00000E+00	312	313	335	334
304	1	0.44000E-01	0.00000E+00	334	335	357	356

ELEM	FACE	VALUE(S)		FACE NODES			
13	1	0.44000E-01	0.00000E+00	14	15	37	36
33	1	0.44000E-01	0.00000E+00	36	37	59	58
53	1	0.44000E-01	0.00000E+00	58	59	81	80
73	1	0.44000E-01	0.00000E+00	80	81	103	102
93	1	0.44000E-01	0.00000E+00	102	103	125	124
113	1	0.44000E-01	0.00000E+00	124	125	147	146
133	1	0.44000E-01	0.00000E+00	146	147	169	168
153	1	0.44000E-01	0.00000E+00	168	169	191	190
173	1	0.44000E-01	0.00000E+00	190	191	213	212
193	1	0.44000E-01	0.00000E+00	212	213	235	234
213	1	0.44000E-01	0.00000E+00	234	235	257	256
233	1	0.44000E-01	0.00000E+00	256	257	279	278
253	1	0.44000E-01	0.00000E+00	278	279	301	300
273	1	0.44000E-01	0.00000E+00	300	301	323	322
293	1	0.44000E-01	0.00000E+00	322	323	345	344
313	1	0.44000E-01	0.00000E+00	344	345	367	366
14	1	0.44000E-01	0.00000E+00	15	16	38	37
34	1	0.44000E-01	0.00000E+00	37	38	60	59
54	1	0.44000E-01	0.00000E+00	59	60	82	81
74	1	0.44000E-01	0.00000E+00	81	82	104	103

ELEM	FACE	VALUE(S)		FACE NODES			
94	1	0.44000E-01	0.00000E+00	103	104	126	125

114	1	0.44000E-01	0.00000E+00	125	126	148	147
134	1	0.44000E-01	0.00000E+00	147	148	170	169
154	1	0.44000E-01	0.00000E+00	169	170	192	191
174	1	0.44000E-01	0.00000E+00	191	192	214	213
194	1	0.44000E-01	0.00000E+00	213	214	236	235
214	1	0.44000E-01	0.00000E+00	235	236	258	257
234	1	0.44000E-01	0.00000E+00	257	258	280	279
254	1	0.44000E-01	0.00000E+00	279	280	302	301
274	1	0.44000E-01	0.00000E+00	301	302	324	323
294	1	0.44000E-01	0.00000E+00	323	324	346	345
314	1	0.44000E-01	0.00000E+00	345	346	368	367
15	1	0.44000E-01	0.00000E+00	16	17	39	38
35	1	0.44000E-01	0.00000E+00	38	39	61	60
55	1	0.44000E-01	0.00000E+00	60	61	83	82
75	1	0.44000E-01	0.00000E+00	82	83	105	104
95	1	0.44000E-01	0.00000E+00	104	105	127	126
115	1	0.44000E-01	0.00000E+00	126	127	149	148
135	1	0.44000E-01	0.00000E+00	148	149	171	170
155	1	0.44000E-01	0.00000E+00	170	171	193	192
ELEM	FACE	VALUE(S)		FACE NODES			
175	1	0.44000E-01	0.00000E+00	192	193	215	214
195	1	0.44000E-01	0.00000E+00	214	215	237	236
215	1	0.44000E-01	0.00000E+00	236	237	259	258
235	1	0.44000E-01	0.00000E+00	258	259	281	280
255	1	0.44000E-01	0.00000E+00	280	281	303	302
275	1	0.44000E-01	0.00000E+00	302	303	325	324
295	1	0.44000E-01	0.00000E+00	324	325	347	346
315	1	0.44000E-01	0.00000E+00	346	347	369	368
16	1	0.44000E-01	0.00000E+00	17	18	40	39
36	1	0.44000E-01	0.00000E+00	39	40	62	61
56	1	0.44000E-01	0.00000E+00	61	62	84	83
76	1	0.44000E-01	0.00000E+00	83	84	106	105
96	1	0.44000E-01	0.00000E+00	105	106	128	127
116	1	0.44000E-01	0.00000E+00	127	128	150	149
136	1	0.44000E-01	0.00000E+00	149	150	172	171
156	1	0.44000E-01	0.00000E+00	171	172	194	193
176	1	0.44000E-01	0.00000E+00	193	194	216	215
196	1	0.44000E-01	0.00000E+00	215	216	238	237
216	1	0.44000E-01	0.00000E+00	237	238	260	259
236	1	0.44000E-01	0.00000E+00	259	260	282	281
ELEM	FACE	VALUE(S)		FACE NODES			
256	1	0.44000E-01	0.00000E+00	281	282	304	303
276	1	0.44000E-01	0.00000E+00	303	304	326	325
296	1	0.44000E-01	0.00000E+00	325	326	348	347
316	1	0.44000E-01	0.00000E+00	347	348	370	369
8	4	4.9280	0.00000E+00	9	31		
28	4	4.9280	0.00000E+00	31	53		
48	4	4.9280	0.00000E+00	53	75		
68	4	4.9280	0.00000E+00	75	97		
88	4	4.9280	0.00000E+00	97	119		
108	4	4.9280	0.00000E+00	119	141		
128	4	4.9280	0.00000E+00	141	163		
148	4	4.9280	0.00000E+00	163	185		
168	4	4.9280	0.00000E+00	185	207		
188	4	4.9280	0.00000E+00	207	229		
208	4	4.9280	0.00000E+00	229	251		
228	4	4.9280	0.00000E+00	251	273		
248	4	4.9280	0.00000E+00	273	295		

268	4	4.9280	0.00000E+00	295	317
288	4	4.9280	0.00000E+00	317	339
308	4	4.9280	0.00000E+00	339	361

-ST ALL ELEMENT TYPES

).	STIF	KEYOPT VALUES									INOTPR	
1	63	0	0	0	0	0	0	0	0	0	0	QUAD. FLAT SHELL
2	8	0	0	0	0	0	0	0	0	0	0	SPAR, 3-D

LIST ALL REAL SETS

REAL CONSTANT SET 1 ITEMS 1 TO 6

0.20000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

LIST DISPLACEMENTS FOR ALL SELECTED NODES

NODE	LABEL	DISP	CDISP
1	UX	0.000000000E+00	0.000000000E+00
13	UX	0.000000000E+00	0.000000000E+00
14	UX	0.000000000E+00	0.000000000E+00
23	UX	0.000000000E+00	0.000000000E+00
35	UX	0.000000000E+00	0.000000000E+00
36	UX	0.000000000E+00	0.000000000E+00
45	UX	0.000000000E+00	0.000000000E+00
57	UX	0.000000000E+00	0.000000000E+00
58	UX	0.000000000E+00	0.000000000E+00
67	UX	0.000000000E+00	0.000000000E+00
79	UX	0.000000000E+00	0.000000000E+00
80	UX	0.000000000E+00	0.000000000E+00
89	UX	0.000000000E+00	0.000000000E+00
01	UX	0.000000000E+00	0.000000000E+00
102	UX	0.000000000E+00	0.000000000E+00
111	UX	0.000000000E+00	0.000000000E+00
123	UX	0.000000000E+00	0.000000000E+00
124	UX	0.000000000E+00	0.000000000E+00
133	UX	0.000000000E+00	0.000000000E+00
145	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
146	UX	0.000000000E+00	0.000000000E+00
155	UX	0.000000000E+00	0.000000000E+00
167	UX	0.000000000E+00	0.000000000E+00
168	UX	0.000000000E+00	0.000000000E+00
177	UX	0.000000000E+00	0.000000000E+00
189	UX	0.000000000E+00	0.000000000E+00
190	UX	0.000000000E+00	0.000000000E+00
199	UX	0.000000000E+00	0.000000000E+00
211	UX	0.000000000E+00	0.000000000E+00
212	UX	0.000000000E+00	0.000000000E+00
221	UX	0.000000000E+00	0.000000000E+00
233	UX	0.000000000E+00	0.000000000E+00
234	UX	0.000000000E+00	0.000000000E+00
243	UX	0.000000000E+00	0.000000000E+00
255	UX	0.000000000E+00	0.000000000E+00
-6	UX	0.000000000E+00	0.000000000E+00
5	UX	0.000000000E+00	0.000000000E+00
7	UX	0.000000000E+00	0.000000000E+00
278	UX	0.000000000E+00	0.000000000E+00
287	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
299	UX	0.000000000E+00	0.000000000E+00
300	UX	0.000000000E+00	0.000000000E+00
09	UX	0.000000000E+00	0.000000000E+00
321	UX	0.000000000E+00	0.000000000E+00
322	UX	0.000000000E+00	0.000000000E+00
331	UX	0.000000000E+00	0.000000000E+00
343	UX	0.000000000E+00	0.000000000E+00
344	UX	0.000000000E+00	0.000000000E+00
353	UX	0.000000000E+00	0.000000000E+00
365	UX	0.000000000E+00	0.000000000E+00
366	UX	0.000000000E+00	0.000000000E+00
1	ROTZ	0.000000000E+00	0.000000000E+00
13	ROTZ	0.000000000E+00	0.000000000E+00
14	ROTZ	0.000000000E+00	0.000000000E+00
23	ROTZ	0.000000000E+00	0.000000000E+00
35	ROTZ	0.000000000E+00	0.000000000E+00
36	ROTZ	0.000000000E+00	0.000000000E+00
45	ROTZ	0.000000000E+00	0.000000000E+00
57	ROTZ	0.000000000E+00	0.000000000E+00
58	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
67	ROTZ	0.000000000E+00	0.000000000E+00
79	ROTZ	0.000000000E+00	0.000000000E+00
80	ROTZ	0.000000000E+00	0.000000000E+00
89	ROTZ	0.000000000E+00	0.000000000E+00
101	ROTZ	0.000000000E+00	0.000000000E+00
02	ROTZ	0.000000000E+00	0.000000000E+00
11	ROTZ	0.000000000E+00	0.000000000E+00
123	ROTZ	0.000000000E+00	0.000000000E+00
124	ROTZ	0.000000000E+00	0.000000000E+00
133	ROTZ	0.000000000E+00	0.000000000E+00
145	ROTZ	0.000000000E+00	0.000000000E+00
146	ROTZ	0.000000000E+00	0.000000000E+00
155	ROTZ	0.000000000E+00	0.000000000E+00
167	ROTZ	0.000000000E+00	0.000000000E+00
168	ROTZ	0.000000000E+00	0.000000000E+00
177	ROTZ	0.000000000E+00	0.000000000E+00
189	ROTZ	0.000000000E+00	0.000000000E+00
190	ROTZ	0.000000000E+00	0.000000000E+00
199	ROTZ	0.000000000E+00	0.000000000E+00
211	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
212	ROTZ	0.000000000E+00	0.000000000E+00
221	ROTZ	0.000000000E+00	0.000000000E+00
233	ROTZ	0.000000000E+00	0.000000000E+00
234	ROTZ	0.000000000E+00	0.000000000E+00
243	ROTZ	0.000000000E+00	0.000000000E+00
255	ROTZ	0.000000000E+00	0.000000000E+00
256	ROTZ	0.000000000E+00	0.000000000E+00
265	ROTZ	0.000000000E+00	0.000000000E+00
277	ROTZ	0.000000000E+00	0.000000000E+00
3	ROTZ	0.000000000E+00	0.000000000E+00
7	ROTZ	0.000000000E+00	0.000000000E+00
299	ROTZ	0.000000000E+00	0.000000000E+00
300	ROTZ	0.000000000E+00	0.000000000E+00
309	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
321	ROTZ	0.000000000E+00	0.000000000E+00
322	ROTZ	0.000000000E+00	0.000000000E+00
331	ROTZ	0.000000000E+00	0.000000000E+00
343	ROTZ	0.000000000E+00	0.000000000E+00
344	ROTZ	0.000000000E+00	0.000000000E+00
353	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
365	ROTZ	0.000000000E+00	0.000000000E+00
366	ROTZ	0.000000000E+00	0.000000000E+00
22	ROTX	0.000000000E+00	0.000000000E+00
21	ROTX	0.000000000E+00	0.000000000E+00
20	ROTX	0.000000000E+00	0.000000000E+00
106	UX	0.000000000E+00	0.000000000E+00
84	UX	0.000000000E+00	0.000000000E+00
62	UX	0.000000000E+00	0.000000000E+00
40	UX	0.000000000E+00	0.000000000E+00
18	UX	0.000000000E+00	0.000000000E+00
10	ROTX	0.000000000E+00	0.000000000E+00
9	ROTX	0.000000000E+00	0.000000000E+00
8	ROTX	0.000000000E+00	0.000000000E+00
7	ROTX	0.000000000E+00	0.000000000E+00
6	ROTX	0.000000000E+00	0.000000000E+00
5	ROTX	0.000000000E+00	0.000000000E+00
4	ROTX	0.000000000E+00	0.000000000E+00
150	UX	0.000000000E+00	0.000000000E+00
339	UX	0.000000000E+00	0.000000000E+00
317	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
195	UX	0.000000000E+00	0.000000000E+00
73	UX	0.000000000E+00	0.000000000E+00
251	UX	0.000000000E+00	0.000000000E+00
229	UX	0.000000000E+00	0.000000000E+00
207	UX	0.000000000E+00	0.000000000E+00
185	UX	0.000000000E+00	0.000000000E+00
163	UX	0.000000000E+00	0.000000000E+00
141	UX	0.000000000E+00	0.000000000E+00
119	UX	0.000000000E+00	0.000000000E+00
97	UX	0.000000000E+00	0.000000000E+00
75	UX	0.000000000E+00	0.000000000E+00
53	UX	0.000000000E+00	0.000000000E+00
31	UX	0.000000000E+00	0.000000000E+00
9	UX	0.000000000E+00	0.000000000E+00
3	ROTX	0.000000000E+00	0.000000000E+00
2	ROTX	0.000000000E+00	0.000000000E+00
1	ROTX	0.000000000E+00	0.000000000E+00
21	UZ	0.000000000E+00	0.000000000E+00
20	UZ	0.000000000E+00	0.000000000E+00
19	UZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
18	UZ	0.000000000E+00	0.000000000E+00
17	UZ	0.000000000E+00	0.000000000E+00
16	UZ	0.000000000E+00	0.000000000E+00
15	UZ	0.000000000E+00	0.000000000E+00
8	UX	0.000000000E+00	0.000000000E+00
[illegible]0	UX	0.000000000E+00	0.000000000E+00
348	UX	0.000000000E+00	0.000000000E+00
326	UX	0.000000000E+00	0.000000000E+00

304	UX	0.000000000E+00	0.000000000E+00
282	UX	0.000000000E+00	0.000000000E+00
260	UX	0.000000000E+00	0.000000000E+00
238	UX	0.000000000E+00	0.000000000E+00
216	UX	0.000000000E+00	0.000000000E+00
5	UX	0.000000000E+00	0.000000000E+00
27	UX	0.000000000E+00	0.000000000E+00
49	UX	0.000000000E+00	0.000000000E+00
71	UX	0.000000000E+00	0.000000000E+00
93	UX	0.000000000E+00	0.000000000E+00
225	UX	0.000000000E+00	0.000000000E+00
247	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
269	UX	0.000000000E+00	0.000000000E+00
291	UX	0.000000000E+00	0.000000000E+00
313	UX	0.000000000E+00	0.000000000E+00
335	UX	0.000000000E+00	0.000000000E+00
5	UY	0.000000000E+00	0.000000000E+00
27	UY	0.000000000E+00	0.000000000E+00
49	UY	0.000000000E+00	0.000000000E+00
71	UY	0.000000000E+00	0.000000000E+00
93	UY	0.000000000E+00	0.000000000E+00
225	UY	0.000000000E+00	0.000000000E+00
247	UY	0.000000000E+00	0.000000000E+00
269	UY	0.000000000E+00	0.000000000E+00
291	UY	0.000000000E+00	0.000000000E+00
313	UY	0.000000000E+00	0.000000000E+00
335	UY	0.000000000E+00	0.000000000E+00
361	UX	0.000000000E+00	0.000000000E+00
14	UZ	0.000000000E+00	0.000000000E+00
13	UZ	0.000000000E+00	0.000000000E+00
12	UZ	0.000000000E+00	0.000000000E+00
11	UZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
10	UZ	0.000000000E+00	0.000000000E+00
9	UZ	0.000000000E+00	0.000000000E+00
8	UZ	0.000000000E+00	0.000000000E+00
172	UX	0.000000000E+00	0.000000000E+00
7	UZ	0.000000000E+00	0.000000000E+00
6	UZ	0.000000000E+00	0.000000000E+00
19	ROTX	0.000000000E+00	0.000000000E+00
5	UZ	0.000000000E+00	0.000000000E+00
4	UZ	0.000000000E+00	0.000000000E+00
3	UZ	0.000000000E+00	0.000000000E+00
2	UZ	0.000000000E+00	0.000000000E+00
1	UZ	0.000000000E+00	0.000000000E+00
11	ROTX	0.000000000E+00	0.000000000E+00
12	ROTX	0.000000000E+00	0.000000000E+00
13	ROTX	0.000000000E+00	0.000000000E+00
14	ROTX	0.000000000E+00	0.000000000E+00
15	ROTX	0.000000000E+00	0.000000000E+00
22	UZ	0.000000000E+00	0.000000000E+00
27	ROTX	0.000000000E+00	0.000000000E+00
49	ROTX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
71	ROTX	0.000000000E+00	0.000000000E+00
93	ROTX	0.000000000E+00	0.000000000E+00

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 225 ROTX   0.000000000E+00 0.000000000E+00
 247 ROTX   0.000000000E+00 0.000000000E+00
 269 ROTX   0.000000000E+00 0.000000000E+00
 291 ROTX   0.000000000E+00 0.000000000E+00
 313 ROTX   0.000000000E+00 0.000000000E+00
 335 ROTX   0.000000000E+00 0.000000000E+00
  22 UX     0.000000000E+00 0.000000000E+00
  44 UX     0.000000000E+00 0.000000000E+00
  66 UX     0.000000000E+00 0.000000000E+00
  88 UX     0.000000000E+00 0.000000000E+00
 110 UX     0.000000000E+00 0.000000000E+00
 132 UX     0.000000000E+00 0.000000000E+00
 154 UX     0.000000000E+00 0.000000000E+00
 176 UX     0.000000000E+00 0.000000000E+00
 198 UX     0.000000000E+00 0.000000000E+00
 220 UX     0.000000000E+00 0.000000000E+00
 242 UX     0.000000000E+00 0.000000000E+00
 264 UX     0.000000000E+00 0.000000000E+00

NODE  LABEL       DISP             CDISP
 286 UX     0.000000000E+00 0.000000000E+00
 308 UX     0.000000000E+00 0.000000000E+00
 330 UX     0.000000000E+00 0.000000000E+00
 352 UX     0.000000000E+00 0.000000000E+00
 374 UX     0.000000000E+00 0.000000000E+00
  18 ROTX   0.000000000E+00 0.000000000E+00
  16 ROTX   0.000000000E+00 0.000000000E+00
  17 ROTX   0.000000000E+00 0.000000000E+00
 194 UX     0.000000000E+00 0.000000000E+00
  93 ROTZ   0.000000000E+00 0.000000000E+00
  25 ROTZ   0.000000000E+00 0.000000000E+00
  35 ROTZ   0.000000000E+00 0.000000000E+00

LIST ALL COUPLED SETS

COUPLED SET=      1   DIRECTION= UY    TOTAL NODES=       2
NODES=      13      14

COUPLED SET=      2   DIRECTION= UY    TOTAL NODES=       2
NODES=      35      36

COUPLED SET=      3   DIRECTION= UY    TOTAL NODES=       2
NODES=      57      58

COUPLED SET=      4   DIRECTION= UY    TOTAL NODES=       2
NODES=      79      80

COUPLED SET=      5   DIRECTION= UY    TOTAL NODES=       2
NODES=     101     102

COUPLED SET=      6   DIRECTION= UY    TOTAL NODES=       2
NODES=     123     124

COUPLED SET=      7   DIRECTION= UY    TOTAL NODES=       2
NODES=     145     146

COUPLED SET=      8   DIRECTION= UY    TOTAL NODES=       2
NODES=     167     168

COUPLED SET=      9   DIRECTION= UY    TOTAL NODES=       2
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NODES=    189    190

COUPLED SET=     10  DIRECTION= UY     TOTAL NODES=       2
NODES=    211    212

 .UPLED SET=     11  DIRECTION= UY     TOTAL NODES=       2
NODES=    233    234

COUPLED SET=     12  DIRECTION= UY     TOTAL NODES=       2
NODES=    255    256

COUPLED SET=     13  DIRECTION= UY     TOTAL NODES=       2
NODES=    277    278

COUPLED SET=     14  DIRECTION= UY     TOTAL NODES=       2
NODES=    299    300

COUPLED SET=     15  DIRECTION= UY     TOTAL NODES=       2
NODES=    321    322

COUPLED SET=     16  DIRECTION= UY     TOTAL NODES=       2
NODES=    343    344

COUPLED SET=     17  DIRECTION= UY     TOTAL NODES=       2
NODES=    365    366

COUPLED SET=     18  DIRECTION= UY     TOTAL NODES=       2
NODES=     12     15

C  PLED SET=     19  DIRECTION= UY     TOTAL NODES=       2
   ES=     34     37

COUPLED SET=     20  DIRECTION= UY     TOTAL NODES=       2
NODES=     56     59

COUPLED SET=     21  DIRECTION= UY     TOTAL NODES=       2
NODES=     78     81

COUPLED SET=     22  DIRECTION= UY     TOTAL NODES=       2
NODES=    100    103

COUPLED SET=     23  DIRECTION= UY     TOTAL NODES=       2
NODES=    122    125

COUPLED SET=     24  DIRECTION= UY     TOTAL NODES=       2
NODES=    144    147

COUPLED SET=     25  DIRECTION= UY     TOTAL NODES=       2
NODES=    166    169

COUPLED SET=     26  DIRECTION= UY     TOTAL NODES=       2
NODES=    188    191

COUPLED SET=     27  DIRECTION= UY     TOTAL NODES=       2
NODES=    210    213

   .LED SET=     28  DIRECTION= UY     TOTAL NODES=       2
NODES=    232    235

COUPLED SET=     29  DIRECTION= UY     TOTAL NODES=       2
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NODES= 254 257

COUPLED SET= 30 DIRECTION= UY TOTAL NODES= 2
NODES= 276 279

COUPLED SET= 31 DIRECTION= UY TOTAL NODES= 2
NODES= 298 301

COUPLED SET= 32 DIRECTION= UY TOTAL NODES= 2
NODES= 320 323

COUPLED SET= 33 DIRECTION= UY TOTAL NODES= 2
NODES= 342 345

COUPLED SET= 34 DIRECTION= UY TOTAL NODES= 2
NODES= 364 367

COUPLED SET= 35 DIRECTION= UY TOTAL NODES= 2
NODES= 11 16

COUPLED SET= 36 DIRECTION= UY TOTAL NODES= 2
NODES= 33 38

COUPLED SET= 37 DIRECTION= UY TOTAL NODES= 2
NODES= 55 60

COUPLED SET= 38 DIRECTION= UY TOTAL NODES= 2
NODES= 77 82

COUPLED SET= 39 DIRECTION= UY TOTAL NODES= 2
NODES= 99 104

COUPLED SET= 40 DIRECTION= UY TOTAL NODES= 2
NODES= 121 126

COUPLED SET= 41 DIRECTION= UY TOTAL NODES= 2
NODES= 143 148

COUPLED SET= 42 DIRECTION= UY TOTAL NODES= 2
NODES= 165 170

COUPLED SET= 43 DIRECTION= UY TOTAL NODES= 2
NODES= 187 192

COUPLED SET= 44 DIRECTION= UY TOTAL NODES= 2
NODES= 209 214

COUPLED SET= 45 DIRECTION= UY TOTAL NODES= 2
NODES= 231 236

COUPLED SET= 46 DIRECTION= UY TOTAL NODES= 2
NODES= 253 258

COUPLED SET= 47 DIRECTION= UY TOTAL NODES= 2
NODES= 275 280

COUPLED SET= 48 DIRECTION= UY TOTAL NODES= 2
NODES= 297 302

COUPLED SET= 49 DIRECTION= UY TOTAL NODES= 2

NODES= 319 324

COUPLED SET= 50 DIRECTION= UY TOTAL NODES= 2
NODES= 341 346

COUPLED SET= 51 DIRECTION= UY TOTAL NODES= 2
NODES= 363 368

COUPLED SET= 52 DIRECTION= UY TOTAL NODES= 2
NODES= 10 17

COUPLED SET= 53 DIRECTION= UY TOTAL NODES= 2
NODES= 32 39

COUPLED SET= 54 DIRECTION= UY TOTAL NODES= 2
NODES= 54 61

COUPLED SET= 55 DIRECTION= UY TOTAL NODES= 2
NODES= 76 83

COUPLED SET= 56 DIRECTION= UY TOTAL NODES= 2
NODES= 98 105

COUPLED SET= 57 DIRECTION= UY TOTAL NODES= 2
NODES= 120 127

COUPLED SET= 58 DIRECTION= UY TOTAL NODES= 2
NODES= 142 149

COUPLED SET= 59 DIRECTION= UY TOTAL NODES= 2
NODES= 164 171

COUPLED SET= 60 DIRECTION= UY TOTAL NODES= 2
NODES= 186 193

COUPLED SET= 61 DIRECTION= UY TOTAL NODES= 2
NODES= 208 215

COUPLED SET= 62 DIRECTION= UY TOTAL NODES= 2
NODES= 230 237

COUPLED SET= 63 DIRECTION= UY TOTAL NODES= 2
NODES= 252 259

COUPLED SET= 64 DIRECTION= UY TOTAL NODES= 2
NODES= 274 281

COUPLED SET= 65 DIRECTION= UY TOTAL NODES= 2
NODES= 296 303

COUPLED SET= 66 DIRECTION= UY TOTAL NODES= 2
NODES= 318 325

COUPLED SET= 67 DIRECTION= UY TOTAL NODES= 2
NODES= 340 347

COUPLED SET= 68 DIRECTION= UY TOTAL NODES= 2
NODES= 362 369

COUPLED SET= 69 DIRECTION= UY TOTAL NODES= 2

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NODES=       9      18

COUPLED SET=       70  DIRECTION= UY     TOTAL NODES=       2
NODES=      31      40

 UPLED SET=        71  DIRECTION= UY     TOTAL NODES=       2
  DES=      53      62

COUPLED SET=       72  DIRECTION= UY     TOTAL NODES=       2
NODES=      75      84

COUPLED SET=       73  DIRECTION= UY     TOTAL NODES=       2
NODES=      97     106

COUPLED SET=       74  DIRECTION= UY     TOTAL NODES=       2
NODES=     119     128

COUPLED SET=       75  DIRECTION= UY     TOTAL NODES=       2
NODES=     141     150

COUPLED SET=       76  DIRECTION= UY     TOTAL NODES=       2
NODES=     163     172

COUPLED SET=       77  DIRECTION= UY     TOTAL NODES=       2
NODES=     185     194

COUPLED SET=       78  DIRECTION= UY     TOTAL NODES=       2
NODES=     207     216

COUPLED SET=       79  DIRECTION= UY     TOTAL NODES=       2
   ES=     229     238

COUPLED SET=       80  DIRECTION= UY     TOTAL NODES=       2
NODES=     251     260

COUPLED SET=       81  DIRECTION= UY     TOTAL NODES=       2
NODES=     273     282

COUPLED SET=       82  DIRECTION= UY     TOTAL NODES=       2
NODES=     295     304

COUPLED SET=       83  DIRECTION= UY     TOTAL NODES=       2
NODES=     317     326

COUPLED SET=       84  DIRECTION= UY     TOTAL NODES=       2
NODES=     339     348

COUPLED SET=       85  DIRECTION= UY     TOTAL NODES=       2
NODES=     361     370

MAXIMUM COUPLED SET NUMBER=   85

LIST ALL MATERIALS   PROPERTY= ALL

PROPERTY TABLE EX     MAT=    1  NUM. POINTS=  2
      TEMPERATURE        DATA          TEMPERATURE        DATA
    0.00000E+00   28000.         2300.0       28000.

PROPERTY TABLE DENS   MAT=    1  NUM. POINTS=  2
      TEMPERATURE        DATA          TEMPERATURE        DATA
```

0.00000E+00 0.28000 2300.0 0.28000

PROPERTY TABLE GXY MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	10730.	2300.0	10730.

PRINT NODAL DISPLACEMENTS

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
1	0.00000000E+00	-0.81175877E-01	0.00000000E+00	0.00000000E+00	-0.4873
2	0.21327425E-05	-0.75450507E-01	0.00000000E+00	0.00000000E+00	0.5568
3	0.14286798E-05	-0.59352129E-01	0.00000000E+00	0.00000000E+00	0.3843
4	0.52963848E-05	-0.36073282E-01	0.00000000E+00	0.00000000E+00	0.2402
5	0.00000000E+00	0.00000000E+00	0.00000000E+00	0.00000000E+00	0.1490
6	-0.23482377E-01	-0.46297287E-03	0.00000000E+00	0.00000000E+00	0.2379
7	-0.15322254E-01	-0.10035825E-02	0.00000000E+00	0.00000000E+00	0.1130
8	0.58102938E-03	-0.16934357E-02	0.00000000E+00	0.00000000E+00	-0.6398
9	0.00000000E+00	-0.25251833E-02	0.00000000E+00	0.00000000E+00	-0.9509
10	-0.15193221E-04	-0.18213436E-01	0.00000000E+00	0.00000000E+00	-0.1922
11	-0.13596440E-04	-0.28674421E-01	0.00000000E+00	0.00000000E+00	-0.6190
12	-0.76222937E-05	-0.35981744E-01	0.00000000E+00	0.00000000E+00	-0.3243

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
13	0.00000000E+00	-0.38590490E-01	0.00000000E+00	0.00000000E+00	-0.2682
14	0.00000000E+00	-0.38590490E-01	0.00000000E+00	0.00000000E+00	0.1656
15	-0.30944309E-05	-0.35981744E-01	0.00000000E+00	0.00000000E+00	0.2002
16	-0.48994024E-05	-0.28674421E-01	0.00000000E+00	0.00000000E+00	0.3555
17	-0.46300453E-05	-0.18213436E-01	0.00000000E+00	0.00000000E+00	0.9968
18	0.00000000E+00	-0.25251833E-02	0.00000000E+00	0.00000000E+00	0.4991
19	-0.15039878E-01	-0.27603868E-02	0.00000000E+00	0.00000000E+00	0.1014
20	-0.17511526E-01	-0.31121996E-02	0.00000000E+00	0.00000000E+00	0.1024
21	-0.11048255E-01	-0.36122772E-02	0.00000000E+00	0.00000000E+00	0.6101
22	0.00000000E+00	-0.42596112E-02	0.00000000E+00	0.00000000E+00	0.1119
23	0.00000000E+00	-0.82408173E-01	-0.35134031E-03	0.12946486E-02	-0.7014
24	0.46026605E-05	-0.76622071E-01	-0.34840836E-03	0.12567578E-02	-0.8164

***** POST1 NODAL DISPLACEMENT LISTING *****

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
25	0.74463057E-05	-0.60332926E-01	-0.33955252E-03	0.11481576E-02	-0.6877
26	0.21431914E-05	-0.36762217E-01	-0.35238688E-03	0.94024567E-03	0.1172
27	0.00000000E+00	0.00000000E+00	-0.31802591E-03	0.00000000E+00	-0.3261
28	-0.21150377E-01	-0.47706387E-03	-0.24724479E-03	0.14024176E-03	0.5297
29	-0.13721345E-01	-0.10651026E-02	-0.29503713E-04	0.23503423E-03	0.5733
30	0.49524047E-03	-0.17619423E-02	0.23601571E-03	0.25761318E-03	0.2411
31	0.00000000E+00	-0.26430268E-02	0.57982656E-03	0.20442275E-03	0.1438

32	-0.87247053E-05	-0.18849826E-01	0.62959511E-03	0.36530515E-03	-0.5601
33	-0.71373346E-05	-0.29499214E-01	0.64794484E-03	0.55520373E-03	-0.3291
34	-0.38263822E-05	-0.36918308E-01	0.65675334E-03	0.63642404E-03	-0.2487
35	0.00000000E+00	-0.39562645E-01	0.65935683E-03	0.66611278E-03	-0.2318
36	0.00000000E+00	-0.39562645E-01	-0.33788985E-03	0.13225455E-02	0.1

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
37	-0.45069645E-05	-0.36918308E-01	-0.33971587E-03	0.12951029E-02	0.1582
38	-0.73919076E-05	-0.29499214E-01	-0.34487854E-03	0.12064228E-02	0.2252
39	-0.72159157E-05	-0.18849826E-01	-0.35178655E-03	0.10827120E-02	0.3270
40	0.00000000E+00	-0.26430268E-02	-0.36335717E-03	0.88616163E-03	-0.9278
41	-0.14048424E-01	-0.28867501E-02	-0.83796959E-04	0.39455221E-03	0.1600
42	-0.16290411E-01	-0.32530791E-02	0.26483082E-03	0.34285208E-03	0.2788
43	-0.10272637E-01	-0.37608488E-02	0.64525208E-03	0.31453188E-03	0.1958
44	0.00000000E+00	-0.44132785E-02	0.10167587E-02	0.30381839E-03	-0.4254
45	0.00000000E+00	-0.80536420E-01	-0.10748477E-02	-0.18172962E-02	-0.5212
46	0.83273178E-06	-0.74858848E-01	-0.10702340E-02	-0.17001388E-02	-0.1194
47	0.46086400E-05	-0.58898925E-01	-0.10561028E-02	-0.13953271E-02	-0.4087
48	0.12795964E-04	-0.35879987E-01	-0.99953101E-03	-0.95217414E-03	-0.1323

***** POST1 NODAL DISPLACEMENT LISTING *****

AD STEP 1 ITERATION= 1 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
49	0.00000000E+00	0.00000000E+00	-0.10193725E-02	0.00000000E+00	-0.1258
50	-0.19055722E-01	-0.73752184E-03	-0.69678558E-03	0.25025939E-03	0.8582
51	-0.11036069E-01	-0.14887637E-02	-0.12169757E-03	0.40911835E-03	0.9273
52	0.20574198E-02	-0.24755489E-02	0.86999972E-03	0.45005069E-03	0.5200
53	0.00000000E+00	-0.36046128E-02	0.18973219E-02	0.35013663E-03	0.3691
54	0.20956736E-04	-0.20748253E-01	0.19542158E-02	0.55196581E-03	0.3260
55	0.21048344E-04	-0.31852448E-01	0.19588931E-02	0.64524483E-03	-0.7740
56	0.12744869E-04	-0.39572306E-01	0.19562254E-02	0.68820746E-03	-0.1778
57	0.00000000E+00	-0.42321558E-01	0.19543721E-02	0.70509617E-03	-0.1960
58	0.00000000E+00	-0.42321558E-01	-0.97293058E-03	0.37705231E-03	0.9813
59	-0.10215225E-04	-0.39572306E-01	-0.98170657E-03	0.36109976E-03	0.1045
60	-0.17154620E-04	-0.31852448E-01	-0.10069842E-02	0.30964648E-03	0.1105

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

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THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

ODE	UX	UY	UZ	ROTX	RO
61	-0.17685404E-04	-0.20748253E-01	-0.10464653E-02	0.24090308E-03	0.2010
62	0.00000000E+00	-0.36046128E-02	-0.11174763E-02	0.10150892E-03	0.6931
63	-0.14347531E-01	-0.40037332E-02	-0.22944859E-03	0.54931336E-03	-0.1305
64	-0.16335326E-01	-0.44825904E-02	0.81592461E-03	0.50734922E-03	-0.1488

65	-0.10193799E-01	-0.50434938E-02	0.19425907E-02	0.45806166E-03	-0.7985
66	0.00000000E+00	-0.57128447E-02	0.31044279E-02	0.43733695E-03	-0.2411
67	0.00000000E+00	-0.66584511E-01	-0.17306491E-02	-0.47426885E-02	0.7015
68	-0.35807529E-04	-0.61741718E-01	-0.17461796E-02	-0.45635813E-02	0.7830
69	-0.61119010E-04	-0.48215146E-01	-0.17839087E-02	-0.39194036E-02	-0.2953
70	-0.63613406E-04	-0.28951344E-01	-0.18469660E-02	-0.24304568E-02	-0.1334
71	0.00000000E+00	0.00000000E+00	-0.16664674E-02	0.00000000E+00	-0.4674
72	-0.12542135E-01	-0.11303298E-02	-0.13674827E-02	0.48550425E-03	0.2153

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
73	-0.45877147E-02	-0.28261568E-02	0.32081559E-03	0.69837979E-03	0.2129
74	0.51934884E-02	-0.45017473E-02	0.19138792E-02	0.75866192E-03	0.1002
75	0.00000000E+00	-0.60368209E-02	0.35297074E-02	0.71176533E-03	0.2270
76	0.61975616E-04	-0.23653484E-01	0.33304464E-02	0.78214197E-03	0.4611
77	0.57871127E-04	-0.34865062E-01	0.32229206E-02	0.77576835E-03	-0.3047
78	0.33659947E-04	-0.42615193E-01	0.31534642E-02	0.74689052E-03	-0.1582
79	0.00000000E+00	-0.45368781E-01	0.31296375E-02	0.73519142E-03	-0.1817
80	0.00000000E+00	-0.45368781E-01	-0.14822452E-02	0.11354857E-02	0.4226
81	-0.16722655E-04	-0.42615193E-01	-0.15036473E-02	0.11477497E-02	0.4084
82	-0.28572084E-04	-0.34865062E-01	-0.15673730E-02	0.11725917E-02	0.3282
83	-0.30276913E-04	-0.23653484E-01	-0.16706924E-02	0.11923598E-02	0.3469
84	0.00000000E+00	-0.60368209E-02	-0.18916292E-02	0.11590098E-02	0.6396

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
85	-0.14814182E-01	-0.66625468E-02	-0.27867497E-03	0.76038272E-03	-0.7046
86	-0.16861456E-01	-0.72889035E-02	0.13942305E-02	0.67621652E-03	-0.8895
87	-0.10513110E-01	-0.79010536E-02	0.31746956E-02	0.56589742E-03	-0.5692
88	0.00000000E+00	-0.85560861E-02	0.51675954E-02	0.52367696E-03	0.2457
89	0.00000000E+00	-0.55132223E-01	-0.21143831E-02	0.13651762E-02	0.2757
90	-0.49340439E-04	-0.50103403E-01	-0.21645735E-02	0.13584061E-02	0.3010
91	-0.89635649E-04	-0.36445588E-01	-0.23219550E-02	0.13253634E-02	0.3663
92	-0.10811199E-03	-0.18552001E-01	-0.25794117E-02	0.12501416E-02	0.3350
93	0.00000000E+00	0.00000000E+00	-0.33224502E-02	0.00000000E+00	-0.6974
94	-0.26450269E-02	-0.42178806E-02	-0.34867969E-03	0.12444886E-02	-0.1118
95	0.17822820E-02	-0.70699588E-02	0.15411658E-02	0.10307354E-02	-0.9679
96	0.74053922E-02	-0.90484700E-02	0.32690181E-02	0.10678028E-02	-0.3695

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
97	0.00000000E+00	-0.10609872E-01	0.51584079E-02	0.14580464E-02	0.2250

98	0.64410328E-04	-0.27990643E-01	0.45010291E-02	0.14693142E-02	-0.2792
99	0.58452303E-04	-0.38919788E-01	0.42191731E-02	0.14695573E-02	-0.2400
100	0.33537256E-04	-0.46457931E-01	0.40549295E-02	0.14674986E-02	-0.2055
101	0.00000000E+00	-0.49135027E-01	0.40009548E-02	0.14666237E-02	-0.1945
102	0.00000000E+00	-0.49135027E-01	-0.17508684E-02	0.50217431E-03	-0.[illegible]99
103	-0.15595773E-04	-0.46457931E-01	-0.17870801E-02	0.50321702E-03	-0.[illegible]73
104	-0.27022581E-04	-0.38919788E-01	-0.18964261E-02	0.50509721E-03	-0.2931
105	-0.29415458E-04	-0.27990643E-01	-0.20821058E-02	0.51318539E-03	-0.2651
106	0.00000000E+00	-0.10609872E-01	-0.25040730E-02	0.52024198E-03	0.6286
107	-0.14974935E-01	-0.11283605E-01	-0.20042158E-03	0.12017995E-02	-0.1993
108	-0.17089209E-01	-0.11908042E-01	0.19009008E-02	0.82290549E-03	-0.2715

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
109	-0.10668747E-01	-0.12466571E-01	0.41328048E-02	0.59243521E-03	-0.1762
110	0.00000000E+00	-0.13031627E-01	0.67997304E-02	0.52246454E-03	0.1079
111	0.00000000E+00	-0.82287920E-01	-0.20664421E-02	0.10632830E-01	0.4289
112	-0.19372791E-05	-0.77505566E-01	-0.21318002E-02	0.10490233E-01	0.5457
113	-0.46989596E-05	-0.64124494E-01	-0.23344837E-02	0.99594061E-02	0.1017
114	-0.10678004E-04	-0.45000641E-01	-0.27160582E-02	0.87936009E-02	0.2459
115	-0.67797728E-04	-0.15725283E-01	-0.37503690E-02	0.62677475E-02	0.6571
116	-0.12943834E-01	-0.15200449E-01	0.29924932E-03	0.19400953E-02	-0.1972
117	-0.50181600E-02	-0.15490453E-01	0.22779875E-02	0.10552147E-02	-0.2055
118	0.48961760E-02	-0.16180524E-01	0.39820719E-02	0.10529155E-02	-0.1[illegible]5
119	0.00000000E+00	-0.16993831E-01	0.59639857E-02	0.17476838E-02	-0.[illegible]
120	-0.42362843E-07	-0.34698777E-01	0.50434929E-02	0.16784580E-02	-0.1077

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
121	0.11593436E-05	-0.45867594E-01	0.46674173E-02	0.16738933E-02	-0.4221
122	0.10513766E-05	-0.53580574E-01	0.44498862E-02	0.16939698E-02	-0.2306
123	0.00000000E+00	-0.56320029E-01	0.43784933E-02	0.17037227E-02	-0.1856
124	0.00000000E+00	-0.56320029E-01	-0.16755366E-02	0.44153397E-02	-0.5905
125	-0.51121743E-06	-0.53580574E-01	-0.17198507E-02	0.44064384E-02	-0.6652
126	-0.78666407E-06	-0.45867594E-01	-0.18546929E-02	0.43897642E-02	-0.9291
127	-0.68550479E-06	-0.34698777E-01	-0.20852078E-02	0.43910344E-02	-0.1520
128	0.00000000E+00	-0.16993831E-01	-0.26333775E-02	0.43760541E-02	-0.1796
129	-0.15004429E-01	-0.17450872E-01	-0.52393501E-04	0.16221061E-02	0.2394
130	-0.17087446E-01	-0.17873671E-01	0.21522259E-02	0.75918458E-03	0.4054
131	-0.10657957E-01	-0.18254547E-01	0.44989577E-02	0.46730687E-03	0.2683
132	0.00000000E+00	-0.18592739E-01	0.74542431E-02	0.39306694E-03	-0.8330

***** POST1 NODAL DISPLACEMENT LISTING *****

..AD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
133	0.00000000E+00	-0.11499264	-0.66986272E-03	0.29326410E-02	0.3672
134	-0.40173392E-04	-0.10879796	-0.70483297E-03	0.28944392E-02	0.4676
135	-0.87822228E-04	-0.91376763E-01	-0.80542083E-03	0.28117787E-02	0.8583
136	-0.15247658E-03	-0.66219599E-01	-0.94641611E-03	0.27402702E-02	0.1908
137	-0.30693595E-03	-0.26484530E-01	-0.11083019E-02	0.22864074E-02	0.4152
138	-0.22157527E-01	-0.26780800E-01	0.16878696E-03	0.94922131E-03	-0.2189
139	-0.14417852E-01	-0.26806765E-01	0.18536402E-02	0.58888411E-03	-0.3382
140	0.27485254E-03	-0.26881766E-01	0.32536603E-02	0.61968169E-03	-0.2520
141	0.00000000E+00	-0.27030524E-01	0.46497564E-02	0.10522784E-02	-0.4968
142	-0.51090069E-04	-0.44414514E-01	0.40802881E-02	0.94296100E-03	-0.6280
143	-0.48091523E-04	-0.55682736E-01	0.38205857E-02	0.87592408E-03	-0.2930
144	-0.28161088E-04	-0.63544682E-01	0.36657492E-02	0.84227732E-03	-0.1590

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
145	0.00000000E+00	-0.66348679E-01	0.36146221E-02	0.83158054E-03	-0.1250
146	0.00000000E+00	-0.66348679E-01	-0.63149440E-03	0.29272233E-02	-0.7491
147	0.17116381E-04	-0.63544682E-01	-0.66339016E-03	0.29357409E-02	-0.8138
148	0.29171281E-04	-0.55682736E-01	-0.75984974E-03	0.29611766E-02	-0.1063
149	0.30876984E-04	-0.44414514E-01	-0.92381969E-03	0.29957610E-02	-0.1796
150	0.00000000E+00	-0.27030524E-01	-0.12985002E-02	0.30095998E-02	-0.4457
151	-0.14325503E-01	-0.27201938E-01	0.37184413E-03	0.83296821E-03	0.4076
152	-0.16398316E-01	-0.27352146E-01	0.18437224E-02	0.40810154E-03	0.7050
153	-0.10258525E-01	-0.27486031E-01	0.34096340E-02	0.25982265E-03	0.4793
154	0.00000000E+00	-0.27544829E-01	0.54405464E-02	0.22180078E-03	0.5464
155	0.00000000E+00	-0.11732900	0.24264254E-02	-0.35939811E-02	0.1586
156	-0.97181696E-04	-0.11122177	0.24343300E-02	-0.35879583E-02	0.1809

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
157	-0.20236368E-03	-0.94030942E-01	0.24565599E-02	-0.35707748E-02	0.2323
158	-0.32026389E-03	-0.69152334E-01	0.24885306E-02	-0.35469996E-02	0.1696
159	-0.51064333E-03	-0.29601178E-01	0.25173442E-02	-0.33765980E-02	-0.1234
160	-0.23014201E-01	-0.29784035E-01	0.21702797E-02	-0.46744700E-03	0.1867
161	-0.15512417E-01	-0.30036213E-01	0.17546099E-02	-0.11303415E-03	0.5438
162	-0.45167178E-03	-0.30184606E-01	0.13836570E-02	-0.54766504E-04	0.4385
163	0.00000000E+00	-0.30279133E-01	0.10111367E-02	-0.14767193E-03	0.4134
164	-0.62107407E-04	-0.47115954E-01	0.11486262E-02	-0.17057883E-03	0.9358
165	-0.60116080E-04	-0.58049594E-01	0.12110276E-02	-0.18451233E-03	-0.1082
166	-0.35657353E-04	-0.65681753E-01	0.12483918E-02	-0.19602301E-03	-0.2184
167	0.00000000E+00	-0.68404387E-01	0.12604617E-02	-0.20081768E-03	-0.2137
168	0.00000000E+00	-0.68404387E-01	0.14847420E-02	-0.34719037E-02	-0.7838

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1

TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
169	0.23048311E-04	-0.65681753E-01	0.14927344E-02	-0.34667063E-02	-0.8
170	0.39083930E-04	-0.58049594E-01	0.15168260E-02	-0.34541602E-02	-0.8697
171	0.40861738E-04	-0.47115954E-01	0.15580755E-02	-0.34449595E-02	-0.9909
172	0.00000000E+00	-0.30279133E-01	0.16545635E-02	-0.33652719E-02	-0.6270
173	-0.14028837E-01	-0.30473391E-01	0.12293126E-02	-0.42431765E-03	-0.1500
174	-0.16057144E-01	-0.30603673E-01	0.85925883E-03	-0.81867176E-04	-0.1746
175	-0.10044838E-01	-0.30682874E-01	0.46726133E-03	-0.22255450E-05	-0.1875
176	0.00000000E+00	-0.30638554E-01	-0.54426712E-04	0.14785667E-04	-0.1682
177	0.00000000E+00	-0.10695960	0.47878033E-02	-0.22409396E-02	-0.1523
178	-0.27759377E-04	-0.10119645	0.48297855E-02	-0.21294158E-02	-0.2201
179	-0.62380619E-04	-0.84981363E-01	0.49535000E-02	-0.18542114E-02	-0.5259
180	-0.11402309E-03	-0.61538860E-01	0.51369159E-02	-0.15582160E-02	-0.1455

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
181	-0.25787754E-03	-0.24483224E-01	0.54375922E-02	-0.84826038E-03	-0.2691
182	-0.20619252E-01	-0.24777617E-01	0.35844319E-02	-0.13605662E-02	0.6329
183	-0.12997701E-01	-0.24775029E-01	0.15760345E-02	-0.80207875E-03	0.7385
184	0.78659661E-03	-0.24885417E-01	-0.53130418E-04	-0.78083514E-03	0.45
185	0.00000000E+00	-0.25109280E-01	-0.17031475E-02	-0.13502875E-02	0.98
186	-0.44383318E-04	-0.41811514E-01	-0.10274024E-02	-0.12305430E-02	0.6720
187	-0.41294149E-04	-0.52572821E-01	-0.72569256E-03	-0.11559454E-02	0.2877
188	-0.24056178E-04	-0.60062000E-01	-0.54747383E-03	-0.11195210E-02	0.1448
189	0.00000000E+00	-0.62730576E-01	-0.48807599E-03	-0.11080339E-02	0.1118
190	0.00000000E+00	-0.62730576E-01	0.30978342E-02	-0.12066090E-02	-0.7879
191	0.13562318E-04	-0.60062000E-01	0.31344060E-02	-0.12186420E-02	-0.7419
192	0.23147935E-04	-0.52572821E-01	0.32455101E-02	-0.12568268E-02	-0.5578

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
193	0.24579159E-04	-0.41811514E-01	0.34344568E-02	-0.13228306E-02	0.5759
194	0.00000000E+00	-0.25109280E-01	0.38674535E-02	-0.14114323E-02	0.1981
195	-0.14222493E-01	-0.25323242E-01	0.18744766E-02	-0.11641545E-02	-0.4372
196	-0.16280282E-01	-0.25516348E-01	0.13032277E-03	-0.53121649E-03	-0.5917
197	-0.10183917E-01	-0.25689855E-01	-0.17235686E-02	-0.27878503E-03	-0.3634
198	0.00000000E+00	-0.25795114E-01	-0.40955705E-02	-0.21262092E-03	-0.1449
199	0.00000000E+00	-0.80651471E-01	0.57813284E-02	-0.84788201E-02	-0.4272
200	-0.91204149E-05	-0.75903796E-01	0.58442707E-02	-0.84116531E-02	-0.515
1	-0.17827074E-04	-0.62658887E-01	0.60391246E-02	-0.80803765E-02	-0.892
202	-0.26996678E-04	-0.43842451E-01	0.64120424E-02	-0.71395686E-02	-0.1990
203	-0.85147992E-04	-0.15483206E-01	0.74205500E-02	-0.47098422E-02	-0.4566
204	-0.12425704E-01	-0.14858294E-01	0.32537302E-02	-0.16201407E-02	0.2064

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
205	-0.47778037E-02	-0.15241029E-01	0.12443414E-02	-0.11201037E-02	0.1987
206	0.48841121E-02	-0.16032295E-01	-0.50567659E-03	-0.11648993E-02	0.9388
207	0.00000000E+00	-0.16915630E-01	-0.25103966E-02	-0.17302776E-02	0.2428
208	0.73044005E-05	-0.34321941E-01	-0.16164917E-02	-0.16551801E-02	0.8952
209	0.81593503E-05	-0.45373688E-01	-0.12521871E-02	-0.16396476E-02	0.4053
210	0.52356958E-05	-0.53012394E-01	-0.10408129E-02	-0.16450914E-02	0.2551
211	0.00000000E+00	-0.55726197E-01	-0.97223718E-03	-0.16486212E-02	0.2220
212	0.00000000E+00	-0.55726197E-01	0.38329633E-02	-0.27202321E-02	-0.8803
213	-0.33630302E-05	-0.53012394E-01	0.38751568E-02	-0.27157186E-02	-0.7840
214	-0.56033266E-05	-0.45373688E-01	0.40031452E-02	-0.27060671E-02	-0.4681
215	-0.56739347E-05	-0.34321941E-01	0.42223121E-02	-0.26974406E-02	0.1234
216	0.00000000E+00	-0.16915630E-01	0.47444682E-02	-0.26894772E-02	0.6893

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
217	-0.14620524E-01	-0.17390349E-01	0.21553434E-02	-0.12739913E-02	-0.2706
218	-0.16658392E-01	-0.17826107E-01	-0.54334335E-04	-0.71891731E-03	-0.3979
219	-0.10395424E-01	-0.18219115E-01	-0.23892687E-02	-0.44554571E-03	-0.2680
220	0.00000000E+00	-0.18579355E-01	-0.53121417E-02	-0.36854206E-03	0.5087
221	0.00000000E+00	-0.56970973E-01	0.59126035E-02	-0.28430188E-02	-0.6587
222	-0.52343085E-04	-0.51863420E-01	0.59592396E-02	-0.27456694E-02	-0.6688
223	-0.95749930E-04	-0.37905085E-01	0.61068516E-02	-0.24755510E-02	-0.7129
224	-0.11702930E-03	-0.19396529E-01	0.63456362E-02	-0.20888527E-02	-0.9269
225	0.00000000E+00	0.00000000E+00	0.70634859E-02	0.00000000E+00	-0.1845
226	-0.36986131E-02	-0.45226443E-02	0.39302242E-02	-0.11040561E-02	-0.2254
227	0.62320861E-03	-0.74175122E-02	0.19597770E-02	-0.99740399E-03	-0.2577
228	0.68012602E-02	-0.93858631E-02	0.15884381E-03	-0.11079816E-02	-0.8564

***** POST1 NODAL DISPLACEMENT LISTING *****

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
229	0.00000000E+00	-0.10945326E-01	-0.17899906E-02	-0.15321188E-02	0.4262
230	0.67407359E-04	-0.27871542E-01	-0.11579483E-02	-0.16284630E-02	0.2730
231	0.61637099E-04	-0.38583314E-01	-0.88951290E-03	-0.17423179E-02	0.2708
232	0.35371478E-04	-0.45970629E-01	-0.73618651E-03	-0.18195933E-02	0.3081
233	0.00000000E+00	-0.48593418E-01	-0.68510702E-03	-0.18476498E-02	0.3227
234	0.00000000E+00	-0.48593418E-01	0.39526403E-02	-0.18138315E-02	-0.1231
235	-0.17226312E-04	-0.45970629E-01	0.39852554E-02	-0.17871819E-02	-0.1092
236	-0.29626176E-04	-0.38583314E-01	0.40847744E-02	-0.17158804E-02	-0.6914
237	-0.31894698E-04	-0.27871542E-01	0.42546765E-02	-0.16308914E-02	-0.1696
238	0.00000000E+00	-0.10945326E-01	0.46473229E-02	-0.15451454E-02	-0.1086

239	-0.14625156E-01	-0.11643364E-01	0.22912363E-02	-0.10105021E-02	0.4354
240	-0.16718922E-01	-0.12279903E-01	0.16326892E-03	-0.61907929E-03	-0.4267

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
241	-0.10449815E-01	-0.12836141E-01	-0.20769371E-02	-0.47180541E-03	-0.5944
242	0.00000000E+00	-0.13380246E-01	-0.47375728E-02	-0.42894420E-03	0.9542
243	0.00000000E+00	-0.60423689E-01	0.57523871E-02	0.42835040E-02	-0.9282
244	-0.42503606E-04	-0.55930973E-01	0.57710534E-02	0.42625074E-02	-0.8345
245	-0.72354156E-04	-0.43446164E-01	0.58184949E-02	0.40548069E-02	-0.4073
246	-0.75312061E-04	-0.25836026E-01	0.59028193E-02	0.31444577E-02	0.9788
247	0.00000000E+00	0.00000000E+00	0.57777207E-02	0.00000000E+00	0.4022
248	-0.10612132E-01	-0.16431692E-02	0.49794006E-02	-0.37511845E-03	-0.2264
249	-0.33617096E-02	-0.37221693E-02	0.29609474E-02	-0.57272677E-03	-0.1966
250	0.53402156E-02	-0.56274093E-02	0.11843676E-02	-0.68587223E-03	-0.8790
251	0.00000000E+00	-0.72770010E-02	-0.62464402E-03	-0.84677897E-03	-0.2395
252	0.73253614E-04	-0.23929870E-01	-0.37326249E-03	-0.89945901E-03	-0.7240

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	
253	0.67564500E-04	-0.34459553E-01	-0.25683860E-03	-0.87690206E-03	0.1073
254	0.39216814E-04	-0.41736143E-01	-0.17982791E-03	-0.84431489E-03	0.4066
255	0.00000000E+00	-0.44322554E-01	-0.15482235E-03	-0.83072228E-03	0.4817
256	0.00000000E+00	-0.44322554E-01	0.38483112E-02	-0.91694776E-03	-0.1987
257	-0.20520200E-04	-0.41736143E-01	0.38682154E-02	-0.92910470E-03	-0.1787
258	-0.35326352E-04	-0.34459553E-01	0.39269192E-02	-0.95506700E-03	-0.1207
259	-0.37833629E-04	-0.23929870E-01	0.40249876E-02	-0.96113881E-03	-0.2972
260	0.00000000E+00	-0.72770010E-02	0.42421794E-02	-0.94029298E-03	0.2158
261	-0.14637845E-01	-0.79928824E-02	0.23715504E-02	-0.32862656E-04	-0.1443
262	-0.16755514E-01	-0.86645151E-02	0.50550389E-03	-0.32091970E-03	-0.2367
263	-0.10480614E-01	-0.92766361E-02	-0.14503375E-02	-0.40104537E-03	-0.1589
264	0.00000000E+00	-0.99109529E-02	-0.36324623E-02	-0.41518501E-03	-0.1480

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
265	0.00000000E+00	-0.84274446E-01	0.52195052E-02	0.68530669E-02	-0.1198
266	-0.26977655E-05	-0.78372552E-01	0.52056205E-02	0.66161468E-02	-0.1125
267	-0.28824713E-05	-0.61774301E-01	0.51655765E-02	0.59371747E-02	-0.80
268	0.10758175E-05	-0.37807304E-01	0.50690206E-02	0.47655900E-02	0.39
269	0.00000000E+00	0.00000000E+00	0.49872524E-02	0.00000000E+00	0.4056
270	-0.20133242E-01	-0.85240629E-03	0.45134760E-02	-0.20988981E-03	-0.7868
271	-0.12111247E-01	-0.17503149E-02	0.37482050E-02	-0.34172089E-03	-0.9447

272	0.15940129E-02	-0.28130137E-02	0.25048716E-02	-0.38320789E-03	-0.5640
273	0.00000000E+00	-0.39771850E-02	0.12885654E-02	-0.35780175E-03	-0.2240
274	0.23220697E-04	-0.21809019E-01	0.11092549E-02	-0.33229198E-03	-0.4330
275	0.23574923E-04	-0.33262045E-01	0.10650178E-02	-0.27752640E-03	0.3448
276	0.14233299E-04	-0.41220662E-01	0.10385872E-02	-0.21939467E-03	0.6078

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
277	0.00000000E+00	-0.44054138E-01	0.10318888E-02	-0.19558959E-03	0.6753
278	0.00000000E+00	-0.44054138E-01	0.34484483E-02	0.43918451E-02	-0.2763
279	-0.11308399E-04	-0.41220662E-01	0.34490812E-02	0.43677711E-02	-0.2520
280	-0.18982568E-04	-0.33262045E-01	0.34506867E-02	0.43082520E-02	-0.1784
281	-0.19678453E-04	-0.21809019E-01	0.34468416E-02	0.42501895E-02	-0.5771
282	0.00000000E+00	-0.39771850E-02	0.34171941E-02	0.41148025E-02	-0.1275
283	-0.14808071E-01	-0.44459279E-02	0.23707338E-02	0.18657764E-03	-0.1275
284	-0.16889288E-01	-0.49541217E-02	0.11282199E-02	-0.27436471E-03	-0.9819
285	-0.10543252E-01	-0.55014528E-02	-0.15335926E-03	-0.39217560E-03	0.3546
286	0.00000000E+00	-0.61176828E-02	-0.13672275E-02	-0.41861003E-03	-0.1216
287	0.00000000E+00	-0.88732854E-01	0.43978900E-02	-0.28237377E-02	-0.1457
288	0.69672202E-05	-0.82540091E-01	0.43921031E-02	-0.27505609E-02	-0.1455

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
289	0.11223283E-04	-0.65123640E-01	0.43705292E-02	-0.25227382E-02	-0.1477
290	0.91498683E-05	-0.39962983E-01	0.43554261E-02	-0.20352543E-02	-0.1791
291	0.00000000E+00	0.00000000E+00	0.42287832E-02	0.00000000E+00	-0.1854
292	-0.22261142E-01	-0.57841266E-03	0.40838205E-02	-0.19185113E-03	0.1969
293	-0.14513919E-01	-0.11936764E-02	0.37515244E-02	-0.28059513E-03	0.2172
294	0.31298899E-03	-0.18882906E-02	0.35198950E-02	-0.23595919E-03	0.1238
295	0.00000000E+00	-0.26981248E-02	0.32373885E-02	-0.10254508E-03	0.2173
296	-0.56832586E-05	-0.20317529E-01	0.30728314E-02	-0.91298970E-04	0.7184
297	-0.51351949E-05	-0.31729672E-01	0.29770482E-02	-0.11971365E-03	0.7805
298	-0.28291824E-05	-0.39689891E-01	0.29260851E-02	-0.15536277E-03	0.8623
299	0.00000000E+00	-0.42528604E-01	0.29078931E-02	-0.17014155E-03	0.8868
300	0.00000000E+00	-0.42528604E-01	0.27347155E-02	-0.24741062E-02	-0.3619

***** POST1 NODAL DISPLACEMENT LISTING *****

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
301	-0.14343970E-05	-0.39689891E-01	0.27230524E-02	-0.24609208E-02	-0.3398
302	-0.22547465E-05	-0.31729672E-01	0.26869592E-02	-0.24304873E-02	-0.2536
303	-0.18341128E-05	-0.20317529E-01	0.26295868E-02	-0.23996669E-02	-0.1081
304	0.00000000E+00	-0.26981248E-02	0.24968803E-02	-0.23434619E-02	0.2298

305	-0.14546323E-01	-0.29677586E-02	0.22489443E-02	-0.42309835E-03	-0.3705
306	-0.16670988E-01	-0.33175572E-02	0.19441713E-02	-0.40256628E-03	-0.1437
307	-0.10437234E-01	-0.37567144E-02	0.16676814E-02	-0.44041296E-03	-0.9234
308	0.00000000E+00	-0.42829639E-02	0.15721871E-02	-0.45290200E-03	0.7378
309	0.00000000E+00	-0.71006840E-01	0.39310296E-02	-0.63232127E-02	-0.1760
310	-0.20406448E-05	-0.65965555E-01	0.39282972E-02	-0.61245207E-02	-0.[illegible]2
311	-0.23394728E-05	-0.51815020E-01	0.39277622E-02	-0.54301403E-02	-0.2144
312	0.15721122E-05	-0.31466403E-01	0.39187915E-02	-0.39295655E-02	-0.3251

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
313	0.00000000E+00	0.00000000E+00	0.39498724E-02	0.00000000E+00	-0.1105
314	-0.14557962E-01	-0.67506407E-03	0.38704314E-02	-0.31617040E-03	0.1632
315	-0.64149590E-02	-0.15070503E-02	0.40902686E-02	-0.36277968E-03	0.2151
316	0.43282043E-02	-0.23945176E-02	0.42264385E-02	-0.19031935E-03	0.1308
317	0.00000000E+00	-0.32764807E-02	0.43607492E-02	0.20599990E-03	0.5452
318	-0.12723727E-06	-0.20935862E-01	0.42060695E-02	0.48084203E-03	0.1728
319	0.56129400E-06	-0.32080381E-01	0.41519206E-02	0.67805726E-03	0.1359
320	0.48997775E-06	-0.39786906E-01	0.41089632E-02	0.79272403E-03	0.1213
321	0.00000000E+00	-0.42526130E-01	0.40954010E-02	0.83182723E-03	0.1173
322	0.00000000E+00	-0.42526130E-01	0.23448800E-02	-0.18477535E-02	-0.4967
323	0.33784655E-05	-0.39786906E-01	0.23357216E-02	-0.18821760E-02	-0.4978
324	0.55076891E-05	-0.32080381E-01	0.23089093E-02	-0.19797829E-02	-0.4618

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
325	0.50866976E-05	-0.20935862E-01	0.22592771E-02	-0.21043201E-02	-0.1175
326	0.00000000E+00	-0.32764807E-02	0.21590765E-02	-0.22183025E-02	-0.3894
327	-0.15147990E-01	-0.36306020E-02	0.23352410E-02	-0.78914492E-03	-0.9358
328	-0.17282710E-01	-0.40162867E-02	0.24917449E-02	-0.57448672E-03	-0.7941
329	-0.10786056E-01	-0.44406104E-02	0.26966326E-02	-0.52531571E-03	-0.4991
330	0.00000000E+00	-0.48966360E-02	0.30011044E-02	-0.51587206E-03	-0.2504
331	0.00000000E+00	-0.50966425E-01	0.37468217E-02	0.51391483E-03	-0.2050
332	-0.13080233E-04	-0.46307444E-01	0.37341670E-02	0.67958012E-03	-0.2151
333	-0.24041257E-04	-0.33673668E-01	0.36896129E-02	0.11177015E-02	-0.2478
334	-0.30234736E-04	-0.17161179E-01	0.36259669E-02	0.15489905E-02	-0.2892
335	0.00000000E+00	0.00000000E+00	0.35642800E-02	0.00000000E+00	0.5522
336	0.18283142E-03	-0.14086751E-02	0.43565651E-02	-0.10610399E-02	0.1036

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

1 FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
337	0.54680842E-02	-0.25624888E-02	0.47544797E-02	-0.63013178E-03	0.8069

338	0.94444586E-02	-0.35147502E-02	0.48890346E-02	-0.30259993E-03	0.1731
339	0.00000000E+00	-0.43472063E-02	0.49858037E-02	0.68059077E-04	-0.2838
340	0.30867114E-04	-0.23070369E-01	0.47840978E-02	0.27702279E-04	0.2589
341	0.27830401E-04	-0.34728334E-01	0.46610793E-02	-0.15619622E-03	0.1963
342	0.15817605E-04	-0.42731189E-01	0.45948697E-02	-0.29117167E-03	0.1597
343	0.00000000E+00	-0.45565706E-01	0.45713944E-02	-0.33861389E-03	0.1489
344	0.00000000E+00	-0.45565706E-01	0.22328415E-02	0.23247947E-02	-0.6707
345	0.41225144E-05	-0.42731189E-01	0.22286541E-02	0.23687864E-02	-0.7283
346	0.74180804E-05	-0.34728334E-01	0.22152911E-02	0.24866184E-02	-0.9280
347	0.86967268E-05	-0.23070369E-01	0.21978807E-02	0.26249880E-02	-0.1252
348	0.00000000E+00	-0.43472063E-02	0.21278553E-02	0.26039054E-02	0.3153

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
349	-0.15190630E-01	-0.46506225E-02	0.24873023E-02	-0.76804366E-03	0.2226
350	-0.17222516E-01	-0.50064710E-02	0.28075947E-02	-0.69980941E-03	0.1156
351	-0.10729775E-01	-0.53966234E-02	0.31396586E-02	-0.61422212E-03	0.5803
352	0.00000000E+00	-0.58094398E-02	0.35382781E-02	-0.58869521E-03	0.1102
353	0.00000000E+00	-0.63072315E-01	0.36408495E-02	0.19351308E-02	-0.2151
354	0.75996717E-04	-0.58795106E-01	0.36201196E-02	0.15216701E-02	-0.2253
355	0.14836439E-03	-0.46903251E-01	0.35624746E-02	0.18635212E-03	-0.2535
356	0.21345129E-03	-0.30133034E-01	0.34490786E-02	-0.22950066E-02	-0.2956
357	0.28430630E-03	-0.51754371E-02	0.30388459E-02	-0.63916156E-02	-0.1214
358	-0.87083226E-02	-0.44897629E-02	0.47591268E-02	-0.16536669E-02	-0.2950
359	-0.29195434E-03	-0.43778939E-02	0.52565898E-02	-0.77827311E-03	-0.2055
360	0.75813407E-02	-0.46907005E-02	0.54146349E-02	-0.39211508E-03	0.2133

***** POST1 NODAL DISPLACEMENT LISTING *****

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
361	0.00000000E+00	-0.53070880E-02	0.53335358E-02	-0.40716834E-03	0.1263
362	-0.63543102E-04	-0.23323530E-01	0.49809659E-02	0.62804559E-03	0.3374
363	-0.60377058E-04	-0.34607041E-01	0.48558048E-02	0.12395258E-02	0.2205
364	-0.35129361E-04	-0.42404576E-01	0.47730440E-02	0.16417482E-02	0.1743
365	0.00000000E+00	-0.45176857E-01	0.47469487E-02	0.17797090E-02	0.1610
366	0.00000000E+00	-0.45176857E-01	0.22010763E-02	-0.40670216E-02	-0.7431
367	0.39371440E-05	-0.42404576E-01	0.21992667E-02	-0.42025589E-02	-0.8304
368	0.64697572E-05	-0.34607041E-01	0.21957362E-02	-0.46009946E-02	-0.1183
369	0.68134784E-05	-0.23323530E-01	0.21885190E-02	-0.52468590E-02	-0.2436
370	0.00000000E+00	-0.53070880E-02	0.22288550E-02	-0.58383554E-02	-0.1186
371	-0.16106591E-01	-0.56220028E-02	0.26678486E-02	-0.10357073E-02	-0.1203
372	-0.18741796E-01	-0.59609192E-02	0.30579711E-02	-0.74395891E-03	-0.1024

***** POST1 NODAL DISPLACEMENT LISTING *****

D STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z DISPLACEMENTS ARE IN NODAL COORDINATES

NODE	UX	UY	UZ	ROTX	RO
373	-0.11827090E-01	-0.63387121E-02	0.34457363E-02	-0.64620623E-03	-0.6226
374	0.00000000E+00	-0.67403882E-02	0.38528602E-02	-0.61636836E-03	-0.1695

MAXIMUMS

NODE	6	155	132	111	358
VALUE	-0.23482377E-01	-0.11732900	0.74542431E-02	0.10632830E-01	-0.2950

NODAL STRESSES ARE SHELL TOP

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
1	32.178001	3.1719053	0.00000000E+00	32.178001	30.715
2	29.054566	2.4267269	0.00000000E+00	29.054566	27.920
3	19.906725	0.19494342	0.00000000E+00	19.906725	19.810
4	4.6768821	0.00000000E+00	-4.3242332	9.0011153	7.8079
5	0.00000000E+00	-10.647302	-30.899410	30.899410	27.266
6	0.00000000E+00	-6.7236539	-24.332276	24.332276	21.782
7	0.00000000E+00	-2.6553936	-13.108887	13.108887	12.003
8	2.3661906	0.00000000E+00	-1.7120649	4.0782555	3.5743
9	17.429184	11.994371	0.00000000E+00	17.429184	15.468
10	9.8989155	0.27504092E-01	-0.43660264	10.335518	10.[illegible]7
11	9.1570451	0.00000000E+00	-5.8516131	15.008658	13.[illegible]
12	8.0419035	0.00000000E+00	-10.635877	18.677781	16.227
13	7.7122194	0.00000000E+00	-12.097216	19.809435	17.295

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
14	13.786881	0.00000000E+00	-1.1460694	14.932950	14.394
15	12.261611	0.00000000E+00	-1.5606179	13.822229	13.111
16	8.1374690	0.00000000E+00	-2.6613265	10.798796	9.7446
17	0.00000000E+00	-0.75467679	-4.8144090	4.8144090	4.4921
18	0.00000000E+00	-6.5076790	-9.5772894	9.5772894	8.5738
19	0.00000000E+00	-2.6578978	-10.876690	10.876690	9.8296
20	2.0970727	0.00000000E+00	-9.2600995	11.357172	10.467
21	7.5488474	0.00000000E+00	-7.2257227	14.774570	12.797
22	13.030381	0.00000000E+00	-5.1713765	18.201757	16.245
23	33.186344	5.4603974	0.00000000E+00	33.186344	30.916
24	30.014175	4.4682486	0.00000000E+00	30.014175	28.151
25	20.392257	2.0570766	-0.59358943	20.985847	19.838
26	4.5791835	0.00000000E+00	-3.8800055	8.4591890	7.5954

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
27	0.00000000E+00	-14.607042	-33.148063	33.148063	28.780
28	0.00000000E+00	-10.319251	-24.765068	24.765068	21.568
29	0.00000000E+00	-3.9577149	-12.727735	12.727735	11.291
30	3.5444691	0.00000000E+00	-1.3293965	4.8738656	4.4309
31	18.113704	12.583554	0.00000000E+00	18.113704	16.126
32	9.0784692	0.20602067	-0.65718424	9.7356534	9.3417
33	7.0593248	0.00000000E+00	-6.6385844	13.697909	11.865
34	5.6516217	0.00000000E+00	-11.425110	17.076732	15.068
35	5.2258047	0.00000000E+00	-12.888031	18.113836	16.148
36	13.823785	0.60390840	-1.9863889	15.810174	14.728
37	12.292605	0.35653252	-2.2317401	14.524345	13.504
38	8.0632306	0.00000000E+00	-3.2500094	11.313240	10.276
39	0.10474680	-1.0719049	-6.2804539	6.3852007	5.9007

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
40	0.00000000E+00	-8.4434004	-11.746729	11.746729	10.496
41	0.00000000E+00	-4.0146942	-11.171168	11.171168	9.8062
42	1.7274796	0.00000000E+00	-9.0957234	10.823203	10.072
43	7.2962364	0.00000000E+00	-7.1174206	14.413657	12.483
44	12.912079	0.00000000E+00	-5.1849631	18.097042	16.141
45	32.950627	7.1189739	0.00000000E+00	32.950627	30.046
46	29.797488	5.8777480	0.00000000E+00	29.797488	27.349
47	20.375098	2.3378390	0.00000000E+00	20.375098	19.317
48	4.4218259	0.00000000E+00	-3.5919481	8.0137740	6.9741
49	0.00000000E+00	-15.585342	-35.559395	35.559395	30.886
50	0.00000000E+00	-13.276978	-27.135938	27.135938	23.590
51	0.00000000E+00	-4.1014567	-15.209625	15.209625	13.665
52	4.5767462	0.00000000E+00	-4.0245466	8.6012928	7.4939

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
53	17.844454	12.119407	0.00000000E+00	17.844454	15.865
54	9.8511353	0.60271387E-01	-0.42424687	10.275382	10.044
55	7.1539598	0.00000000E+00	-6.8936725	14.047632	12.166
56	5.3958357	0.00000000E+00	-11.597733	16.993569	15.040
57	4.8246473	0.00000000E+00	-13.085773	17.910420	16.052
58	14.652070	0.12905632	-0.82142937E-02	14.660284	14.592
59	13.105730	0.00000000E+00	-0.44434198	13.550072	13.333
60	8.7077598	0.00000000E+00	-2.0708825	10.778642	9.9070
61	0.21416007	-0.10644841	-5.2277548	5.4419149	5.2953
62	0.00000000E+00	-9.2667963	-13.253302	13.253302	11.829
63	0.00000000E+00	-4.6719497	-13.292280	13.292280	11.680
64	0.90510037	0.00000000E+00	-10.364069	11.269169	10.846
65	6.6691991	0.00000000E+00	-7.5763143	14.245513	12.349

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
66	12.962986	0.00000000E+00	-5.2845174	18.247504	16.[illegible]2
67	27.053494	5.4349276	0.00000000E+00	27.053494	24.[illegible]5
68	24.442037	4.7977230	0.00000000E+00	24.442037	22.449
69	16.875044	2.4395873	0.00000000E+00	16.875044	15.855
70	5.7517455	0.00000000E+00	-4.0810465	9.8327920	8.7362
71	0.00000000E+00	-17.228907	-37.022302	37.022302	33.250
72	0.00000000E+00	-11.416847	-32.939901	32.939901	29.059
73	0.71974694	-2.0078829	-22.467608	23.187355	21.959
74	6.0746340	0.00000000E+00	-10.071243	16.145877	14.217
75	17.110413	8.3173502	-0.92908118E-01	17.203321	15.951
76	9.3011835	0.00000000E+00	-1.7133572	11.014541	10.275
77	5.8683023	0.00000000E+00	-7.4043790	13.272681	11.536
78	3.7484837	0.00000000E+00	-11.696681	15.445164	13.977

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
79	3.0681668	0.00000000E+00	-13.071122	16.139289	14.871
80	14.912113	1.4760205	0.00000000E+00	14.912113	14.267
81	13.456807	0.98385527	-0.11034817	13.567155	13.077
82	9.2993965	0.60108609E-01	-0.97583286	10.275229	9.8210
83	1.4919819	0.00000000E+00	-4.5042995	5.9962814	5.46[illegible]
84	0.00000000E+00	-8.6013575	-15.140149	15.140149	13.[illegible]
85	0.00000000E+00	-4.1117936	-16.322708	16.322708	14.723
86	0.70465372	0.00000000E+00	-12.322328	13.026982	12.690
87	5.4422863	0.00000000E+00	-8.4338033	13.876090	12.132
88	11.411637	0.00000000E+00	-5.5019711	16.913608	14.960
89	24.834967	0.00000000E+00	-3.2244155	28.059383	26.619
90	20.579594	0.00000000E+00	-5.2108613	25.790455	23.663
91	7.7355034	0.00000000E+00	-11.025300	18.760803	16.486

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
92	0.00000000E+00	-11.910453	-20.610503	20.610503	18.387
93	0.00000000E+00	-20.217372	-56.108060	56.108060	50.848
94	7.9310006	0.00000000E+00	-48.471193	56.402194	52.939
95	8.2888262	0.00000000E+00	-31.344333	39.633159	36.226
96	8.5818469	0.00000000E+00	-16.098302	24.680149	21.731
97	16.199999	5.7050315	-2.8355001	19.035499	17.025
98	7.3595016	0.00000000E+00	-3.8294406	11.188942	10.011
99	4.0294775	0.00000000E+00	-8.1308031	12.160281	10.845
[illegible]00	2.0781029	-0.63276039E-02	-11.913630	13.991733	13.18[illegible]
[illegible]1	1.7539061	-0.28600816	-13.158013	14.911919	14.05[illegible]
102	15.430762	4.4149970	0.00000000E+00	15.430762	13.783
103	14.084099	3.9154230	0.00000000E+00	14.084099	12.610
104	10.340008	2.3317113	0.00000000E+00	10.340008	9.3998

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
105	4.0116045	0.00000000E+00	-1.3538701	5.3654746	4.8555
106	0.00000000E+00	-4.5499577	-14.858478	14.858478	13.363
107	0.00000000E+00	-2.2101591	-17.546512	17.546512	16.590
108	0.81546934	0.00000000E+00	-13.593727	14.409196	14.020
109	3.0918485	0.00000000E+00	-9.1833980	12.275246	11.152
110	6.7412397	0.00000000E+00	-5.7732353	12.514475	11.032
111	30.436440	14.405636	0.00000000E+00	30.436440	27.479
112	27.806189	14.007562	0.00000000E+00	27.806189	25.240
113	20.057491	12.508039	0.00000000E+00	20.057491	18.819
114	12.320903	4.8926232	0.00000000E+00	12.320903	10.850
115	4.2650539	-4.4537056	-26.641265	30.906319	27.624
116	3.1538288	-0.36387862	-22.690443	25.844272	24.308
117	7.8616247	0.00000000E+00	-18.982677	26.844302	24.015

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
118	10.588210	0.00000000E+00	-11.497180	22.085390	19.298
119	17.522067	2.3404049	-2.8740633	20.396130	18.602
120	2.3705354	-0.46789840	-7.1317678	9.5023032	8.7037
121	0.21538044	-2.8434705	-11.313504	11.528885	10.598
122	0.00000000E+00	-4.8091392	-15.172817	15.172817	13.676
123	0.00000000E+00	-5.4286755	-16.489342	16.489342	14.772
124	17.213465	7.9935680	-0.30145218	17.514917	16.571
125	15.839599	7.6891710	-0.59087955	16.430478	15.480
126	12.415361	6.2735007	-1.4649686	13.880329	12.613
127	7.3058476	2.2934458	-3.2287470	10.534595	9.4897
128	3.3705772	-2.7967149	-13.269687	16.640264	15.060
129	0.31307942	-0.27906806	-15.610161	15.923240	15.639
130	0.68890536	-0.45172475	-13.351041	14.039947	13.510

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
131	0.97950773	-1.8903321	-9.7797001	10.759208	9.7664
132	1.9043181	-2.6930907	-7.4083725	9.3126906	8.0664
133	38.153775	19.039347	0.00000000E+00	38.153775	33.235
134	34.637491	17.937251	0.00000000E+00	34.637491	30.225
135	24.145756	14.647877	0.00000000E+00	24.145756	21.400
136	10.573634	5.3484341	0.00000000E+00	10.573634	9.2610
137	2.2995438	-0.77472849	-31.256248	33.555792	32.140
138	0.83375254	-1.8496109	-19.860765	20.694517	19.526
139	2.2635602	-0.93660461	-10.547047	12.810608	11.577
140	8.8014980	0.00000000E+00	-7.2857736	16.087272	13.982

141	19.097742	0.00000000E+00	-5.2785228	24.376265	22.351
142	0.10087050	-3.4227340	-10.766775	10.867646	9.7596
143	0.00000000E+00	-9.4711539	-13.778999	13.778999	12.470

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
144	0.00000000E+00	-11.532952	-18.039429	18.039429	15.997
145	0.00000000E+00	-12.011967	-19.598172	19.598172	17.261
146	18.513434	9.4626726	0.00000000E+00	18.513434	16.589
147	16.875027	9.0020837	0.00000000E+00	16.875027	15.238
148	12.359937	7.4348463	0.00000000E+00	12.359937	11.528
149	7.1281057	2.0694864	-0.87231116	8.0004169	7.0124
150	5.1702401	-0.34442696	-9.8713667	15.041607	13.429
151	1.3124677	0.00000000E+00	-10.233806	11.546274	10.954
152	0.29714174	-2.4505766	-10.081550	10.378691	9.6550
153	0.00000000E+00	-4.4721920	-11.035103	11.035103	9.9053
154	0.00000000E+00	-3.9315488	-15.368540	15.368540	13.832
155	36.907525	21.539594	0.00000000E+00	36.907525	32.315
156	33.526327	20.656218	0.00000000E+00	33.526327	29.515

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
157	23.446286	17.933300	0.00000000E+00	23.446286	21.493
158	13.649407	6.9006115	0.00000000E+00	13.649407	11.860
159	3.6964212	-0.26198213	-29.785028	33.481449	31.752
160	1.1768079	0.00000000E+00	-18.841175	20.017983	19.460
161	0.00000000E+00	-1.0086445	-8.7673250	8.7673250	8.3326
162	5.9953947	0.00000000E+00	-6.2256622	12.221057	10.588
163	18.062926	0.00000000E+00	-7.3916013	25.454527	22.685
164	0.00000000E+00	-5.6144649	-12.297694	12.297694	10.678
165	0.00000000E+00	-12.212967	-14.221848	14.221848	13.347
166	0.00000000E+00	-14.000797	-18.478600	18.478600	16.696
167	0.00000000E+00	-14.346409	-20.072086	20.072086	17.909
168	19.029455	12.067727	0.00000000E+00	19.029455	17.089
169	17.399172	11.684514	0.00000000E+00	17.399172	15.794

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
170	13.396621	9.8707462	0.00000000E+00	13.396621	12.274
171	8.9334942	3.2041995	0.00000000E+00	8.9334942	7.8576
[illegible]	7.2720856	0.00000000E+00	-8.3564796	15.628565	13.75
[illegible]	1.1408880	0.00000000E+00	-8.8432986	9.9841866	9.468
174	0.00000000E+00	-3.6426801	-9.0425141	9.0425141	7.9676
175	0.00000000E+00	-5.4487215	-12.284822	12.284822	10.699
176	0.00000000E+00	-4.0474349	-19.683890	19.683890	18.004

177	36.781245	20.880377	0.00000000E+00	36.781245	32.044
178	33.540594	19.870945	0.00000000E+00	33.540594	29.320
179	23.898749	16.826266	0.00000000E+00	23.898749	21.420
180	12.901126	6.7197526	0.00000000E+00	12.901126	11.250
181	3.5166679	0.00000000E+00	-29.264206	32.780873	31.224
182	0.61638513	-1.9067659	-19.547609	20.163994	19.092

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
183	2.8102035	-0.28377533	-11.915859	14.726063	13.482
184	9.0271171	0.00000000E+00	-8.3375184	17.364635	15.094
185	18.478528	0.39561659E-01	-5.0096855	23.488213	21.574
186	0.26416979	-2.7237166	-10.324993	10.589163	9.5670
187	0.00000000E+00	-7.8658881	-13.143430	13.143430	11.716
188	0.00000000E+00	-9.9043167	-16.903706	16.903706	14.894
189	0.00000000E+00	-10.379028	-18.291298	18.291298	16.044
190	18.364982	11.603366	0.00000000E+00	18.364982	16.392
191	16.899376	11.147941	0.00000000E+00	16.899376	15.206
192	13.318082	9.1882296	0.00000000E+00	13.318082	12.048
193	9.4119013	2.5155128	0.00000000E+00	9.4119013	8.5198
194	5.9708986	0.00000000E+00	-9.3005315	15.271430	13.705
195	1.4070174	0.00000000E+00	-11.232148	12.639166	11.999

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
196	0.37238160	-1.6889408	-11.115852	11.488234	10.719
197	0.00000000E+00	-4.0338348	-10.890509	10.890509	9.8589
198	0.00000000E+00	-3.9243606	-13.857183	13.857183	12.375
199	29.762624	13.631639	0.00000000E+00	29.762624	26.236
200	27.133310	13.293258	0.00000000E+00	27.133310	23.952
201	19.484004	12.031458	0.00000000E+00	19.484004	17.510
202	12.178749	5.1759960	0.00000000E+00	12.178749	10.591
203	3.5784492	-2.7542855	-25.944801	29.523250	26.960
204	3.6583901	-0.30147220	-22.978932	26.637322	24.946
205	7.9093760	0.00000000E+00	-19.830098	27.739474	24.849
206	10.334065	0.00000000E+00	-12.115292	22.449357	19.597
207	17.071390	2.2831106	-3.0014539	20.072844	18.263
208	2.4305333	-0.32247688	-7.1300701	9.5606034	8.7161

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
209	0.66654740E-01	-2.6981038	-11.251729	11.318384	10.430
210	0.00000000E+00	-5.0136985	-15.034705	15.034705	13.442
211	0.00000000E+00	-5.6983862	-16.316508	16.316508	14.511
212	16.968394	7.7118698	0.00000000E+00	16.968394	15.208

213	15.566244	7.1068537	0.00000000E+00	15.566244	14.025
214	11.779633	5.1041850	0.00000000E+00	11.779633	10.812
215	6.0044544	1.1487988	-1.4977075	7.5021619	6.7138
216	2.1304697	-2.1843764	-13.219481	15.349951	13.911
217	0.27486502	-0.37208049	-15.684890	15.959755	15.651
218	0.56606782	-0.24114594	-13.377613	13.943681	13[illegible]4
219	0.84175942	-1.4992512	-9.7450546	10.586814	9.[illegible]7
220	1.7283986	-2.3867167	-7.0222936	8.7506922	7.5901
221	26.088418	0.93744968	-1.5002204	27.588638	26.457

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
222	21.855720	0.16527854	-3.1017877	24.957508	23.577
223	8.7952338	0.00000000E+00	-10.003087	18.798321	16.567
224	0.00000000E+00	-12.004051	-22.546277	22.546277	19.744
225	0.98676981E-01	-21.735423	-58.287021	58.385698	53.031
226	9.0482406	0.00000000E+00	-50.895693	59.943933	56.001
227	7.8415781	0.00000000E+00	-31.951825	39.793403	36.524
228	8.2508055	0.00000000E+00	-16.192301	24.443106	21.580
229	15.643758	5.5859303	-2.8455624	18.489320	16.537
230	6.3539999	0.00000000E+00	-3.9222859	10.276286	9.1106
231	2.7628355	0.00000000E+00	-8.2124670	10.975303	9.9758
232	1.1496764	-0.45692050	-12.005922	13.155598	12.443
233	0.82610790	-0.77435145	-13.244800	14.070908	13.342
234	15.184089	4.7034510	0.00000000E+00	15.184089	13.560

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
235	13.842843	4.1701395	0.00000000E+00	13.842843	12.404
236	10.101763	2.5340515	0.00000000E+00	10.101763	9.2330
237	3.5705111	0.54103134E-01	-1.4404794	5.0109906	4.6372
238	0.00000000E+00	-4.6643592	-14.705503	14.705503	13.324
239	0.00000000E+00	-2.1806070	-17.539848	17.539848	16.587
240	0.57084192	0.00000000E+00	-13.623013	14.193855	13.918
241	2.5659658	0.00000000E+00	-9.1694027	11.735368	10.755
242	6.0295539	0.00000000E+00	-5.7371858	11.766740	10.361
243	24.409404	3.6444470	0.00000000E+00	24.409404	22.893
244	21.966369	3.4369694	0.00000000E+00	21.966369	20.556
245	14.987501	2.6081183	-0.18695323	15.174454	14.031
246	4.9578697	0.00000000E+00	-2.8427296	7.8005993	6.9000
247	0.00000000E+00	-16.117702	-38.008443	38.008443	34.540

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
[illegible]ME= 0.00000E+00 LOAD CASE= 1
[illegible]LL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
248	0.00000000E+00	-9.1269739	-36.898246	36.898246	33.397

249	1.0445669	-0.88355303	-25.655161	26.699728	25.823
250	5.9730584	0.00000000E+00	-12.890382	18.863440	16.766
251	16.061484	7.6679412	-1.0295287	17.091013	15.648
252	8.8150051	0.00000000E+00	-2.0546229	10.869628	10.033
253	6.1154092	0.00000000E+00	-6.6829768	12.798386	11.106
254	4.3881288	0.00000000E+00	-10.544519	14.932648	13.318
255	3.8419843	0.00000000E+00	-11.782187	15.624171	14.129
256	14.568150	3.6744962	0.00000000E+00	14.568150	13.196
257	13.243626	3.2145851	0.00000000E+00	13.243626	12.051
258	9.5270217	1.8533690	-0.11186271E-02	9.5281403	8.9001
259	2.7093309	0.54963546	-1.6327426	4.3420736	3.8169
260	0.00000000E+00	-6.3085865	-14.123904	14.123904	12.273

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
261	0.00000000E+00	-3.8742259	-16.927511	16.927511	15.376
262	0.27880606	-0.26837184E-01	-12.710264	12.989070	12.839
263	4.3309004	0.00000000E+00	-8.6401785	12.971079	11.451
264	9.9889317	0.00000000E+00	-5.5949753	15.583907	13.687
265	34.415194	8.4646600	0.00000000E+00	34.415194	31.503
266	31.139678	7.0828478	0.00000000E+00	31.139678	28.799
267	21.341443	4.8963130	-1.7862097	23.127652	20.836
268	5.5205008	1.8848292	-5.0835068	10.604008	9.4824
269	0.00000000E+00	-15.000769	-36.818064	36.818064	32.150
270	0.00000000E+00	-12.495723	-29.431658	29.431658	25.690
271	0.00000000E+00	-3.6386284	-17.080993	17.080993	15.611
272	4.2814912	0.00000000E+00	-4.9969246	9.2784159	8.1301
273	17.327623	11.013346	0.00000000E+00	17.327623	15.255

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
274	7.5626767	0.17483020E-01	-1.2224354	8.7851121	8.2595
275	4.3768287	0.00000000E+00	-8.0576747	12.434503	10.926
276	2.3741608	0.00000000E+00	-12.871223	15.245383	14.211
277	1.7260895	0.00000000E+00	-14.415722	16.141812	15.356
278	15.052655	3.7638535	-3.6618988	18.714553	16.335
279	13.464721	3.4907449	-4.0152289	17.479950	15.190
280	8.8582615	2.6920159	-5.0510917	13.909353	12.104
281	1.6032834	-0.27414424	-6.9249517	8.5282352	7.8170
282	0.00000000E+00	-7.7680019	-15.189911	15.189911	13.386
283	0.00000000E+00	-4.4402509	-14.170859	14.170859	12.556
284	0.52552114E-01	-0.11195771	-11.006223	11.058775	10.977
285	4.5185617	0.00000000E+00	-7.9254523	12.444014	10.915
286	9.9679533	0.00000000E+00	-5.2918394	15.259793	13.432

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

AD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
287	35.748436	6.8268307	0.00000000E+00	35.748436	32.899
288	32.315125	5.7605317	0.00000000E+00	32.315125	29.888
289	22.069337	2.6774497	0.00000000E+00	22.069337	20.908
290	6.0702662	0.17466315	-1.9877068	8.0579730	7.[illegible]5
291	0.00000000E+00	-13.509589	-35.614603	35.614603	31.[illegible]9
292	0.00000000E+00	-10.125034	-26.236297	26.236297	22.920
293	0.00000000E+00	-3.8782228	-13.394699	13.394699	11.939
294	3.3617619	0.56604092E-02	-1.2073197	4.5690816	4.1285
295	17.908992	10.280258	0.00000000E+00	17.908992	15.622
296	5.6435090	0.00000000E+00	-1.3686751	7.0121840	6.4764
297	3.1540470	0.00000000E+00	-8.4968563	11.650903	10.482
298	1.5191414	0.00000000E+00	-13.519336	15.038478	14.377
299	1.1117803	-0.12121497	-15.139300	16.251081	15.693

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
300	15.276243	1.1400592	-1.2915096	16.567752	15.495
301	13.635608	0.87229530	-1.5591565	15.194765	14.146
302	8.8758735	0.95533264E-01	-2.3336542	11.209528	10.372
303	0.31070790	-0.33824347	-5.0965253	5.4072332	5.1230
304	0.00000000E+00	-7.1040683	-12.556692	12.556692	11.034
305	0.00000000E+00	-3.3714977	-11.600824	11.600824	10.345
306	0.83028978E-01	-0.17891588	-9.5039127	9.5869417	9.4591
[illegible]07	3.1917205	0.00000000E+00	-7.2672366	10.458957	9.3[illegible]
[illegible]08	6.5580441	0.00000000E+00	-4.9485867	11.506631	10.0[illegible]
309	30.712580	10.873609	0.00000000E+00	30.712580	27.099
310	27.978612	10.145673	0.00000000E+00	27.978612	24.656
311	19.857088	7.6048866	0.00000000E+00	19.857088	17.476
312	7.7029418	1.3489027	-0.97411523	8.6770571	7.8254

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
313	0.00000000E+00	-9.3271063	-33.141926	33.141926	30.024
314	0.00000000E+00	-8.7103021	-24.615935	24.615935	21.661
315	0.00000000E+00	-2.8272531	-13.070728	13.070728	11.965
316	2.2106343	0.00000000E+00	-2.2603176	4.4709519	4.0008
317	14.207868	8.0100209	0.00000000E+00	14.207868	12.420
318	3.8121891	0.00000000E+00	-2.4922954	6.3044845	5.5096
319	1.8014289	0.00000000E+00	-8.8490899	10.650519	9.9265
320	0.96502946	-0.42568451	-13.341833	14.306862	13.671
321	0.79689775	-0.66343785	-14.796567	15.593465	14.917
322	16.291443	4.4709294	0.00000000E+00	16.291443	15.028
323	14.791977	4.1247510	-0.29777413E-01	14.821754	13.726
[illegible]4	10.443561	3.5810106	-0.58706307	11.030624	10.0[illegible]
[illegible]5	3.2661174	1.6966270	-1.5587238	4.8248412	4.296

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
326	0.55052137	-3.9243756	-11.613557	12.164079	10.754
327	0.00000000E+00	-2.8295475	-12.388753	12.388753	11.247
328	0.00000000E+00	-0.82206477	-9.9449057	9.9449057	9.5639
329	1.1477027	0.00000000E+00	-7.4023695	8.5500723	8.0691
330	2.8793443	0.00000000E+00	-4.9461086	7.8254529	6.9255
331	24.916863	1.1824302	-0.67604256	25.592906	24.720
332	20.877534	0.44736540	-1.6109476	22.488481	21.552
333	8.6733310	0.00000000E+00	-6.0982073	14.771538	13.069
334	0.00000000E+00	-10.302414	-15.687005	15.687005	13.830
335	0.00000000E+00	-13.078870	-36.352378	36.352378	32.543
336	4.9332945	0.00000000E+00	-16.437151	21.370445	19.429
337	5.3047744	0.00000000E+00	-10.444372	15.749146	13.908
338	4.8714299	0.00000000E+00	-2.7260033	7.5974332	6.7065

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
339	11.727008	5.1863118	0.00000000E+00	11.727008	10.224
340	1.3205096	-0.11432337	-4.6195354	5.9400450	5.3958
341	0.00000000E+00	-2.1945831	-10.560396	10.560396	9.6789
342	0.00000000E+00	-4.1704512	-14.942597	14.942597	13.372
43	0.00000000E+00	-4.7975474	-16.362168	16.362168	14.583
44	16.820307	4.5111585	0.00000000E+00	16.820307	15.127
45	15.301902	3.9575646	0.00000000E+00	15.301902	13.810
346	10.862602	2.3117168	0.00000000E+00	10.862602	9.9833
347	2.4634251	0.21990046	-1.1066925	3.5701176	3.1876
348	0.00000000E+00	-4.3764097	-12.357670	12.357670	10.931
349	0.00000000E+00	-2.8873120	-12.028863	12.028863	10.880
350	0.00000000E+00	-1.1836927	-9.5138840	9.5138840	8.9818
351	0.14271349	-0.12027817	-7.1923896	7.3351031	7.2076

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
352	0.85446013	0.00000000E+00	-4.9451041	5.7995642	5.4423
353	28.631577	11.029926	0.00000000E+00	28.631577	25.012
354	26.198240	11.263674	0.00000000E+00	26.198240	22.771
355	19.309622	11.988668	0.00000000E+00	19.309622	16.908
356	14.954141	8.6862824	0.00000000E+00	14.954141	13.069
357	4.1530501	-5.4801236	-18.105301	22.258351	19.953
358	0.15052788	-0.48883323	-8.6484090	8.7989369	8.5032
359	4.5959774	0.00000000E+00	-5.2300100	9.8259873	8.5191
60	6.1771098	0.00000000E+00	-1.9482861	8.1253959	7.3494
1	12.981110	3.2362142	0.00000000E+00	12.981110	11.888
2	1.4077740	0.00000000E+00	-2.4711261	3.8789001	3.4010
363	0.90296481	0.00000000E+00	-9.5638397	10.466804	10.047
364	0.33675680	0.00000000E+00	-14.276928	14.613685	14.448

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
IME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
365	0.17697580	0.00000000E+00	-15.824891	16.001867	15.914
366	18.539696	11.650314	0.00000000E+00	18.539696	16.231
367	17.109741	11.520906	0.00000000E+00	17.109741	15.112
368	13.097453	11.126682	0.00000000E+00	13.097453	12.234
369	10.701816	5.8298438	0.00000000E+00	10.701816	9.2804
370	4.4158514	-0.60205516	-9.1088587	13.524710	12.356
371	0.00000000E+00	-0.60234045	-11.162358	11.162358	10.879
372	0.00000000E+00	-0.33454862	-9.5217477	9.5217477	9.3607
373	0.12293042	0.00000000E+00	-7.4177444	7.5406748	7.4800
374	0.56161988	0.00000000E+00	-5.1592461	5.7208660	5.4617

MAXIMUMS

NODE	133	225	225	226	226
VALUE	38.153775	-21.735423	-58.287021	59.943933	56.00

NODAL STRESSES ARE SHELL BOTTOM

PRINT PRIN NODAL STRESSES PER NODE

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

AD STEP 1 ITERATION= 1 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
1	-0.43999790E-01	-13.916295	-35.274257	35.230258	30.739
2	-0.43999790E-01	-13.097637	-32.211241	32.167241	28.022
3	-0.43999790E-01	-10.646703	-23.011593	22.967594	19.911
4	-0.43999790E-01	-5.7957955	-8.5400062	8.4960064	7.5675
5	21.731488	0.77310095	-1.8066311	23.538120	22.378
6	8.8960243	0.00000000E+00	-4.9031016	13.799126	12.116
7	0.00000000E+00	-1.1628682	-5.6509721	5.6509721	5.2051
8	0.73575237E-01	0.00000000E+00	-17.661751	17.735326	17.698
9	2.2184352	0.00000000E+00	-23.551874	25.770309	24.743
10	9.7812588	6.1292748	0.00000000E+00	9.7812588	8.5924
11	11.649105	10.654826	0.00000000E+00	11.649105	11.185
12	16.289777	12.062932	0.00000000E+00	16.289777	14.641
13	17.724201	12.468977	0.00000000E+00	17.724201	15.767

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
4	-0.43999790E-01	-9.3196930	-17.105722	17.061722	14.7
15	-0.43999790E-01	-8.9476672	-15.557757	15.513757	13.484
16	-0.43999790E-01	-7.9413064	-11.402008	11.358009	10.083
17	-0.43999790E-01	-2.3665211	-6.0082602	5.9642604	5.2086
18	3.8119082	-0.21999895E-01	-5.3689383	9.1808465	7.9953

19	2.4131224	0.00000000E+00	-2.2922832	4.7054056	4.0854
20	2.6428617	0.39869546	-0.63335873E-01	2.7061975	2.5270
21	7.7196871	0.00000000E+00	-2.2478168	9.9675039	9.0646
22	12.571920	0.00000000E+00	-4.5321700	17.104090	15.348
23	-0.43999790E-01	-16.373564	-36.201033	36.157033	31.461
24	-0.43999790E-01	-15.329093	-33.063503	33.019504	28.730
25	-0.43999790E-01	-12.138953	-23.695091	23.651091	20.631
26	-0.43999790E-01	-5.4238383	-9.0404314	8.9964316	8.1179

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
27	23.731524	2.2322477	-0.21999895E-01	23.753524	22.719
28	8.5039938	0.00000000E+00	-1.5562636	10.060257	9.4746
29	0.00000000E+00	-2.3421671	-5.0019032	5.0019032	4.3422
30	0.00000000E+00	-1.3672740	-17.772543	17.772543	17.142
31	1.7635084	-0.28040605	-23.756358	25.519867	24.624
32	11.177922	6.0957395	0.00000000E+00	11.177922	9.7234
33	13.135473	12.338896	0.00000000E+00	13.135473	12.763
34	17.270471	14.413821	0.00000000E+00	17.270471	16.034
35	18.710939	14.863589	0.00000000E+00	18.710939	17.115
36	-0.43999790E-01	-8.8057674	-17.136553	17.092553	14.932
37	-0.43999790E-01	-8.3722046	-15.584040	15.540040	13.609
38	-0.43999790E-01	-7.1562500	-11.303776	11.259777	10.054
39	-0.23658636E-01	-1.7486861	-4.8238543	4.8001957	4.2578

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

AD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
40	5.2977398	0.67401971E-02	-3.2325234	8.5302633	7.5935
41	2.3667517	0.00000000E+00	-1.0725600	3.4393117	3.0700
42	2.9643040	0.97970563E-01	-0.19049143	3.1547954	3.0231
43	7.9060468	0.00000000E+00	-2.4388198	10.344867	9.3706
44	13.004387	0.00000000E+00	-4.5437100	17.548097	15.775
45	-0.43999790E-01	-17.868667	-36.149134	36.105134	31.275
46	-0.43999790E-01	-16.743104	-32.935155	32.891155	28.492
47	-0.43999790E-01	-13.452880	-23.398099	23.354100	20.304
48	-0.43999790E-01	-5.9785793	-9.5654235	9.5214237	8.6331
49	22.493901	2.0645126	-0.21999895E-01	22.515901	21.561
50	5.3279822	0.00000000E+00	-2.2690477	7.5970299	6.8031
51	0.42411628	-0.96392229	-8.5191820	8.9432982	8.3629
52	0.20971022	-0.50711099	-21.041563	21.251273	20.905

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
L STRESSES ARE AT BOTTOM

E	SIG1	SIG2	SIG3	SI	SI
53	2.6803199	-0.12971275E-01	-24.687195	27.367515	26.256
54	11.066706	5.9793534	0.00000000E+00	11.066706	9.6158

55	13.379313	12.486798	0.00000000E+00	13.379313	12.956
56	18.034827	14.019733	0.00000000E+00	18.034827	16.403
57	19.588685	14.435041	0.00000000E+00	19.588685	17.591
58	-0.43999790E-01	-9.1184237	-17.929369	17.885370	15.503
59	-0.43999790E-01	-8.6693921	-16.334841	16.290842	14.130
60	-0.43999790E-01	-7.3696923	-11.815907	11.771907	10[illegible]8
61	-0.43999790E-01	-2.4651913	-5.2425671	5.1985673	4.[illegible]6
62	5.4065704	-0.21999895E-01	-3.5781729	8.9847433	7.9503
63	1.3737412	0.00000000E+00	-0.77279967	2.1465409	1.8887
64	3.7374721	0.00000000E+00	-1.0536293	4.7911014	4.3629
65	7.9585408	0.00000000E+00	-2.9434968	10.902038	9.7700

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
66	13.102500	0.00000000E+00	-4.9049664	18.007467	16.125
67	-0.43999790E-01	-14.005518	-31.619935	31.575935	27.424
68	-0.43999790E-01	-13.753819	-28.793089	28.749089	24.918
69	-0.43999790E-01	-12.716303	-20.423079	20.379079	17.833
70	-0.43999790E-01	-5.4203409	-10.863123	10.819123	9.4193
71	18.935733	0.78382758	-7.5573608	26.493094	23.830
72	3.2095345	-1.3291090	-7.9864597	11.195994	10.212
73	1.9258991	-0.47002561	-19.911554	21.837453	20.787
74	1.1493046	-0.50850846E-01	-27.856298	29.005603	28.431
75	4.0973232	0.00000000E+00	-25.754955	29.852278	28.234
76	11.132733	5.6720105	0.00000000E+00	11.132733	9.6676
77	13.913056	11.373184	0.00000000E+00	13.913056	12.[illegible]7
78	18.330510	12.839131	0.00000000E+00	18.330510	16.[illegible]8

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
79	19.849076	13.201859	0.00000000E+00	19.849076	17.522
80	-0.43999790E-01	-7.7356698	-17.733489	17.689489	15.373
81	-0.43999790E-01	-7.3152662	-16.188313	16.144313	14.016
82	-0.43999790E-01	-6.0585922	-11.778013	11.734014	10.180
83	-0.43999790E-01	-1.9050914	-4.8899881	4.8459883	4.2603
84	5.0212174	-0.21999895E-01	-3.7022940	8.7235114	7.9637
85	1.8734692	0.00000000E+00	-2.7659552	4.6394244	4.0852
86	4.2632283	0.00000000E+00	-2.9663955	7.2296238	6.3214
87	7.0482079	0.00000000E+00	-3.6571522	10.705360	9.4491
88	11.495012	0.00000000E+00	-5.2956578	16.790670	14.887
89	1.0263251	-1.0625490	-28.545261	29.571586	28.584
90	1.9989016	-0.39543438	-24.124668	26.123570	25.050
91	6.3392101	-0.43999790E-01	-10.726797	17.066007	15.175

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

\D STEP 1 ITERATION= 1 SECTION= 1
..ME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
92	16.743719	8.1995614	-0.43999790E-01	16.787719	14.678
93	28.544428	0.61382027	-30.687664	59.232092	53.949
94	0.74120103	-6.0949568	-47.926301	48.667502	45.720
95	0.88511755	-1.5639948	-33.913034	34.798152	33.708
96	1.0206716	-0.11948334	-30.989405	32.010077	31.461
97	2.7914873	-0.14447005	-25.891816	28.683303	27.507
98	9.9706321	2.6175418	0.00000000E+00	9.9706321	9.1109
99	12.889199	6.8512058	0.00000000E+00	12.889199	11.332
100	16.729106	8.2640277	0.00000000E+00	16.729106	14.586
101	18.073122	8.6049998	0.00000000E+00	18.073122	15.742
102	-0.43999790E-01	-6.1366822	-16.811887	16.767887	14.794
103	-0.43999790E-01	-5.7862504	-15.393746	15.349746	13.537
104	-0.43999790E-01	-4.6808917	-11.454675	11.410675	10.083

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
105	0.32850456	-1.1248491	-5.5679095	5.8964141	5.3513
106	6.2063029	-0.21999895E-01	-3.8990106	10.105314	9.1526
107	4.5863874	0.00000000E+00	-4.8652513	9.4516387	8.2089
108	5.1317603	0.00000000E+00	-4.8986727	10.030433	8.7186
109	4.9827207	0.00000000E+00	-4.5517450	9.5344657	8.3706
110	6.8178708	0.00000000E+00	-5.6600161	12.477887	11.014
111	-0.43999790E-01	-8.3308945	-28.700528	28.656529	25.703
112	-0.43999790E-01	-7.7813824	-26.217663	26.173663	23.422
:3	-0.43999790E-01	-5.4677753	-19.275944	19.231944	17.223
.4	1.7548384	-0.43999790E-01	-11.883467	13.638306	12.880
5	36.324044	5.6307579	-4.3595934	40.683637	36.934
.6	24.322861	0.36003075	-4.8971335	29.219995	27.108
117	9.0123949	0.00000000E+00	-13.957359	22.969754	20.254

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
118	1.1288571	-1.5462404	-22.871978	24.000835	22.815
119	0.65772692	-5.2746529	-25.969508	26.627235	24.460
120	7.5464751	0.47050035	-2.8975874	10.444063	9.3976
121	11.387919	2.8406928	-0.64894825	12.036867	10.908
122	15.148524	4.3797154	0.00000000E+00	15.148524	13.880
123	16.436747	5.0016538	0.00000000E+00	16.436747	14.946
124	0.77976085	-3.3897667	-15.646824	16.426585	14.970
125	1.0351488	-3.1200056	-14.209545	15.244694	13.779
126	1.8216193	-2.2844109	-10.139911	11.961530	10.543
127	3.5859926	-0.92584701E-01	-3.3039105	6.8899031	6.4723
128	10.407586	1.5657765	-0.97291244	11.380498	10.446
129	7.8898561	0.00000000E+00	-3.5826012	11.472457	10.190
0	5.7173095	0.00000000E+00	-5.6589922	11.376302	9.8870

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

OAD STEP 1 ITERATION= 1 SECTION= 1

TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
131	2.3438840	-0.50179007	-5.9926864	8.3365704	7.4795
132	1.8343797	-2.4716131	-7.3937107	9.2280904	7.9[illegible]1
133	-0.43999790E-01	-1.9457462	-35.164175	35.120175	34.[illegible]
134	0.10775209	-0.70296963	-31.826211	31.933963	31.540
135	3.6028931	-0.43999790E-01	-21.876239	25.479132	23.869
136	10.849749	-0.43999790E-01	-5.8572916	16.707041	14.696
137	32.287678	20.347251	-0.21999895E-01	32.309678	28.340
138	18.784455	7.0918175	0.00000000E+00	18.784455	17.099
139	7.1834261	0.55748578E-01	-4.1086551	11.292081	10.016
140	0.15401308	-5.1219246	-15.650157	15.804170	14.488
141	0.00000000E+00	-14.398852	-25.702198	25.702198	22.876
142	2.6842577	0.00000000E+00	-7.6675826	10.351840	9.5446
143	8.3006422	0.00000000E+00	-3.6885377	11.989180	10.887

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
144	12.739956	0.77360512	-2.1932800	14.933236	13.739
145	14.191980	1.1444020	-1.8517072	16.043687	14.783
146	3.4209904	-0.43999790E-01	-13.672950	17.093940	15.695
147	4.0356876	-0.43999790E-01	-12.107628	16.143315	14.583
148	5.8530898	-0.43999790E-01	-7.5972791	13.450369	11.715
[illegible]	9.3187725	0.70194766	-0.58253367E-01	9.3770259	9.03[illegible]
[illegible]	13.842545	7.8477250	-0.21999895E-01	13.864545	12.4[illegible]
151	8.4791842	1.8048612	-0.85922715	9.3384114	8.4888
152	4.3771714	0.00000000E+00	-4.3513229	8.7284943	7.6081
153	0.79801824	-1.0931754	-9.0660414	9.8640597	9.1087
154	0.00000000E+00	-3.8338089	-15.330468	15.330468	13.821
155	1.9530051	-1.8518660	-35.663173	37.616179	35.865
156	2.5504940	-1.3055545	-32.432396	34.982890	33.240

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
157	4.7366719	-0.43999790E-01	-22.698737	27.435409	25.599
158	10.305893	-0.43999790E-01	-6.7407349	17.046628	15.084
159	31.147653	21.149531	-0.21999895E-01	31.169653	27.619
160	17.345775	11.390574	0.00000000E+00	17.345775	15.313
161	3.1436726	0.19955095	-1.0653394	4.2090120	3.7784
162	0.00000000E+00	-8.4712867	-13.634092	13.634092	11.997
163	0.00000000E+00	-18.153338	-25.624613	25.624613	22.865
164	1.0797740	0.00000000E+00	-9.7245083	10.804282	10.322
165	6.8690050	0.00000000E+00	-6.2453723	13.114377	11.371
[illegible]	11.308789	0.00000000E+00	-4.0804042	15.389193	13.820
[illegible]	12.737914	0.00000000E+00	-3.3843859	16.122300	14.73[illegible]
[illegible]	4.0114915	-0.15071978	-12.936090	16.947582	15.617
169	4.5173819	-0.43999790E-01	-11.421853	15.939235	14.589

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
170	6.3185962	-0.43999790E-01	-7.0637135	13.382310	11.944
171	9.7109863	1.3168736	-0.26144314	9.9724295	9.2903
172	14.127122	8.8368952	-0.21999895E-01	14.149122	12.444
173	7.5228041	2.7885705	0.00000000E+00	7.5228041	6.6920
174	3.1118958	0.00000000E+00	-3.7683862	6.8802820	5.9931
175	0.18083363E-01	-1.0286740	-10.693936	10.712020	10.248
176	0.00000000E+00	-3.9765867	-19.638373	19.638373	17.983
177	-0.43999790E-01	-4.8010454	-33.420856	33.376856	31.320
178	-0.43999790E-01	-3.4759893	-30.376538	30.332539	28.815
179	0.83252527	-0.37076781	-21.342884	22.175409	21.607
180	7.7538074	-0.43999790E-01	-7.1029690	14.856776	12.890
181	30.807780	17.619100	-0.21999895E-01	30.829780	26.873
182	18.672364	5.5738623	-0.55278132	19.225146	17.297

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
183	7.9480800	0.00000000E+00	-5.6904878	13.638568	11.956
184	0.38975531	-4.0102215	-16.809103	17.198858	15.685
85	0.00000000E+00	-12.758430	-25.695801	25.695801	22.716
186	3.2196672	0.00000000E+00	-7.3658749	10.585542	9.6220
187	8.1001884	0.00000000E+00	-3.6618046	11.761993	10.669
188	12.181345	0.64362454	-2.2506891	14.432034	13.286
9	13.519730	0.96606432	-1.9411042	15.460835	14.250
190	0.41062507	-0.57830098E-01	-13.970447	14.381072	14.157
191	0.93143610	-0.43999790E-01	-12.516050	13.447486	12.993
192	2.5262593	-0.43999790E-01	-8.3650772	10.891336	9.8672
193	5.8256507	0.12658280E-01	-0.90561466	6.7312653	6.3505
194	12.212144	5.2792798	-0.21999895E-01	12.234144	10.903
195	8.8082065	0.81333840	-1.2230311	10.031238	9.2074

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
196	4.8248182	0.00000000E+00	-5.0471982	9.8720164	8.5861
197	0.85903193	-0.96963661	-8.6872989	9.5463308	8.8331
198	0.00000000E+00	-3.8310553	-13.785375	13.785375	12.327
199	-0.43999790E-01	-7.2953101	-28.346997	28.302997	25.473
200	-0.43999790E-01	-6.9042158	-25.761850	25.717850	23.073
201	-0.43999790E-01	-5.1562588	-18.557878	18.513878	16.591
202	2.0314781	-0.85948011	-11.446839	13.478317	12.355
3	36.335801	6.0158689	-5.2653125	41.601114	37.401
204	24.110010	0.25197578E-01	-5.7442934	29.854303	27.719
205	8.4727790	0.00000000E+00	-15.378527	23.851306	21.160
[illegible]	0.91352672	-1.3904901	-23.875249	24.788775	23.739

207	0.57630833	-4.7959659	-26.009748	26.586056	24.52
208	7.4313762	0.43244952	-2.5381840	9.9695602	8.954

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
209	11.353157	2.7219791	-0.14320229	11.496360	10.602
210	15.204580	4.7538433	0.00000000E+00	15.204580	13.708
211	16.517652	5.3713479	0.00000000E+00	16.517652	14.812
212	-0.43999790E-01	-2.5705325	-15.590461	15.546461	14.482
213	-0.43999790E-01	-2.0412087	-14.132804	14.088804	13.238
214	0.29607013	-0.76819505	-10.016920	10.312990	9.8325
215	3.4649691	-0.43999790E-01	-2.7798340	6.2448031	5.4350
216	10.061731	1.5120510	-0.96199525	11.023726	10.117
217	7.5541210	0.00000000E+00	-4.0013067	11.555428	10.177
218	5.6032759	0.00000000E+00	-5.8936928	11.496969	9.9813
219	2.2994576	-0.38537178	-5.9961478	8.2956054	7.4227
220	1.6916565	-2.1599638	-6.9645469	8.6562035	7.5117
221	-0.43999790E-01	-0.72398637	-29.394347	29.350348	29.018

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
222	1.4118604	-0.14964849	-25.045227	26.457087	25[illegible]8
223	7.2352070	-0.43999790E-01	-11.567526	18.802733	16.621
224	19.562161	9.4634902	-0.43999790E-01	19.606161	17.224
225	29.853171	0.94512336	-33.153190	63.006361	57.011
226	0.74183351	-5.5519826	-49.505387	50.247220	47.476
227	1.2134315	-1.2833587	-33.458301	34.671733	33.535
228	0.90462660	-0.61133860E-01	-30.910506	31.815132	31.348
229	2.3944430	-0.22186778	-26.127170	28.521613	27.456
230	9.7256398	2.1488939	-0.46971642E-01	9.7726114	9.0060
231	12.691431	6.3366635	0.00000000E+00	12.691431	11.107
232	16.441628	7.8878623	0.00000000E+00	16.441628	14.316
233	17.746001	8.2671736	0.00000000E+00	17.746001	15.444
234	-0.43999790E-01	-5.0697271	-16.255683	16.211683	14.375

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
235	-0.43999790E-01	-4.6890740	-14.855789	14.811789	13.123
236	-0.43999790E-01	-3.5101872	-10.951305	10.907305	9.6585
237	0.37552427	-0.17157075	-4.6033132	4.9788374	4.7312
238	6.1194478	-0.21999895E-01	-3.3118681	9.4313159	8.6[illegible]
239	4.2487353	0.00000000E+00	-5.0784162	9.3271515	8.1[illegible]
240	4.7214268	0.00000000E+00	-5.1399742	9.8614009	8.5654
241	4.4040765	0.00000000E+00	-4.6605132	9.0645897	7.9372
242	6.1232851	0.00000000E+00	-5.6097994	11.733085	10.320

243	-0.43999790E-01	-9.2297529	-28.460315	28.416315	25.323
244	-0.43999790E-01	-9.4152586	-25.814574	25.770574	22.802
245	-0.43999790E-01	-9.6756598	-18.177997	18.133997	15.857
246	-0.43999790E-01	-4.1920380	-9.2932966	9.2492969	8.1821
247	15.228849	-0.21999895E-01	-10.617437	25.846286	23.674

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
248	3.5479096	-2.0929702	-13.975270	17.523180	15.630
249	1.6959673	-0.63084974	-24.081679	25.777647	24.716
250	1.0922467	-0.26290757	-29.578984	30.671231	30.017
251	3.3459019	0.00000000E+00	-26.086005	29.431907	28.078
252	9.1935055	5.1524805	0.00000000E+00	9.1935055	8.0184
253	12.265071	8.6721265	0.00000000E+00	12.265071	10.960
254	16.567877	9.3377988	0.00000000E+00	16.567877	14.398
255	17.988798	9.4978188	0.00000000E+00	17.988798	15.596
256	-0.43999790E-01	-7.5230763	-16.886448	16.842448	14.831
257	-0.43999790E-01	-7.2819165	-15.454773	15.410773	13.591
258	-0.43999790E-01	-6.5783535	-11.415151	11.371152	10.196
259	-0.43999790E-01	-2.5043141	-6.1470578	6.1030580	5.3648
260	3.5294565	-0.17311965	-4.8036480	8.3331045	7.5388

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1
LL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
261	1.4508756	-0.10463750	-3.3501941	4.8010697	4.2895
262	3.5988991	0.00000000E+00	-3.4526577	7.0515568	6.1355
263	5.9060794	0.00000000E+00	-3.8742925	9.7803719	8.5519
264	10.037978	0.00000000E+00	-5.4748561	15.512834	13.642
265	-0.43999790E-01	-15.095688	-36.575276	36.531276	32.167
266	-0.43999790E-01	-13.843646	-33.273534	33.229535	29.324
267	-0.43999790E-01	-10.153776	-23.493235	23.449236	20.951
268	1.1242923	-3.5621507	-9.8564300	10.980722	9.8171
269	23.565644	3.0536227	-0.21999895E-01	23.587644	22.233
270	5.5667328	0.00000000E+00	-1.2049752	6.7717080	6.3195
271	0.91339255	-0.42603329	-9.5562817	10.469674	9.8897
272	0.11684719	-1.0860404	-22.187774	22.304621	21.734
273	1.5613940	-0.79844676	-26.080874	27.642268	26.614

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
74	9.3892248	5.4208935	0.00000000E+00	9.3892248	8.1965
75	13.020037	11.229660	0.00000000E+00	13.020037	12.242
76	18.044519	12.650003	0.00000000E+00	18.044519	16.054
277	19.671183	13.096084	0.00000000E+00	19.671183	17.355
278	1.0331756	-6.5912253	-17.319205	18.352380	15.713

279	1.2817068	-6.3566122	-15.664430	16.946137	15.384
280	2.0056232	-5.6797342	-10.859881	12.865504	11.718
281	3.3271782	-1.7186484	-4.3861119	7.7132901	6.9822
282	5.9582799	2.0947350	-3.0357848	8.9940648	7.9388
283	1.5676584	0.00000000E+00	-0.69963337	2.2672918	2.0192
284	3.2546080	0.00000000E+00	-1.3787468	4.6333548	4.[illegible]4
285	6.0936342	0.00000000E+00	-3.0723193	9.1659535	8.[illegible]1
286	10.048139	0.00000000E+00	-5.1525298	15.200669	13.401

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
287	-0.43999790E-01	-11.996044	-36.911903	36.867903	32.663
288	-0.43999790E-01	-10.891425	-33.533540	33.489540	29.690
289	-0.43999790E-01	-7.6703489	-23.470523	23.426523	20.834
290	0.94745114E-01	-3.1483133	-7.5480353	7.6427805	6.9173
291	26.306097	6.7805853	-0.21999895E-01	26.328097	23.722
292	9.4330413	1.9138663	0.00000000E+00	9.4330413	8.6915
293	0.58577698	-0.43375575	-4.9522911	5.5380681	5.1269
294	0.00000000E+00	-2.3125846	-18.195454	18.195454	17.158
295	0.30527054	-2.3866739	-25.022626	25.327897	24.114
296	7.4563065	4.6111834	0.00000000E+00	7.4563065	6.5766
297	12.223786	9.3182757	0.00000000E+00	12.223786	11.077
298	17.126373	10.974362	0.00000000E+00	17.126373	15.041
299	18.730490	11.487171	0.00000000E+00	18.730490	16.372

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
300	-0.43999790E-01	-4.3566240	-16.713118	16.669118	15.310
301	-0.43999790E-01	-3.8528959	-15.060166	15.016166	13.887
302	0.63185809	-3.0666543	-10.265231	10.897090	9.8369
303	2.0501827	-1.1081570	-1.9919740	4.0421567	3.7755
304	7.5929499	1.8302841	-0.80002474	8.3929746	7.7849
305	3.5779123	0.17563686	-0.22496900	3.8028813	3.6222
306	3.1008965	0.00000000E+00	-0.35460619	3.4555027	3.2971
307	4.5956629	0.00000000E+00	-2.4648298	7.0604927	6.2395
308	6.5521183	0.00000000E+00	-4.8367402	11.388859	9.9851
309	-0.43999790E-01	-14.107567	-31.800510	31.756511	27.756
310	-0.43999790E-01	-13.438714	-29.016800	28.972800	25.299
311	-0.43999790E-01	-11.123956	-20.710075	20.666075	18.053
312	-0.43999790E-01	-3.4152018	-9.3460846	9.3020848	8.5693

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

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LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
313	23.582964	2.6267565	-0.46665541	24.049620	22.692
314	6.0523017	2.6442123	-0.85696598E-01	6.1379983	5.6681

315	2.0790639	-0.17562348	-8.8165050	10.895569	10.133
316	0.70055387E-02	-1.4261414	-19.640582	19.647587	18.986
317	0.00000000E+00	-2.7902062	-23.414674	23.414674	22.175
318	6.0506364	3.6675860	0.00000000E+00	6.0506364	5.3087
319	11.471084	6.3915810	0.00000000E+00	11.471084	9.9780
320	15.857099	7.6835446	0.00000000E+00	15.857099	13.749
321	17.297219	8.0760583	0.00000000E+00	17.297219	15.004
322	-0.43999790E-01	-6.8220306	-16.816301	16.772302	15.291
323	-0.43999790E-01	-6.4022339	-15.348778	15.304779	14.061
324	0.25501712E-01	-5.1985858	-11.138170	11.163672	10.596
325	1.1435759	-2.1479601	-5.1773762	6.3209520	5.5107

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
326	6.5892359	1.6821153	-1.3355277	7.9247636	7.1244
327	3.4748429	0.85317954	0.00000000E+00	3.4748429	3.1424
328	2.6703612	0.00000000E+00	-0.23710692	2.9074681	2.7976
329	2.7499820	0.00000000E+00	-2.4465299	5.1965120	4.5340
330	2.9430237	0.00000000E+00	-4.8016678	7.7446915	6.8361
331	-0.43999790E-01	-2.0833419	-26.117795	26.073795	25.132
332	0.22151513	-0.80430731	-22.034123	22.255638	21.776
333	3.9704341	-0.43999790E-01	-9.6523951	13.622829	12.287
334	13.431894	9.4045731	-0.43999790E-01	13.475894	12.079
335	25.050999	7.5639257	-9.1489395	34.199939	30.361
336	0.00000000E+00	-4.7691023	-16.336449	16.336449	14.644
37	0.00000000E+00	-3.5061854	-15.815241	15.815241	14.434
38	0.00000000E+00	-3.0940513	-19.590901	19.590901	18.258

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
339	0.00000000E+00	-3.0887702	-20.854920	20.854920	19.540
340	5.8874576	3.3277062	0.00000000E+00	5.8874576	5.1517
341	12.211030	6.6079828	0.00000000E+00	12.211030	10.622
342	16.914328	8.2758128	0.00000000E+00	16.914328	14.685
343	18.429866	8.8038672	0.00000000E+00	18.429866	16.001
344	-0.43999790E-01	-5.3237573	-16.833002	16.789002	14.889
345	-0.43999790E-01	-4.7358530	-15.324574	15.280574	13.581
346	-0.43999790E-01	-2.9774200	-10.925656	10.881656	9.7885
347	0.80580304	-0.32329459	-2.7854500	3.5912530	3.2098
348	8.3928489	3.3975911	-0.21999895E-01	8.4148488	7.3489
349	4.0729263	1.9231440	0.00000000E+00	4.0729263	3.5396
350	2.0443904	0.23218305	-0.98843002E-01	2.1432334	2.0063
351	1.3961232	0.00000000E+00	-2.3164290	3.7125522	3.2731

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

D STEP 1 ITERATION= 1 SECTION= 1
E= 0.00000E+00 LOAD CASE= 1
L STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
352	1.0081439	0.00000000E+00	-4.6691241	5.6772679	5.2767
353	-0.43999790E-01	-11.751576	-24.736264	24.692264	21.393
354	-0.43999790E-01	-12.037589	-22.474476	22.430476	19.445
355	-0.43999790E-01	-12.180492	-16.736948	16.692948	14.947
356	-0.43999790E-01	-5.8077686	-17.200022	17.156022	15[illegible]2
357	27.372604	0.59409958	-7.2714997	34.644104	31.[illegible]5
358	16.012952	3.5256285	0.00000000E+00	16.012952	14.573
359	2.3374480	0.66182991	-2.8872449	5.2246929	4.8968
360	0.14330170E-02	-0.60895142	-13.845028	13.846461	13.558
361	0.00000000E+00	-2.1188177	-18.490573	18.490573	17.529
362	5.5995408	0.54784428E-01	-0.54607368E-01	5.6541482	5.6002
363	9.6737440	1.2310397	0.00000000E+00	9.6737440	9.1233
364	13.297116	1.6707207	0.00000000E+00	13.297116	12.546

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

LOAD STEP 1 ITERATION= 1 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
365	14.510952	1.8067689	0.00000000E+00	14.510952	13.697
366	-0.43999790E-01	-11.961682	-18.421405	18.377405	16.147
367	-0.43999790E-01	-11.798800	-17.035071	16.991071	15.072
368	-0.43999790E-01	-11.190508	-13.223887	13.179887	12.290
369	-0.43999790E-01	-5.8493245	-10.879158	10.835159	9.3915
370	5.1171016	-0.19520902E-01	-3.8784071	8.9955087	8.1540
371	3.1109657	0.21250189	-0.66839317E-01	3.1778050	3.0502
372	0.92201875	0.38242191	0.00000000E+00	0.92201875	0.80787
373	0.53776997	0.00000000E+00	-2.0196355	2.5574054	2.3[illegible]
374	0.14082694	0.00000000E+00	-4.5597625	4.7005895	4.6[illegible]

MAXIMUMS					
NODE	203	159	226	225	225
VALUE	36.335801	21.149531	-49.505387	63.006361	57.01

ATTACHMENT B

FINITE ELEMENT ANALYSIS INPUT AND OUTPUT

MSB

Note: A copy of the computer input and output for the ANSYS calculations is provided here for convenience. This computer input and output is from Reference 9.

LIST ALL SELECTED NODE DSYS= 0

NODE	X	Y	Z	THXY	THYZ	THXZ
1	0.00000E+00	0.00000E+00	0.00000E+00	0.00	0.00	0.00
2	0.00000E+00	-9.2000	0.00000E+00	0.00	0.00	0.00
3	9.2000	-9.2000	0.00000E+00	0.00	0.00	0.00
4	9.2000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
5	9.2000	9.2000	0.00000E+00	0.00	0.00	0.00
6	0.00000E+00	9.2000	0.00000E+00	0.00	0.00	0.00
7	0.00000E+00	-18.400	0.00000E+00	0.00	0.00	0.00
8	9.2000	-18.400	0.00000E+00	0.00	0.00	0.00
9	18.400	-9.2000	0.00000E+00	0.00	0.00	0.00
10	18.400	0.00000E+00	0.00000E+00	0.00	0.00	0.00
11	18.400	9.2000	0.00000E+00	0.00	0.00	0.00
12	9.2000	18.400	0.00000E+00	0.00	0.00	0.00
13	0.00000E+00	18.400	0.00000E+00	0.00	0.00	0.00
14	0.12079E-09	-31.000	0.00000E+00	0.00	0.00	0.00
15	8.0234	-29.944	0.00000E+00	0.00	0.00	0.00
16	15.500	-26.847	0.00000E+00	0.00	0.00	0.00
17	21.920	-21.920	0.00000E+00	0.00	0.00	0.00
18	26.847	-15.500	0.00000E+00	0.00	0.00	0.00
19	29.944	-8.0234	0.00000E+00	0.00	0.00	0.00
20	31.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
21	29.944	8.0234	0.00000E+00	0.00	0.00	0.00
22	26.847	15.500	0.00000E+00	0.00	0.00	0.00
23	21.920	21.920	0.00000E+00	0.00	0.00	0.00
24	15.500	26.847	0.00000E+00	0.00	0.00	0.00
25	8.0234	29.944	0.00000E+00	0.00	0.00	0.00
26	0.12079E-09	31.000	0.00000E+00	0.00	0.00	0.00
27	0.12079E-09	-31.000	3.0000	0.00	0.00	0.00
28	8.0234	-29.944	3.0000	0.00	0.00	0.00
29	15.500	-26.847	3.0000	0.00	0.00	0.00
30	21.920	-21.920	3.0000	0.00	0.00	0.00
31	26.847	-15.500	3.0000	0.00	0.00	0.00
32	29.944	-8.0234	3.0000	0.00	0.00	0.00
33	31.000	0.00000E+00	3.0000	0.00	0.00	0.00
34	29.944	8.0234	3.0000	0.00	0.00	0.00
35	26.847	15.500	3.0000	0.00	0.00	0.00
36	21.920	21.920	3.0000	0.00	0.00	0.00
37	15.500	26.847	3.0000	0.00	0.00	0.00
38	8.0234	29.944	3.0000	0.00	0.00	0.00
39	0.12079E-09	31.000	3.0000	0.00	0.00	0.00
40	0.12079E-09	-31.000	6.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
41	8.0234	-29.944	6.0000	0.00	0.00	0.00
42	15.500	-26.847	6.0000	0.00	0.00	0.00
43	21.920	-21.920	6.0000	0.00	0.00	0.00
44	26.847	-15.500	6.0000	0.00	0.00	0.00
45	29.944	-8.0234	6.0000	0.00	0.00	0.00
46	31.000	0.00000E+00	6.0000	0.00	0.00	0.00
47	29.944	8.0234	6.0000	0.00	0.00	0.00
48	26.847	15.500	6.0000	0.00	0.00	0.00
49	21.920	21.920	6.0000	0.00	0.00	0.00
50	15.500	26.847	6.0000	0.00	0.00	0.00
51	8.0234	29.944	6.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
	[illegible]	[illegible]	6.0000	0.00	0.00	0.00
53	0.12079E-09	-31.000	12.000	0.00	0.00	0.00
54	8.0234	-29.944	12.000	0.00	0.00	0.00
55	15.500	-26.847	12.000	0.00	0.00	0.00
56	21.920	-21.920	12.000	0.00	0.00	0.00
57	26.847	-15.500	12.000	0.00	0.00	0.00
58	29.944	-8.0234	12.000	0.00	0.00	0.00
59	31.000	0.00000E+00	12.000	0.00	0.00	0.00
60	29.944	8.0234	12.000	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
61	26.847	15.500	12.000	0.00	0.00	0.00
62	21.920	21.920	12.000	0.00	0.00	0.00
63	15.500	26.847	12.000	0.00	0.00	0.00
64	8.0234	29.944	12.000	0.00	0.00	0.00
65	0.12079E-09	31.000	12.000	0.00	0.00	0.00
66	0.12079E-09	-31.000	20.000	0.00	0.00	0.00
67	8.0234	-29.944	20.000	0.00	0.00	0.00
68	15.500	-26.847	20.000	0.00	0.00	0.00
69	21.920	-21.920	20.000	0.00	0.00	0.00
70	26.847	-15.500	20.000	0.00	0.00	0.00
71	29.944	-8.0234	20.000	0.00	0.00	0.00
72	31.000	0.00000E+00	20.000	0.00	0.00	0.00
73	29.944	8.0234	20.000	0.00	0.00	0.00
74	26.847	15.500	20.000	0.00	0.00	0.00
75	21.920	21.920	20.000	0.00	0.00	0.00
76	15.500	26.847	20.000	0.00	0.00	0.00
77	8.0234	29.944	20.000	0.00	0.00	0.00
78	0.12079E-09	31.000	20.000	0.00	0.00	0.00
79	0.12079E-09	-31.000	28.000	0.00	0.00	0.00
80	8.0234	-29.944	28.000	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
81	15.500	-26.847	28.000	0.00	0.00	0.00
82	21.920	-21.920	28.000	0.00	0.00	0.00
83	26.847	-15.500	28.000	0.00	0.00	0.00
84	29.944	-8.0234	28.000	0.00	0.00	0.00
85	31.000	0.00000E+00	28.000	0.00	0.00	0.00
86	29.944	8.0234	28.000	0.00	0.00	0.00
87	26.847	15.500	28.000	0.00	0.00	0.00
88	21.920	21.920	28.000	0.00	0.00	0.00
89	15.500	26.847	28.000	0.00	0.00	0.00
90	8.0234	29.944	28.000	0.00	0.00	0.00
91	0.12079E-09	31.000	28.000	0.00	0.00	0.00
92	0.12079E-09	-31.000	34.000	0.00	0.00	0.00
93	8.0234	-29.944	34.000	0.00	0.00	0.00
94	15.500	-26.847	34.000	0.00	0.00	0.00
95	21.920	-21.920	34.000	0.00	0.00	0.00
96	26.847	-15.500	34.000	0.00	0.00	0.00
97	29.944	-8.0234	34.000	0.00	0.00	0.00
98	31.000	0.00000E+00	34.000	0.00	0.00	0.00
99	29.944	8.0234	34.000	0.00	0.00	0.00
100	26.847	15.500	34.000	0.00	0.00	0.00
NODE	X	Y	Z	THXY	THYZ	THXZ
101	21.920	21.920	34.000	0.00	0.00	0.00
02	15.500	26.847	34.000	0.00	0.00	0.00
03	8.0234	29.944	34.000	0.00	0.00	0.00
04	0.12079E-09	31.000	34.000	0.00	0.00	0.00
105	0.12079E-09	-31.000	38.000	0.00	0.00	0.00

107	15.500	-26.847	38.000	0.00	0.00	0.00
108	21.920	-21.920	38.000	0.00	0.00	0.00
109	26.847	-15.500	38.000	0.00	0.00	0.00
110	29.944	-8.0234	38.000	0.00	0.00	0.00
111	31.000	0.00000E+00	38.000	0.00	0.00	0.00
112	29.944	8.0234	38.000	0.00	0.00	0.00
113	26.847	15.500	38.000	0.00	0.00	0.00
114	21.920	21.920	38.000	0.00	0.00	0.00
115	15.500	26.847	38.000	0.00	0.00	0.00
116	8.0234	29.944	38.000	0.00	0.00	0.00
117	0.12079E-09	31.000	38.000	0.00	0.00	0.00
118	0.12079E-09	-31.000	45.000	0.00	0.00	0.00
119	8.0234	-29.944	45.000	0.00	0.00	0.00
120	15.500	-26.847	45.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
121	21.920	-21.920	45.000	0.00	0.00	0.00
122	26.847	-15.500	45.000	0.00	0.00	0.00
123	29.944	-8.0234	45.000	0.00	0.00	0.00
124	31.000	0.00000E+00	45.000	0.00	0.00	0.00
125	29.944	8.0234	45.000	0.00	0.00	0.00
126	26.847	15.500	45.000	0.00	0.00	0.00
127	21.920	21.920	45.000	0.00	0.00	0.00
128	15.500	26.847	45.000	0.00	0.00	0.00
129	8.0234	29.944	45.000	0.00	0.00	0.00
130	0.12079E-09	31.000	45.000	0.00	0.00	0.00
131	0.12079E-09	-31.000	57.500	0.00	0.00	0.00
132	8.0234	-29.944	57.500	0.00	0.00	0.00
133	15.500	-26.847	57.500	0.00	0.00	0.00
134	21.920	-21.920	57.500	0.00	0.00	0.00
135	26.847	-15.500	57.500	0.00	0.00	0.00
136	29.944	-8.0234	57.500	0.00	0.00	0.00
137	31.000	0.00000E+00	57.500	0.00	0.00	0.00
138	29.944	8.0234	57.500	0.00	0.00	0.00
139	26.847	15.500	57.500	0.00	0.00	0.00
140	21.920	21.920	57.500	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
141	15.500	26.847	57.500	0.00	0.00	0.00
142	8.0234	29.944	57.500	0.00	0.00	0.00
143	0.12079E-09	31.000	57.500	0.00	0.00	0.00
144	0.12079E-09	-31.000	64.500	0.00	0.00	0.00
145	8.0234	-29.944	64.500	0.00	0.00	0.00
146	15.500	-26.847	64.500	0.00	0.00	0.00
147	21.920	-21.920	64.500	0.00	0.00	0.00
148	26.847	-15.500	64.500	0.00	0.00	0.00
149	29.944	-8.0234	64.500	0.00	0.00	0.00
150	31.000	0.00000E+00	64.500	0.00	0.00	0.00
151	29.944	8.0234	64.500	0.00	0.00	0.00
152	26.847	15.500	64.500	0.00	0.00	0.00
153	21.920	21.920	64.500	0.00	0.00	0.00
154	15.500	26.847	64.500	0.00	0.00	0.00
155	8.0234	29.944	64.500	0.00	0.00	0.00
156	0.12079E-09	31.000	64.500	0.00	0.00	0.00
157	0.12079E-09	-31.000	68.500	0.00	0.00	0.00
158	8.0234	-29.944	68.500	0.00	0.00	0.00
159	15.500	-26.847	68.500	0.00	0.00	0.00
160	21.920	-21.920	68.500	0.00	0.00	0.00

				THXY	THYZ	THXZ
161	26.847	-15.500	68.500	0.00	0.00	0.00
162	29.944	-8.0234	68.500	0.00	0.00	0.00
163	31.000	0.00000E+00	68.500	0.00	0.00	0.00
164	29.944	8.0234	68.500	0.00	0.00	0.00
165	26.847	15.500	68.500	0.00	0.00	0.00
166	21.920	21.920	68.500	0.00	0.00	0.00
167	15.500	26.847	68.500	0.00	0.00	0.00
168	8.0234	29.944	68.500	0.00	0.00	0.00
169	0.12079E-09	31.000	68.500	0.00	0.00	0.00
170	0.12079E-09	-31.000	74.500	0.00	0.00	0.00
171	8.0234	-29.944	74.500	0.00	0.00	0.00
172	15.500	-26.847	74.500	0.00	0.00	0.00
173	21.920	-21.920	74.500	0.00	0.00	0.00
174	26.847	-15.500	74.500	0.00	0.00	0.00
175	29.944	-8.0234	74.500	0.00	0.00	0.00
176	31.000	0.00000E+00	74.500	0.00	0.00	0.00
177	29.944	8.0234	74.500	0.00	0.00	0.00
178	26.847	15.500	74.500	0.00	0.00	0.00
179	21.920	21.920	74.500	0.00	0.00	0.00
180	15.500	26.847	74.500	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
181	8.0234	29.944	74.500	0.00	0.00	0.00
182	0.12079E-09	31.000	74.500	0.00	0.00	0.00
183	0.12079E-09	-31.000	82.500	0.00	0.00	0.00
184	8.0234	-29.944	82.500	0.00	0.00	0.00
185	15.500	-26.847	82.500	0.00	0.00	0.00
186	21.920	-21.920	82.500	0.00	0.00	0.00
187	26.847	-15.500	82.500	0.00	0.00	0.00
188	29.944	-8.0234	82.500	0.00	0.00	0.00
189	31.000	0.00000E+00	82.500	0.00	0.00	0.00
190	29.944	8.0234	82.500	0.00	0.00	0.00
191	26.847	15.500	82.500	0.00	0.00	0.00
192	21.920	21.920	82.500	0.00	0.00	0.00
193	15.500	26.847	82.500	0.00	0.00	0.00
194	8.0234	29.944	82.500	0.00	0.00	0.00
195	0.12079E-09	31.000	82.500	0.00	0.00	0.00
196	0.12079E-09	-31.000	90.500	0.00	0.00	0.00
197	8.0234	-29.944	90.500	0.00	0.00	0.00
198	15.500	-26.847	90.500	0.00	0.00	0.00
199	21.920	-21.920	90.500	0.00	0.00	0.00
200	26.847	-15.500	90.500	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
201	29.944	-8.0234	90.500	0.00	0.00	0.00
202	31.000	0.00000E+00	90.500	0.00	0.00	0.00
203	29.944	8.0234	90.500	0.00	0.00	0.00
204	26.847	15.500	90.500	0.00	0.00	0.00
205	21.920	21.920	90.500	0.00	0.00	0.00
206	15.500	26.847	90.500	0.00	0.00	0.00
207	8.0234	29.944	90.500	0.00	0.00	0.00
208	0.12079E-09	31.000	90.500	0.00	0.00	0.00
209	0.12079E-09	-31.000	96.500	0.00	0.00	0.00
210	8.0234	-29.944	96.500	0.00	0.00	0.00
211	15.500	-26.847	96.500	0.00	0.00	0.00
212	21.920	-21.920	96.500	0.00	0.00	0.00
213	26.847	-15.500	96.500	0.00	0.00	0.00
214	29.944	-8.0234	96.500	0.00	0.00	0.00
215	31.000	0.00000E+00	96.500	0.00	0.00	0.00

[illegible]	[illegible]	[illegible]	[illegible]	0.00	0.00	0.00
217	26.847	15.500	96.500	0.00	0.00	0.00
218	21.920	21.920	96.500	0.00	0.00	0.00
219	15.500	26.847	96.500	0.00	0.00	0.00
220	8.0234	29.944	96.500	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
221	0.12079E-09	31.000	96.500	0.00	0.00	0.00
222	0.12079E-09	-31.000	100.50	0.00	0.00	0.00
223	8.0234	-29.944	100.50	0.00	0.00	0.00
224	15.500	-26.847	100.50	0.00	0.00	0.00
225	21.920	-21.920	100.50	0.00	0.00	0.00
226	26.847	-15.500	100.50	0.00	0.00	0.00
227	29.944	-8.0234	100.50	0.00	0.00	0.00
228	31.000	0.00000E+00	100.50	0.00	0.00	0.00
229	29.944	8.0234	100.50	0.00	0.00	0.00
230	26.847	15.500	100.50	0.00	0.00	0.00
231	21.920	21.920	100.50	0.00	0.00	0.00
232	15.500	26.847	100.50	0.00	0.00	0.00
233	8.0234	29.944	100.50	0.00	0.00	0.00
234	0.12079E-09	31.000	100.50	0.00	0.00	0.00
235	0.12079E-09	-31.000	107.50	0.00	0.00	0.00
236	8.0234	-29.944	107.50	0.00	0.00	0.00
237	15.500	-26.847	107.50	0.00	0.00	0.00
238	21.920	-21.920	107.50	0.00	0.00	0.00
239	26.847	-15.500	107.50	0.00	0.00	0.00
240	29.944	-8.0234	107.50	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
241	31.000	0.00000E+00	107.50	0.00	0.00	0.00
242	29.944	8.0234	107.50	0.00	0.00	0.00
243	26.847	15.500	107.50	0.00	0.00	0.00
244	21.920	21.920	107.50	0.00	0.00	0.00
245	15.500	26.847	107.50	0.00	0.00	0.00
246	8.0234	29.944	107.50	0.00	0.00	0.00
247	0.12079E-09	31.000	107.50	0.00	0.00	0.00
248	0.12079E-09	-31.000	120.00	0.00	0.00	0.00
249	8.0234	-29.944	120.00	0.00	0.00	0.00
250	15.500	-26.847	120.00	0.00	0.00	0.00
251	21.920	-21.920	120.00	0.00	0.00	0.00
252	26.847	-15.500	120.00	0.00	0.00	0.00
253	29.944	-8.0234	120.00	0.00	0.00	0.00
254	31.000	0.00000E+00	120.00	0.00	0.00	0.00
255	29.944	8.0234	120.00	0.00	0.00	0.00
256	26.847	15.500	120.00	0.00	0.00	0.00
257	21.920	21.920	120.00	0.00	0.00	0.00
258	15.500	26.847	120.00	0.00	0.00	0.00
259	8.0234	29.944	120.00	0.00	0.00	0.00
260	0.12079E-09	31.000	120.00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
261	0.12079E-09	-31.000	127.00	0.00	0.00	0.00
262	8.0234	-29.944	127.00	0.00	0.00	0.00
263	15.500	-26.847	127.00	0.00	0.00	0.00
264	21.920	-21.920	127.00	0.00	0.00	0.00
265	26.847	-15.500	127.00	0.00	0.00	0.00
266	29.944	-8.0234	127.00	0.00	0.00	0.00
267	31.000	0.00000E+00	127.00	0.00	0.00	0.00
268	29.944	8.0234	127.00	0.00	0.00	0.00
269	26.847	15.500	127.00	0.00	0.00	0.00

271	15.500	26.847	127.00	[illegible]	[illegible]	[illegible]
272	8.0234	29.944	127.00	0.00	0.00	0.00
273	0.12079E-09	31.000	127.00	0.00	0.00	0.00
274	0.12079E-09	-31.000	131.00	0.00	0.00	0.00
275	8.0234	-29.944	131.00	0.00	0.00	0.00
276	15.500	-26.847	131.00	0.00	0.00	0.00
277	21.920	-21.920	131.00	0.00	0.00	0.00
278	26.847	-15.500	131.00	0.00	0.00	0.00
279	29.944	-8.0234	131.00	0.00	0.00	0.00
280	31.000	0.00000E+00	131.00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
281	29.944	8.0234	131.00	0.00	0.00	0.00
282	26.847	15.500	131.00	0.00	0.00	0.00
283	21.920	21.920	131.00	0.00	0.00	0.00
284	15.500	26.847	131.00	0.00	0.00	0.00
285	8.0234	29.944	131.00	0.00	0.00	0.00
286	0.12079E-09	31.000	131.00	0.00	0.00	0.00
287	0.12079E-09	-31.000	137.00	0.00	0.00	0.00
288	8.0234	-29.944	137.00	0.00	0.00	0.00
289	15.500	-26.847	137.00	0.00	0.00	0.00
290	21.920	-21.920	137.00	0.00	0.00	0.00
291	26.847	-15.500	137.00	0.00	0.00	0.00
292	29.944	-8.0234	137.00	0.00	0.00	0.00
293	31.000	0.00000E+00	137.00	0.00	0.00	0.00
294	29.944	8.0234	137.00	0.00	0.00	0.00
295	26.847	15.500	137.00	0.00	0.00	0.00
296	21.920	21.920	137.00	0.00	0.00	0.00
297	15.500	26.847	137.00	0.00	0.00	0.00
298	8.0234	29.944	137.00	0.00	0.00	0.00
299	0.12079E-09	31.000	137.00	0.00	0.00	0.00
300	0.12079E-09	-31.000	145.00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
301	8.0234	-29.944	145.00	0.00	0.00	0.00
302	15.500	-26.847	145.00	0.00	0.00	0.00
303	21.920	-21.920	145.00	0.00	0.00	0.00
304	26.847	-15.500	145.00	0.00	0.00	0.00
305	29.944	-8.0234	145.00	0.00	0.00	0.00
306	31.000	0.00000E+00	145.00	0.00	0.00	0.00
307	29.944	8.0234	145.00	0.00	0.00	0.00
308	26.847	15.500	145.00	0.00	0.00	0.00
309	21.920	21.920	145.00	0.00	0.00	0.00
310	15.500	26.847	145.00	0.00	0.00	0.00
311	8.0234	29.944	145.00	0.00	0.00	0.00
312	0.12079E-09	31.000	145.00	0.00	0.00	0.00
313	0.12079E-09	-31.000	153.00	0.00	0.00	0.00
314	8.0234	-29.944	153.00	0.00	0.00	0.00
315	15.500	-26.847	153.00	0.00	0.00	0.00
316	21.920	-21.920	153.00	0.00	0.00	0.00
317	26.847	-15.500	153.00	0.00	0.00	0.00
318	29.944	-8.0234	153.00	0.00	0.00	0.00
319	31.000	0.00000E+00	153.00	0.00	0.00	0.00
320	29.944	8.0234	153.00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
321	26.847	15.500	153.00	0.00	0.00	0.00
322	21.920	21.920	153.00	0.00	0.00	0.00
323	15.500	26.847	153.00	0.00	0.00	0.00

[illegible]	[illegible]	29.944	153.00	0.00	0.00	0.00
325	0.12079E-09	31.000	153.00	0.00	0.00	0.00
326	0.12079E-09	-31.000	159.00	0.00	0.00	0.00
327	8.0234	-29.944	159.00	0.00	0.00	0.00
328	15.500	-26.847	159.00	0.00	0.00	0.00
329	21.920	-21.920	159.00	0.00	0.00	0.00
330	26.847	-15.500	159.00	0.00	0.00	0.00
331	29.944	-8.0234	159.00	0.00	0.00	0.00
332	31.000	0.00000E+00	159.00	0.00	0.00	0.00
333	29.944	8.0234	159.00	0.00	0.00	0.00
334	26.847	15.500	159.00	0.00	0.00	0.00
335	21.920	21.920	159.00	0.00	0.00	0.00
336	15.500	26.847	159.00	0.00	0.00	0.00
337	8.0234	29.944	159.00	0.00	0.00	0.00
338	0.12079E-09	31.000	159.00	0.00	0.00	0.00
339	0.12079E-09	-31.000	162.50	0.00	0.00	0.00
340	8.0234	-29.944	162.50	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
341	15.500	-26.847	162.50	0.00	0.00	0.00
342	21.920	-21.920	162.50	0.00	0.00	0.00
343	26.847	-15.500	162.50	0.00	0.00	0.00
344	29.944	-8.0234	162.50	0.00	0.00	0.00
345	31.000	0.00000E+00	162.50	0.00	0.00	0.00
346	29.944	8.0234	162.50	0.00	0.00	0.00
347	26.847	15.500	162.50	0.00	0.00	0.00
348	21.920	21.920	162.50	0.00	0.00	0.00
349	15.500	26.847	162.50	0.00	0.00	0.00
350	8.0234	29.944	162.50	0.00	0.00	0.00
351	0.12079E-09	31.000	162.50	0.00	0.00	0.00
352	0.12079E-09	-31.000	168.50	0.00	0.00	0.00
353	8.0234	-29.944	168.50	0.00	0.00	0.00
354	15.500	-26.847	168.50	0.00	0.00	0.00
355	21.920	-21.920	168.50	0.00	0.00	0.00
356	26.847	-15.500	168.50	0.00	0.00	0.00
357	29.944	-8.0234	168.50	0.00	0.00	0.00
358	31.000	0.00000E+00	168.50	0.00	0.00	0.00
359	29.944	8.0234	168.50	0.00	0.00	0.00
360	26.847	15.500	168.50	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
361	21.920	21.920	168.50	0.00	0.00	0.00
362	15.500	26.847	168.50	0.00	0.00	0.00
363	8.0234	29.944	168.50	0.00	0.00	0.00
364	0.12079E-09	31.000	168.50	0.00	0.00	0.00
365	0.00000E+00	0.00000E+00	172.00	0.00	0.00	0.00
366	0.35848E-10	-9.2000	172.00	0.00	0.00	0.00
367	9.2000	-9.2000	172.00	0.00	0.00	0.00
368	9.2000	0.00000E+00	172.00	0.00	0.00	0.00
369	9.2000	9.2000	172.00	0.00	0.00	0.00
370	0.35848E-10	9.2000	172.00	0.00	0.00	0.00
371	0.71696E-10	-18.400	172.00	0.00	0.00	0.00
372	9.2000	-18.400	172.00	0.00	0.00	0.00
373	18.400	-9.2000	172.00	0.00	0.00	0.00
374	18.400	0.00000E+00	172.00	0.00	0.00	0.00
375	18.400	9.2000	172.00	0.00	0.00	0.00
376	9.2000	18.400	172.00	0.00	0.00	0.00
377	0.71696E-10	18.400	172.00	0.00	0.00	0.00
378	0.12079E-09	-31.000	172.00	0.00	0.00	0.00
379	8.0234	-29.944	172.00	0.00	0.00	0.00

	[illegible]	-26.847	172.00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
381	21.920	-21.920	172.00	0.00	0.00	0.00
382	26.847	-15.500	172.00	0.00	0.00	0.00
383	29.944	-8.0234	172.00	0.00	0.00	0.00
384	31.000	0.00000E+00	172.00	0.00	0.00	0.00
385	29.944	8.0234	172.00	0.00	0.00	0.00
386	26.847	15.500	172.00	0.00	0.00	0.00
387	21.920	21.920	172.00	0.00	0.00	0.00
388	15.500	26.847	172.00	0.00	0.00	0.00
389	8.0234	29.944	172.00	0.00	0.00	0.00
390	0.12079E-09	31.000	172.00	0.00	0.00	0.00
391	0.00000E+00	0.00000E+00	178.00	0.00	0.00	0.00
392	0.35848E-10	-9.2000	178.00	0.00	0.00	0.00
393	9.2000	-9.2000	178.00	0.00	0.00	0.00
394	9.2000	0.00000E+00	178.00	0.00	0.00	0.00
395	9.2000	9.2000	178.00	0.00	0.00	0.00
396	0.35848E-10	9.2000	178.00	0.00	0.00	0.00
397	0.71696E-10	-18.400	178.00	0.00	0.00	0.00
398	9.2000	-18.400	178.00	0.00	0.00	0.00
399	18.400	-9.2000	178.00	0.00	0.00	0.00
400	18.400	0.00000E+00	178.00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
401	18.400	9.2000	178.00	0.00	0.00	0.00
402	9.2000	18.400	178.00	0.00	0.00	0.00
403	0.71696E-10	18.400	178.00	0.00	0.00	0.00
404	0.12079E-09	-31.000	178.00	0.00	0.00	0.00
405	8.0234	-29.944	178.00	0.00	0.00	0.00
406	15.500	-26.847	178.00	0.00	0.00	0.00
407	21.920	-21.920	178.00	0.00	0.00	0.00
408	26.847	-15.500	178.00	0.00	0.00	0.00
409	29.944	-8.0234	178.00	0.00	0.00	0.00
410	31.000	0.00000E+00	178.00	0.00	0.00	0.00
411	29.944	8.0234	178.00	0.00	0.00	0.00
412	26.847	15.500	178.00	0.00	0.00	0.00
413	21.920	21.920	178.00	0.00	0.00	0.00
414	15.500	26.847	178.00	0.00	0.00	0.00
415	8.0234	29.944	178.00	0.00	0.00	0.00
416	0.12079E-09	31.000	178.00	0.00	0.00	0.00
417	8.2822	-30.910	3.0000	0.00	0.00	0.00
418	8.2822	-30.910	6.0000	0.00	0.00	0.00
419	16.000	-27.713	6.0000	0.00	0.00	0.00
420	8.2822	-30.910	12.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
421	16.000	-27.713	12.000	0.00	0.00	0.00
422	8.2822	-30.910	20.000	0.00	0.00	0.00
423	16.000	-27.713	20.000	0.00	0.00	0.00
424	8.2822	-30.910	28.000	0.00	0.00	0.00
425	16.000	-27.713	28.000	0.00	0.00	0.00
426	8.2822	-30.910	34.000	0.00	0.00	0.00
427	16.000	-27.713	34.000	0.00	0.00	0.00
428	8.2822	-30.910	38.000	0.00	0.00	0.00
429	16.000	-27.713	38.000	0.00	0.00	0.00
430	8.2822	-30.910	45.000	0.00	0.00	0.00
431	16.000	-27.713	45.000	0.00	0.00	0.00
432	8.2822	-30.910	57.500	0.00	0.00	0.00
433	16.000	-27.713	57.500	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
[illegible]	[illegible]	[illegible]	[illegible]	0.00	0.00	0.00
435	16.000	-27.713	64.500	0.00	0.00	0.00
436	8.2822	-30.910	68.500	0.00	0.00	0.00
437	16.000	-27.713	68.500	0.00	0.00	0.00
438	8.2822	-30.910	74.500	0.00	0.00	0.00
439	16.000	-27.713	74.500	0.00	0.00	0.00
440	8.2822	-30.910	82.500	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
441	16.000	-27.713	82.500	0.00	0.00	0.00
442	8.2822	-30.910	90.500	0.00	0.00	0.00
443	16.000	-27.713	90.500	0.00	0.00	0.00
444	8.2822	-30.910	96.500	0.00	0.00	0.00
445	16.000	-27.713	96.500	0.00	0.00	0.00
446	8.2822	-30.910	100.50	0.00	0.00	0.00
447	16.000	-27.713	100.50	0.00	0.00	0.00
448	8.2822	-30.910	107.50	0.00	0.00	0.00
449	16.000	-27.713	107.50	0.00	0.00	0.00
450	8.2822	-30.910	120.00	0.00	0.00	0.00
451	16.000	-27.713	120.00	0.00	0.00	0.00
452	8.2822	-30.910	127.00	0.00	0.00	0.00
453	16.000	-27.713	127.00	0.00	0.00	0.00
454	8.2822	-30.910	131.00	0.00	0.00	0.00
455	16.000	-27.713	131.00	0.00	0.00	0.00
456	8.2822	-30.910	137.00	0.00	0.00	0.00
457	16.000	-27.713	137.00	0.00	0.00	0.00
458	8.2822	-30.910	145.00	0.00	0.00	0.00
459	16.000	-27.713	145.00	0.00	0.00	0.00
460	8.2822	-30.910	153.00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
461	16.000	-27.713	153.00	0.00	0.00	0.00
462	8.2822	-30.910	159.00	0.00	0.00	0.00
463	16.000	-27.713	159.00	0.00	0.00	0.00
464	8.2822	-30.910	162.50	0.00	0.00	0.00
465	16.000	-27.713	162.50	0.00	0.00	0.00
466	8.2822	-30.910	168.50	0.00	0.00	0.00
467	8.2822	-30.910	0.00000E+00	0.00	0.00	0.00
468	16.000	-27.713	0.00000E+00	0.00	0.00	0.00
469	16.000	-27.713	3.0000	0.00	0.00	0.00
470	16.000	-27.713	168.50	0.00	0.00	0.00
471	8.2822	-30.910	172.00	0.00	0.00	0.00
472	16.000	-27.713	172.00	0.00	0.00	0.00
473	8.2822	-30.910	178.00	0.00	0.00	0.00
474	16.000	-27.713	178.00	0.00	0.00	0.00

LIST ALL SELECTED ELEMENTS. (LIST NODES)

ELEM	MAT	TYP	REL	NODES			
1	1	1	2	26	25	12	13
2	1	1	2	13	12	5	6
3	1	1	2	6	5	4	1
4	1	1	2	1	4	3	2
5	1	1	2	2	3	8	7
6	1	1	2	7	8	15	14
7	1	1	2	25	24	12	12
8	1	1	2	12	11	5	5
9	1	1	2	5	11	10	4
10	1	1	2	4	10	9	3

11	1	1	2	9	8	3	3
12	1	1	2	16	15	8	8
13	1	1	2	24	23	12	12
14	1	1	2	11	12	23	23
15	1	1	2	23	22	11	11
16	1	1	2	22	21	11	11
17	1	1	2	21	20	10	11
18	1	1	2	20	19	9	10
19	1	1	2	19	18	9	9
20	1	1	2	18	17	9	9

ELEM	MAT	TYP	REL	NODES			
21	1	1	2	8	9	17	17
22	1	1	2	17	16	8	8
23	1	1	1	14	15	28	27
24	1	1	1	15	16	29	28
25	1	1	1	16	17	30	29
26	1	1	1	17	18	31	30
27	1	1	1	18	19	32	31
28	1	1	1	19	20	33	32
29	1	1	1	20	21	34	33
30	1	1	1	21	22	35	34
31	1	1	1	22	23	36	35
32	1	1	1	23	24	37	36
33	1	1	1	24	25	38	37
34	1	1	1	25	26	39	38
35	1	1	1	27	28	41	40
36	1	1	1	28	29	42	41
37	1	1	1	29	30	43	42
38	1	1	1	30	31	44	43
39	1	1	1	31	32	45	44
40	1	1	1	32	33	46	45

ELEM	MAT	TYP	REL	NODES			
41	1	1	1	33	34	47	46
42	1	1	1	34	35	48	47
43	1	1	1	35	36	49	48
44	1	1	1	36	37	50	49
45	1	1	1	37	38	51	50
46	1	1	1	38	39	52	51
47	1	1	3	40	41	54	53
48	1	1	3	41	42	55	54
49	1	1	3	42	43	56	55
50	1	1	3	43	44	57	56
51	1	1	3	44	45	58	57
52	1	1	3	45	46	59	58
53	1	1	3	46	47	60	59
54	1	1	3	47	48	61	60
55	1	1	3	48	49	62	61
56	1	1	3	49	50	63	62
57	1	1	3	50	51	64	63
58	1	1	3	51	52	65	64
59	1	1	3	53	54	67	66
60	1	1	3	54	55	68	67

ELEM	MAT	TYP	REL	NODES			
61	1	1	3	55	56	69	68

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	70	69
63	1	1	3	57	58	71	70
64	1	1	3	58	59	72	71
65	1	1	3	59	60	73	72
66	1	1	3	60	61	74	73
67	1	1	3	61	62	75	74
68	1	1	3	62	63	76	75
69	1	1	3	63	64	77	76
70	1	1	3	64	65	78	77
71	1	1	3	66	67	80	79
72	1	1	3	67	68	81	80
73	1	1	3	68	69	82	81
74	1	1	3	69	70	83	82
75	1	1	3	70	71	84	83
76	1	1	3	71	72	85	84
77	1	1	3	72	73	86	85
78	1	1	3	73	74	87	86
79	1	1	3	74	75	88	87
80	1	1	3	75	76	89	88

ELEM	MAT	TYP	REL	NODES			
81	1	1	3	76	77	90	89
82	1	1	3	77	78	91	90
83	1	1	3	79	80	93	92
84	1	1	3	80	81	94	93
85	1	1	3	81	82	95	94
86	1	1	3	82	83	96	95
87	1	1	3	83	84	97	96
88	1	1	3	84	85	98	97
89	1	1	3	85	86	99	98
90	1	1	3	86	87	100	99
91	1	1	3	87	88	101	100
92	1	1	3	88	89	102	101
93	1	1	3	89	90	103	102
94	1	1	3	90	91	104	103
95	1	1	1	92	93	106	105
96	1	1	1	93	94	107	106
97	1	1	1	94	95	108	107
98	1	1	1	95	96	109	108
99	1	1	1	96	97	110	109
100	1	1	1	97	98	111	110

ELEM	MAT	TYP	REL	NODES			
101	1	1	1	98	99	112	111
102	1	1	1	99	100	113	112
103	1	1	1	100	101	114	113
104	1	1	1	101	102	115	114
105	1	1	1	102	103	116	115
106	1	1	1	103	104	117	116
107	1	1	1	105	106	119	118
108	1	1	1	106	107	120	119
109	1	1	1	107	108	121	120
110	1	1	1	108	109	122	121
111	1	1	1	109	110	123	122
112	1	1	1	110	111	124	123
113	1	1	1	111	112	125	124
114	1	1	1	112	113	126	125
115	1	1	1	113	114	127	126

117	1	1	1	115	116	129	128
118	1	1	1	116	117	130	129
119	1	1	1	118	119	132	131
120	1	1	1	119	120	133	132

ELEM	MAT	TYP	REL	NODES			
121	1	1	1	120	121	134	133
122	1	1	1	121	122	135	134
123	1	1	1	122	123	136	135
124	1	1	1	123	124	137	136
125	1	1	1	124	125	138	137
126	1	1	1	125	126	139	138
127	1	1	1	126	127	140	139
128	1	1	1	127	128	141	140
129	1	1	1	128	129	142	141
130	1	1	1	129	130	143	142
131	1	1	1	131	132	145	144
132	1	1	1	132	133	146	145
133	1	1	1	133	134	147	146
134	1	1	1	134	135	148	147
135	1	1	1	135	136	149	148
136	1	1	1	136	137	150	149
137	1	1	1	137	138	151	150
138	1	1	1	138	139	152	151
139	1	1	1	139	140	153	152
140	1	1	1	140	141	154	153

ELEM	MAT	TYP	REL	NODES			
141	1	1	1	141	142	155	154
142	1	1	1	142	143	156	155
143	1	1	1	144	145	158	157
144	1	1	1	145	146	159	158
145	1	1	1	146	147	160	159
146	1	1	1	147	148	161	160
147	1	1	1	148	149	162	161
148	1	1	1	149	150	163	162
149	1	1	1	150	151	164	163
150	1	1	1	151	152	165	164
151	1	1	1	152	153	166	165
152	1	1	1	153	154	167	166
153	1	1	1	154	155	168	167
154	1	1	1	155	156	169	168
155	1	1	3	157	158	171	170
156	1	1	3	158	159	172	171
157	1	1	3	159	160	173	172
158	1	1	3	160	161	174	173
159	1	1	3	161	162	175	174
160	1	1	3	162	163	176	175

ELEM	MAT	TYP	REL	NODES			
161	1	1	3	163	164	177	176
162	1	1	3	164	165	178	177
163	1	1	3	165	166	179	178
164	1	1	3	166	167	180	179
165	1	1	3	167	168	181	180
166	1	1	3	168	169	182	181

168	1	1	3	171	172	185	184
169	1	1	3	172	173	186	185
170	1	1	3	173	174	187	186
171	1	1	3	174	175	188	187
172	1	1	3	175	176	189	188
173	1	1	3	176	177	190	189
174	1	1	3	177	178	191	190
175	1	1	3	178	179	192	191
176	1	1	3	179	180	193	192
177	1	1	3	180	181	194	193
178	1	1	3	181	182	195	194
179	1	1	3	183	184	197	196
180	1	1	3	184	185	198	197

ELEM	MAT	TYP	REL	NODES			
181	1	1	3	185	186	199	198
182	1	1	3	186	187	200	199
183	1	1	3	187	188	201	200
184	1	1	3	188	189	202	201
185	1	1	3	189	190	203	202
186	1	1	3	190	191	204	203
187	1	1	3	191	192	205	204
188	1	1	3	192	193	206	205
189	1	1	3	193	194	207	206
190	1	1	3	194	195	208	207
191	1	1	3	196	197	210	209
192	1	1	3	197	198	211	210
193	1	1	3	198	199	212	211
194	1	1	3	199	200	213	212
195	1	1	3	200	201	214	213
196	1	1	3	201	202	215	214
197	1	1	3	202	203	216	215
198	1	1	3	203	204	217	216
199	1	1	3	204	205	218	217
200	1	1	3	205	206	219	218

ELEM	MAT	TYP	REL	NODES			
201	1	1	3	206	207	220	219
202	1	1	3	207	208	221	220
203	1	1	1	209	210	223	222
204	1	1	1	210	211	224	223
205	1	1	1	211	212	225	224
206	1	1	1	212	213	226	225
207	1	1	1	213	214	227	226
208	1	1	1	214	215	228	227
209	1	1	1	215	216	229	228
210	1	1	1	216	217	230	229
211	1	1	1	217	218	231	230
212	1	1	1	218	219	232	231
213	1	1	1	219	220	233	232
214	1	1	1	220	221	234	233
215	1	1	1	222	223	236	235
216	1	1	1	223	224	237	236
217	1	1	1	224	225	238	237
218	1	1	1	225	226	239	238
219	1	1	1	226	227	240	239
220	1	1	1	227	228	241	240

ELEM	MAT	TYP	REL	NODES			
221	1	1	1	228	229	242	241
222	1	1	1	229	230	243	242
223	1	1	1	230	231	244	243
224	1	1	1	231	232	245	244
225	1	1	1	232	233	246	245
226	1	1	1	233	234	247	246
227	1	1	1	235	236	249	248
228	1	1	1	236	237	250	249
229	1	1	1	237	238	251	250
230	1	1	1	238	239	252	251
231	1	1	1	239	240	253	252
232	1	1	1	240	241	254	253
233	1	1	1	241	242	255	254
234	1	1	1	242	243	256	255
235	1	1	1	243	244	257	256
236	1	1	1	244	245	258	257
237	1	1	1	245	246	259	258
238	1	1	1	246	247	260	259
239	1	1	1	248	249	262	261
240	1	1	1	249	250	263	262

ELEM	MAT	TYP	REL	NODES			
241	1	1	1	250	251	264	263
242	1	1	1	251	252	265	264
243	1	1	1	252	253	266	265
244	1	1	1	253	254	267	266
245	1	1	1	254	255	268	267
246	1	1	1	255	256	269	268
247	1	1	1	256	257	270	269
248	1	1	1	257	258	271	270
249	1	1	1	258	259	272	271
250	1	1	1	259	260	273	272
251	1	1	1	261	262	275	274
252	1	1	1	262	263	276	275
253	1	1	1	263	264	277	276
254	1	1	1	264	265	278	277
255	1	1	1	265	266	279	278
256	1	1	1	266	267	280	279
257	1	1	1	267	268	281	280
258	1	1	1	268	269	282	281
259	1	1	1	269	270	283	282
260	1	1	1	270	271	284	283

ELEM	MAT	TYP	REL	NODES			
261	1	1	1	271	272	285	284
262	1	1	1	272	273	286	285
263	1	1	3	274	275	288	287
264	1	1	3	275	276	289	288
265	1	1	3	276	277	290	289
266	1	1	3	277	278	291	290
267	1	1	3	278	279	292	291
268	1	1	3	279	280	293	292
269	1	1	3	280	281	294	293
270	1	1	3	281	282	295	294
271	1	1	3	282	283	296	295

273	1	1	3	284	285	298	297
274	1	1	3	285	286	299	298
275	1	1	3	287	288	301	300
276	1	1	3	288	289	302	301
277	1	1	3	289	290	303	302
278	1	1	3	290	291	304	303
279	1	1	3	291	292	305	304
280	1	1	3	292	293	306	305

ELEM	MAT	TYP	REL	NODES			
281	1	1	3	293	294	307	306
282	1	1	3	294	295	308	307
283	1	1	3	295	296	309	308
284	1	1	3	296	297	310	309
285	1	1	3	297	298	311	310
286	1	1	3	298	299	312	311
287	1	1	3	300	301	314	313
288	1	1	3	301	302	315	314
289	1	1	3	302	303	316	315
290	1	1	3	303	304	317	316
291	1	1	3	304	305	318	317
292	1	1	3	305	306	319	318
293	1	1	3	306	307	320	319
294	1	1	3	307	308	321	320
295	1	1	3	308	309	322	321
296	1	1	3	309	310	323	322
297	1	1	3	310	311	324	323
298	1	1	3	311	312	325	324
299	1	1	3	313	314	327	326
300	1	1	3	314	315	328	327

ELEM	MAT	TYP	REL	NODES			
301	1	1	3	315	316	329	328
302	1	1	3	316	317	330	329
303	1	1	3	317	318	331	330
304	1	1	3	318	319	332	331
305	1	1	3	319	320	333	332
306	1	1	3	320	321	334	333
307	1	1	3	321	322	335	334
308	1	1	3	322	323	336	335
309	1	1	3	323	324	337	336
310	1	1	3	324	325	338	337
311	1	1	1	326	327	340	339
312	1	1	1	327	328	341	340
313	1	1	1	328	329	342	341
314	1	1	1	329	330	343	342
315	1	1	1	330	331	344	343
316	1	1	1	331	332	345	344
317	1	1	1	332	333	346	345
318	1	1	1	333	334	347	346
319	1	1	1	334	335	348	347
320	1	1	1	335	336	349	348

ELEM	MAT	TYP	REL	NODES			
321	1	1	1	336	337	350	349
322	1	1	1	337	338	351	350

324	1	1	1	340	341	354	353
325	1	1	1	341	342	355	354
326	1	1	1	342	343	356	355
327	1	1	1	343	344	357	356
328	1	1	1	344	345	358	357
329	1	1	1	345	346	359	358
330	1	1	1	346	347	360	359
331	1	1	1	347	348	361	360
332	1	1	1	348	349	362	361
333	1	1	1	349	350	363	362
334	1	1	1	350	351	364	363
335	1	1	1	352	353	379	378
336	1	1	1	353	354	380	379
337	1	1	1	354	355	381	380
338	1	1	1	355	356	382	381
339	1	1	1	356	357	383	382
340	1	1	1	357	358	384	383

ELEM	MAT	TYP	REL	NODES			
341	1	1	1	358	359	385	384
342	1	1	1	359	360	386	385
343	1	1	1	360	361	387	386
344	1	1	1	361	362	388	387
345	1	1	1	362	363	389	388
346	1	1	1	363	364	390	389
347	1	1	4	389	390	377	376
348	1	1	4	376	377	370	369
349	1	1	4	369	370	365	368
350	1	1	4	368	365	366	367
351	1	1	4	367	366	371	372
352	1	1	4	372	371	378	379
353	1	1	4	388	389	376	376
354	1	1	4	375	376	369	369
355	1	1	4	375	369	368	374
356	1	1	4	374	368	367	373
357	1	1	4	372	373	367	367
358	1	1	4	379	380	372	372
359	1	1	4	387	388	376	376
360	1	1	4	376	375	387	387

ELEM	MAT	TYP	REL	NODES			
361	1	1	4	386	387	375	375
362	1	1	4	385	386	375	375
363	1	1	4	384	385	375	374
364	1	1	4	383	384	374	373
365	1	1	4	382	383	373	373
366	1	1	4	381	382	373	373
367	1	1	4	373	372	381	381
368	1	1	4	380	381	372	372
369	1	1	1	378	379	405	404
370	1	1	1	379	380	406	405
371	1	1	1	380	381	407	406
372	1	1	1	381	382	408	407
373	1	1	1	382	383	409	408
374	1	1	1	383	384	410	409
375	1	1	1	384	385	411	410
376	1	1	1	385	386	412	411

378	1	1	1	387	388	414	413
379	1	1	1	388	389	415	414
380	1	1	1	389	390	416	415

ELEM	MAT	TYP	REL	NODES			
381	1	1	7	415	416	403	402
382	1	1	7	402	403	396	395
383	1	1	7	395	396	391	394
384	1	1	7	394	391	392	393
385	1	1	7	393	392	397	398
386	1	1	7	398	397	404	405
387	1	1	7	414	415	402	402
388	1	1	7	401	402	395	395
389	1	1	7	401	395	394	400
390	1	1	7	400	394	393	399
391	1	1	7	398	399	393	393
392	1	1	7	405	406	398	398
393	1	1	7	413	414	402	402
394	1	1	7	402	401	413	413
395	1	1	7	412	413	401	401
396	1	1	7	411	412	401	401
397	1	1	7	410	411	401	400
398	1	1	7	409	410	400	399
399	1	1	7	408	409	399	399
400	1	1	7	407	408	399	399

ELEM	MAT	TYP	REL	NODES			
401	1	1	7	399	398	407	407
402	1	1	7	406	407	398	398
435	1	2	5	467	15		
436	1	2	6	468	16		
437	1	2	6	469	29		
438	1	2	5	417	28		
439	1	2	5	418	41		
440	1	2	6	419	42		
441	1	2	5	420	54		
442	1	2	6	421	55		
443	1	2	5	422	67		
444	1	2	6	423	68		
445	1	2	5	424	80		
446	1	2	6	425	81		
447	1	2	5	426	93		
448	1	2	6	427	94		
449	1	2	5	428	106		
450	1	2	6	429	107		
451	1	2	5	430	119		
452	1	2	6	431	120		

ELEM	MAT	TYP	REL	NODES	
453	1	2	5	432	132
454	1	2	6	433	133
455	1	2	5	434	145
456	1	2	6	435	146
458	1	2	5	436	158
459	1	2	6	437	159
460	1	2	5	438	171

462	1	2	5	440	184
463	1	2	6	441	185
464	1	2	5	442	197
465	1	2	6	443	198
466	1	2	5	444	210
467	1	2	6	445	211
468	1	2	5	446	223
469	1	2	6	447	224
470	1	2	5	448	236
471	1	2	6	449	237
472	1	2	5	450	249
473	1	2	6	451	250

ELEM	MAT	TYP	REL	NODES	
474	1	2	5	452	262
475	1	2	6	453	263
476	1	2	5	454	275
477	1	2	6	455	276
478	1	2	5	456	288
479	1	2	6	457	289
480	1	2	5	458	301
481	1	2	6	459	302
482	1	2	5	460	314
483	1	2	6	461	315
484	1	2	5	462	327
485	1	2	6	463	328
486	1	2	5	464	340
487	1	2	6	465	341
488	1	2	5	466	353
489	1	2	6	470	354
490	1	2	6	472	380
491	1	2	6	474	406
492	1	2	5	471	379
493	1	2	5	473	405

LIST ALL ELEMENT TYPES

NO.	STIF	KEYOPT VALUES									INOTPR	
1	63	0	0	0	0	0	0	0	0	0	0	QUAD. FLAT SHELL
2	52	0	0	1	0	0	0	0	0	0	0	INTERFACE ELEM. 3-D

LIST ALL MATERIALS PROPERTY= ALL

PROPERTY TABLE EX MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	28000.	2300.0	28000.

PROPERTY TABLE NUXY MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.30000	2300.0	0.30000

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.28000	2300.0	0.28000

-T ALL REAL SETS

REAL CONSTANT SET 1 ITEMS 1 TO 6

0.75000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 2 ITEMS 1 TO 6

0.75000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 3 ITEMS 1 TO 6

0.82000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.0000( )0

REAL CONSTANT SET 4 ITEMS 1 TO 6

7.5000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 5 ITEMS 1 TO 6

0.90000E+07	0.10000	3.0000	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 6 ITEMS 1 TO 6

0.90000E+07	0.47000	3.0000	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 7 ITEMS 1 TO 6

3.0000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

LIST DISPLACEMENTS FOR ALL SELECTED NODES

NODE	LABEL	DISP	CDISP
1	UX	0.000000000E+00	0.000000000E+00
2	UX	0.000000000E+00	0.000000000E+00
6	UX	0.000000000E+00	0.000000000E+00
7	UX	0.000000000E+00	0.000000000E+00
13	UX	0.000000000E+00	0.000000000E+00
14	UX	0.000000000E+00	0.000000000E+00
26	UX	0.000000000E+00	0.000000000E+00
27	UX	0.000000000E+00	0.000000000E+00
39	UX	0.000000000E+00	0.000000000E+00
40	UX	0.000000000E+00	0.000000000E+00
52	UX	0.000000000E+00	0.000000000E+00
53	UX	0.000000000E+00	0.000000000E+00
65	UX	0.000000000E+00	0.000000000E+00
66	UX	0.000000000E+00	0.000000000E+00
78	UX	0.000000000E+00	0.000000000E+00
79	UX	0.000000000E+00	0.000000000E+00
91	UX	0.000000000E+00	0.000000000E+00
92	UX	0.000000000E+00	0.000000000E+00
104	UX	0.000000000E+00	0.000000000E+00
105	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
117	UX	0.000000000E+00	0.000000000E+00
118	UX	0.000000000E+00	0.000000000E+00
130	UX	0.000000000E+00	0.000000000E+00
131	UX	0.000000000E+00	0.000000000E+00
143	UX	0.000000000E+00	0.000000000E+00
144	UX	0.000000000E+00	0.000000000E+00
156	UX	0.000000000E+00	0.000000000E+00
157	UX	0.000000000E+00	0.000000000E+00
169	UX	0.000000000E+00	0.000000000E+00
170	UX	0.000000000E+00	0.000000000E+00
182	UX	0.000000000E+00	0.000000000E+00
183	UX	0.000000000E+00	0.000000000E+00
195	UX	0.000000000E+00	0.000000000E+00
196	UX	0.000000000E+00	0.000000000E+00
208	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
221	UX	0.000000000E+00	0.000000000E+00
222	UX	0.000000000E+00	0.000000000E+00
234	UX	0.000000000E+00	0.000000000E+00
235	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
247	UX	0.000000000E+00	0.000000000E+00
248	UX	0.000000000E+00	0.000000000E+00
260	UX	0.000000000E+00	0.000000000E+00
261	UX	0.000000000E+00	0.000000000E+00
273	UX	0.000000000E+00	0.000000000E+00
274	UX	0.000000000E+00	0.000000000E+00
286	UX	0.000000000E+00	0.000000000E+00
287	UX	0.000000000E+00	0.000000000E+00
299	UX	0.000000000E+00	0.000000000E+00
300	UX	0.000000000E+00	0.000000000E+00
312	UX	0.000000000E+00	0.000000000E+00
313	UX	0.000000000E+00	0.000000000E+00
325	UX	0.000000000E+00	0.000000000E+00
326	UX	0.000000000E+00	0.000000000E+00
338	UX	0.000000000E+00	0.000000000E+00
339	UX	0.000000000E+00	0.000000000E+00
351	UX	0.000000000E+00	0.000000000E+00
352	UX	0.000000000E+00	0.000000000E+00
364	UX	0.000000000E+00	0.000000000E+00
365	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
366	UX	0.000000000E+00	0.000000000E+00
370	UX	0.000000000E+00	0.000000000E+00
371	UX	0.000000000E+00	0.000000000E+00
377	UX	0.000000000E+00	0.000000000E+00
378	UX	0.000000000E+00	0.000000000E+00
390	UX	0.000000000E+00	0.000000000E+00
391	UX	0.000000000E+00	0.000000000E+00
392	UX	0.000000000E+00	0.000000000E+00
396	UX	0.000000000E+00	0.000000000E+00
397	UX	0.000000000E+00	0.000000000E+00
403	UX	0.000000000E+00	0.000000000E+00
404	UX	0.000000000E+00	0.000000000E+00
416	UX	0.000000000E+00	0.000000000E+00
446	UX	0.000000000E+00	0.000000000E+00
472	UY	0.000000000E+00	0.000000000E+00
403	ROTY	0.000000000E+00	0.000000000E+00
397	ROTY	0.000000000E+00	0.000000000E+00
396	ROTY	0.000000000E+00	0.000000000E+00
392	ROTY	0.000000000E+00	0.000000000E+00
391	ROTY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
472	UX	0.000000000E+00	0.000000000E+00
457	UX	0.000000000E+00	0.000000000E+00
377	ROTY	0.000000000E+00	0.000000000E+00
371	ROTY	0.000000000E+00	0.000000000E+00
370	ROTY	0.000000000E+00	0.000000000E+00
366	ROTY	0.000000000E+00	0.000000000E+00
365	ROTY	0.000000000E+00	0.000000000E+00
453	UX	0.000000000E+00	0.000000000E+00
443	UY	0.000000000E+00	0.000000000E+00

471	UY	0.000000000E+00	0.000000000E+00
471	UX	0.000000000E+00	0.000000000E+00
443	UX	0.000000000E+00	0.000000000E+00
453	UY	0.000000000E+00	0.000000000E+00
433	UX	0.000000000E+00	0.000000000E+00
434	UX	0.000000000E+00	0.000000000E+00
470	UY	0.000000000E+00	0.000000000E+00
470	UX	0.000000000E+00	0.000000000E+00
455	UX	0.000000000E+00	0.000000000E+00
446	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
462	UY	0.000000000E+00	0.000000000E+00
457	UY	0.000000000E+00	0.000000000E+00
469	UY	0.000000000E+00	0.000000000E+00
469	UX	0.000000000E+00	0.000000000E+00
455	UY	0.000000000E+00	0.000000000E+00
452	UY	0.000000000E+00	0.000000000E+00
462	UX	0.000000000E+00	0.000000000E+00
432	UY	0.000000000E+00	0.000000000E+00
468	UY	0.000000000E+00	0.000000000E+00
468	UX	0.000000000E+00	0.000000000E+00
432	UX	0.000000000E+00	0.000000000E+00
452	UX	0.000000000E+00	0.000000000E+00
442	UY	0.000000000E+00	0.000000000E+00
434	UY	0.000000000E+00	0.000000000E+00
467	UY	0.000000000E+00	0.000000000E+00
467	UX	0.000000000E+00	0.000000000E+00
442	UX	0.000000000E+00	0.000000000E+00
431	UY	0.000000000E+00	0.000000000E+00
431	UX	0.000000000E+00	0.000000000E+00
435	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
466	UY	0.000000000E+00	0.000000000E+00
466	UX	0.000000000E+00	0.000000000E+00
430	UY	0.000000000E+00	0.000000000E+00
430	UX	0.000000000E+00	0.000000000E+00
435	UY	0.000000000E+00	0.000000000E+00
447	UX	0.000000000E+00	0.000000000E+00
465	UY	0.000000000E+00	0.000000000E+00
465	UX	0.000000000E+00	0.000000000E+00
441	UY	0.000000000E+00	0.000000000E+00
451	UY	0.000000000E+00	0.000000000E+00
461	UY	0.000000000E+00	0.000000000E+00
429	UY	0.000000000E+00	0.000000000E+00
464	UY	0.000000000E+00	0.000000000E+00
464	UX	0.000000000E+00	0.000000000E+00
441	UX	0.000000000E+00	0.000000000E+00
451	UX	0.000000000E+00	0.000000000E+00
461	UX	0.000000000E+00	0.000000000E+00
429	UX	0.000000000E+00	0.000000000E+00
463	UY	0.000000000E+00	0.000000000E+00
463	UX	0.000000000E+00	0.000000000E+00

ODE	LABEL	DISP	CDISP
444	UX	0.000000000E+00	0.000000000E+00
13	ROTY	0.000000000E+00	0.000000000E+00
7	ROTY	0.000000000E+00	0.000000000E+00

2	ROTY	0.000000000E+00	0.000000000E+00
1	ROTY	0.000000000E+00	0.000000000E+00
444	UY	0.000000000E+00	0.000000000E+00
447	UY	0.000000000E+00	0.000000000E+00
440	UY	0.000000000E+00	0.000000000E+00
458	UX	0.000000000E+00	0.000000000E+00
474	UY	0.000000000E+00	0.000000000E+00
14	ROTZ	0.000000000E+00	0.000000000E+00
26	ROTZ	0.000000000E+00	0.000000000E+00
27	ROTZ	0.000000000E+00	0.000000000E+00
39	ROTZ	0.000000000E+00	0.000000000E+00
40	ROTZ	0.000000000E+00	0.000000000E+00
52	ROTZ	0.000000000E+00	0.000000000E+00
53	ROTZ	0.000000000E+00	0.000000000E+00
65	ROTZ	0.000000000E+00	0.000000000E+00
66	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
78	ROTZ	0.000000000E+00	0.000000000E+00
79	ROTZ	0.000000000E+00	0.000000000E+00
91	ROTZ	0.000000000E+00	0.000000000E+00
92	ROTZ	0.000000000E+00	0.000000000E+00
104	ROTZ	0.000000000E+00	0.000000000E+00
105	ROTZ	0.000000000E+00	0.000000000E+00
117	ROTZ	0.000000000E+00	0.000000000E+00
118	ROTZ	0.000000000E+00	0.000000000E+00
130	ROTZ	0.000000000E+00	0.000000000E+00
131	ROTZ	0.000000000E+00	0.000000000E+00
143	ROTZ	0.000000000E+00	0.000000000E+00
144	ROTZ	0.000000000E+00	0.000000000E+00
156	ROTZ	0.000000000E+00	0.000000000E+00
157	ROTZ	0.000000000E+00	0.000000000E+00
169	ROTZ	0.000000000E+00	0.000000000E+00
170	ROTZ	0.000000000E+00	0.000000000E+00
182	ROTZ	0.000000000E+00	0.000000000E+00
183	ROTZ	0.000000000E+00	0.000000000E+00
195	ROTZ	0.000000000E+00	0.000000000E+00
196	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
208	ROTZ	0.000000000E+00	0.000000000E+00
209	ROTZ	0.000000000E+00	0.000000000E+00
221	ROTZ	0.000000000E+00	0.000000000E+00
222	ROTZ	0.000000000E+00	0.000000000E+00
234	ROTZ	0.000000000E+00	0.000000000E+00
235	ROTZ	0.000000000E+00	0.000000000E+00
247	ROTZ	0.000000000E+00	0.000000000E+00
248	ROTZ	0.000000000E+00	0.000000000E+00
260	ROTZ	0.000000000E+00	0.000000000E+00
261	ROTZ	0.000000000E+00	0.000000000E+00
273	ROTZ	0.000000000E+00	0.000000000E+00
274	ROTZ	0.000000000E+00	0.000000000E+00
286	ROTZ	0.000000000E+00	0.000000000E+00
287	ROTZ	0.000000000E+00	0.000000000E+00
299	ROTZ	0.000000000E+00	0.000000000E+00
00	ROTZ	0.000000000E+00	0.000000000E+00
12	ROTZ	0.000000000E+00	0.000000000E+00
13	ROTZ	0.000000000E+00	0.000000000E+00
325	ROTZ	0.000000000E+00	0.000000000E+00

[illegible]	[illegible]	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
338	ROTZ	0.000000000E+00	0.000000000E+00
339	ROTZ	0.000000000E+00	0.000000000E+00
351	ROTZ	0.000000000E+00	0.000000000E+00
352	ROTZ	0.000000000E+00	0.000000000E+00
364	ROTZ	0.000000000E+00	0.000000000E+00
474	UX	0.000000000E+00	0.000000000E+00
440	UX	0.000000000E+00	0.000000000E+00
428	UY	0.000000000E+00	0.000000000E+00
450	UY	0.000000000E+00	0.000000000E+00
428	UX	0.000000000E+00	0.000000000E+00
378	ROTZ	0.000000000E+00	0.000000000E+00
390	ROTZ	0.000000000E+00	0.000000000E+00
473	UY	0.000000000E+00	0.000000000E+00
473	UX	0.000000000E+00	0.000000000E+00
445	UY	0.000000000E+00	0.000000000E+00
450	UX	0.000000000E+00	0.000000000E+00
458	UY	0.000000000E+00	0.000000000E+00
404	ROTZ	0.000000000E+00	0.000000000E+00
416	ROTZ	0.000000000E+00	0.000000000E+00
14	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
27	UY	0.000000000E+00	0.000000000E+00
40	UY	0.000000000E+00	0.000000000E+00
53	UY	0.000000000E+00	0.000000000E+00
66	UY	0.000000000E+00	0.000000000E+00
79	UY	0.000000000E+00	0.000000000E+00
92	UY	0.000000000E+00	0.000000000E+00
105	UY	0.000000000E+00	0.000000000E+00
118	UY	0.000000000E+00	0.000000000E+00
131	UY	0.000000000E+00	0.000000000E+00
144	UY	0.000000000E+00	0.000000000E+00
157	UY	0.000000000E+00	0.000000000E+00
170	UY	0.000000000E+00	0.000000000E+00
183	UY	0.000000000E+00	0.000000000E+00
196	UY	0.000000000E+00	0.000000000E+00
209	UY	0.000000000E+00	0.000000000E+00
222	UY	0.000000000E+00	0.000000000E+00
235	UY	0.000000000E+00	0.000000000E+00
248	UY	0.000000000E+00	0.000000000E+00
261	UY	0.000000000E+00	0.000000000E+00
274	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
287	UY	0.000000000E+00	0.000000000E+00
300	UY	0.000000000E+00	0.000000000E+00
313	UY	0.000000000E+00	0.000000000E+00
326	UY	0.000000000E+00	0.000000000E+00
339	UY	0.000000000E+00	0.000000000E+00
352	UY	0.000000000E+00	0.000000000E+00
378	UY	0.000000000E+00	0.000000000E+00
404	UY	0.000000000E+00	0.000000000E+00
427	UY	0.000000000E+00	0.000000000E+00
427	UX	0.000000000E+00	0.000000000E+00
417	UX	0.000000000E+00	0.000000000E+00
417	UY	0.000000000E+00	0.000000000E+00
436	UX	0.000000000E+00	0.000000000E+00

454	UY	0.000000000E+00	0.000000000E+00
439	UY	0.000000000E+00	0.000000000E+00
418	UX	0.000000000E+00	0.000000000E+00
418	UY	0.000000000E+00	0.000000000E+00
426	UY	0.000000000E+00	0.000000000E+00
460	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
439	UX	0.000000000E+00	0.000000000E+00
456	UX	0.000000000E+00	0.000000000E+00
419	UX	0.000000000E+00	0.000000000E+00
419	UY	0.000000000E+00	0.000000000E+00
426	UX	0.000000000E+00	0.000000000E+00
436	UY	0.000000000E+00	0.000000000E+00
448	UX	0.000000000E+00	0.000000000E+00
438	UY	0.000000000E+00	0.000000000E+00
420	UX	0.000000000E+00	0.000000000E+00
420	UY	0.000000000E+00	0.000000000E+00
425	UY	0.000000000E+00	0.000000000E+00
449	UY	0.000000000E+00	0.000000000E+00
449	UX	0.000000000E+00	0.000000000E+00
438	UX	0.000000000E+00	0.000000000E+00
421	UX	0.000000000E+00	0.000000000E+00
421	UY	0.000000000E+00	0.000000000E+00
425	UX	0.000000000E+00	0.000000000E+00
448	UY	0.000000000E+00	0.000000000E+00
456	UY	0.000000000E+00	0.000000000E+00
445	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
422	UX	0.000000000E+00	0.000000000E+00
422	UY	0.000000000E+00	0.000000000E+00
424	UY	0.000000000E+00	0.000000000E+00
459	UY	0.000000000E+00	0.000000000E+00
454	UX	0.000000000E+00	0.000000000E+00
437	UY	0.000000000E+00	0.000000000E+00
423	UX	0.000000000E+00	0.000000000E+00
423	UY	0.000000000E+00	0.000000000E+00
424	UX	0.000000000E+00	0.000000000E+00
459	UX	0.000000000E+00	0.000000000E+00
437	UX	0.000000000E+00	0.000000000E+00
14	UZ	0.000000000E+00	0.000000000E+00

LIST FORCES FOR ALL SELECTED NODES

NODE	LABEL	FORCE	CFORCE
40	FY	-14.0998886	0.000000000E+00
42	FY	-14.0999908	0.000000000E+00
53	FY	-14.0998886	0.000000000E+00
55	FY	-14.0999908	0.000000000E+00
66	FY	-14.0998886	0.000000000E+00
68	FY	-14.0999908	0.000000000E+00
79	FY	-14.0998886	0.000000000E+00
81	FY	-14.0999908	0.000000000E+00
92	FY	-14.0998886	0.000000000E+00
94	FY	-14.0999908	0.000000000E+00
274	FY	-14.0998886	0.000000000E+00
276	FY	-14.0999908	0.000000000E+00
287	FY	-14.0998886	0.000000000E+00
289	FY	-14.0999908	0.000000000E+00

302	FY	-14.0999908	0.000000000E+00
313	FY	-14.0998886	0.000000000E+00
315	FY	-14.0999908	0.000000000E+00
326	FY	-14.0998886	0.000000000E+00
328	FY	-14.0999908	0.000000000E+00

NODE	LABEL	FORCE	CFORCE
41	FY	-23.4998280	0.000000000E+00
54	FY	-23.4998280	0.000000000E+00
67	FY	-23.4998280	0.000000000E+00
80	FY	-23.4998280	0.000000000E+00
93	FY	-23.4998280	0.000000000E+00
275	FY	-23.4998280	0.000000000E+00
288	FY	-23.4998280	0.000000000E+00
301	FY	-23.4998280	0.000000000E+00
314	FY	-23.4998280	0.000000000E+00
327	FY	-23.4998280	0.000000000E+00
44	FY	-4.69992600	0.000000000E+00
57	FY	-4.69992600	0.000000000E+00
70	FY	-4.69992600	0.000000000E+00
83	FY	-4.69992600	0.000000000E+00
96	FY	-4.69992600	0.000000000E+00
278	FY	-4.69992600	0.000000000E+00
291	FY	-4.69992600	0.000000000E+00
304	FY	-4.69992600	0.000000000E+00
317	FY	-4.69992600	0.000000000E+00
330	FY	-4.69992600	0.000000000E+00

NODE	LABEL	FORCE	CFORCE
157	FY	-20.9996524	0.000000000E+00
159	FY	-20.9998047	0.000000000E+00
170	FY	-20.9996524	0.000000000E+00
172	FY	-20.9998047	0.000000000E+00
183	FY	-20.9996524	0.000000000E+00
185	FY	-20.9998047	0.000000000E+00
196	FY	-20.9996524	0.000000000E+00
198	FY	-20.9998047	0.000000000E+00
209	FY	-20.9996524	0.000000000E+00
211	FY	-20.9998047	0.000000000E+00
158	FY	-34.9998727	0.000000000E+00
171	FY	-34.9998727	0.000000000E+00
184	FY	-34.9998727	0.000000000E+00
197	FY	-34.9998727	0.000000000E+00
210	FY	-34.9998700	0.000000000E+00
161	FY	-6.64905245	0.000000000E+00
174	FY	-6.64905245	0.000000000E+00
187	FY	-6.64905245	0.000000000E+00
200	FY	-6.64905245	0.000000000E+00
213	FY	-6.64905245	0.000000000E+00

NODAL STRESSES ARE SHELL MIDDLE

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
1	0.99629258	0.00000000E+00	-4.5712749	5.5675675	5.1593
2	0.00000000E+00	-0.96501781	-7.6385594	7.6385594	7.2047
3	0.16045274	-0.39265760	-7.1318370	7.2922897	7.0398
4	1.4001144	0.00000000E+00	-4.5054659	5.9055803	5.3608
5	2.1910195	0.00000000E+00	-2.2375444	4.4285640	3.8824
6	1.7426664	0.00000000E+00	-2.7745646	4.5172310	3.9690
7	0.00000000E+00	-1.8088650	-29.456377	29.456377	28.735
8	4.3530882	-0.39344808	-11.302427	15.655515	14.069
9	3.9492469	0.00000000E+00	-7.4592629	11.408510	10.251
10	3.4055323	0.00000000E+00	-2.6689637	6.0744961	5.2822
11	3.8053326	0.00000000E+00	-1.2648823	5.0702148	4.6002
12	2.2686917	0.33883760E-01	-0.71301760	2.9817093	2.7098
13	1.8135517	0.00000000E+00	-1.3435365	3.1570882	2.7827

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
14	0.00000000E+00	-9.7667090	-38.652022	38.652022	35.133
15	4.1473265	0.00000000E+00	-21.828922	25.976249	24.231
16	5.5305242	0.00000000E+00	-14.615926	20.146450	18.136
17	6.2899608	0.00000000E+00	-11.660802	17.950763	15.876
18	7.6377958	0.00000000E+00	-6.4972888	14.135085	12.322
19	8.6997673	0.00000000E+00	-4.0009933	12.700761	11.319
20	9.1213102	0.00000000E+00	-1.2459840	10.367294	9.8066
21	7.1037935	0.00000000E+00	-0.60715964	7.7109531	7.4297
22	5.2217561	0.00000000E+00	-0.68426192	5.9060180	5.6092
23	3.6799952	0.00000000E+00	-0.65111243	4.3311076	4.0545
24	2.5249418	0.00000000E+00	-0.61968255	3.1446243	2.8929
25	1.2211669	0.00000000E+00	-0.44539242	1.6665593	1.5041
26	0.31553940	0.00000000E+00	-0.51452912	0.83006853	0.76362

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

Calc. Pckg. VSC02.6.2.3.08
Rev. No: 2
Pg. B27 of B60

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
27	0.00000000E+00	-3.5155106	-8.3898386	8.3898386	7.6758
28	5.3789712	0.00000000E+00	-6.8124082	12.191379	10.783
29	10.290479	0.00000000E+00	-7.7310957	18.021574	15.717
30	10.685233	0.00000000E+00	-11.518179	22.203412	19.241
31	8.6417690	0.00000000E+00	-8.1679229	16.809692	14.580
32	6.4491452	0.00000000E+00	-4.3568977	10.806043	9.4502

33	4.7304775	0.00000000E+00	-1.8694125	6.5998900	5.9014
34	3.2988353	0.00000000E+00	-0.83150128	4.1303365	3.7921
35	2.5368577	0.00000000E+00	-0.75482065	3.2916783	3.0150
36	2.3525374	0.00000000E+00	-1.1224249	3.4749623	3.0840
37	1.9949511	0.00000000E+00	-1.1301458	3.1250969	2.7461
38	1.1992221	0.00000000E+00	-0.68492066	1.8841428	1.6562
39	0.72010112	0.00000000E+00	-0.38104362	1.1011447	0.9[illegible]0

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
40	5.1406684	0.00000000E+00	-5.0239487	10.164617	8.8297
41	10.603455	3.1367735	0.00000000E+00	10.603455	9.7437
42	15.239939	1.0007642	-1.4756297	16.715568	15.699
43	11.334734	0.00000000E+00	-9.0097090	20.344443	17.735
44	7.5086386	0.00000000E+00	-8.6474167	16.156055	14.017
45	4.3761707	0.00000000E+00	-5.7892375	10.165408	8.8557
46	1.9232170	0.00000000E+00	-3.0595599	4.9827770	4.3746
47	0.75534406	0.00000000E+00	-1.6081268	2.3634709	2.1031
48	0.94326946	0.00000000E+00	-1.4358251	2.3790946	2.0817
49	1.6247875	0.00000000E+00	-1.6586882	3.2834757	2.8443
50	1.8392647	0.00000000E+00	-1.3416548	3.1809194	2.7670
51	1.4731276	0.00000000E+00	-0.59860993	2.0717375	1.8601
52	1.1441345	0.00000000E+00	-0.17702915	1.3211637	1.2505

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
53	11.055653	0.79126615	-2.0429319	13.098585	11.969
54	12.326332	5.0731559	0.00000000E+00	12.326332	10.843
55	12.592404	3.0160316	-0.17889311	12.771297	11.660
56	8.4072467	0.00000000E+00	-5.2700701	13.677317	12.064
57	5.1503989	0.00000000E+00	-8.0590845	13.209483	11.575
58	2.6272145	0.00000000E+00	-6.6452524	9.2724669	8.3274
59	0.85494576	-0.75972302E-01	-4.3061934	5.1611392	4.7920
60	0.82251215E-01	-0.13998254	-2.6094854	2.6917366	2.5894
61	0.41784398	-0.88312945E-01	-1.9445211	2.3623651	2.1632
62	1.2969640	0.00000000E+00	-1.6926293	2.9895933	2.5994
63	1.8659624	0.00000000E+00	-1.0605785	2.9265409	2.5704
64	1.8722966	0.89785827E-01	-0.29322879	2.1655254	2.0111
65	1.7614029	0.21070423	0.00000000E+00	1.7614029	1.6705

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

Calc. Pckg. VSC02.6.2.3.08
Rev. No: 2

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	
66	7.1574988	3.5509459	0.00000000E+00	7.1574988	6.6[illegible]
67	8.8219199	4.5580698	0.00000000E+00	8.8219199	7.8420
68	9.1062768	2.8605659	0.00000000E+00	9.1062768	8.1677

[illegible]	[illegible]	[illegible]	[illegible]	6.9857394	6.222
70	3.2446759	0.00000000E+00	-7.0054164	10.250092	9.081
71	2.0823133	0.00000000E+00	-7.3059040	9.3882173	8.565
72	0.89167617	0.00000000E+00	-5.7291827	6.6208589	6.244
73	0.28660396	-0.19848356E-01	-3.9289010	4.2155049	4.076
74	0.41230768	-0.19636385E-01	-2.5876895	2.9999972	2.819
75	1.1556594	0.00000000E+00	-1.6236380	2.7792975	2.421
76	1.9528573	0.00000000E+00	-0.72469660	2.6775539	2.403
77	2.4208564	0.15857464	-0.11294372	2.5338001	2.414
78	2.5777645	0.33721990	0.00000000E+00	2.5777645	2.428

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
79	6.9240751	3.4179492	0.00000000E+00	6.9240751	5.9993
80	7.6693329	3.4877246	0.00000000E+00	7.6693329	6.6534
81	8.5127431	3.4948366	0.00000000E+00	8.5127431	7.4155
82	3.9306555	0.95048067	-0.32150212	4.2521576	3.8493
83	2.7199999	0.00000000E+00	-5.1973089	7.9173088	6.9748
84	1.8625344	0.00000000E+00	-7.5855215	9.4480559	8.6794
85	0.88332576	0.00000000E+00	-7.0437813	7.9271071	7.5387
86	0.27298434	-0.25926792E-01	-5.3269151	5.5998995	5.4598
87	0.25371641	-0.25832012E-01	-3.3944262	3.6481426	3.5196
88	0.87052711	0.00000000E+00	-1.6965308	2.5670579	2.2650
89	1.9819007	0.00000000E+00	-0.52806002	2.5099607	2.2967
90	2.9694143	0.18590767	-0.48841103E-01	3.0182554	2.9107
91	3.3588111	0.34918070	0.00000000E+00	3.3588111	3.1992

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
92	8.0280531	1.7062134	0.00000000E+00	8.0280531	7.3255
93	7.7284641	2.8614747	0.00000000E+00	7.7284641	6.8537
94	8.8619523	4.0725420	0.00000000E+00	8.8619523	7.6862
95	3.9837623	1.7650941	0.00000000E+00	3.9837623	3.4948
96	2.1684012	0.00000000E+00	-3.6599029	5.8283041	5.1057
97	1.6796910	0.00000000E+00	-7.7178572	9.3975482	8.6906
98	0.75040610	0.00000000E+00	-8.3227703	9.0731764	8.7315
99	0.23049748	-0.56112710E-01	-6.7516855	6.9821830	6.8456
100	0.14200960	-0.55614554E-01	-4.2856721	4.4276817	4.3330
101	0.66069868	0.00000000E+00	-1.8581737	2.5188724	2.2667
102	2.1020239	0.00000000E+00	-0.42628941	2.5283133	2.3485
103	3.5584454	0.18688528	-0.25408651E-01	3.5838541	3.4847
104	4.1245603	0.33261799	0.00000000E+00	4.1245603	3.9694

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI

106	8.1231026	0.72113014E-01	-0.57566960E-01	8.1806696	8.800
107	8.0687393	0.24354272	-0.58748687E-01	8.1274879	8.116
108	4.2643475	0.69357721	0.00000000E+00	4.2643475	7.982
109	1.3593516	0.00000000E+00	-2.5977936	3.9571452	3.994
110	1.0005536	0.00000000E+00	-7.6534719	8.6540254	3.501
111	0.58777666	0.00000000E+00	-9.3760205	9.9637972	8.200
112	0.16597640	-0.47529191E-01	-8.0263778	8.1923542	9.687
113	0.87708026E-01	-0.46448701E-01	-5.1196983	5.2074063	88
114	0.54052831	0.00000000E+00	-2.0027791	2.5433074	5.142
115	2.2331445	0.00000000E+00	-0.32322673	2.5563712	2.325
116	4.0795095	0.18437913	-0.72570816E-02	4.0867665	2.414
117	4.7801778	0.31296943	0.00000000E+00	4.7801778	3.996
					4.631

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S:
118	9.2561986	0.00000000E+00	-1.9374547	11.193653	10.36:
119	8.6317194	0.00000000E+00	-2.0085136	10.640233	9.792
120	6.5570740	0.00000000E+00	-1.8254510	8.3825250	7.639
121	5.5004425	0.00000000E+00	-1.0046103	6.5050528	6.086
122	1.3577794	-0.12196088	-1.7744870	3.1322664	2.7361
123	1.0387509	0.00000000E+00	-7.3287531	8.3675041	7.9005
124	0.67108976	0.00000000E+00	-10.155890	10.826979	10.511
125	0.28277881	-0.32936429E-01	-9.2726857	9.5554645	9.4035
126	0.13820921	-0.31387319E-01	-5.9919766	6.1301859	6.0481
127	0.42365692	0.00000000E+00	-2.1040652	2.5277221	2.3517
128	2.2806142	0.52294972E-01	-0.12286195	2.4034762	2.3222
129	4.5308138	0.33905713	0.00000000E+00	4.5308138	4 29
130	5.3559748	0.45120426	0.00000000E+00	5.3559748	5.456

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
131	9.1898476	0.00000000E+00	-1.6128636	10.802711	10.093
132	9.2018575	0.00000000E+00	-1.9391026	11.140960	10.313
133	6.9000649	0.00000000E+00	-2.2877770	9.1878418	8.2882
134	6.9201431	0.00000000E+00	-1.7866668	8.7068099	7.9812
135	2.3933718	0.00000000E+00	-2.1318291	4.5252009	3.9365
136	1.1374294	0.00000000E+00	-7.2883661	8.4257955	7.9191
137	0.64044262	0.00000000E+00	-11.067011	11.707453	11.404
138	0.22999133	-0.39635469E-01	-10.607403	10.837394	10.706
139	0.74868217E-01	-0.58830887E-01	-6.9765166	7.0513848	6.9855
140	0.22690608	-0.18105835E-01	-2.2896704	2.5165765	2.4061
141	2.2907460	0.13992063	-0.22167734E-01	2.3129137	2.2385
142	5.0020829	0.41549279	0.00000000E+00	5.0020829	4.8087
143	5.9570088	0.50533368	0.00000000E+00	5.9570088	5.7213

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
144	9.0274370	0.31799962	0.00000000E+00	9.0274370	8.8728
145	9.0869785	0.16839255	-0.90474413E-01	9.1774529	9.0515
146	9.4853279	0.92745558E-02	-0.47606051	9.9613884	9.7316
147	7.7583153	0.00000000E+00	-0.61576014	8.3740754	8.0937
148	3.3400692	0.00000000E+00	-2.1633704	5.5034395	4.8036
149	1.1963369	0.00000000E+00	-7.5643334	8.7606703	8.2305
150	0.52313422	0.00000000E+00	-11.702257	12.225391	11.975
151	0.10433553	-0.56589859E-01	-11.420559	11.524895	11.445
152	0.00000000E+00	-0.10260426	-7.6147580	7.6147580	7.5641
153	0.64178584E-01	-0.46728773E-01	-2.4618384	2.5260170	2.4727
154	2.2785081	0.11761528	-0.24109494E-02	2.2809191	2.2251
155	5.2821908	0.31972838	0.00000000E+00	5.2821908	5.1302
156	6.3153408	0.39034016	0.00000000E+00	6.3153408	6.1295

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
157	8.6941022	0.27452130	0.00000000E+00	8.6941022	8.5606
158	8.4299745	1.9764523	0.00000000E+00	8.4299745	7.7932
159	11.307920	4.0346563	0.00000000E+00	11.307920	9.9477
160	7.4407220	2.1113149	0.00000000E+00	7.4407220	6.8307
161	3.4494779	0.00000000E+00	-1.3986989	4.8481768	4.3250
162	1.8055295	0.00000000E+00	-7.4882741	9.2938035	8.5576
163	0.60309394	0.00000000E+00	-11.465451	12.068545	11.782
164	0.13853641	-0.39141891E-01	-11.260969	11.399505	11.312
165	0.71142640E-02	-0.84212352E-01	-7.5705942	7.5777084	7.5325
166	0.43440751E-01	-0.46215650E-01	-2.4699287	2.5133694	2.4699
167	2.1595786	0.16205524	0.00000000E+00	2.1595786	2.0853
168	5.1549742	0.34846931	0.00000000E+00	5.1549742	4.9903
169	6.1763481	0.41987704	0.00000000E+00	6.1763481	5.9776

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
170	8.1259571	1.3426775	0.00000000E+00	8.1259571	7.5451
171	8.4887618	1.9341434	0.00000000E+00	8.4887618	7.7228
172	10.935173	2.9915329	0.00000000E+00	10.935173	9.7972
173	6.3923031	2.6525490	0.00000000E+00	6.3923031	5.6050
174	2.6715725	0.00000000E+00	-0.86595085	3.5375233	3.1948
175	1.6148331	0.00000000E+00	-7.2176816	8.8325147	8.1556
176	0.72621922	0.00000000E+00	-11.102967	11.829186	11.488
177	0.16833307	-0.23990063E-01	-10.932130	11.100463	11.006
178	0.00000000E+00	-0.76028339E-01	-7.4042865	7.4042865	7.3666
179	0.35247976E-01	-0.49016000E-01	-2.4673290	2.5025770	2.4615
180	2.0330269	0.17638366	0.00000000E+00	2.0330269	1.9540
181	4.9444595	0.39365269	0.00000000E+00	4.9444595	4.7604
182	5.9341132	0.47931412	0.00000000E+00	5.9341132	5.7095

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
183	7.9223951	1.4193159	0.00000000E+00	7.9223951	7[illegible]16
184	8.8951222	1.3794819	0.00000000E+00	8.8951222	[illegible]92
185	10.693533	1.6624805	0.00000000E+00	10.693533	9.970
186	6.5366633	1.7679766	0.00000000E+00	6.5366633	5.859
187	1.7590213	0.00000000E+00	-0.77151329	2.5305346	2.246
188	1.2583871	0.00000000E+00	-7.1578250	8.4162121	7.871
189	0.52133686	0.00000000E+00	-11.095363	11.616700	11.36
190	0.11983246	-0.40263281E-01	-10.920609	11.040441	10.96
191	0.00000000E+00	-0.76604523E-01	-7.4325119	7.4325119	7.394
192	0.80102861E-01	-0.18594037E-01	-2.5646798	2.6447827	2.597
193	2.0169370	0.17008197	-0.14125107E-01	2.0310621	1.948
194	4.8561962	0.42162871	0.00000000E+00	4.8561962	4.660
195	5.8279499	0.51349213	0.00000000E+00	5.8279499	5.588

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
196	8.0967614	1.3786413	0.00000000E+00	8.0967614	7.503
197	8.4650176	1.9649836	0.00000000E+00	8.4650176	7.690
198	10.914806	3.0178032	0.00000000E+00	10.914806	9.771
199	6.4234072	2.6411304	0.00000000E+00	6.4234072	5.638
200	2.7285914	0.00000000E+00	-0.85633536	3.5849268	3[illegible]37
201	1.6076789	0.00000000E+00	-7.0717206	8.6793995	8[illegible]85
202	0.69406372	0.00000000E+00	-10.857767	11.551831	11.226
203	0.14839792	-0.30011058E-01	-10.674667	10.823065	10.735
204	0.00000000E+00	-0.59560075E-01	-7.2705704	7.2705704	7.2410
205	0.14245745	-0.10062971E-01	-2.6248966	2.7673540	2.6955
206	2.0214970	0.78375060E-01	-0.81275164E-01	2.1027721	2.0292
207	4.6517934	0.36115038	0.00000000E+00	4.6517934	4.4833
208	5.5677021	0.47140072	0.00000000E+00	5.5677021	5.3477

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
209	8.6342093	0.33732949	0.00000000E+00	8.6342093	8.4710
210	8.3811416	2.0348162	0.00000000E+00	8.3811416	7.7294
211	11.283097	4.0605060	0.00000000E+00	11.283097	9.9219
212	7.5199343	2.0542721	0.00000000E+00	7.5199343	6.9183
213	3.5679781	0.00000000E+00	-1.3939710	4.9619491	4.4355
214	1.8070585	0.00000000E+00	-7.2171089	9.0241674	8.2950
215	0.55555000	0.00000000E+00	-10.992869	11.548419	11.284
216	0.10194834	-0.40089271E-01	-10.767836	10.869784	10.799
217	0.29642940E-02	-0.42957454E-01	-7.3202220	7.3231863	7.[illegible]04
218	0.26170918	0.00000000E+00	-2.7640127	3.0257219	2.[illegible]6
219	2.1178265	0.12840222E-01	-0.18215074	2.2999773	2.2121
220	4.6003616	0.27629975	0.00000000E+00	4.6003616	4.4698

221	5.4840160	0.39325046	0.00000000E+00	5.4840160	5.2983

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
222	8.9112305	0.40834532	0.00000000E+00	8.9112305	8.7143
223	9.0330906	0.23156495	-0.74074380E-01	9.1071650	8.9589
224	9.4172366	0.27252894E-01	-0.45865283	9.8758894	9.6455
225	7.8075288	0.00000000E+00	-0.66055462	8.4680834	8.1664
226	3.5100042	0.00000000E+00	-2.1843617	5.6943658	4.9772
227	1.2170066	0.00000000E+00	-7.1856613	8.4026678	7.8693
228	0.47011188	0.00000000E+00	-11.006514	11.476626	11.253
229	0.66566630E-01	-0.61952294E-01	-10.705251	10.771818	10.708
230	0.26944877E-01	-0.69098630E-01	-7.2702229	7.2971678	7.2498
231	0.38367749	0.00000000E+00	-2.8881593	3.2718368	3.1008
232	2.1917704	0.00000000E+00	-0.34166950	2.5334399	2.3869
233	4.4894338	0.22104605	0.00000000E+00	4.4894338	4.3852
234	5.3283354	0.36122266	0.00000000E+00	5.3283354	5.1574

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
235	9.0826553	0.00000000E+00	-1.4763531	10.559008	9.9037
236	9.1043908	0.00000000E+00	-1.8022184	10.906609	10.130
237	6.7601529	0.00000000E+00	-2.2009112	8.9610641	8.0926
238	6.8807400	0.00000000E+00	-1.7865426	8.6672826	7.9412
239	2.6291881	0.00000000E+00	-2.1865296	4.8157176	4.1890
240	1.1890784	0.00000000E+00	-6.7349631	7.9240415	7.4033
241	0.57071377	0.00000000E+00	-10.036617	10.607331	10.339
242	0.18190541	-0.54261745E-01	-9.5869781	9.7688835	9.6544
243	0.17002817	-0.52969521E-01	-6.5380675	6.7080957	6.6003
244	0.68216723	0.00000000E+00	-2.8833615	3.5655288	3.2829
245	2.1638877	0.00000000E+00	-0.52918667	2.6930743	2.4838
246	3.9194196	0.29591490	-0.28330438E-01	3.9477500	3.7991
247	4.6011747	0.46903112	0.00000000E+00	4.6011747	4.3865

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
248	9.2992600	0.00000000E+00	-2.2225639	11.521824	10.587
249	8.4528634	0.00000000E+00	-2.2290170	10.681880	9.7607
250	6.3196859	0.00000000E+00	-1.8863738	8.2060598	7.4509
251	5.2471106	0.00000000E+00	-0.96689963	6.2140102	5.8145
252	1.5726618	-0.84784743E-01	-1.8258488	3.3985106	2.9716
253	1.1378460	0.00000000E+00	-6.5080301	7.6458761	7.1465
254	0.60521331	0.00000000E+00	-8.6621151	9.2673284	8.9872
255	0.22824310	-0.43556772E-01	-7.8569185	8.0851616	7.9553
256	0.33169997	-0.41155948E-01	-5.4753971	5.8070970	5.6329

257	0.99862382	0.00000000E+00	-2.9062584	3.9048822	3.517
258	2.0756363	0.00000000E+00	-0.95495760	3.0305939	2.694
259	3.1162749	0.19529175	-0.10862169	3.2248966	3.088
260	3.5598119	0.38019611	0.00000000E+00	3.5598119	3.387

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
261	9.0373270	0.00000000E+00	-0.10085125	9.1381783	9.0882
262	8.0246547	0.00000000E+00	-0.11921190	8.1438666	8.0853
263	7.6867588	0.28707457	-0.68677009E-01	7.7554358	7.5872
264	3.8230598	0.72256642	-0.26286840E-01	3.8493467	3.5651
265	1.5843598	0.00000000E+00	-2.6231445	4.2075044	3.7013
266	1.1453008	0.00000000E+00	-6.5734712	7.7187720	7.2152
267	0.56397579	-0.15254022E-01	-7.4999171	8.0638929	7.7981
268	0.12256189	-0.55187882E-01	-6.3052731	6.4278350	6.3415
269	0.36523688	-0.39372822E-01	-4.5935356	4.9587725	4.7735
270	1.1645302	0.00000000E+00	-2.9623326	4.1268628	3.6868
271	1.9443243	0.00000000E+00	-1.3796916	3.3240159	2.8963
272	2.4451915	0.85531341E-01	-0.26832536	2.7135169	2.5602
273	2.6728184	0.20550660	0.00000000E+00	2.6728184	2.5775

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	I
274	8.3751385	1.6650875	0.00000000E+00	8.3751385	7.6792
275	7.8608228	2.9008391	0.00000000E+00	7.8608228	6.9786
276	8.2961652	4.1947427	0.00000000E+00	8.2961652	7.1916
277	3.9525781	1.1953433	-0.10451365	4.0570917	3.6233
278	2.4331255	0.00000000E+00	-3.6864791	6.1196046	5.3401
279	1.8543709	0.00000000E+00	-6.4759184	8.3302893	7.5917
280	0.74801229	-0.15282181E-01	-6.2723242	7.0203365	6.6876
281	0.18193493	-0.46121195E-01	-4.9157566	5.0976915	4.9901
282	0.47762842	-0.30479266E-01	-3.8186541	4.2962825	4.0736
283	1.2630369	0.00000000E+00	-2.8698445	4.1328814	3.6697
284	1.8011140	0.00000000E+00	-1.5778716	3.3789856	2.9310
285	1.9218060	0.67603375E-01	-0.36794386	2.2897499	2.1150
286	1.9582536	0.18447739	0.00000000E+00	1.9582536	1.8751

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
287	7.6343937	3.3913189	0.00000000E+00	7.6343937	6.6276
288	8.1109728	3.5098765	0.00000000E+00	8.1109728	7.0479
289	7.3832328	3.6150842	0.00000000E+00	7.3832328	6.4
290	4.1321687	0.33765451	-0.91991725	5.0520860	4.6
291	3.1136968	0.00000000E+00	-5.2233147	8.3370115	7.3056
292	2.1676507	0.00000000E+00	-6.2312405	8.3988912	7.5731

295	0.69228017	0.00000000E+00	-3.0437470	3.7360272	3.4612
296	1.4166315	0.00000000E+00	-2.7810302	4.1976617	3.6997
297	1.6750899	0.00000000E+00	-1.8298340	3.5049240	3.0408
298	1.4408836	0.44809447E-01	-0.60376886	2.0446525	1.8228
299	1.2470769	0.13872884	-0.10184642	1.3489233	1.2462

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
300	7.2863424	5.6997828	0.00000000E+00	7.2863424	6.7036
301	9.0108097	5.5574361	0.00000000E+00	9.0108097	7.9784
302	7.2718038	2.8162287	-0.17526824E-02	7.2735565	6.6932
303	5.0199438	0.00000000E+00	-3.5546310	8.5745748	7.5556
304	3.8373465	0.00000000E+00	-7.0087162	10.846063	9.5359
305	2.7170251	0.00000000E+00	-5.8249324	8.5419574	7.6003
306	1.2163639	-0.27759152E-01	-3.2333601	4.4497240	4.0305
307	0.48775619	-0.68382780E-02	-1.8867938	2.3745500	2.2180
308	1.0760514	0.00000000E+00	-2.4332366	3.5092880	3.1386
309	1.6256563	0.00000000E+00	-2.8552373	4.4808937	3.9296
310	1.5939115	0.00000000E+00	-2.2979935	3.8919050	3.3944
311	1.1086578	0.00000000E+00	-1.1466495	2.2553073	1.9855
312	0.74762165	0.00000000E+00	-0.49655175	1.2441734	1.1469

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

OAD STEP 1 ITERATION= 10 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

ODE	SIG1	SIG2	SIG3	SI	SI
313	10.062577	3.7787767	0.00000000E+00	10.062577	8.8795
314	11.087449	5.8454418	0.00000000E+00	11.087449	9.8436
315	10.639618	1.3163560	-0.98461482	11.624232	10.747
316	8.2294141	0.00000000E+00	-6.9754577	15.204872	13.262
317	5.8827205	0.00000000E+00	-8.0276543	13.910375	12.127
318	3.9253015	0.00000000E+00	-5.0278539	8.9531554	7.8240
319	1.9939576	0.14733438E-01	-1.8242486	3.8182062	3.4145
320	1.1000734	0.49900044E-02	-0.83913210	1.9392055	1.7665
321	1.5480981	0.00000000E+00	-2.0154819	3.5635801	3.1106
322	1.8013863	0.00000000E+00	-2.9670074	4.7683937	4.1709
323	1.5213525	0.00000000E+00	-2.8426787	4.3640312	3.8410
324	0.93349367	0.00000000E+00	-1.9313586	2.8648523	2.5473
325	0.56365071	0.00000000E+00	-1.3269677	1.8906184	1.7000

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

DE	SIG1	SIG2	SIG3	SI	SI
6	9.0312000	2.8543728	0.00000000E+00	9.0312000	8.0099
327	12.065345	3.5147583	0.00000000E+00	12.065345	11.074
28	14.436223	0.21394234	-4.0989943	18.535218	16.916

329	11.418258	0.00000000E+00	-10.814046	22.232304	19.344
330	8.1804172	0.00000000E+00	-9.1019833	17.282401	14.997
331	5.6015190	0.00000000E+00	-4.6311840	10.232703	8.9091
332	3.4110425	0.00000000E+00	-1.4689744	4.8800169	4.3882
333	2.1634388	0.00000000E+00	-0.67490715	2.8383460	2.5881
334	2.0743966	0.00000000E+00	-1.9530875	4.0274841	3.4941
335	2.0418460	0.00000000E+00	-3.2357228	5.2775687	4.6099
336	1.5998228	0.00000000E+00	-3.4962820	5.0961048	4.5171
337	0.98919622	0.00000000E+00	-2.7989471	3.7881433	3.4131
338	0.65687153	0.00000000E+00	-2.1309087	2.7877802	2.5313

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
339	5.0144025	2.6342214	0.00000000E+00	5.0144025	4.4594
340	6.3103514	0.70164268	-2.1811518	8.4915032	7.6210
341	10.978851	0.00000000E+00	-9.8857606	20.864612	18.163
342	12.483757	0.00000000E+00	-13.382412	25.866170	22.428
343	10.142821	0.00000000E+00	-9.3846924	19.527513	16.944
344	7.4150722	0.00000000E+00	-4.0827549	11.497827	10.148
345	5.0503581	0.60753040E-01	-0.95658046	6.0069386	5.5991
346	3.2499711	0.59624379E-01	-0.37386251	3.6238336	3.4333
347	2.5711407	0.00000000E+00	-1.7430609	4.3142015	3.7657
348	2.1743286	0.00000000E+00	-3.3879338	5.5622623	4.8553
349	1.4996150	0.00000000E+00	-4.0788303	5.5784453	5.0043
350	0.76025561	0.00000000E+00	-3.7179256	4.4781812	4.1616
351	0.40166819	0.00000000E+00	-2.6495860	3.0512542	2.8739

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
352	7.9625933	0.00000000E+00	-4.4334511	12.396044	10.887
353	0.90813880	-1.4522635	-7.1475468	8.0556856	7.4989
354	4.4739864	-0.54011654	-15.431207	19.905194	18.031
355	11.345514	0.00000000E+00	-13.485505	24.831019	21.560
356	12.245692	0.00000000E+00	-6.7163684	18.962060	16.744
357	10.096197	0.78567846	-1.2941035	11.390301	10.526
358	7.0773243	2.4706769	0.00000000E+00	7.0773243	6.3729
359	4.3742661	2.3011630	0.00000000E+00	4.3742661	3.9345
360	3.1462325	0.23948219	-0.74264647	3.8888790	3.5276
361	1.7656738	0.00000000E+00	-3.1454482	4.9111220	4.3286
362	0.41279980	-0.24875152	-4.5036677	4.9164675	4.6271
363	0.00000000E+00	-1.4191621	-4.8016533	4.8016533	4.3550
364	0.00000000E+00	-2.1083700	-2.7726658	2.7726658	2.5250

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1
LL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI

365	0.13667468	0.00000000E+00	-0.15090280	0.28757748	0.24939
366	0.87872422E-01	0.00000000E+00	-0.44257174	0.53044417	0.49268
367	0.31006345	0.00000000E+00	-0.53646671	0.84653016	0.74235
368	0.27954898	0.00000000E+00	-0.16406399	0.44361298	0.38851
369	0.31767017	0.00000000E+00	-0.12771544	0.44538562	0.38851
370	0.13915066	0.00000000E+00	-0.91227891E-01	0.23037855	0.20099
371	0.31569783E-01	-0.13634706	-1.1609656	1.1925354	1.0 [illegible]
372	0.57043155	0.00000000E+00	-1.3478156	1.9182472	1 [illegible] 27
373	0.95122606	0.00000000E+00	-0.79831944	1.7495455	1.[illegible]33
374	0.76607540	0.00000000E+00	-0.15451909	0.92059448	1.5295
375	0.78473291	0.00000000E+00	-0.22291890	1.0076518	0.85407
376	0.41103846	0.00000000E+00	-0.36742909	0.77846755	0.92006
377	0.10903004	0.00000000E+00	-0.27063514	0.37966517	0.68152

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
378	3.1982140	-0.78642793E-01	-2.7904281	5.9886421	5.5895
379	0.28333199	-0.49190389	-4.7398930	5.0232250	4.7369
380	1.8918119	-0.30861678	-8.2085177	10.100330	9.2371
381	4.9706379	0.00000000E+00	-5.8914717	10.862110	9.4361
382	6.5831999	0.00000000E+00	-3.5351547	10.118355	8.9356
383	5.6460907	0.49089065	-0.96236204	6.6084528	6.0266
384	4.4753977	1.0662440	-0.48247325E-01	4.5236450	4.1571
385	3.6331626	0.83762972	-0.57656723	4.2097298	3.8068
386	3.1499638	0.14889550	-1.5724506	4.7224145	4.1583
387	2.1470150	0.00000000E+00	-2.4231263	4.5701413	3.9940
388	1.4136800	-0.15112919	-3.2583471	4.6720271	4.[illegible]1
389	0.69655362	-0.55604152	-3.2512312	3.9477848	3.[illegible]9
390	0.17678369	-0.73035230	-2.3910727	2.5678564	2.4263

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
391	0.44572979	0.00000000E+00	-0.58798207E-01	0.50452799	0.47934
392	0.73789308	0.96071378E-01	0.00000000E+00	0.73789308	0.69486
393	0.52233855	0.82281606E-01	0.00000000E+00	0.52233855	0.48676
394	0.29223942	0.00000000E+00	-0.76347631E-01	0.36858705	0.34016
395	0.25171954	0.47588318E-01	-0.79862266E-01	0.33158180	0.29119
396	0.27823128	0.13697438	0.00000000E+00	0.27823128	0.24119
397	2.6590213	0.44098259	0.00000000E+00	2.6590213	2.5176
398	1.1843662	0.78183422E-01	-0.41143535	1.5958016	1.4321
399	0.66710909	0.15240056E-01	-0.80886557	1.4759747	1.3146
400	0.35315385E-01	-0.96620280E-02	-0.62126872	0.65658411	0.63532
401	0.49912779	0.00000000E+00	-0.81059290	1.3097207	1.1572
402	0.92887126	0.00000000E+00	-0.38564184	1.3145131	1.1803
403	0.77634708	0.96780203E-01	0.00000000E+00	0.77634708	0.73676

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
404	4.1916496	1.1896983	-0.59039142E-01	4.2506887	3.896
405	2.9739668	0.00000000E+00	-1.1566396	4.1306063	3.739
406	2.6980285	0.00000000E+00	-2.4819367	5.1799652	4.545
407	2.8924869	0.00000000E+00	-2.7170360	5.6095229	4.880
408	2.9491120	0.00000000E+00	-3.1723539	6.1214659	5.330
409	1.8268784	0.00000000E+00	-2.7973625	4.6242409	4.090
410	1.0442011	0.00000000E+00	-2.7264313	3.7706324	3.443
411	1.7484499	0.00000000E+00	-2.8449914	4.5934414	4.065
412	2.5673948	0.00000000E+00	-3.0503417	5.6177364	4.891
413	2.5189367	0.00000000E+00	-2.5131117	5.0320484	4.367
414	2.8139032	0.00000000E+00	-2.3129225	5.1268257	4.476
415	2.7348641	0.00000000E+00	-1.4432072	4.1780713	3.719
416	2.7308560	0.00000000E+00	-1.2769015	4.0077575	3.639

MAXIMUMS					
NODE	42	14	14	14	14
VALUE	15.239939	-9.7667090	-38.652022	38.652022	35.13

NODAL STRESSES ARE SHELL TOP

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
1	0.15323477	-0.17257084	-4.3876659	4.5409006	4.3871
2	0.00000000E+00	-2.5453342	-9.1246475	9.1246475	8.1759
3	0.00000000E+00	-1.8548924	-8.1602282	8.1602282	7.4427
4	1.0888787	0.00000000E+00	-3.6941399	4.7830186	4.3569
5	2.3061933	0.00000000E+00	-1.4628815	3.7690748	3.3497
6	1.3730850	0.00000000E+00	-2.3096374	3.6827224	3.2366
7	2.5509843	-2.3923813	-32.326759	34.877743	32.854
8	0.27059979	-3.3182258	-15.479392	15.749992	14.553
9	3.3196221	-0.77166149E-01	-5.3994608	8.7190829	8.0691
10	4.3221914	0.21136168	-0.59521538	4.9174067	4.5790
11	4.6345887	0.47832383	-0.29503755	4.9296263	4.6127
12	2.2900204	0.22021158E-01	-0.72971685	3.0197373	2.7633
13	1.6326540	0.00000000E+00	-1.7539064	3.3865603	2.9488

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

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NODE	SIG1	SIG2	SIG3	SI	SI
14	0.00000000E+00	-9.2313618	-44.631592	44.631592	41.503
15	0.53628758	-3.6501124	-24.599305	25.135593	23.588
16	0.00000000E+00	-10.564186	-19.543235	19.543235	17.151
17	2.3698857	-2.2933358	-9.2000750	11.569961	10.396
18	8.4759837	1.1431934	-1.8726630	10.348647	9.2563
19	11.175130	3.3269239	0.00000000E+00	11.175130	10.072
20	12.705501	5.6821439	0.00000000E+00	12.705501	11.030

21	9.3393891	3.5209472	0.00000000E+00	9.3393891	8.1904
22	6.3090041	1.5893214	0.00000000E+00	6.3090041	5.7307
23	3.7903870	0.23200951	-0.25004527	4.0404322	3.8284
24	2.0221014	0.00000000E+00	-1.1163519	3.1384533	2.8302
25	0.64966156	-0.24702609	-1.8617666	2.5114282	2.2184
26	0.00000000E+00	-0.51794577	-2.4571927	2.4571927	2.[illegible]17

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
27	0.00000000E+00	-11.273235	-42.632402	42.632402	38.801
28	25.774894	7.6373002	-4.4896289	30.264523	26.922
29	12.592365	4.4689535	-0.44968429	13.042049	11.748
30	2.5714533	-1.0088193	-6.6541669	9.2256202	8.3884
31	6.0328522	0.00000000E+00	-6.0320273	12.064879	10.497
32	3.6346966	0.00000000E+00	-5.4646498	9.0993464	7.9494
33	3.7661274	0.00000000E+00	-4.8176691	8.5837966	7.4725
34	2.8383937	0.00000000E+00	-4.1513799	6.9897735	6.1162
35	1.7363562	0.00000000E+00	-2.9991846	4.7355408	4.1739
36	0.92472793	0.00000000E+00	-2.2134789	3.1382069	2.8042
37	0.77017423	0.00000000E+00	-1.3510749	2.1212491	1.8726
38	0.44315035	0.00000000E+00	-0.68992151	1.1330719	1.0084
39	0.28385602	0.00000000E+00	-0.37985031	0.66370633	0.59126

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
40	0.00000000E+00	-16.792954	-48.120405	48.120405	42.492
41	46.078642	25.953152	0.00000000E+00	46.078642	40.269
42	35.019331	22.909521	0.00000000E+00	35.019331	30.830
43	1.0924532	-2.9131022	-9.0353744	10.127828	9.0236
44	3.8132839	0.00000000E+00	-7.8187013	11.631985	10.279
45	1.0504456	-0.47768739	-8.3608123	9.4112579	8.7607
46	0.38538815	-0.35356703	-6.9293111	7.3146992	6.9812
47	0.31595914	-0.21490342	-4.9764608	5.2924200	5.0529
48	0.23388774	-0.42991354E-01	-3.0000827	3.2339704	3.1094
49	0.44008560	0.00000000E+00	-1.5452479	1.9853335	1.8062
50	1.1484988	0.00000000E+00	-0.63494261	1.7834414	1.5700
51	1.4152153	0.18500720	-0.10072787	1.5159431	1.4120
52	1.4883512	0.38154667	0.00000000E+00	1.4883512	1.3402

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	
53	0.00000000E+00	-20.015097	-51.028431	51.028431	44.[illegible]
54	37.708554	16.426844	0.00000000E+00	37.708554	32.835
55	37.018363	16.553453	0.00000000E+00	37.018363	32.214
56	0.00000000E+00	-5.2069740	-10.562775	10.562775	9.2060

57	0.40255199	-1.7787188	-9.3127285	9.7152805	
58	0.00000000E+00	-1.8502813	-8.9560269	8.9560269	8.898
59	0.10153357	-0.80678582	-6.4943481	6.5958817	8.297
60	0.34146128	-0.25237572	-3.9874446	4.3289059	6.246
61	0.62686407	0.00000000E+00	-1.7896039	2.4164680	4.065
62	1.2499681	0.55941762E-01	-0.29639409	1.5463622	2.179
63	2.0822268	0.41032933	0.00000000E+00	2.0822268	1.407
64	2.2992056	0.87198616	0.00000000E+00	2.2992056	1.917
65	2.3215550	1.0074367	0.00000000E+00	2.3215550	2.0628
					2.0164

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
66	0.00000000E+00	-12.428826	-51.762287	51.762287	46.940
67	23.849501	10.530431	0.00000000E+00	23.849501	20.923
68	39.017088	17.253902	0.00000000E+00	39.017088	33.969
69	0.00000000E+00	-2.5755409	-6.4349052	6.4349052	5.6558
70	0.00000000E+00	-5.2155917	-9.1994018	9.1994018	8.0706
71	0.00000000E+00	-5.3678308	-10.045669	10.045669	8.7719
72	0.00000000E+00	-2.3275327	-8.0159447	8.0159447	7.1850
73	0.12593717	-0.20300503	-5.1086144	5.2345516	5.0854
74	1.2943944	0.00000000E+00	-2.3467070	3.6411015	3.2173
75	2.1472548	0.15076582	-0.29083249	2.4380873	2.2523
76	2.6745528	1.0938116	0.00000000E+00	2.6745528	2.3331
77	2.9691703	1.4398489	0.00000000E+00	2.9691703	2.5993
78	3.1141722	1.3915526	0.00000000E+00	3.1141722	2.7020

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
79	0.00000000E+00	-10.241996	-52.948491	52.948491	48.675
80	14.617452	6.4427454	0.00000000E+00	14.617452	12.956
81	45.804381	22.022943	0.00000000E+00	45.804381	39.712
82	1.9630367	0.24850073	-2.2177122	4.1807489	3.7989
83	0.00000000E+00	-5.2808657	-7.9538287	7.9538287	7.0755
84	0.00000000E+00	-9.1280102	-11.474317	11.474317	10.529
85	0.00000000E+00	-5.0043440	-10.368117	10.368117	9.0012
86	0.00000000E+00	-1.0402195	-7.0074985	7.0074985	6.5569
87	1.5617095	0.00000000E+00	-3.3347700	4.8964795	4.3498
88	2.8383965	0.13836920	-0.35623458	3.1946311	2.9838
89	3.1990669	1.7285991	0.00000000E+00	3.1990669	2.7759
90	3.7536983	1.9231761	0.00000000E+00	3.7536983	3.2588
91	4.0781235	1.6974297	0.00000000E+00	4.0781235	3.5483

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
92	0.00000000E+00	-8.4515920	-52.182457	52.182457	48.512

93	12.790631	5.8926577	-0.23796845	13.028600	12.062
94	49.507780	28.460333	0.00000000E+00	49.507780	43.090
95	5.6724207	3.2960771	-0.21806780	5.8904885	5.2378
96	0.00000000E+00	-3.6813930	-7.1472838	7.1472838	6.3456
97	0.00000000E+00	-10.796792	-12.100536	12.100536	11.523
98	0.00000000E+00	-6.8716239	-12.088704	12.088704	[illegible]
99	0.00000000E+00	-1.7469709	-8.4973462	8.4973462	[illegible]
100	1.7264200	0.00000000E+00	-4.1058386	5.8322586	5.2044
101	3.2880717	0.43760691E-01	-0.32574887	3.6138205	3.4531
102	3.5603899	2.1384746	0.00000000E+00	3.5603899	3.1056
103	4.4245318	2.0923603	0.00000000E+00	4.4245318	3.8375
104	4.8698168	1.7426388	0.00000000E+00	4.8698168	4.2748

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
105	0.00000000E+00	-7.4873518	-49.987652	49.987652	46.697
106	7.4184313	2.4207225	-1.3779143	8.7963455	7.8571
107	37.848178	18.062482	0.00000000E+00	37.848178	32.838
108	8.3358061	4.6330984	0.00000000E+00	8.3358061	7.2750
109	0.00000000E+00	-3.9226397	-8.1002864	8.1002864	7.2708
110	0.00000000E+00	-11.776705	-13.348293	13.348293	12.660
111	0.00000000E+00	-8.3276278	-13.288529	13.288529	11.640
112	0.00000000E+00	-2.3682571	-9.7150166	9.7150166	8.7772
113	1.8516776	0.00000000E+00	-4.8158691	6.6675466	5.9666
114	3.6017855	0.00000000E+00	-0.41466633	4.0164518	3.8308
115	3.7381098	2.4330248	0.00000000E+00	3.7381098	[illegible]
116	4.9198368	2.1371967	0.00000000E+00	4.9198368	[illegible]
117	5.4751432	1.6840070	0.00000000E+00	5.4751432	4.8573

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
118	0.00000000E+00	-2.9413638	-47.089124	47.089124	45.689
119	9.1706626	1.3004075	-2.6202995	11.790962	10.457
120	30.203047	14.002553	0.00000000E+00	30.203047	26.220
121	13.952262	10.001275	0.00000000E+00	13.952262	12.538
122	0.36350173	-1.7936336	-7.0128747	7.3763764	6.6228
123	0.00000000E+00	-11.308361	-14.359709	14.359709	13.112
124	0.00000000E+00	-10.259296	-14.773246	14.773246	13.127
125	0.00000000E+00	-3.3781593	-11.429768	11.429768	10.173
126	2.0220068	0.00000000E+00	-5.8424602	7.8644670	7.0789
127	4.2181949	0.00000000E+00	-0.63272139	4.8509163	4.5698
128	4.0968346	2.9074713	0.00000000E+00	4.0968346	3.6665
129	5.4016653	2.5154171	0.00000000E+00	5.4016653	4.6826
130	6.0437385	1.9447360	0.00000000E+00	6.0437385	5.3437

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	S
131	0.00000000E+00	-2.9676617	-46.240366	46.240366	44.84
132	9.5133310	0.15310540	-5.4169031	14.930234	13.34
133	32.491540	14.127094	0.00000000E+00	32.491540	28.25
134	17.120573	12.169568	0.00000000E+00	17.120573	15.28
135	0.64904428	-0.56774651	-6.3659212	7.0149655	6.517
136	0.00000000E+00	-11.635372	-16.481877	16.481877	14.69
137	0.00000000E+00	-12.761315	-16.778027	16.778027	15.18
138	0.00000000E+00	-4.8314591	-13.276292	13.276292	11.64
139	2.1380888	0.00000000E+00	-6.8828186	9.0209074	8.178
140	5.0646821	0.19863725E-01	-0.76815330	5.8328354	5.505
141	4.7722348	3.4513512	0.00000000E+00	4.7722348	4.270
142	6.0475558	2.9390310	0.00000000E+00	6.0475558	5.238
143	6.7600845	2.1597102	0.00000000E+00	6.7600845	5.980

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
144	0.00000000E+00	-5.1877163	-45.220348	45.220348	42.910
145	5.9694253	0.00000000E+00	-11.463929	17.433354	16.073
146	46.537868	21.067223	0.00000000E+00	46.537868	40.400
147	15.510370	9.4300607	0.00000000E+00	15.510370	13.640
148	0.68583891	-1.5245360	-6.1287083	6.8145472	6.0405
149	0.00000000E+00	-13.326462	-18.310819	18.310819	16.397
150	0.00000000E+00	-14.179774	-18.014787	18.014787	16.444
151	0.00000000E+00	-5.4081219	-14.036740	14.036740	12.270
152	2.3272535	0.00000000E+00	-7.1910121	9.5182655	8.6007
153	5.5213373	0.00000000E+00	-0.61041193	6.1317493	5.8552
154	4.9656585	3.9368153	0.00000000E+00	4.9656585	4.5398
155	6.4611928	2.9619901	0.00000000E+00	6.4611928	5.6024
156	7.1831655	2.0297937	0.00000000E+00	7.1831655	6.4138

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
157	0.00000000E+00	-5.6540242	-44.592858	44.592858	42.079
158	4.9209490	0.00000000E+00	-15.419825	20.340774	19.119
159	66.318662	36.895293	0.00000000E+00	66.318662	57.621
160	15.665355	11.368288	0.00000000E+00	15.665355	14.090
161	0.69154463	-0.56184790E-01	-3.8340932	4.5256379	4.2511
162	0.00000000E+00	-13.270857	-18.694590	18.694590	16.680
163	0.00000000E+00	-15.252262	-17.976968	17.976968	16.823
164	0.00000000E+00	-5.9088152	-13.960018	13.960018	12.163
165	2.4007527	0.00000000E+00	-7.1778878	9.5786404	8.6423
166	5.8994393	0.00000000E+00	-0.57670946	6.4761487	6.2087
167	5.2964897	4.0252507	0.00000000E+00	5.2964897	4.8012
168	6.4668610	3.2006598	0.00000000E+00	6.4668610	5.6045
169	7.1716113	2.1878348	0.00000000E+00	7.1716113	6.3666

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
170	0.00000000E+00	-5.3360784	-43.136376	43.136376	4[illegible]33
171	2.5713596	-0.34167738E-02	-18.504774	21.076133	20.106
172	66.618566	31.507649	0.00000000E+00	66.618566	57.736
173	14.198678	9.0588718	0.00000000E+00	14.198678	12.560
174	0.00000000E+00	-1.5134433	-3.6114057	3.6114057	3.1756
175	0.00000000E+00	-13.959696	-19.522810	19.522810	17.423
176	0.00000000E+00	-16.083124	-17.712262	17.712262	16.975
177	0.00000000E+00	-6.3428052	-13.818817	13.818817	11.999
178	2.3959387	0.00000000E+00	-7.1224973	9.5184360	8.5858
179	6.1864974	0.00000000E+00	-0.57986695	6.7663644	6.4965
180	5.6554178	3.9587628	0.00000000E+00	5.6554178	5.0274
181	6.3594840	3.4659334	0.00000000E+00	6.3594840	5.5158
182	7.0269132	2.4125191	0.00000000E+00	7.0269132	6.1842

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
183	0.00000000E+00	-4.8737980	-42.452217	42.452217	40.237
184	3.6434551	0.00000000E+00	-18.577974	22.221429	20.787
185	63.508459	28.546291	0.00000000E+00	63.508459	55.093
186	13.919496	9.7767923	0.00000000E+00	13.919496	12.604
187	0.00000000E+00	-2.6967087	-4.3018553	4.3018553	3.[illegible]8
188	0.00000000E+00	-14.172015	-19.660494	19.660494	17.[illegible]75
189	0.00000000E+00	-16.346964	-17.699068	17.699068	17.068
190	0.00000000E+00	-6.4461137	-13.791756	13.791756	11.969
191	2.3856992	0.00000000E+00	-7.1009718	9.4866710	8.5579
192	6.2480164	0.00000000E+00	-0.60182914	6.8498455	6.5700
193	5.7709966	3.8456415	0.00000000E+00	5.7709966	5.0919
194	6.2501490	3.5110888	0.00000000E+00	6.2501490	5.4270
195	6.8746276	2.4680724	0.00000000E+00	6.8746276	6.0319

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
196	0.00000000E+00	-5.4146440	-43.301460	43.301460	40.865
197	2.7173093	0.00000000E+00	-17.932723	20.650032	19.640
198	66.640508	31.449343	0.00000000E+00	66.640508	57.757
199	13.980555	8.7807401	0.00000000E+00	13.980555	12.330
200	0.00000000E+00	-1.6644009	-3.8076475	3.8076475	3.3501
201	0.00000000E+00	-13.888141	-19.483728	19.483728	17.377
202	0.00000000E+00	-15.988499	-17.318850	17.318850	16.701
203	0.00000000E+00	-6.1974306	-13.451629	13.451629	11.679
204	2.4153356	0.00000000E+00	-6.9150792	9.3304148	8.3
205	6.1164006	0.00000000E+00	-0.62069985	6.7371004	6.4496
206	5.6716550	3.6374063	0.00000000E+00	5.6716550	4.9817
207	6.0626913	3.4128382	0.00000000E+00	6.0626913	5.2645
208	6.6509100	2.4426379	0.00000000E+00	6.6509100	5.8271

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
209	0.00000000E+00	-5.8353032	-44.941551	44.941551	42.357
210	5.2449795	0.00000000E+00	-14.422093	19.667073	18.435
211	66.363684	36.773483	0.00000000E+00	66.363684	57.650
212	15.255692	10.913922	0.00000000E+00	15.255692	13.703
213	0.59056288	-0.15084918	-4.2149595	4.8055224	4.5013
214	0.00000000E+00	-13.119227	-18.611909	18.611909	16.585
215	0.00000000E+00	-15.097782	-17.237896	17.237896	16.313
216	0.00000000E+00	-5.6602537	-13.293586	13.293586	11.579
217	2.4284532	0.00000000E+00	-6.8106640	9.2391171	8.3061
218	5.7885198	0.00000000E+00	-0.67302169	6.4615414	6.1532
219	5.4037435	3.3609710	0.00000000E+00	5.4037435	4.7272
220	5.9113147	3.1106696	0.00000000E+00	5.9113147	5.1260
221	6.4770458	2.2393125	0.00000000E+00	6.4770458	5.6981

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
222	0.00000000E+00	-5.5510520	-45.726960	45.726960	43.270
223	6.4689689	0.00000000E+00	-10.292162	16.761131	15.397
224	46.578812	20.841107	0.00000000E+00	46.578812	40.454
225	14.824082	8.9784610	0.00000000E+00	14.824082	13.029
226	0.59426298	-1.6145070	-6.6990082	7.2932712	6.4858
227	0.00000000E+00	-13.041096	-18.216041	18.216041	16.258
228	0.00000000E+00	-13.923336	-17.002847	17.002847	15.700
229	0.00000000E+00	-5.1265300	-13.063980	13.063980	11.409
230	2.3315048	0.00000000E+00	-6.6715221	9.0030269	8.1009
231	5.3879104	0.00000000E+00	-0.77671004	6.1646204	5.8192
232	5.1591399	2.9622046	0.00000000E+00	5.1591399	4.4869
233	5.6871659	2.8247218	0.00000000E+00	5.6871659	4.9264
234	6.1934688	2.1064288	0.00000000E+00	6.1934688	5.4543

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
235	0.00000000E+00	-3.0829345	-46.507272	46.507272	45.060
236	10.076047	0.47722359	-4.2539561	14.330003	12.813
237	32.654482	13.950937	0.00000000E+00	32.654482	28.427
238	16.177194	11.567451	0.00000000E+00	16.177194	14.485
239	0.51526339	-0.67112740	-7.1720597	7.6873230	7.1858
240	0.00000000E+00	-11.112216	-16.400312	16.400312	14.515
241	0.00000000E+00	-12.286586	-15.458739	15.458739	14.161
242	0.00000000E+00	-4.4751741	-11.926061	11.926061	10.440
243	2.1271625	0.00000000E+00	-6.1877920	8.3149546	7.4998
244	4.9095401	0.00000000E+00	-1.0273806	5.9369207	5.5190

245	4.9145444	2.2284266	0.00000000E+00	4.9145444	4.265
246	5.0193454	2.7146147	0.00000000E+00	5.0193454	4.360
247	5.4033377	2.2625259	0.00000000E+00	5.4033377	4.700

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
248	0.00000000E+00	-2.9890291	-47.638871	47.638871	46.217
249	9.3216064	2.0678167	-1.9646841	11.286290	9.9621
250	30.289986	13.729582	0.00000000E+00	30.289986	26.321
251	12.706430	8.9118400	0.00000000E+00	12.706430	11.399
252	0.24221493	-2.0734556	-8.0692568	8.3114717	7.5020
253	0.00000000E+00	-10.425225	-14.207358	14.207358	12.752
254	0.00000000E+00	-9.4894980	-12.952208	12.952208	11.636
255	0.00000000E+00	-2.9156720	-9.5765648	9.5765648	8.5047
256	1.9687612	0.00000000E+00	-4.9503875	6.9191487	6.1834
257	4.0101388	0.00000000E+00	-1.1101889	5.1203278	4.6659
258	4.1964368	1.2992739	0.00000000E+00	4.1964368	3.7497
259	4.1119630	2.1292190	0.00000000E+00	4.1119630	3.6064
260	4.2827756	2.0563418	0.00000000E+00	4.2827756	3.7110

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
261	0.00000000E+00	-7.6765521	-51.063773	51.063773	47.694
262	8.5494768	3.5773809	-0.75206990	9.3015467	8.3042
263	37.892143	17.604333	0.00000000E+00	37.892143	32.901
264	6.5421403	3.0914391	0.00000000E+00	6.5421403	5.7114
265	0.00000000E+00	-4.6553171	-9.0012761	9.0012761	7.9733
266	0.00000000E+00	-10.532376	-13.075731	13.075731	12.020
267	0.00000000E+00	-7.3686565	-11.086550	11.086550	9.7937
268	0.00000000E+00	-1.8971456	-7.4967683	7.4967683	6.7553
269	1.7446632	0.00000000E+00	-3.8229453	5.5676085	4.9411
270	3.4071372	0.00000000E+00	-1.1272528	4.5343900	4.0909
271	3.7460715	0.61916847	0.00000000E+00	3.7460715	3.4875
272	3.4988668	1.6439226	0.00000000E+00	3.4988668	3.0985
273	3.4844588	1.8299279	0.00000000E+00	3.4844588	3.0194

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
274	0.00000000E+00	-8.3636026	-53.660629	53.660629	50.006
275	14.987824	8.7426462	0.00000000E+00	14.987824	13.696
276	49.247789	27.839412	0.00000000E+00	49.247789	42.[illegible]
277	3.6315998	2.0198700	-0.98380268	4.6154025	4.09[illegible]
278	0.00000000E+00	-4.6588015	-7.6909696	7.6909696	6.8180
279	0.00000000E+00	-9.4087164	-11.676801	11.676801	10.732
280	0.00000000E+00	-5.7257368	-9.7860258	9.7860258	8.5383

281	0.00000000E+00	-1.2693123	-6.0852139	6.0852139	5.5657
282	1.5647668	0.00000000E+00	-3.0355994	4.6003662	4.0735
283	3.0774594	0.00000000E+00	-1.1035826	4.1810420	3.7655
284	3.5073278	0.25467222	-0.22235619E-01	3.5295635	3.4018
285	3.1655694	1.3418797	0.00000000E+00	3.1655694	2.8177
286	2.9262151	1.7815896	0.00000000E+00	2.9262151	2.5542

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
287	0.00000000E+00	-10.421902	-54.915534	54.915534	50.548
288	17.791068	9.1043338	0.00000000E+00	17.791068	15.534
289	44.741075	20.183378	0.00000000E+00	44.741075	38.839
290	1.0842022	-1.6181193	-3.9690225	5.0532247	4.5581
291	0.00000000E+00	-6.3862902	-8.1517691	8.1517691	7.4619
292	0.00000000E+00	-7.8031312	-10.802576	10.802576	9.6719
293	0.00000000E+00	-3.7120710	-8.0000929	8.0000929	7.0044
294	0.00000000E+00	-0.58837380	-4.4461514	4.4461514	4.2003
295	1.3431463	0.00000000E+00	-2.2293032	3.5724495	3.1553
296	2.6420482	0.00000000E+00	-1.1842236	3.8262718	3.4043
297	3.0996539	0.00000000E+00	-0.27269212	3.3723460	3.2480
298	2.8326941	0.78480141	0.00000000E+00	2.8326941	2.5785
299	2.5198338	1.3548346	0.00000000E+00	2.5198338	2.1936

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

OAD STEP 1 ITERATION= 10 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1
S LL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
300	0.00000000E+00	-9.7712636	-51.829967	51.829967	47.778
301	27.835080	14.073572	0.00000000E+00	27.835080	24.263
302	38.017688	14.736265	0.00000000E+00	38.017688	33.251
303	0.00000000E+00	-4.5934680	-8.4178197	8.4178197	7.3634
304	0.00000000E+00	-5.8754623	-9.6100269	9.6100269	8.5603
305	0.00000000E+00	-4.0729138	-9.1969830	9.1969830	8.0674
306	0.44240764E-02	-0.84070488	-5.6964208	5.7008449	5.4277
307	0.45009646	-0.18049828	-2.5029555	2.9530520	2.6961
308	1.0342909	0.00000000E+00	-1.4029545	2.4372454	2.1577
309	2.0650435	0.00000000E+00	-1.5159542	3.5809977	3.1201
310	2.4615239	0.00000000E+00	-1.1440554	3.6055794	3.1938
311	2.3607008	0.12128954	-0.34412710	2.7048279	2.5087
312	2.1928811	0.36892157	-0.47022301E-01	2.2399034	2.0841

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

ODE	SIG1	SIG2	SIG3	SI	SI
3	0.00000000E+00	-13.887304	-48.346351	48.346351	43.219
4	35.892837	16.096073	0.00000000E+00	35.892837	31.243
315	35.362061	11.111198	0.00000000E+00	35.362061	31.357
316	0.00000000E+00	-5.7262024	-13.627910	13.627910	11.911

317	0.54674691	-2.1260749	-9.8032688	10.350016	9.387
318	0.83289333	-0.46798884	-7.4033989	8.2362923	7.686
319	1.9228581	0.00000000E+00	-3.6464078	5.5692658	4.942
320	1.2585801	-0.90476330E-02	-1.0799985	2.3385786	2.056
321	0.88033570	0.00000000E+00	-0.71122834	1.5915640	1.412
322	1.6755493	0.00000000E+00	-1.8663972	3.5419465	1.412
323	1.8593070	0.00000000E+00	-2.0839065	3.9432135	3 [illegible]
324	1.8510267	0.00000000E+00	-1.3940153	3.2450420	3 [illegible]
325	1.9340287	0.00000000E+00	-0.86387956	2.7979082	2.835

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
326	0.00000000E+00	-8.4787713	-38.995632	38.995632	35.537
327	39.419223	19.919553	0.00000000E+00	39.419223	34.434
328	35.217398	15.214749	0.00000000E+00	35.217398	30.820
329	0.64097049	-3.3941347	-15.393134	16.034104	14.500
330	3.5914027	0.00000000E+00	-9.9068432	13.498246	12.135
331	3.6883298	0.00000000E+00	-6.3840640	10.072394	8.8960
332	3.3093956	0.00000000E+00	-3.0693463	6.3787419	5.5387
333	1.8643361	0.00000000E+00	-1.0064065	2.8707425	2.5408
334	1.0221571	0.00000000E+00	-0.86196257	1.8841196	1.6585
335	1.6396073	0.00000000E+00	-2.2984220	3.9380293	3.4284
336	1.6762269	0.00000000E+00	-2.7914476	4.4676745	3.9118
337	1.6470130	0.00000000E+00	-2.1646948	3.8117078	3.3228
338	2.0624415	0.00000000E+00	-1.3452524	3.4076938	2.9755

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
339	0.80418448E-01	-5.0939518	-27.628670	27.709089	25.732
340	20.432465	2.3266094	-4.3209930	24.753458	23.070
341	19.612087	1.7952833	-2.4561506	22.068237	20.350
342	1.3337065	-1.5907905	-14.990092	16.323798	15.242
343	5.7060650	0.00000000E+00	-11.199592	16.905657	14.951
344	4.8327347	0.00000000E+00	-6.2914173	11.124152	9.6966
345	3.6886655	0.00000000E+00	-2.8214130	6.5100785	5.6889
346	1.8524699	0.00000000E+00	-0.96808100	2.8205509	2.5285
347	1.0261884	0.00000000E+00	-0.93926953	1.9654579	1.7349
348	1.5565392	0.00000000E+00	-2.3449001	3.9014393	3.4076
349	1.5652864	0.00000000E+00	-2.8631453	4.4284317	3.8905
350	1.3603721	0.00000000E+00	-2.3143950	3.6747671	3.2238
351	1.9484059	0.00000000E+00	-0.80727515	2.7556811	2.4540

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
LL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
352	9.2426046	0.00000000E+00	-11.703689	20.946294	18.722

353	4.9139970	-2.1860703	-14.698605	19.612602	17.29:
354	3.0463036	-1.4683566	-16.428321	19.474625	17.828
355	5.1363090	0.00000000E+00	-9.8586885	14.994997	17.828
356	12.431208	0.00000000E+00	-4.2537424	16.684950	13.904
357	11.845425	1.1144456	-0.50463176	12.350057	15.079
358	9.0894383	2.6195228	0.00000000E+00	9.0894383	11.641
359	5.3210611	2.5804615	0.00000000E+00	5.3210611	8.1666
360	2.2550084	0.98297843	-0.10303815	2.3580465	4.6205
361	0.80078626	-0.52444090E-01	-2.3515347	3.1523209	2.0892
362	0.69368300E-01	-0.71231222	-4.4334436	4.5028119	2.8678
363	0.00000000E+00	-2.0097922	-5.4445728	5.4445728	4.1797
364	0.00000000E+00	-1.9039680	-3.6994620	3.6994620	4.7955
					3.2047

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
365	2.7569870	0.00000000E+00	-2.6680686	5.4250556	4.6984
366	2.5760931	0.00000000E+00	-2.2823265	4.8584196	4.2127
367	2.3413461	0.00000000E+00	-2.3642731	4.7056191	4.0762
368	2.6216044	0.00000000E+00	-2.6734341	5.2950386	4.5859
369	2.5585684	0.00000000E+00	-2.2025845	4.7611529	4.1277
370	2.8947020	0.00000000E+00	-2.4468619	5.3415640	4.6324
371	1.3914788	0.00000000E+00	-1.6212065	3.0126853	2.6134
372	1.7727120	0.00000000E+00	-1.2326520	3.0053640	2.6642
373	1.5499693	0.00000000E+00	-2.1177535	3.6677228	3.2006
374	1.9807609	0.00000000E+00	-2.5901911	4.5709520	3.9707
375	1.8418210	0.00000000E+00	-1.7874637	3.6292846	3.1484
376	2.2880484	0.00000000E+00	-1.0746620	3.3627104	3.0041
377	2.8303673	0.00000000E+00	-1.5912366	4.4216039	3.8854

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
378	5.0204006	-1.7823643	-3.2101834	8.2305840	7.7718
379	0.24050392	-4.1795183	-11.458766	11.699270	10.426
380	0.70333717	-3.8288914	-17.119964	17.823301	16.200
381	4.7784394	0.00000000E+00	-6.1987626	10.977202	9.6655
382	11.316274	0.92004652	-1.5868261	12.903101	12.091
383	11.820502	3.2910902	-0.69580036	12.516303	11.283
384	10.457997	4.2628150	-0.71437108	11.172368	9.8208
385	8.2963514	2.5606623	-0.57750279	8.8738542	7.9212
386	5.3097609	0.81611381	-1.2823068	6.5920677	5.8836
387	2.5408393	0.00000000E+00	-2.9162848	5.4571241	4.8579
388	1.5360304	-0.90799213	-5.5427422	7.0787726	6.3335
389	0.51599084	-1.8233020	-7.1514330	7.6674238	6.8871
390	0.11562336	-2.5324511	-7.3634768	7.4791001	6.5907

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

)AD STEP 1 ITERATION= 10 SECTION= 1
-IME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
391	1.1471719	0.00000000E+00	-0.70732400	1.8544959	1.6225
392	1.4006955	0.41358105E-01	-0.23440834	1.6351038	1.5241
393	1.3881866	0.00000000E+00	-0.62916265	2.0173493	1.7895
394	1.0628975	0.00000000E+00	-0.95300480	2.0159023	1.[illegible]78
395	1.2811071	0.00000000E+00	-1.0454868	2.3265940	2.[illegible]97
396	1.3708536	0.00000000E+00	-0.78020812	2.1510617	1.8861
397	3.0127692	0.85612709	0.00000000E+00	3.0127692	2.6986
398	2.3910906	0.00000000E+00	-0.73345314	3.1245437	2.8481
399	1.4131048	0.00000000E+00	-1.8932465	3.3063512	2.9268
400	0.70529053	0.00000000E+00	-1.9868798	2.6921704	2.4180
401	1.1527003	0.00000000E+00	-1.8404451	2.9931454	2.6362
402	1.9799150	0.00000000E+00	-0.92443116	2.9043461	2.5938
403	2.0233036	0.00000000E+00	-0.51433075	2.5376343	2.3237

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
404	6.6503684	4.9721916	0.00000000E+00	6.6503684	6.0849
405	4.6776398	1.4531426	-0.17158133	4.8492212	4.4291
406	4.2209155	0.00000000E+00	-1.6782390	5.8991545	5.3445
407	3.9479035	0.00000000E+00	-2.9501793	6.8980828	6.0779
408	2.6084771	0.00000000E+00	-4.3578230	6.9663001	6.1764
409	0.59902643	-0.51590833	-4.7302512	5.3292777	4.9005
410	0.00000000E+00	-1.6441309	-4.5293888	4.5293888	4.2231
411	0.56362069	-0.40601355	-4.8522573	5.4158780	5.[illegible]3
412	1.9479372	0.00000000E+00	-4.4893921	6.4373293	5.[illegible]9
413	2.8886874	0.00000000E+00	-3.1014229	5.9901103	5.2316
414	3.8002039	0.00000000E+00	-1.9769333	5.7771372	5.1372
415	4.0877714	0.18601677	-0.57672559	4.6644970	4.3383
416	3.5603446	0.51068392	-0.13353951	3.6938841	3.4285

MAXIMUMS					
NODE	198	159	287	198	198
VALUE	66.640508	36.895293	-54.915534	66.640508	57.75

NODAL STRESSES ARE SHELL BOTTOM

PRINT PRIN NODAL STRESSES PER NODE

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
1	2.0203793	0.00000000E+00	-4.7633420	6.7837213	6.0573
2	0.62513138	0.00000000E+00	-6.1623040	6.7874354	6.5329
3	1.4071196	0.00000000E+00	-6.1200826	7.5272022	6.9356
4	1.7187566	0.00000000E+00	-5.3241984	7.0429550	6.3[illegible]
5	2.0922713	0.00000000E+00	-3.0286329	5.1209042	4.5[illegible]
6	2.1264213	0.00000000E+00	-3.2536651	5.3800864	4.7270
7	0.00000000E+00	-3.7282511	-26.634077	26.634077	24.980
8	11.014990	0.44868812E-01	-7.2184145	18.233405	16.577

9	4.8847802	0.00000000E+00	-9.7478073	14.632588	12.99[illegible]
10	2.5459478	0.00000000E+00	-5.0111483	7.5570961	6.696[illegible]
11	3.1898337	0.00000000E+00	-2.9268081	6.1166418	5.315[illegible]
12	2.4598641	0.12295857	-0.98603173	3.4458959	3.088[illegible]
13	1.9965852	0.00000000E+00	-0.93530256	2.9318878	2.682[illegible]

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
14	1.3151341	-8.6626572	-35.626986	36.942120	33.192
15	15.942732	0.00000000E+00	-23.592793	39.535525	35.034
16	22.321039	0.00000000E+00	-10.384422	32.705461	28.971
17	12.677233	0.00000000E+00	-14.295390	26.972622	23.523
18	7.0112531	0.00000000E+00	-12.476753	19.488006	17.115
19	6.5959562	0.00000000E+00	-11.700462	18.296418	16.060
20	6.0891201	0.00000000E+00	-8.7261128	14.815233	12.909
21	5.5211179	0.00000000E+00	-5.3881866	10.909304	9.4542
22	4.6293156	0.00000000E+00	-3.4526528	8.0819684	7.0336
23	3.9522777	0.00000000E+00	-1.6668634	5.6191410	5.0340
24	3.4401166	0.00000000E+00	-0.53534766	3.9754643	3.7417
25	2.8237386	0.23350288	-0.46561469E-01	2.8703001	2.7423
26	2.1959614	0.38119771	0.00000000E+00	2.1959614	2.0340

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
27	29.789911	4.4219128	-4.1168855	33.906796	30.554
28	4.3674527	-7.0496158	-29.107276	33.474729	29.851
29	10.337437	-1.7190331	-20.111273	30.448710	26.850
30	21.359395	0.00000000E+00	-17.933753	39.293147	34.490
31	11.357737	0.00000000E+00	-10.410870	21.768607	18.946
32	9.3194485	0.68530874E-01	-3.3735311	12.692980	11.447
33	5.9086317	0.97925733	-0.11421720	6.0228489	5.6063
34	4.9572054	1.4001847	-0.10973587	5.0669412	4.6890
35	5.1041890	0.44788319	-0.72516968	5.8293587	5.3786
36	4.8725453	0.00000000E+00	-1.1235693	5.9961146	5.5500
37	3.6505652	0.00000000E+00	-1.3400539	4.9906191	4.4834
38	2.1369118	0.00000000E+00	-0.86153767	2.9984494	2.6818
39	1.2469763	0.00000000E+00	-0.47286705	1.7198434	1.5405

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

Calc. Pckg. VSC02.6.2.3.08
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
40	57.319418	7.8273810	0.00000000E+00	57.319418	53.848
41	0.00000000E+00	-17.045111	-27.506227	27.506227	24.965
42	1.3658808	-4.6882550	-25.076332	26.442212	24.213
43	25.434049	0.00000000E+00	-9.9279758	35.362025	31.763
44	11.328199	0.00000000E+00	-9.6003379	20.928537	18.207

45	8.2288911	0.00000000E+00	-3.2669706	11.495862	10.34
46	3.9653010	1.0173295	-0.35782631	4.3231273	3.997
47	2.9803800	0.53003633	-0.34057669	3.3209567	3.085
48	3.5803084	0.00000000E+00	-1.7562334	5.3365418	4.731
49	3.4507456	0.00000000E+00	-2.4133846	5.8641302	5.106
50	2.6525167	0.00000000E+00	-2.1708531	4.8233697	4 [illegible] 5
51	1.5436702	0.00000000E+00	-1.2941295	2.8377997	2.[illegible]68
52	0.80561950	0.00000000E+00	-0.74130664	1.5469261	1.364

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
53	71.795002	18.856500	0.00000000E+00	71.795002	64.483
54	0.50335895	-3.6907412	-16.149039	16.652398	15.080
55	0.40624413	-2.8277716	-20.291203	20.697447	19.307
56	22.705586	1.4912258	-2.1527099	24.858296	23.308
57	11.894234	0.00000000E+00	-7.0227096	18.916943	16.616
58	7.2470193	0.00000000E+00	-4.4767870	11.723806	10.361
59	2.6967777	0.00000000E+00	-2.5516173	5.2483950	4.7030
60	1.0872730	-0.37216194E-01	-2.4861312	3.5734042	3.2316
61	1.4349597	0.00000000E+00	-3.5022000	4.9371597	4.4204
62	1.7331185	0.00000000E+00	-3.5339650	5.2670835	4.6508
63	1.7226981	0.00000000E+00	-2.6044865	4.3271846	3.7799
64	1.4532761	0.00000000E+00	-1.2867606	2.7400368	2.3985
65	1.2176648	0.00000000E+00	-0.60244221	1.8201070	1.6387

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
66	64.469456	21.138546	0.00000000E+00	64.469456	56.924
67	3.3436482	-0.94570292E-01	-10.869030	14.212678	13.197
68	0.35651427	-2.6940159	-29.999803	30.356317	28.988
69	13.947283	2.0986911	-1.5289168	15.476200	14.297
70	12.164767	0.00000000E+00	-5.2712547	17.436022	15.543
71	9.7255141	0.00000000E+00	-4.7591958	14.484710	12.844
72	4.6699839	0.00000000E+00	-4.0015196	8.6715035	7.6196
73	1.6229707	0.00000000E+00	-3.7615792	5.3845499	4.8406
74	0.82177979	-0.37482813E-01	-4.1220208	4.9438006	4.5872
75	0.95555849	0.00000000E+00	-3.8987038	4.8542623	4.4551
76	1.4459357	0.00000000E+00	-2.7579787	4.2039144	3.7108
77	1.8863749	0.00000000E+00	-1.3624196	3.2487945	2.8500
78	2.0525531	0.00000000E+00	-0.72830908	2.7808622	2.5162

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
'ELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
79	59.859804	24.014732	0.00000000E+00	59.859804	52.178
80	6.3775033	0.36650867	-5.4900943	11.867598	10.755

81	0.00000000E+00	-5.5630950	-38.249069	38.249069	35.83C
82	8.5548691	2.0478610	-1.4772872	10.032156	9.1551
83	11.919246	0.00000000E+00	-3.6391699	15.558416	14.158
84	13.086728	0.00000000E+00	-3.9303746	17.017102	15.457
85	7.3058896	0.00000000E+00	-4.2543393	11.560229	10.197
86	2.3691279	0.00000000E+00	-4.4811251	6.8502530	6.0764
87	0.28443342	-0.15212871	-4.6923278	4.9767612	4.7769
88	0.12196096	0.00000000E+00	-4.3944995	4.5164604	4.4577
89	1.1294958	0.00000000E+00	-3.1494805	4.2789763	3.8549
90	2.1959243	0.00000000E+00	-1.6598369	3.8557612	3.3691
91	2.6424909	0.00000000E+00	-1.0020606	3.6445515	3.2735

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
92	55.677878	24.424704	0.00000000E+00	55.677878	48.360
93	5.2992428	0.61638441	-3.1810700	8.4803127	7.8607
94	0.00000000E+00	-10.822453	-41.276672	41.276672	37.129
95	4.1592350	0.45962337	-1.8715756	6.0308106	5.3395
96	10.658507	0.14326691E-01	-2.8271609	13.485668	12.403
97	14.545631	0.00000000E+00	-3.7246357	18.270267	16.734
98	8.8900832	0.00000000E+00	-5.0744834	13.964567	12.289
99	2.7760208	0.00000000E+00	-5.6863052	8.4623260	7.5142
100	0.00000000E+00	-0.53529102	-5.4838443	5.4838443	5.2485
101	0.00000000E+00	-0.60987468	-4.7911589	4.7911589	4.5180
102	1.0309020	0.00000000E+00	-3.3782975	4.4091995	4.0055
103	2.7024136	0.00000000E+00	-1.7794616	4.4818752	3.9242
104	3.3814659	0.00000000E+00	-1.0795649	4.4610308	4.0410

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
105	50.333206	25.090447	0.00000000E+00	50.333206	43.590
106	9.9885377	0.91780735	-3.0922872	13.080825	11.830
107	0.22506617	-2.2061030	-37.422557	37.647623	36.511
108	3.3028472	0.00000000E+00	-6.3559023	9.6587496	8.6375
109	10.120056	0.87242155	-1.4464357	11.566492	10.670
110	14.721151	0.00000000E+00	-2.9019892	17.623140	16.377
111	9.8480332	0.00000000E+00	-5.8083642	15.656397	13.727
112	3.0286774	0.00000000E+00	-6.7612648	9.7899422	8.7035
113	0.00000000E+00	-1.0598397	-6.1328467	6.1328467	5.6895
114	0.00000000E+00	-1.1357434	-4.9758772	4.9758772	4.5198
115	1.1065622	0.00000000E+00	-3.4578612	4.5644234	4.1263
116	3.2463024	0.00000000E+00	-1.7900728	5.0363752	4.4252
117	4.0871794	0.00000000E+00	-1.0600352	5.1472146	4.7087

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
118	43.397490	21.270485	0.00000000E+00	43.397490	37.590
119	8.6777443	0.54358577	-3.8256890	12.503433	11.165
120	0.00000000E+00	-1.3409817	-33.401372	33.401372	32.767
121	0.94309007	-0.95048393	-14.954479	15.897569	15.066
122	8.2216063	0.41391645	-1.2698532	9.4914594	8.[illegible]55
123	15.839973	0.00000000E+00	-2.7519077	18.591881	17[illegible]2
124	11.971893	0.00000000E+00	-5.9089513	17.880845	15.812
125	4.1829321	0.00000000E+00	-7.4206915	11.603624	10.213
126	0.00000000E+00	-1.2997554	-6.6501007	6.6501007	6.1164
127	0.00000000E+00	-1.8237553	-5.1225347	5.1225347	4.5166
128	1.0578884	0.00000000E+00	-3.6420997	4.6999881	4.2709
129	3.6726408	0.00000000E+00	-1.8499813	5.5226220	4.8705
130	4.6734625	0.00000000E+00	-1.0475790	5.7210415	5.2758

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
131	43.126700	21.235296	0.00000000E+00	43.126700	37.372
132	10.017599	2.2740937	-2.0157157	12.033314	10.812
133	0.16069376	-1.3218391	-36.232913	36.393606	35.694
134	1.1702216	-0.57101445	-19.622395	20.792617	19.982
135	7.7194051	0.17592581	-1.0876220	8.8070272	8.3189
136	17.839954	0.00000000E+00	-2.0245794	19.864534	18.942
137	14.628421	0.00000000E+00	-5.9422150	20.570636	18.360
138	5.4521965	0.00000000E+00	-8.1785394	13.630736	11.917
139	0.00000000E+00	-1.8271432	-7.3490856	7.3490856	6.6[illegible]5
140	0.00000000E+00	-2.9645050	-5.5136279	5.5136279	4.[illegible]3
141	0.78795033	0.00000000E+00	-4.1945387	4.9824890	4.6658
142	3.9636138	0.00000000E+00	-2.1150493	6.0786632	5.3630
143	5.1562752	0.00000000E+00	-1.1513850	6.3076602	5.8271

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
144	45.915054	23.183884	0.00000000E+00	45.915054	39.772
145	16.692226	8.3543014	-1.2222309	17.914457	15.756
146	0.00000000E+00	-2.8693144	-46.698694	46.698694	45.342
147	4.9021566	0.00000000E+00	-15.557477	20.459633	18.803
148	8.7538766	0.75557878	-0.18865244	8.9425291	8.5114
149	19.707323	0.00000000E+00	-0.80603474	20.513357	20.128
150	15.770307	0.00000000E+00	-5.9339921	21.704299	19.440
151	5.6462439	0.00000000E+00	-8.9470091	14.593253	12.763
152	0.00000000E+00	-2.4078775	-8.1630884	8.1630884	7.2706
153	0.00000000E+00	-3.9636545	-5.8360481	5.8360481	5.1623
154	0.50205547	0.00000000E+00	-4.6171044	5.1191598	4.8910
155	4.1066134	0.00000000E+00	-2.3259581	6.4325715	5.6450
156	5.4477560	0.00000000E+00	-1.2493534	6.6971093	6.16[illegible]

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

LOAD STEP 1 ITERATION= 10 SECTION= 1

TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
157	45.146515	23.037614	0.00000000E+00	45.146515	39.157
158	20.170265	11.141464	0.00000000E+00	20.170265	17.865
159	0.00000000E+00	-15.057313	-57.471489	57.471489	51.647
160	1.8464228	-0.45644015E-01	-9.7303485	11.576771	10.882
161	7.6729302	0.39870733E-01	-0.41250958	8.0854398	7.8845
162	21.597853	0.93004313E-02	-1.0071966	22.605050	22.120
163	16.931566	0.00000000E+00	-5.4270495	22.358616	20.205
164	6.1585940	0.00000000E+00	-8.6129098	14.771504	12.874
165	0.00000000E+00	-2.5127597	-8.0054897	8.0054897	7.1057
166	0.00000000E+00	-4.2457733	-6.0223636	6.0223636	5.3635
167	0.26345414	0.00000000E+00	-4.9419269	5.2053810	5.0792
168	3.8470045	0.00000000E+00	-2.5076384	6.3546429	5.5483
169	5.1813531	0.00000000E+00	-1.3483487	6.5297018	5.9722

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
170	45.858343	21.551381	0.00000000E+00	45.858343	39.738
171	23.281881	13.500760	0.00000000E+00	23.281881	20.308
172	0.00000000E+00	-9.8177791	-60.455024	60.455024	56.208
173	3.1858623	0.00000000E+00	-8.3537077	11.539570	10.420
174	7.9794741	0.90737424	-0.15075621	8.1302304	7.6617
175	22.477075	0.00000000E+00	-0.20026516	22.677340	22.578
176	17.954571	0.00000000E+00	-4.9126814	22.867252	20.856
177	6.6972702	0.00000000E+00	-8.1112232	14.808493	12.871
178	0.00000000E+00	-2.5116066	-7.7224644	7.7224644	6.8418
179	0.00000000E+00	-4.3249768	-6.2438478	6.2438478	5.5408
180	0.75097791E-01	-0.24586745E-01	-5.2458704	5.3209682	5.2720
181	3.5381713	0.00000000E+00	-2.6873644	6.2255356	5.4120
182	4.8427787	0.00000000E+00	-1.4553563	6.2981350	5.7113

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

Calc. Pckg. VSC02.6.2.3.08
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
183	45.293921	20.715516	0.00000000E+00	45.293921	39.273
184	22.203076	13.280651	0.00000000E+00	22.203076	19.352
185	0.00000000E+00	-7.4318487	-59.910875	59.910875	56.563
186	3.0317159	0.00000000E+00	-10.118724	13.150440	12.000
187	7.8043762	1.1692040	0.00000000E+00	7.8043762	7.3023
188	22.139685	0.00000000E+00	-0.10605134	22.245736	22.192
189	17.806815	0.00000000E+00	-4.9088349	22.715650	20.708
190	6.6716773	0.00000000E+00	-8.1158865	14.787564	12.852
191	0.00000000E+00	-2.4916424	-7.8113177	7.8113177	6.9261
192	0.00000000E+00	-4.3144635	-6.3380657	6.3380657	5.6095
193	0.42003323E-01	-0.48670548E-01	-5.2641832	5.3061865	5.2616
194	3.4783684	0.00000000E+00	-2.6839564	6.1623248	5.3556
195	4.7842331	0.00000000E+00	-1.4440491	6.2282821	5.6466

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
196	46.097688	21.569221	0.00000000E+00	46.097688	39.949
197	22.804838	13.270578	0.00000000E+00	22.804838	19.893
198	0.00000000E+00	-9.8429632	-60.381670	60.381670	56.126
199	3.3138857	0.00000000E+00	-7.9461059	11.259992	10.128
200	8.3475957	1.0337811	-0.16481636	8.5124121	7.9889
201	22.507445	0.44654424E-01	-0.10831377	22.615759	22.539
202	17.732287	0.00000000E+00	-4.7523455	22.484632	20.533
203	6.4880776	0.00000000E+00	-7.9515785	14.439656	12.554
204	0.00000000E+00	-2.4460204	-7.7144969	7.7144969	6.8431
205	0.00000000E+00	-3.9814235	-6.4992814	6.4992814	5.6809
206	0.16013688E-01	-0.32885356E-01	-5.2549959	5.2710096	5.2468
207	3.2596319	0.00000000E+00	-2.7092738	5.9689057	5.1802
208	4.4869614	0.00000000E+00	-1.5023037	5.9892651	5.3974

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
209	45.623085	23.096847	0.00000000E+00	45.623085	39.568
210	19.335069	10.673960	0.00000000E+00	19.335069	17[illegible]30
211	0.00000000E+00	-15.106632	-57.343329	57.343329	51[illegible]0
212	2.0424554	0.00000000E+00	-9.0636562	11.106112	10.391
213	8.3022819	0.11843394	-0.29745590	8.5997378	8.4058
214	21.658789	0.10260836	-0.85036181	22.509151	22.050
215	16.558396	0.00000000E+00	-5.0973565	21.655752	19.617
216	5.8200426	0.00000000E+00	-8.2781565	14.098199	12.293
217	0.00000000E+00	-2.3884827	-7.9497368	7.9497368	7.0732
218	0.00000000E+00	-3.6250320	-6.4950731	6.4950731	5.6381
219	0.12558052	-0.19551554E-02	-4.9913078	5.1168883	5.0552
220	3.3026342	0.00000000E+00	-2.5712957	5.8739298	5.1028
221	4.4915395	0.00000000E+00	-1.4533649	5.9449044	5.3683

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
222	46.603751	23.313413	0.00000000E+00	46.603751	40.368
223	16.031138	7.6920544	-1.5188369	17.549975	15.375
224	0.00000000E+00	-2.9114121	-46.536833	46.536833	45.163
225	5.1867128	0.00000000E+00	-14.695308	19.882021	18.182
226	9.5277978	0.93492983	-0.92190583E-01	9.6199884	9.1524
227	19.777800	0.67009629E-01	-0.52498193	20.302782	20.[illegible]3
228	15.291003	0.00000000E+00	-5.4376236	20.728627	18.[illegible]
229	5.2510956	0.00000000E+00	-8.4618592	13.712955	12.004
230	0.00000000E+00	-2.1824384	-8.1022977	8.1022977	7.2640
231	0.00000000E+00	-3.1846696	-6.4354944	6.4354944	5.5750
232	0.28183158	-0.52776239E-02	-4.6976967	4.9795282	4.8479

233	3.3192878	0.00000000E+00	-2.4102157	5.7295035	4.9892
234	4.4638913	0.00000000E+00	-1.3846727	5.8485639	5.2963

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
235	43.684624	21.118187	0.00000000E+00	43.684624	37.865
236	9.4090015	1.5894853	-2.6934566	12.102458	10.819
237	0.16170795	-1.5283166	-36.120327	36.282035	35.487
238	1.4151364	-0.52922443	-18.442162	19.857298	18.964
239	8.7383075	0.35013705	-0.87520387	9.6135113	9.1067
240	17.907331	0.00000000E+00	-1.4865726	19.393904	18.708
241	13.981601	0.00000000E+00	-5.1680822	19.149683	17.196
242	4.9499661	0.00000000E+00	-7.4674000	12.417366	10.872
243	0.00000000E+00	-1.4800139	-7.3013744	7.3013744	6.7013
244	0.00000000E+00	-2.1539002	-6.1306479	6.1306479	5.3895
245	0.57821109	-0.11331034	-4.3384698	4.9166809	4.6270
246	2.8765251	0.00000000E+00	-2.2364770	5.1130020	4.4797
247	3.8040836	0.00000000E+00	-1.3295357	5.1336193	4.6390

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
248	43.400661	21.380631	0.00000000E+00	43.400661	37.590
249	8.1776218	0.10298664	-5.2576546	13.435276	12.023
250	0.00000000E+00	-1.5651318	-33.587811	33.587811	32.854
251	1.1582523	-0.94883339	-13.267267	14.425519	13.530
252	9.6265442	0.67442580	-1.0764161	10.702960	10.031
253	15.866549	0.00000000E+00	-1.9743343	17.840884	16.958
254	11.103872	0.00000000E+00	-4.7759694	15.879842	14.166
255	3.5855949	0.00000000E+00	-6.4378224	10.023417	8.8470
256	0.00000000E+00	-0.75451058	-6.6335692	6.6335692	6.3186
257	0.00000000E+00	-0.95349091	-5.7617281	5.7617281	5.3594
258	0.65973278	0.00000000E+00	-3.9140861	4.5738189	4.2836
259	2.2417358	0.00000000E+00	-2.0770280	4.3187638	3.7451
260	2.8790303	0.00000000E+00	-1.3381318	4.2171621	3.7344

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
261	50.976744	25.636533	0.00000000E+00	50.976744	44.147
262	9.1741540	0.10622905	-4.8442852	14.018439	12.711
263	0.25539204	-2.5316052	-37.409951	37.665343	36.377
264	3.9104214	0.00000000E+00	-4.5053220	8.4157434	7.4984
265	11.654327	1.0394379	-1.1147413	12.769069	11.924
266	14.669659	0.00000000E+00	-1.9178925	16.587551	15.730
267	8.9067317	0.00000000E+00	-4.3539163	13.260648	11.738
268	2.4700977	0.00000000E+00	-5.5519819	8.0220796	7.1458

269	0.24541414E-01	-0.35113929	-6.1304631	6.1550045	5.995
270	0.00000000E+00	-0.27691433	-5.5985750	5.5985750	5.466
271	0.63345356	0.00000000E+00	-3.8694281	4.5028816	4.228
272	1.5287710	0.00000000E+00	-2.1467653	3.6755364	3.206
273	1.9122616	0.00000000E+00	-1.4699984	3.3822600	2[illegible]42

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
274	57.089606	25.015077	0.00000000E+00	57.089606	49.583
275	4.2459983	-0.43512747	-6.0180168	10.264015	9.3898
276	0.00000000E+00	-11.325857	-40.779528	40.779528	36.534
277	6.1421656	0.75667965	-1.4796969	7.6218624	6.8675
278	12.142482	0.16264250	-2.4620611	14.604543	13.530
279	14.445159	0.00000000E+00	-2.6027374	17.047897	15.922
280	7.9103101	0.00000000E+00	-3.4777357	11.388046	10.169
281	2.2710190	0.00000000E+00	-4.4763784	6.7473974	5.9983
282	0.40402973	-0.13498325	-5.5412237	5.9452534	5.6957
283	0.17232130	0.00000000E+00	-5.3598131	5.5321344	5.4487
284	0.55072738	0.00000000E+00	-3.8440071	4.3947345	4.1612
285	0.94394069	0.00000000E+00	-2.2084587	3.1523994	2.8299
286	1.1334843	0.00000000E+00	-1.5558271	2.6893114	2.3688

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
287	61.713801	25.675060	0.00000000E+00	61.713801	53.701
288	5.6336629	0.00000000E+00	-9.2873657	14.921029	13.446
289	0.00000000E+00	-5.9063367	-37.021482	37.021482	34.497
290	10.890050	2.1879682	-1.4752663	12.365316	11.247
291	13.368888	0.00000000E+00	-3.0500642	16.418952	15.182
292	13.108976	0.00000000E+00	-2.6304480	15.739424	14.639
293	6.3707889	0.00000000E+00	-2.4275126	8.7983015	7.9878
294	1.9920830	0.00000000E+00	-3.2389758	5.2310589	4.6589
295	0.98527130	0.00000000E+00	-4.8020480	5.7873193	5.3804
296	0.79249387	0.00000000E+00	-4.9791159	5.7716097	5.4203
297	0.64329215	0.00000000E+00	-3.7797421	4.4230343	4.1563
298	0.53438885	-0.11817789	-2.2698581	2.8042470	2.5619
299	0.46493452	-0.14994624	-1.6217381	2.0866726	1.8736

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

ODE	SIG1	SIG2	SIG3	SI	
300	65.000558	22.572923	0.00000000E+00	65.000558	57.[illegible]
301	2.3795460	-0.58700538	-14.564701	16.944247	15.759
302	0.33593697E-01	-4.2151043	-28.399883	28.433476	26.654
303	15.831715	1.8603893	-1.7501909	17.581906	16.254
304	13.665707	0.00000000E+00	-4.5229575	18.188665	16.449

305	10.141789	0.00000000E+00	-3.0877071	13.229496	12.065
306	4.0736747	0.12654724	-1.7570311	5.8307058	5.3078
307	1.6967773	0.00000000E+00	-2.2751718	3.9719491	3.6038
308	1.7769686	0.00000000E+00	-4.1226753	5.8996439	5.2594
309	1.5621471	0.00000000E+00	-4.5703984	6.1325455	5.5211
310	0.99350836	0.00000000E+00	-3.7191409	4.7126493	4.3168
311	0.32632464	-0.18750605	-2.3526651	2.6789897	2.4896
312	0.97758208E-01	-0.44797237	-1.6624264	1.7601846	1.5830

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
313	67.578872	22.337491	0.00000000E+00	67.578872	59.656
314	0.17545149	-2.0158394	-16.282741	16.458192	15.599
315	0.00000000E+00	-3.6523848	-20.878157	20.878157	19.385
316	23.047185	1.0925472	-2.2777071	25.324892	23.842
317	13.373391	0.00000000E+00	-6.2806621	19.654054	17.420
318	7.9428031	0.00000000E+00	-3.1094136	11.052217	9.9877
319	2.7579268	0.37390066	-1.0393930	3.7973198	3.4342
320	1.8769976	0.55735564E-01	-1.5704046	3.4474022	3.0846
321	2.4267181	0.00000000E+00	-3.5305931	5.9573112	5.1983
322	2.1384923	0.00000000E+00	-4.2788868	6.4173790	5.6600
323	1.3702358	0.00000000E+00	-3.7882887	5.1585245	4.6357
324	0.33405080	-0.17072490	-2.6160671	2.9501179	2.7422
325	0.00000000E+00	-0.68538838	-1.9113948	1.9113948	1.6867

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
326	56.574591	14.670957	0.00000000E+00	56.574591	50.879
327	0.50893602	-9.1959701	-19.491535	20.000471	17.929
328	0.87979795	-4.9555588	-25.254043	26.133841	23.931
329	26.460827	0.00000000E+00	-7.1061048	33.566932	30.727
330	12.796792	0.00000000E+00	-8.3244842	21.121277	18.474
331	7.6979019	0.00000000E+00	-3.0614977	10.759400	9.6953
332	3.7172373	0.35115429	-0.42430475	4.1415420	3.8558
333	3.0646973	0.32683895E-01	-0.97824736	4.0429446	3.6723
334	3.1485370	0.00000000E+00	-3.0661134	6.2146504	5.3861
335	2.5633173	0.00000000E+00	-4.2922562	6.8555735	6.0006
336	1.6354923	0.00000000E+00	-4.3131899	5.9486822	5.3272
337	0.39899158	-0.16537709E-01	-3.4842739	3.8832655	3.7059
338	0.00000000E+00	-0.74111737	-2.9241460	2.9241460	2.6348

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
339	34.262704	13.676747	0.00000000E+00	34.262704	29.875
340	5.8531402	-1.9684667	-12.661070	18.514211	16.852

341	7.5116817	-1.4845328	-22.792187	30.303868	27.05
342	25.414434	0.00000000E+00	-11.964568	37.379002	33.25
343	14.589521	0.00000000E+00	-7.5797364	22.169257	19.62
344	10.014998	0.25417785	-2.1458590	12.160857	11.20
345	6.7005183	0.82693507	-0.85644415E-01	6.7861627	6.[illegible]386
346	5.1596883	0.35193917	-0.52455040	5.6842387	[illegible]06
347	4.1478680	0.00000000E+00	-2.5786273	6.7264953	5.891
348	2.8780993	0.00000000E+00	-4.5169488	7.3950482	6.460
349	1.4947665	0.00000000E+00	-5.3553383	6.8501048	6.251
350	0.34410128	-0.16122940	-5.1441888	5.4882901	5.257
351	0.00000000E+00	-1.1415401	-4.4954263	4.4954263	4.047

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
352	9.4063543	2.9188300	-2.8058155	12.212170	10.637
353	6.6872735	-2.1266417	-7.9732959	14.660569	13.408
354	9.5494474	-1.1553981	-16.538350	26.087797	22.854
355	17.702764	0.00000000E+00	-17.260367	34.963131	30.795
356	12.155532	0.00000000E+00	-9.2743506	21.429883	18.739
357	8.4870983	0.55159152	-2.3183845	10.805483	9.7461
358	5.7922423	1.5947990	0.00000000E+00	5.7922423	5.2580
359	4.4786441	1.6255963	-0.65490490	5.1335490	4.7232
360	4.1805547	0.26489771	-2.2942646	6.4748193	5.7273
361	2.9104798	0.00000000E+00	-4.0668361	6.9773159	6.1952
362	1.3943027	-0.21712832	-4.7800258	6.1743285	5.5865
363	0.39128581	-0.99425711	-4.3842946	4.7755804	4.[illegible]03
364	0.00000000E+00	-1.2617647	-2.8968770	2.8968770	2.[illegible]487

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
365	2.9075844	0.00000000E+00	-3.0249589	5.9325433	5.1381
366	2.4412092	0.00000000E+00	-3.4443744	5.8855835	5.1248
367	2.9518298	0.00000000E+00	-3.3817093	6.3335391	5.4902
368	3.1510071	0.00000000E+00	-2.8682075	6.0192146	5.2149
369	2.7619708	0.00000000E+00	-2.7380453	5.5000161	4.7633
370	2.6916981	0.00000000E+00	-3.0436927	5.7353909	4.9714
371	1.3483301	0.00000000E+00	-3.6500881	4.9984182	4.5020
372	2.3455191	0.00000000E+00	-4.4403473	6.7858664	6.0123
373	3.9791804	0.00000000E+00	-3.1055829	7.0847632	6.1852
374	4.0165198	0.00000000E+00	-2.1839769	6.2004967	5.4476
375	3.2202914	0.00000000E+00	-2.1510207	5.3713121	4.7000
376	1.8440630	0.00000000E+00	-2.9702307	4.8142937	4.2446
377	1.8037597	0.00000000E+00	-3.3661006	5.1698603	4.5502

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	S
378	4.0531415	0.00000000E+00	-3.4227081	7.4758496	6.816
379	7.2618886	0.67929911	-2.4403368	9.7022254	9.055
380	10.077747	0.48980295	-3.5726762	13.650423	12.574
381	6.8200971	0.00000000E+00	-7.2414417	14.061539	12.21
382	3.9590701	0.00000000E+00	-8.5124746	12.471545	11.384
383	3.0188399	-0.20319646	-6.8821972	9.9010370	9.191
384	2.6959801	-0.31772374	-5.3979086	8.0938887	7.618
385	2.4318293	-0.18862503	-4.7342650	7.1660943	6.6003
386	2.7203410	0.00000000E+00	-4.1110916	6.8314326	6.0892
387	3.0812383	0.00000000E+00	-3.2580154	6.3392537	5.5075
388	3.3631027	0.00000000E+00	-2.4399912	5.8030939	5.1735
389	3.6169046	0.18766811	-1.5672666	5.1841712	4.7274
390	4.7708740	0.39550721	-1.2753592	6.0462331	5.4870

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
391	1.5891716	0.00000000E+00	-1.2551564	2.8443280	2.4696
392	1.6497827	0.00000000E+00	-1.1894990	2.8392818	2.4699
393	1.4354697	0.00000000E+00	-0.98525333	2.4207230	2.1088
394	1.4701010	0.00000000E+00	-1.1482101	2.6183111	2.2750
395	1.0221267	0.00000000E+00	-0.81885582	1.8409825	1.6000
396	1.3139037	0.00000000E+00	-1.0741378	2.3880415	2.0742
397	3.0436733	0.00000000E+00	-0.71256175	3.7562350	3.4654
398	0.61012006	-0.26515834E-01	-0.53901305	1.1491331	1.0387
399	0.61699120	0.00000000E+00	-0.38988235	1.0068735	0.88762
400	0.81870848	0.00000000E+00	-0.72834991	1.5470584	1.3423
401	0.42622040	0.00000000E+00	-0.36140591	0.78762631	0.68730
402	0.39249549	-0.20883727E-04	-0.36149955	0.75399503	0.68107
403	0.72840463	0.00000000E+00	-0.49112288	1.2195275	1.0686

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
404	2.3052331	0.92465333	-4.2078290	6.5130621	6.1780
405	1.8256095	0.00000000E+00	-4.1501562	5.9757657	5.4460
406	1.5468796	-0.26837041E-01	-3.6305354	5.1774150	4.6498
407	1.9321918	-0.21469633E-01	-2.5575447	4.4897365	3.9505
408	3.4478913	0.00000000E+00	-2.1450292	5.5929206	4.9238
409	3.9264143	0.00000000E+00	-1.2202494	5.1466638	4.7095
410	3.9075346	0.00000000E+00	-1.0984753	5.0060100	4.6515
411	3.7747575	0.00000000E+00	-1.2731904	5.0479479	4.6245
412	3.3524494	0.00000000E+00	-1.7768883	5.1293377	4.5433
413	2.1776756	0.00000000E+00	-1.9532901	4.1309658	3.5907
414	1.8907054	0.00000000E+00	-2.7120144	4.6027197	4.0348
415	1.6000357	0.00000000E+00	-2.7137847	4.3138205	3.8882
416	2.0241012	0.84429223E-01	-3.1381103	5.1622115	4.7397

MAXIMUMS

	SIG1	SIG2	SIG3	SI	SI
NODE	53	287	172	53	53
VALUE	71.795002	25.675060	-60.455024	71.795002	64.48

ATTACHMENT C

FINITE ELEMENT ANALYSIS INPUT AND OUTPUT

MSB TOP—REFINED MESH

Note: A copy of the computer input and output for the ANSYS calculations is provided here for convenience. This computer input and output is from Reference 9.

151 180 209 351 383 422 451 480 509 538 567 596 625 654 683 712 741

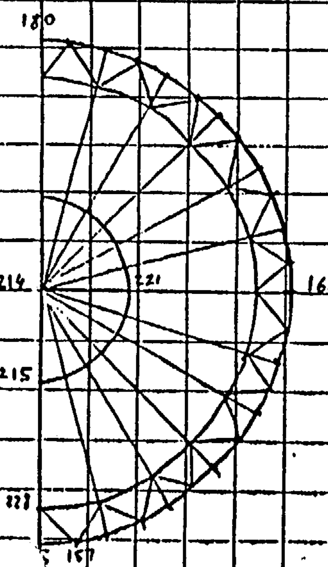
127 156 185 340 369 398 427 456 485 514 543 572 601 630 659 688 717

152-155 181-184 210-213 365-368 394-397 423-426 452-455 481-484 510-513 539-542 568-571 597-600 626-649 655-658 684-687 713-716 742-745

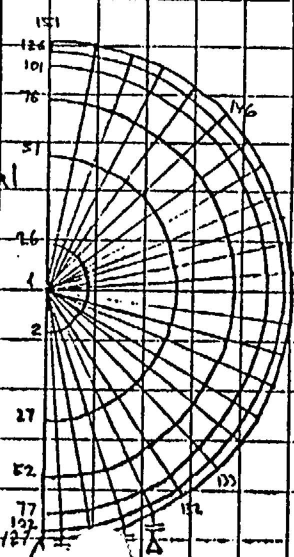
Lengths of Elem-s: 1 2 3 3 6 4 4 10 10 4 4 10 10 4 4 10

Z: 0 3 6 9 15 19 23 33 43 47 51 61 71 75 79 89

Shield lid



Structural lid



Real constants

#	Thick
1	3
2	0.75
3	0.82
4-7	gaps
8	2.5
9	weld 3 → 0.75

Gaps (for methodology please see page 9 of "MSB 30-ft drop analysis"

Real constant #	Angle, °	Gap, in
4	1.5	0.013
5	5	0.053
6	10	0.12
7	17.5	0.214

Forces

1 sleeve – 0.49 kips / in = q_0 (a = 44g)

X = 47 q   Y = 70 q

X – top support

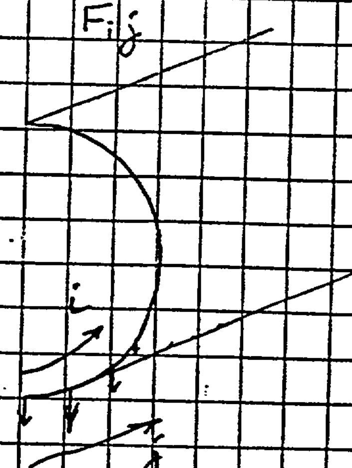
Y – middle support

$F_{11}^x = 47 \cdot 3 q_0 \frac{2}{28} = 4.9$ kips

$F_{12}^x = 47 \cdot 3 q_0 \frac{7}{28} = 17.2$ kips

$F_{13}^x = 47 \cdot 3 q_0 \frac{10}{28} = 24.7$ kips

$F_{14}^x = F_{12}^x$, $F_{15}^x = F_{11}^x$



$F_{21}^x = 47 \cdot 5 q_0 \frac{2}{28} = 8.2$ kips

$F_{22}^x = 47 \cdot 5 q_0 \frac{7}{28} = 28.8$ kips

$F_{23}^x = 47 \cdot 5 q_0 \frac{10}{28} = 41.1$ kips

$F_{24}^x = F_{22}^x$; $F_{25}^x = F_{21}^x$

$F_{3i}^x = F_{1i}^x$

$F_{Y1}^{x} = 47 q_o \frac{2}{28} = 1.64$ kips

$F_{Y2}^{x} = 47 q_o \frac{7}{28} = 5.74$ kips

$F_{Y3}^{x} = 47 q_o \frac{10}{28} = 8.23$ kips

$F_{Y4}^{x} = F_{Y2}^{x}$, $F_{Y5}^{x} = F_{Y1}^{x}$

$F_{11}^{y} = 70.3 q_o \frac{2}{28} = 7.25$ kips

$F_{12}^{y} = 70.3 q_o \frac{7}{28} = 25.7$ kips

$F_{13}^{y} = 70.3 q_o \frac{5}{28} = 18.3$ kips

$F_{21}^{y} = 70.5 q_o \frac{2}{28} = 12.2$ kips

$F_{22}^{y} = 70.5 q_o \frac{7}{28} = 42.8$ kips

$F_{23}^{y} = 70.5 q_o \frac{5}{28} = 30.6$ kips

$F_{3i}^{y} = F_{1i}^{y}$

$F_{Y1}^{y} = 70 q_o \frac{2}{28} = 2.45$ kips

$F_{Y2}^{y} = 70 q_o \frac{7}{28} = 8.575$ kips

$F_{Y3}^{y} = 70 q_o \frac{5}{28} = 6.12$ kips

The stresses evaluation.

Bearing stresses in the points of contact are secondary, however, for conservatism, they can be evaluated as $P_L + P_b$; no limits are exceeded.

Structural lid

middle, Nodes 1-151 (except 127, 128): $P_m = 7.1$ ksi $< 2.4 S_m$ or $0.7 S_u = 49$ ksi

top, node 127: $P_L + P_b = 42.9$ ksi $< 3.6 S_m$ or $1.05 S_u = 73.5$ ksi

Structural lid weld:

Primary membrane (reduction for partial penetration weld)

middle, nodes 129-151: $P_m = 7.1$ ksi $< 49 \cdot 0.75 = 36.7$ ksi

top, nodes 127-128: $P_L + P_b = 42.9$ ksi $< 73.5 \cdot 0.75 = 55$ ksi

Shield lid:

middle, node 214: $P_m = 2.4$ ksi < 49 ksi

top, node 156: $P_L + P_b = 20.6$ ksi < 73.5 ksi

Calc. Pckg. VSC02.6.2.3.08
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Shield lid weld

middle, nodes 157-180: $P_m = 9.1 < 0.75 \cdot 49 = 36.7$ ksi

top, node 156: $P_L + P_b = 20.6$ ksi $< 0.75 \cdot 73.5 = 55$ ksi

Shell:

middle, 369 – 741 : P_m = 26.6 ksi < 49 ksi

top or bot, all : $P_L + P_b$ = 68.3 < 73.5 ksi

52	0.97412E-10	-25.000	0.00000E+00	0.00	0.00	0.00
53	2.1789	-24.905	0.00000E+00	0.00	0.00	0.00
54	4.3412	-24.620	0.00000E+00	0.00	0.00	0.00
55	7.5176	-23.843	0.00000E+00	0.00	0.00	0.00
56	9.7683	-23.013	0.00000E+00	0.00	0.00	0.00
57	12.500	-21.651	0.00000E+00	0.00	0.00	0.00
58	16.070	-19.151	0.00000E+00	0.00	0.00	0.00
59	19.151	-16.070	0.00000E+00	0.00	0.00	0.00
60	21.651	-12.500	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
61	23.097	-9.5671	0.00000E+00	0.00	0.00	0.00
62	24.148	-6.4705	0.00000E+00	0.00	0.00	0.00
63	24.786	-3.2632	0.00000E+00	0.00	0.00	0.00
64	25.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
65	24.786	3.2632	0.00000E+00	0.00	0.00	0.00
66	24.148	6.4705	0.00000E+00	0.00	0.00	0.00
67	23.097	9.5671	0.00000E+00	0.00	0.00	0.00
68	21.651	12.500	0.00000E+00	0.00	0.00	0.00
69	19.834	15.219	0.00000E+00	0.00	0.00	0.00
70	17.678	17.678	0.00000E+00	0.00	0.00	0.00
71	15.219	19.834	0.00000E+00	0.00	0.00	0.00
72	12.500	21.651	0.00000E+00	0.00	0.00	0.00
73	9.5671	23.097	0.00000E+00	0.00	0.00	0.00
74	6.4705	24.148	0.00000E+00	0.00	0.00	0.00
75	3.2632	24.786	0.00000E+00	0.00	0.00	0.00
76	0.97412E-10	25.000	0.00000E+00	0.00	0.00	0.00
77	0.10910E-09	-28.000	0.00000E+00	0.00	0.00	0.00
78	2.4404	-27.893	0.00000E+00	0.00	0.00	0.00
79	4.8621	-27.575	0.00000E+00	0.00	0.00	0.00
80	8.4198	-26.704	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
81	10.940	-25.774	0.00000E+00	0.00	0.00	0.00
82	14.000	-24.249	0.00000E+00	0.00	0.00	0.00
83	17.998	-21.449	0.00000E+00	0.00	0.00	0.00
84	21.449	-17.998	0.00000E+00	0.00	0.00	0.00
85	24.249	-14.000	0.00000E+00	0.00	0.00	0.00
86	25.869	-10.715	0.00000E+00	0.00	0.00	0.00
87	27.046	-7.2469	0.00000E+00	0.00	0.00	0.00
88	27.760	-3.6547	0.00000E+00	0.00	0.00	0.00
89	28.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
90	27.760	3.6547	0.00000E+00	0.00	0.00	0.00
91	27.046	7.2469	0.00000E+00	0.00	0.00	0.00
92	25.869	10.715	0.00000E+00	0.00	0.00	0.00
93	24.249	14.000	0.00000E+00	0.00	0.00	0.00
94	22.214	17.045	0.00000E+00	0.00	0.00	0.00
95	19.799	19.799	0.00000E+00	0.00	0.00	0.00
96	17.045	22.214	0.00000E+00	0.00	0.00	0.00
97	14.000	24.249	0.00000E+00	0.00	0.00	0.00
98	10.715	25.869	0.00000E+00	0.00	0.00	0.00
99	7.2469	27.046	0.00000E+00	0.00	0.00	0.00
100	3.6547	27.760	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
101	0.10910E-09	28.000	0.00000E+00	0.00	0.00	0.00
102	0.11689E-09	-30.000	0.00000E+00	0.00	0.00	0.00
103	2.6147	-29.886	0.00000E+00	0.00	0.00	0.00
104	5.2094	-29.544	0.00000E+00	0.00	0.00	0.00
105	9.0212	-28.612	0.00000E+00	0.00	0.00	0.00

106	11.722	-27.615	0.00000E+00	0.00	0.00	0.00
107	15.000	-25.981	0.00000E+00	0.00	0.00	0.00
108	19.284	-22.981	0.00000E+00	0.00	0.00	0.00
109	22.981	-19.284	0.00000E+00	0.00	0.00	0.00
110	25.981	-15.000	0.00000E+00	0.00	0.00	0.00
111	27.716	-11.481	0.00000E+00	0.00	0.00	0.00
112	28.978	-7.7646	0.00000E+00	0.00	0.00	0.00
113	29.743	-3.9158	0.00000E+00	0.00	0.00	0.00
114	30.000	0.00000E+00	0.00000E+00	0.00	0.00	0.00
115	29.743	3.9158	0.00000E+00	0.00	0.00	0.00
116	28.978	7.7646	0.00000E+00	0.00	0.00	0.00
117	27.716	11.481	0.00000E+00	0.00	0.00	0.00
118	25.981	15.000	0.00000E+00	0.00	0.00	0.00
119	23.801	18.263	0.00000E+00	0.00	0.00	0.00
120	21.213	21.213	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
121	18.263	23.801	0.00000E+00	0.00	0.00	0.00
122	15.000	25.981	0.00000E+00	0.00	0.00	0.00
123	11.481	27.716	0.00000E+00	0.00	0.00	0.00
124	7.7646	28.978	0.00000E+00	0.00	0.00	0.00
125	3.9158	29.743	0.00000E+00	0.00	0.00	0.00
126	0.11689E-09	30.000	0.00000E+00	0.00	0.00	0.00
127	0.11982E-09	-30.750	0.00000E+00	0.00	0.00	0.00
128	2.6800	-30.633	0.00000E+00	0.00	0.00	0.00
129	5.3397	-30.283	0.00000E+00	0.00	0.00	0.00
130	9.2467	-29.327	0.00000E+00	0.00	0.00	0.00
131	12.015	-28.306	0.00000E+00	0.00	0.00	0.00
132	15.375	-26.630	0.00000E+00	0.00	0.00	0.00
133	19.766	-23.556	0.00000E+00	0.00	0.00	0.00
134	23.556	-19.766	0.00000E+00	0.00	0.00	0.00
135	26.630	-15.375	0.00000E+00	0.00	0.00	0.00
136	28.409	-11.768	0.00000E+00	0.00	0.00	0.00
137	29.702	-7.9587	0.00000E+00	0.00	0.00	0.00
138	30.487	-4.0137	0.00000E+00	0.00	0.00	0.00
139	30.750	0.00000E+00	0.00000E+00	0.00	0.00	0.00
140	30.487	4.0137	0.00000E+00	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
141	29.702	7.9587	0.00000E+00	0.00	0.00	0.00
142	28.409	11.768	0.00000E+00	0.00	0.00	0.00
143	26.630	15.375	0.00000E+00	0.00	0.00	0.00
144	24.396	18.719	0.00000E+00	0.00	0.00	0.00
145	21.744	21.744	0.00000E+00	0.00	0.00	0.00
146	18.719	24.396	0.00000E+00	0.00	0.00	0.00
147	15.375	26.630	0.00000E+00	0.00	0.00	0.00
148	11.768	28.409	0.00000E+00	0.00	0.00	0.00
149	7.9587	29.702	0.00000E+00	0.00	0.00	0.00
150	4.0137	30.487	0.00000E+00	0.00	0.00	0.00
151	0.11982E-09	30.750	0.00000E+00	0.00	0.00	0.00
152	2.7890	-31.878	0.00000E+00	0.00	0.00	0.00
153	5.5567	-31.514	0.00000E+00	0.00	0.00	0.00
154	9.6226	-30.519	0.00000E+00	0.00	0.00	0.00
155	12.503	-29.456	0.00000E+00	0.00	0.00	0.00
156	0.11982E-09	-30.750	1.0000	0.00	0.00	0.00
157	2.6800	-30.633	1.0000	0.00	0.00	0.00
158	5.3397	-30.283	1.0000	0.00	0.00	0.00
159	9.2467	-29.327	1.0000	0.00	0.00	0.00
160	12.015	-28.306	1.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
161	15.375	-26.630	1.0000	0.00	0.00	0.00
162	19.766	-23.556	1.0000	0.00	0.00	0.00
163	23.556	-19.766	1.0000	0.00	0.00	0.00
164	26.630	-15.375	1.0000	0.00	0.00	0.00
165	28.409	-11.768	1.0000	0.00	0.00	0.00
166	29.702	-7.9587	1.0000	0.00	0.00	0.00
167	30.487	-4.0137	1.0000	0.00	0.00	0.00
168	30.750	0.00000E+00	1.0000	0.00	0.00	0.00
169	30.487	4.0137	1.0000	0.00	0.00	0.00
170	29.702	7.9587	1.0000	0.00	0.00	0.00
171	28.409	11.768	1.0000	0.00	0.00	0.00
172	26.630	15.375	1.0000	0.00	0.00	0.00
173	24.396	18.719	1.0000	0.00	0.00	0.00
174	21.744	21.744	1.0000	0.00	0.00	0.00
175	18.719	24.396	1.0000	0.00	0.00	0.00
176	15.375	26.630	1.0000	0.00	0.00	0.00
177	11.768	28.409	1.0000	0.00	0.00	0.00
178	7.9587	29.702	1.0000	0.00	0.00	0.00
179	4.0137	30.487	1.0000	0.00	0.00	0.00
180	0.11982E-09	30.750	1.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
181	2.7890	-31.878	1.0000	0.00	0.00	0.00
182	5.5567	-31.514	1.0000	0.00	0.00	0.00
183	9.6226	-30.519	1.0000	0.00	0.00	0.00
184	12.503	-29.456	1.0000	0.00	0.00	0.00
185	0.11982E-09	-30.750	3.0000	0.00	0.00	0.00
186	2.6800	-30.633	3.0000	0.00	0.00	0.00
187	5.3397	-30.283	3.0000	0.00	0.00	0.00
188	9.2467	-29.327	3.0000	0.00	0.00	0.00
189	12.015	-28.306	3.0000	0.00	0.00	0.00
190	15.375	-26.630	3.0000	0.00	0.00	0.00
191	19.766	-23.556	3.0000	0.00	0.00	0.00
192	23.556	-19.766	3.0000	0.00	0.00	0.00
193	26.630	-15.375	3.0000	0.00	0.00	0.00
194	28.409	-11.768	3.0000	0.00	0.00	0.00
195	29.702	-7.9587	3.0000	0.00	0.00	0.00
196	30.487	-4.0137	3.0000	0.00	0.00	0.00
197	30.750	0.00000E+00	3.0000	0.00	0.00	0.00
198	30.487	4.0137	3.0000	0.00	0.00	0.00
199	29.702	7.9587	3.0000	0.00	0.00	0.00
200	28.409	11.768	3.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
201	26.630	15.375	3.0000	0.00	0.00	0.00
202	24.396	18.719	3.0000	0.00	0.00	0.00
203	21.744	21.744	3.0000	0.00	0.00	0.00
204	18.719	24.396	3.0000	0.00	0.00	0.00
205	15.375	26.630	3.0000	0.00	0.00	0.00
206	11.768	28.409	3.0000	0.00	0.00	0.00
207	7.9587	29.702	3.0000	0.00	0.00	0.00
208	4.0137	30.487	3.0000	0.00	0.00	0.00
209	0.11982E-09	30.750	3.0000	0.00	0.00	0.00
210	2.7890	-31.878	3.0000	0.00	0.00	0.00
211	5.5567	-31.514	3.0000	0.00	0.00	0.00
212	9.6226	-30.519	3.0000	0.00	0.00	0.00
213	12.503	-29.456	3.0000	0.00	0.00	0.00
214	0.00000E+00	0.00000E+00	1.0000	0.00	0.00	0.00
215	0.19482E-[illegible]	-5.0000	1.0000	0.00	0.00	0.00

216	0.86824	-4.9240	1.0000	0.00	0.00	0.00
217	1.9537	-4.6025	1.0000	0.00	0.00	0.00
218	3.2139	-3.8302	1.0000	0.00	0.00	0.00
219	4.3301	-2.5000	1.0000	0.00	0.00	0.00
220	4.8296	-1.2941	1.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
221	5.0000	0.00000E+00	1.0000	0.00	0.00	0.00
222	4.8296	1.2941	1.0000	0.00	0.00	0.00
223	4.3301	2.5000	1.0000	0.00	0.00	0.00
224	3.5355	3.5355	1.0000	0.00	0.00	0.00
225	2.5000	4.3301	1.0000	0.00	0.00	0.00
226	1.2941	4.8296	1.0000	0.00	0.00	0.00
227	0.19482E-10	5.0000	1.0000	0.00	0.00	0.00
228	0.97412E-10	-25.000	1.0000	0.00	0.00	0.00
229	4.3412	-24.620	1.0000	0.00	0.00	0.00
230	9.7683	-23.013	1.0000	0.00	0.00	0.00
231	16.070	-19.151	1.0000	0.00	0.00	0.00
232	21.651	-12.500	1.0000	0.00	0.00	0.00
233	24.148	-6.4705	1.0000	0.00	0.00	0.00
234	25.000	0.00000E+00	1.0000	0.00	0.00	0.00
235	24.148	6.4705	1.0000	0.00	0.00	0.00
236	21.651	12.500	1.0000	0.00	0.00	0.00
237	17.678	17.678	1.0000	0.00	0.00	0.00
238	12.500	21.651	1.0000	0.00	0.00	0.00
239	6.4705	24.148	1.0000	0.00	0.00	0.00
240	0.97412E-10	25.000	1.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
241	0.00000E+00	0.00000E+00	3.0000	0.00	0.00	0.00
242	0.19482E-10	-5.0000	3.0000	0.00	0.00	0.00
243	0.86824	-4.9240	3.0000	0.00	0.00	0.00
244	1.9537	-4.6025	3.0000	0.00	0.00	0.00
245	3.2139	-3.8302	3.0000	0.00	0.00	0.00
246	4.3301	-2.5000	3.0000	0.00	0.00	0.00
247	4.8296	-1.2941	3.0000	0.00	0.00	0.00
248	5.0000	0.00000E+00	3.0000	0.00	0.00	0.00
249	4.8296	1.2941	3.0000	0.00	0.00	0.00
250	4.3301	2.5000	3.0000	0.00	0.00	0.00
251	3.5355	3.5355	3.0000	0.00	0.00	0.00
252	2.5000	4.3301	3.0000	0.00	0.00	0.00
253	1.2941	4.8296	3.0000	0.00	0.00	0.00
254	0.19482E-10	5.0000	3.0000	0.00	0.00	0.00
255	0.97412E-10	-25.000	3.0000	0.00	0.00	0.00
256	4.3412	-24.620	3.0000	0.00	0.00	0.00
257	9.7683	-23.013	3.0000	0.00	0.00	0.00
258	16.070	-19.151	3.0000	0.00	0.00	0.00
259	21.651	-12.500	3.0000	0.00	0.00	0.00
260	24.148	-6.4705	3.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
261	25.000	0.00000E+00	3.0000	0.00	0.00	0.00
262	24.148	6.4705	3.0000	0.00	0.00	0.00
263	21.651	12.500	3.0000	0.00	0.00	0.00
264	17.678	17.678	3.0000	0.00	0.00	0.00
265	12.500	21.651	3.0000	0.00	0.00	0.00
66	6.4705	24.148	3.0000	0.00	0.00	0.00
67	0.97412E-10	25.000	3.0000	0.00	0.00	0.00
268	0.00000E+00	0.00000E+00	6.0000	0.00	0.00	0.00
269	0.19482E-10	-5.0000	6.0000	0.00	0.00	0.00

270	0.86824	-4.9240	6.0000	0.00	0.00	0.00
271	1.9537	-4.6025	6.0000	0.00	0.00	0.00
272	3.2139	-3.8302	6.0000	0.00	0.00	0.00
273	4.3301	-2.5000	6.0000	0.00	0.00	0.00
274	4.8296	-1.2941	6.0000	0.00	0.00	0.00
275	5.0000	0.00000E+00	6.0000	0.00	0.00	0.00
276	4.8296	1.2941	6.0000	0.00	0.00	0.00
277	4.3301	2.5000	6.0000	0.00	0.00	0.00
278	3.5355	3.5355	6.0000	0.00	0.00	0.00
279	2.5000	4.3301	6.0000	0.00	0.00	0.00
280	1.2941	4.8296	6.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
281	0.19482E-10	5.0000	6.0000	0.00	0.00	0.00
282	0.97412E-10	-25.000	6.0000	0.00	0.00	0.00
283	4.3412	-24.620	6.0000	0.00	0.00	0.00
284	9.7683	-23.013	6.0000	0.00	0.00	0.00
285	16.070	-19.151	6.0000	0.00	0.00	0.00
286	21.651	-12.500	6.0000	0.00	0.00	0.00
287	24.148	-6.4705	6.0000	0.00	0.00	0.00
288	25.000	0.00000E+00	6.0000	0.00	0.00	0.00
289	24.148	6.4705	6.0000	0.00	0.00	0.00
290	21.651	12.500	6.0000	0.00	0.00	0.00
291	17.678	17.678	6.0000	0.00	0.00	0.00
292	12.500	21.651	6.0000	0.00	0.00	0.00
293	6.4705	24.148	6.0000	0.00	0.00	0.00
294	0.97412E-10	25.000	6.0000	0.00	0.00	0.00
340	0.11982E-09	-30.750	6.0000	0.00	0.00	0.00
341	2.6800	-30.633	6.0000	0.00	0.00	0.00
342	5.3397	-30.283	6.0000	0.00	0.00	0.00
343	9.2467	-29.327	6.0000	0.00	0.00	0.00
344	12.015	-28.306	6.0000	0.00	0.00	0.00
345	15.375	-26.630	6.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
346	19.766	-23.556	6.0000	0.00	0.00	0.00
347	23.556	-19.766	6.0000	0.00	0.00	0.00
348	26.630	-15.375	6.0000	0.00	0.00	0.00
349	28.409	-11.768	6.0000	0.00	0.00	0.00
350	29.702	-7.9587	6.0000	0.00	0.00	0.00
351	30.487	-4.0137	6.0000	0.00	0.00	0.00
352	30.750	0.00000E+00	6.0000	0.00	0.00	0.00
353	30.487	4.0137	6.0000	0.00	0.00	0.00
354	29.702	7.9587	6.0000	0.00	0.00	0.00
355	28.409	11.768	6.0000	0.00	0.00	0.00
356	26.630	15.375	6.0000	0.00	0.00	0.00
357	24.396	18.719	6.0000	0.00	0.00	0.00
358	21.744	21.744	6.0000	0.00	0.00	0.00
359	18.719	24.396	6.0000	0.00	0.00	0.00
360	15.375	26.630	6.0000	0.00	0.00	0.00
361	11.768	28.409	6.0000	0.00	0.00	0.00
362	7.9587	29.702	6.0000	0.00	0.00	0.00
363	4.0137	30.487	6.0000	0.00	0.00	0.00
364	0.11982E-09	30.750	6.0000	0.00	0.00	0.00
365	2.7890	-31.878	6.0000	0.00	0.00	0.00

ODE	X	Y	Z	THXY	THYZ	THXZ
366	5.5567	-31.514	6.0000	0.00	0.00	0.00
367	9.6226	-30.519	6.0000	0.00	0.00	0.00
368	12.503	-29.456	6.0000	0.00	0.00	0.00

369	0.11982E-09	-30.750	9.0000	0.00	0.00	0.00
370	2.6800	-30.633	9.0000	0.00	0.00	0.00
371	5.3397	-30.283	9.0000	0.00	0.00	0.00
372	9.2467	-29.327	9.0000	0.00	0.00	0.00
373	12.015	-28.306	9.0000	0.00	0.00	0.00
374	15.375	-26.630	9.0000	0.00	0.00	0.00
375	19.766	-23.556	9.0000	0.00	0.00	0.00
376	23.556	-19.766	9.0000	0.00	0.00	0.00
377	26.630	-15.375	9.0000	0.00	0.00	0.00
378	28.409	-11.768	9.0000	0.00	0.00	0.00
379	29.702	-7.9587	9.0000	0.00	0.00	0.00
380	30.487	-4.0137	9.0000	0.00	0.00	0.00
381	30.750	0.00000E+00	9.0000	0.00	0.00	0.00
382	30.487	4.0137	9.0000	0.00	0.00	0.00
383	29.702	7.9587	9.0000	0.00	0.00	0.00
384	28.409	11.768	9.0000	0.00	0.00	0.00
385	26.630	15.375	9.0000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
386	24.396	18.719	9.0000	0.00	0.00	0.00
387	21.744	21.744	9.0000	0.00	0.00	0.00
388	18.719	24.396	9.0000	0.00	0.00	0.00
389	15.375	26.630	9.0000	0.00	0.00	0.00
390	11.768	28.409	9.0000	0.00	0.00	0.00
391	7.9587	29.702	9.0000	0.00	0.00	0.00
392	4.0137	30.487	9.0000	0.00	0.00	0.00
393	0.11982E-09	30.750	9.0000	0.00	0.00	0.00
394	2.7890	-31.878	9.0000	0.00	0.00	0.00
395	5.5567	-31.514	9.0000	0.00	0.00	0.00
396	9.6226	-30.519	9.0000	0.00	0.00	0.00
397	12.503	-29.456	9.0000	0.00	0.00	0.00
398	0.11982E-09	-30.750	15.000	0.00	0.00	0.00
399	2.6800	-30.633	15.000	0.00	0.00	0.00
400	5.3397	-30.283	15.000	0.00	0.00	0.00
401	9.2467	-29.327	15.000	0.00	0.00	0.00
402	12.015	-28.306	15.000	0.00	0.00	0.00
403	15.375	-26.630	15.000	0.00	0.00	0.00
404	19.766	-23.556	15.000	0.00	0.00	0.00
405	23.556	-19.766	15.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
406	26.630	-15.375	15.000	0.00	0.00	0.00
407	28.409	-11.768	15.000	0.00	0.00	0.00
408	29.702	-7.9587	15.000	0.00	0.00	0.00
409	30.487	-4.0137	15.000	0.00	0.00	0.00
410	30.750	0.00000E+00	15.000	0.00	0.00	0.00
411	30.487	4.0137	15.000	0.00	0.00	0.00
412	29.702	7.9587	15.000	0.00	0.00	0.00
413	28.409	11.768	15.000	0.00	0.00	0.00
414	26.630	15.375	15.000	0.00	0.00	0.00
415	24.396	18.719	15.000	0.00	0.00	0.00
416	21.744	21.744	15.000	0.00	0.00	0.00
417	18.719	24.396	15.000	0.00	0.00	0.00
418	15.375	26.630	15.000	0.00	0.00	0.00
419	11.768	28.409	15.000	0.00	0.00	0.00
420	7.9587	29.702	15.000	0.00	0.00	0.00
121	4.0137	30.487	15.000	0.00	0.00	0.00
22	0.11982E-09	30.750	15.000	0.00	0.00	0.00
423	2.7890	-31.878	15.000	0.00	0.00	0.00
424	5.5567	-31.514	15.000	0.00	0.00	0.00

425	9.6226	-30.519	15.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
426	12.503	-29.456	15.000	0.00	0.00	0.00
427	0.11982E-09	-30.750	19.000	0.00	0.00	0.00
428	2.6800	-30.633	19.000	0.00	0.00	0.00
429	5.3397	-30.283	19.000	0.00	0.00	0.00
430	9.2467	-29.327	19.000	0.00	0.00	0.00
431	12.015	-28.306	19.000	0.00	0.00	0.00
432	15.375	-26.630	19.000	0.00	0.00	0.00
433	19.766	-23.556	19.000	0.00	0.00	0.00
434	23.556	-19.766	19.000	0.00	0.00	0.00
435	26.630	-15.375	19.000	0.00	0.00	0.00
436	28.409	-11.768	19.000	0.00	0.00	0.00
437	29.702	-7.9587	19.000	0.00	0.00	0.00
438	30.487	-4.0137	19.000	0.00	0.00	0.00
439	30.750	0.00000E+00	19.000	0.00	0.00	0.00
440	30.487	4.0137	19.000	0.00	0.00	0.00
441	29.702	7.9587	19.000	0.00	0.00	0.00
442	28.409	11.768	19.000	0.00	0.00	0.00
443	26.630	15.375	19.000	0.00	0.00	0.00
444	24.396	18.719	19.000	0.00	0.00	0.00
445	21.744	21.744	19.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
446	18.719	24.396	19.000	0.00	0.00	0.00
447	15.375	26.630	19.000	0.00	0.00	0.00
448	11.768	28.409	19.000	0.00	0.00	0.00
449	7.9587	29.702	19.000	0.00	0.00	0.00
450	4.0137	30.487	19.000	0.00	0.00	0.00
451	0.11982E-09	30.750	19.000	0.00	0.00	0.00
452	2.7890	-31.878	19.000	0.00	0.00	0.00
453	5.5567	-31.514	19.000	0.00	0.00	0.00
454	9.6226	-30.519	19.000	0.00	0.00	0.00
455	12.503	-29.456	19.000	0.00	0.00	0.00
456	0.11982E-09	-30.750	23.000	0.00	0.00	0.00
457	2.6800	-30.633	23.000	0.00	0.00	0.00
458	5.3397	-30.283	23.000	0.00	0.00	0.00
459	9.2467	-29.327	23.000	0.00	0.00	0.00
460	12.015	-28.306	23.000	0.00	0.00	0.00
461	15.375	-26.630	23.000	0.00	0.00	0.00
462	19.766	-23.556	23.000	0.00	0.00	0.00
463	23.556	-19.766	23.000	0.00	0.00	0.00
464	26.630	-15.375	23.000	0.00	0.00	0.00
465	28.409	-11.768	23.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
466	29.702	-7.9587	23.000	0.00	0.00	0.00
467	30.487	-4.0137	23.000	0.00	0.00	0.00
468	30.750	0.00000E+00	23.000	0.00	0.00	0.00
469	30.487	4.0137	23.000	0.00	0.00	0.00
470	29.702	7.9587	23.000	0.00	0.00	0.00
471	28.409	11.768	23.000	0.00	0.00	0.00
472	26.630	15.375	23.000	0.00	0.00	0.00
473	24.396	18.719	23.000	0.00	0.00	0.00
474	21.744	21.744	23.000	0.00	0.00	0.00
475	18.719	24.396	23.000	0.00	0.00	0.00
476	15.375	26.630	23.000	0.00	0.00	0.00
477	11.768	28.409	23.000	0.00	0.00	0.00
478	7.9587	29.702	23.000	0.00	0.00	0.00

479	4.0137	30.487	23.000	0.00	0.00	0.00
480	0.11982E-09	30.750	23.000	0.00	0.00	0.00
481	2.7890	-31.878	23.000	0.00	0.00	0.00
482	5.5567	-31.514	23.000	0.00	0.00	0.00
483	9.6226	-30.519	23.000	0.00	0.00	0.00
484	12.503	-29.456	23.000	0.00	0.00	0.00
485	0.11982E-09	-30.750	33.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
486	2.6800	-30.633	33.000	0.00	0.00	0.00
487	5.3397	-30.283	33.000	0.00	0.00	0.00
488	9.2467	-29.327	33.000	0.00	0.00	0.00
489	12.015	-28.306	33.000	0.00	0.00	0.00
490	15.375	-26.630	33.000	0.00	0.00	0.00
491	19.766	-23.556	33.000	0.00	0.00	0.00
492	23.556	-19.766	33.000	0.00	0.00	0.00
493	26.630	-15.375	33.000	0.00	0.00	0.00
494	28.409	-11.768	33.000	0.00	0.00	0.00
495	29.702	-7.9587	33.000	0.00	0.00	0.00
496	30.487	-4.0137	33.000	0.00	0.00	0.00
497	30.750	0.00000E+00	33.000	0.00	0.00	0.00
498	30.487	4.0137	33.000	0.00	0.00	0.00
499	29.702	7.9587	33.000	0.00	0.00	0.00
500	28.409	11.768	33.000	0.00	0.00	0.00
501	26.630	15.375	33.000	0.00	0.00	0.00
502	24.396	18.719	33.000	0.00	0.00	0.00
503	21.744	21.744	33.000	0.00	0.00	0.00
504	18.719	24.396	33.000	0.00	0.00	0.00
505	15.375	26.630	33.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
506	11.768	28.409	33.000	0.00	0.00	0.00
507	7.9587	29.702	33.000	0.00	0.00	0.00
508	4.0137	30.487	33.000	0.00	0.00	0.00
509	0.11982E-09	30.750	33.000	0.00	0.00	0.00
510	2.7890	-31.878	33.000	0.00	0.00	0.00
511	5.5567	-31.514	33.000	0.00	0.00	0.00
512	9.6226	-30.519	33.000	0.00	0.00	0.00
513	12.503	-29.456	33.000	0.00	0.00	0.00
514	0.11982E-09	-30.750	43.000	0.00	0.00	0.00
515	2.6800	-30.633	43.000	0.00	0.00	0.00
516	5.3397	-30.283	43.000	0.00	0.00	0.00
517	9.2467	-29.327	43.000	0.00	0.00	0.00
518	12.015	-28.306	43.000	0.00	0.00	0.00
519	15.375	-26.630	43.000	0.00	0.00	0.00
520	19.766	-23.556	43.000	0.00	0.00	0.00
521	23.556	-19.766	43.000	0.00	0.00	0.00
522	26.630	-15.375	43.000	0.00	0.00	0.00
523	28.409	-11.768	43.000	0.00	0.00	0.00
524	29.702	-7.9587	43.000	0.00	0.00	0.00
525	30.487	-4.0137	43.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
526	30.750	0.00000E+00	43.000	0.00	0.00	0.00
527	30.487	4.0137	43.000	0.00	0.00	0.00
528	29.702	7.9587	43.000	0.00	0.00	0.00
529	28.409	11.768	43.000	0.00	0.00	0.00
530	26.630	15.375	43.000	0.00	0.00	0.00
531	24.396	18.719	43.000	0.00	0.00	0.00
532	21.744	21.744	43.000	0.00	0.00	0.00

533	18.719	24.396	43.000	0.00	0.00	0.00
534	15.375	26.630	43.000	0.00	0.00	0.00
535	11.768	28.409	43.000	0.00	0.00	0.00
536	7.9587	29.702	43.000	0.00	0.00	0.00
537	4.0137	30.487	43.000	0.00	0.00	0.00
538	0.11982E-09	30.750	43.000	0.00	0.00	0.00
539	2.7890	-31.878	43.000	0.00	0.00	0.00
540	5.5567	-31.514	43.000	0.00	0.00	0.00
541	9.6226	-30.519	43.000	0.00	0.00	0.00
542	12.503	-29.456	43.000	0.00	0.00	0.00
543	0.11982E-09	-30.750	47.000	0.00	0.00	0.00
544	2.6800	-30.633	47.000	0.00	0.00	0.00
545	5.3397	-30.283	47.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
546	9.2467	-29.327	47.000	0.00	0.00	0.00
547	12.015	-28.306	47.000	0.00	0.00	0.00
548	15.375	-26.630	47.000	0.00	0.00	0.00
549	19.766	-23.556	47.000	0.00	0.00	0.00
550	23.556	-19.766	47.000	0.00	0.00	0.00
551	26.630	-15.375	47.000	0.00	0.00	0.00
552	28.409	-11.768	47.000	0.00	0.00	0.00
553	29.702	-7.9587	47.000	0.00	0.00	0.00
554	30.487	-4.0137	47.000	0.00	0.00	0.00
555	30.750	0.00000E+00	47.000	0.00	0.00	0.00
556	30.487	4.0137	47.000	0.00	0.00	0.00
557	29.702	7.9587	47.000	0.00	0.00	0.00
558	28.409	11.768	47.000	0.00	0.00	0.00
559	26.630	15.375	47.000	0.00	0.00	0.00
560	24.396	18.719	47.000	0.00	0.00	0.00
561	21.744	21.744	47.000	0.00	0.00	0.00
562	18.719	24.396	47.000	0.00	0.00	0.00
563	15.375	26.630	47.000	0.00	0.00	0.00
564	11.768	28.409	47.000	0.00	0.00	0.00
565	7.9587	29.702	47.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
566	4.0137	30.487	47.000	0.00	0.00	0.00
567	0.11982E-09	30.750	47.000	0.00	0.00	0.00
568	2.7890	-31.878	47.000	0.00	0.00	0.00
569	5.5567	-31.514	47.000	0.00	0.00	0.00
570	9.6226	-30.519	47.000	0.00	0.00	0.00
571	12.503	-29.456	47.000	0.00	0.00	0.00
572	0.11982E-09	-30.750	51.000	0.00	0.00	0.00
573	2.6800	-30.633	51.000	0.00	0.00	0.00
574	5.3397	-30.283	51.000	0.00	0.00	0.00
575	9.2467	-29.327	51.000	0.00	0.00	0.00
576	12.015	-28.306	51.000	0.00	0.00	0.00
577	15.375	-26.630	51.000	0.00	0.00	0.00
578	19.766	-23.556	51.000	0.00	0.00	0.00
579	23.556	-19.766	51.000	0.00	0.00	0.00
580	26.630	-15.375	51.000	0.00	0.00	0.00
581	28.409	-11.768	51.000	0.00	0.00	0.00
582	29.702	-7.9587	51.000	0.00	0.00	0.00
583	30.487	-4.0137	51.000	0.00	0.00	0.00
584	30.750	0.00000E+00	51.000	0.00	0.00	0.00
585	30.487	4.0137	51.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
586	29.702	7.9587	51.000	0.00	0.00	0.00

587	28.409	11.768	51.000	0.00	0.00	0.00
588	26.630	15.375	51.000	0.00	0.00	0.00
589	24.396	18.719	51.000	0.00	0.00	0.00
590	21.744	21.744	51.000	0.00	0.00	0.00
591	18.719	24.396	51.000	0.00	0.00	0.00
592	15.375	26.630	51.000	0.00	0.00	0.00
593	11.768	28.409	51.000	0.00	0.00	0.00
594	7.9587	29.702	51.000	0.00	0.00	0.00
595	4.0137	30.487	51.000	0.00	0.00	0.00
596	0.11982E-09	30.750	51.000	0.00	0.00	0.00
597	2.7890	-31.878	51.000	0.00	0.00	0.00
598	5.5567	-31.514	51.000	0.00	0.00	0.00
599	9.6226	-30.519	51.000	0.00	0.00	0.00
600	12.503	-29.456	51.000	0.00	0.00	0.00
601	0.11982E-09	-30.750	61.000	0.00	0.00	0.00
602	2.6800	-30.633	61.000	0.00	0.00	0.00
603	5.3397	-30.283	61.000	0.00	0.00	0.00
604	9.2467	-29.327	61.000	0.00	0.00	0.00
605	12.015	-28.306	61.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
606	15.375	-26.630	61.000	0.00	0.00	0.00
607	19.766	-23.556	61.000	0.00	0.00	0.00
608	23.556	-19.766	61.000	0.00	0.00	0.00
609	26.630	-15.375	61.000	0.00	0.00	0.00
610	28.409	-11.768	61.000	0.00	0.00	0.00
611	29.702	-7.9587	61.000	0.00	0.00	0.00
612	30.487	-4.0137	61.000	0.00	0.00	0.00
613	30.750	0.00000E+00	61.000	0.00	0.00	0.00
614	30.487	4.0137	61.000	0.00	0.00	0.00
615	29.702	7.9587	61.000	0.00	0.00	0.00
616	28.409	11.768	61.000	0.00	0.00	0.00
617	26.630	15.375	61.000	0.00	0.00	0.00
618	24.396	18.719	61.000	0.00	0.00	0.00
619	21.744	21.744	61.000	0.00	0.00	0.00
620	18.719	24.396	61.000	0.00	0.00	0.00
621	15.375	26.630	61.000	0.00	0.00	0.00
622	11.768	28.409	61.000	0.00	0.00	0.00
623	7.9587	29.702	61.000	0.00	0.00	0.00
624	4.0137	30.487	61.000	0.00	0.00	0.00
625	0.11982E-09	30.750	61.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
626	2.7890	-31.878	61.000	0.00	0.00	0.00
627	5.5567	-31.514	61.000	0.00	0.00	0.00
628	9.6226	-30.519	61.000	0.00	0.00	0.00
629	12.503	-29.456	61.000	0.00	0.00	0.00
630	0.11982E-09	-30.750	71.000	0.00	0.00	0.00
631	2.6800	-30.633	71.000	0.00	0.00	0.00
632	5.3397	-30.283	71.000	0.00	0.00	0.00
633	9.2467	-29.327	71.000	0.00	0.00	0.00
634	12.015	-28.306	71.000	0.00	0.00	0.00
635	15.375	-26.630	71.000	0.00	0.00	0.00
636	19.766	-23.556	71.000	0.00	0.00	0.00
637	23.556	-19.766	71.000	0.00	0.00	0.00
638	26.630	-15.375	71.000	0.00	0.00	0.00
639	28.409	-11.768	71.000	0.00	0.00	0.00
640	29.702	-7.9587	71.000	0.00	0.00	0.00
641	30.487	-4.0137	71.000	0.00	0.00	0.00
642	30.750	0.00000E+00	71.000	0.00	0.00	0.00

643	30.487	4.0137	71.000	0.00	0.00	0.00
644	29.702	7.9587	71.000	0.00	0.00	0.00
645	28.409	11.768	71.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
646	26.630	15.375	71.000	0.00	0.00	0.00
647	24.396	18.719	71.000	0.00	0.00	0.00
648	21.744	21.744	71.000	0.00	0.00	0.00
649	18.719	24.396	71.000	0.00	0.00	0.00
650	15.375	26.630	71.000	0.00	0.00	0.00
651	11.768	28.409	71.000	0.00	0.00	0.00
652	7.9587	29.702	71.000	0.00	0.00	0.00
653	4.0137	30.487	71.000	0.00	0.00	0.00
654	0.11982E-09	30.750	71.000	0.00	0.00	0.00
655	2.7890	-31.878	71.000	0.00	0.00	0.00
656	5.5567	-31.514	71.000	0.00	0.00	0.00
657	9.6226	-30.519	71.000	0.00	0.00	0.00
658	12.503	-29.456	71.000	0.00	0.00	0.00
659	0.11982E-09	-30.750	75.000	0.00	0.00	0.00
660	2.6800	-30.633	75.000	0.00	0.00	0.00
661	5.3397	-30.283	75.000	0.00	0.00	0.00
662	9.2467	-29.327	75.000	0.00	0.00	0.00
663	12.015	-28.306	75.000	0.00	0.00	0.00
664	15.375	-26.630	75.000	0.00	0.00	0.00
665	19.766	-23.556	75.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
666	23.556	-19.766	75.000	0.00	0.00	0.00
667	26.630	-15.375	75.000	0.00	0.00	0.00
668	28.409	-11.768	75.000	0.00	0.00	0.00
669	29.702	-7.9587	75.000	0.00	0.00	0.00
670	30.487	-4.0137	75.000	0.00	0.00	0.00
671	30.750	0.00000E+00	75.000	0.00	0.00	0.00
672	30.487	4.0137	75.000	0.00	0.00	0.00
673	29.702	7.9587	75.000	0.00	0.00	0.00
674	28.409	11.768	75.000	0.00	0.00	0.00
675	26.630	15.375	75.000	0.00	0.00	0.00
676	24.396	18.719	75.000	0.00	0.00	0.00
677	21.744	21.744	75.000	0.00	0.00	0.00
678	18.719	24.396	75.000	0.00	0.00	0.00
679	15.375	26.630	75.000	0.00	0.00	0.00
680	11.768	28.409	75.000	0.00	0.00	0.00
681	7.9587	29.702	75.000	0.00	0.00	0.00
682	4.0137	30.487	75.000	0.00	0.00	0.00
683	0.11982E-09	30.750	75.000	0.00	0.00	0.00
684	2.7890	-31.878	75.000	0.00	0.00	0.00
685	5.5567	-31.514	75.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
686	9.6226	-30.519	75.000	0.00	0.00	0.00
687	12.503	-29.456	75.000	0.00	0.00	0.00
688	0.11982E-09	-30.750	79.000	0.00	0.00	0.00
689	2.6800	-30.633	79.000	0.00	0.00	0.00
690	5.3397	-30.283	79.000	0.00	0.00	0.00
691	9.2467	-29.327	79.000	0.00	0.00	0.00
692	12.015	-28.306	79.000	0.00	0.00	0.00
693	15.375	-26.630	79.000	0.00	0.00	0.00
694	19.766	-23.556	79.000	0.00	0.00	0.00
695	23.556	-19.766	79.000	0.00	0.00	0.00
696	26.630	-15.375	79.000	0.00	0.00	0.00

697	28.409	-11.768	79.000	0.00	0.00	0.00
698	29.702	-7.9587	79.000	0.00	0.00	0.00
699	30.487	-4.0137	79.000	0.00	0.00	0.00
700	30.750	0.00000E+00	79.000	0.00	0.00	0.00
701	30.487	4.0137	79.000	0.00	0.00	0.00
702	29.702	7.9587	79.000	0.00	0.00	0.00
703	28.409	11.768	79.000	0.00	0.00	0.00
704	26.630	15.375	79.000	0.00	0.00	0.00
705	24.396	18.719	79.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
706	21.744	21.744	79.000	0.00	0.00	0.00
707	18.719	24.396	79.000	0.00	0.00	0.00
708	15.375	26.630	79.000	0.00	0.00	0.00
709	11.768	28.409	79.000	0.00	0.00	0.00
710	7.9587	29.702	79.000	0.00	0.00	0.00
711	4.0137	30.487	79.000	0.00	0.00	0.00
712	0.11982E-09	30.750	79.000	0.00	0.00	0.00
713	2.7890	-31.878	79.000	0.00	0.00	0.00
714	5.5567	-31.514	79.000	0.00	0.00	0.00
715	9.6226	-30.519	79.000	0.00	0.00	0.00
716	12.503	-29.456	79.000	0.00	0.00	0.00
717	0.11982E-09	-30.750	89.000	0.00	0.00	0.00
718	2.6800	-30.633	89.000	0.00	0.00	0.00
719	5.3397	-30.283	89.000	0.00	0.00	0.00
720	9.2467	-29.327	89.000	0.00	0.00	0.00
721	12.015	-28.306	89.000	0.00	0.00	0.00
722	15.375	-26.630	89.000	0.00	0.00	0.00
723	19.766	-23.556	89.000	0.00	0.00	0.00
724	23.556	-19.766	89.000	0.00	0.00	0.00
725	26.630	-15.375	89.000	0.00	0.00	0.00

NODE	X	Y	Z	THXY	THYZ	THXZ
726	28.409	-11.768	89.000	0.00	0.00	0.00
727	29.702	-7.9587	89.000	0.00	0.00	0.00
728	30.487	-4.0137	89.000	0.00	0.00	0.00
729	30.750	0.00000E+00	89.000	0.00	0.00	0.00
730	30.487	4.0137	89.000	0.00	0.00	0.00
731	29.702	7.9587	89.000	0.00	0.00	0.00
732	28.409	11.768	89.000	0.00	0.00	0.00
733	26.630	15.375	89.000	0.00	0.00	0.00
734	24.396	18.719	89.000	0.00	0.00	0.00
735	21.744	21.744	89.000	0.00	0.00	0.00
736	18.719	24.396	89.000	0.00	0.00	0.00
737	15.375	26.630	89.000	0.00	0.00	0.00
738	11.768	28.409	89.000	0.00	0.00	0.00
739	7.9587	29.702	89.000	0.00	0.00	0.00
740	4.0137	30.487	89.000	0.00	0.00	0.00
741	0.11982E-09	30.750	89.000	0.00	0.00	0.00
742	2.7890	-31.878	89.000	0.00	0.00	0.00
743	5.5567	-31.514	89.000	0.00	0.00	0.00
744	9.6226	-30.519	89.000	0.00	0.00	0.00
745	12.503	-29.456	89.000	0.00	0.00	0.00

LIST ALL ELEMENT TYPES

STIF	KEYOPT VALUES									INOTPR	
63	0	0	0	0	0	0	0	0	0	0	QUAD. FLAT SHELL
52	0	0	0	0	0	0	0	0	0	0	INTERFACE ELEM. 3-D

LIST ALL SELECTED ELEMENTS. (LIST NODES)

ELEM	MAT	TYP	REL	NODES			
1	1	1	1	1	2	3	3
2	1	1	1	1	3	4	4
3	1	1	1	1	4	5	5
4	1	1	1	1	5	6	6
5	1	1	1	1	6	7	7
6	1	1	1	1	7	8	8
7	1	1	1	1	8	9	9
8	1	1	1	1	9	10	10
9	1	1	1	1	10	11	11
10	1	1	1	1	11	12	12
11	1	1	1	1	12	13	13
12	1	1	1	1	13	14	14
13	1	1	1	1	14	15	15
14	1	1	1	1	15	16	16
15	1	1	1	1	16	17	17
16	1	1	1	1	17	18	18
17	1	1	1	1	18	19	19
18	1	1	1	1	19	20	20
19	1	1	1	1	20	21	21
20	1	1	1	1	21	22	22

ELEM	MAT	TYP	REL	NODES			
21	1	1	1	1	22	23	23
22	1	1	1	1	23	24	24
23	1	1	1	1	24	25	25
24	1	1	1	1	25	26	26
25	1	1	1	2	27	28	3
26	1	1	1	3	28	29	4
27	1	1	1	4	29	30	5
28	1	1	1	5	30	31	6
29	1	1	1	6	31	32	7
30	1	1	1	7	32	33	8
31	1	1	1	8	33	34	9
32	1	1	1	9	34	35	10
33	1	1	1	10	35	36	11
34	1	1	1	11	36	37	12
35	1	1	1	12	37	38	13
36	1	1	1	13	38	39	14
37	1	1	1	14	39	40	15
38	1	1	1	15	40	41	16
39	1	1	1	16	41	42	17
40	1	1	1	17	42	43	18

ELEM	MAT	TYP	REL	NODES			
41	1	1	1	18	43	44	19
42	1	1	1	19	44	45	20
43	1	1	1	20	45	46	21
44	1	1	1	21	46	47	22
45	1	1	1	22	47	48	23
46	1	1	1	23	48	49	24
47	1	1	1	24	49	50	25
48	1	1	1	25	50	51	26
49	1	1	1	27	52	53	28
50	1	1	1	28	53	54	29

51	1	1	1	29	54	55	30
52	1	1	1	30	55	56	31
53	1	1	1	31	56	57	32
54	1	1	1	32	57	58	33
55	1	1	1	33	58	59	34
56	1	1	1	34	59	60	35
57	1	1	1	35	60	61	36
58	1	1	1	36	61	62	37
59	1	1	1	37	62	63	38
60	1	1	1	38	63	64	39

ELEM	MAT	TYP	REL	NODES			
61	1	1	1	39	64	65	40
62	1	1	1	40	65	66	41
63	1	1	1	41	66	67	42
64	1	1	1	42	67	68	43
65	1	1	1	43	68	69	44
66	1	1	1	44	69	70	45
67	1	1	1	45	70	71	46
68	1	1	1	46	71	72	47
69	1	1	1	47	72	73	48
70	1	1	1	48	73	74	49
71	1	1	1	49	74	75	50
72	1	1	1	50	75	76	51
73	1	1	1	52	77	78	53
74	1	1	1	53	78	79	54
75	1	1	1	54	79	80	55
76	1	1	1	55	80	81	56
77	1	1	1	56	81	82	57
78	1	1	1	57	82	83	58
79	1	1	1	58	83	84	59
80	1	1	1	59	84	85	60

ELEM	MAT	TYP	REL	NODES			
81	1	1	1	60	85	86	61
82	1	1	1	61	86	87	62
83	1	1	1	62	87	88	63
84	1	1	1	63	88	89	64
85	1	1	1	64	89	90	65
86	1	1	1	65	90	91	66
87	1	1	1	66	91	92	67
88	1	1	1	67	92	93	68
89	1	1	1	68	93	94	69
90	1	1	1	69	94	95	70
91	1	1	1	70	95	96	71
92	1	1	1	71	96	97	72
93	1	1	1	72	97	98	73
94	1	1	1	73	98	99	74
95	1	1	1	74	99	100	75
96	1	1	1	75	100	101	76
97	1	1	1	77	102	103	78
98	1	1	1	78	103	104	79
99	1	1	1	79	104	105	80
100	1	1	1	80	105	106	81

LEM	MAT	TYP	REL	NODES			
101	1	1	1	81	106	107	[illegible]

102	1	1	1	82	107	108	83
103	1	1	1	83	108	109	84
104	1	1	1	84	109	110	85
105	1	1	1	85	110	111	86
106	1	1	1	86	111	112	87
107	1	1	1	87	112	113	88
108	1	1	1	88	113	114	89
109	1	1	1	89	114	115	90
110	1	1	1	90	115	116	91
111	1	1	1	91	116	117	92
112	1	1	1	92	117	118	93
113	1	1	1	93	118	119	94
114	1	1	1	94	119	120	95
115	1	1	1	95	120	121	96
116	1	1	1	96	121	122	97
117	1	1	1	97	122	123	98
118	1	1	1	98	123	124	99
119	1	1	1	99	124	125	100
120	1	1	1	100	125	126	101

ELEM	MAT	TYP	REL	NODES			
121	1	1	9	102	127	128	103
122	1	1	9	103	128	129	104
123	1	1	9	104	129	130	105
124	1	1	9	105	130	131	106
125	1	1	9	106	131	132	107
126	1	1	9	107	132	133	108
127	1	1	9	108	133	134	109
128	1	1	9	109	134	135	110
129	1	1	9	110	135	136	111
130	1	1	9	111	136	137	112
131	1	1	9	112	137	138	113
132	1	1	9	113	138	139	114
133	1	1	9	114	139	140	115
134	1	1	9	115	140	141	116
135	1	1	9	116	141	142	117
136	1	1	9	117	142	143	118
137	1	1	9	118	143	144	119
138	1	1	9	119	144	145	120
139	1	1	9	120	145	146	121
140	1	1	9	121	146	147	122

ELEM	MAT	TYP	REL	NODES			
141	1	1	9	122	147	148	123
142	1	1	9	123	148	149	124
143	1	1	9	124	149	150	125
144	1	1	9	125	150	151	126
145	1	2	4	152	128		
146	1	2	5	153	129		
147	1	2	6	154	130		
148	1	2	7	155	131		
149	1	1	2	127	156	157	128
150	1	1	2	128	157	158	129
151	1	1	2	129	158	159	130
152	1	1	2	130	159	160	131
153	1	1	2	131	160	161	132
154	1	1	2	132	161	162	133
155	1	1	2	133	162	163	134

156	1	1	2	134	163	164	135
157	1	1	2	135	164	165	136
158	1	1	2	136	165	166	137
159	1	1	2	137	166	167	138
160	1	1	2	138	167	168	139

ELEM	MAT	TYP	REL	NODES			
161	1	1	2	139	168	169	140
162	1	1	2	140	169	170	141
163	1	1	2	141	170	171	142
164	1	1	2	142	171	172	143
165	1	1	2	143	172	173	144
166	1	1	2	144	173	174	145
167	1	1	2	145	174	175	146
168	1	1	2	146	175	176	147
169	1	1	2	147	176	177	148
170	1	1	2	148	177	178	149
171	1	1	2	149	178	179	150
172	1	1	2	150	179	180	151
173	1	2	4	181	157		
174	1	2	5	182	158		
175	1	2	6	183	159		
176	1	2	7	184	160		
177	1	1	2	156	185	186	157
178	1	1	2	157	186	187	158
179	1	1	2	158	187	188	159
180	1	1	2	159	188	189	160

ELEM	MAT	TYP	REL	NODES			
181	1	1	2	160	189	190	161
182	1	1	2	161	190	191	162
183	1	1	2	162	191	192	163
184	1	1	2	163	192	193	164
185	1	1	2	164	193	194	165
186	1	1	2	165	194	195	166
187	1	1	2	166	195	196	167
188	1	1	2	167	196	197	168
189	1	1	2	168	197	198	169
190	1	1	2	169	198	199	170
191	1	1	2	170	199	200	171
192	1	1	2	171	200	201	172
193	1	1	2	172	201	202	173
194	1	1	2	173	202	203	174
195	1	1	2	174	203	204	175
196	1	1	2	175	204	205	176
197	1	1	2	176	205	206	177
198	1	1	2	177	206	207	178
199	1	1	2	178	207	208	179
200	1	1	2	179	208	209	180

ELEM	MAT	TYP	REL	NODES			
201	1	2	4	210	186		
202	1	2	5	211	187		
203	1	2	6	212	188		
204	1	2	7	213	189		
205	1	1	2	185	340	341	186
206	1	1	2	186	341	342	187

207	1	1	2	187	342	343	188
208	1	1	2	188	343	344	189
209	1	1	2	189	344	345	190
210	1	1	2	190	345	346	191
211	1	1	2	191	346	347	192
212	1	1	2	192	347	348	193
213	1	1	2	193	348	349	194
214	1	1	2	194	349	350	195
215	1	1	2	195	350	351	196
216	1	1	2	196	351	352	197
217	1	1	2	197	352	353	198
218	1	1	2	198	353	354	199
219	1	1	2	199	354	355	200
220	1	1	2	200	355	356	201

ELEM	MAT	TYP	REL	NODES			
221	1	1	2	201	356	357	202
222	1	1	2	202	357	358	203
223	1	1	2	203	358	359	204
224	1	1	2	204	359	360	205
225	1	1	2	205	360	361	206
226	1	1	2	206	361	362	207
227	1	1	2	207	362	363	208
228	1	1	2	208	363	364	209
229	1	1	8	214	215	216	216
230	1	1	8	214	216	217	217
231	1	1	8	214	217	218	218
232	1	1	8	214	218	219	219
233	1	1	8	214	219	220	220
234	1	1	8	214	220	221	221
235	1	1	8	214	221	222	222
236	1	1	8	214	222	223	223
237	1	1	8	214	223	224	224
238	1	1	8	214	224	225	225
239	1	1	8	214	225	226	226
240	1	1	8	214	226	227	227

ELEM	MAT	TYP	REL	NODES			
241	1	1	8	215	228	229	216
242	1	1	8	216	229	230	217
243	1	1	8	217	230	231	218
244	1	1	8	218	231	232	219
245	1	1	8	219	232	233	220
246	1	1	8	220	233	234	221
247	1	1	8	221	234	235	222
248	1	1	8	222	235	236	223
249	1	1	8	223	236	237	224
250	1	1	8	224	237	238	225
251	1	1	8	225	238	239	226
252	1	1	8	226	239	240	227
253	1	1	8	228	156	157	157
254	1	1	8	228	157	229	229
255	1	1	8	157	158	229	229
256	1	1	8	229	158	159	159
257	1	1	8	229	159	230	230
258	1	1	8	159	160	230	230
259	1	1	8	230	160	161	161
260	1	1	8	230	161	231	231

ELEM	MAT	TYP	REL	NODES			
261	1	1	8	161	162	231	231
262	1	1	8	231	162	163	163
263	1	1	8	231	163	232	232
264	1	1	8	163	164	232	232
265	1	1	8	232	164	165	165
266	1	1	8	232	165	233	233
267	1	1	8	165	166	233	233
268	1	1	8	233	166	167	167
269	1	1	8	233	167	234	234
270	1	1	8	167	168	234	234
271	1	1	8	234	168	169	169
272	1	1	8	234	169	235	235
273	1	1	8	169	170	235	235
274	1	1	8	235	170	171	171
275	1	1	8	235	171	236	236
276	1	1	8	171	172	236	236
277	1	1	8	236	172	173	173
278	1	1	8	236	173	237	237
279	1	1	8	173	174	237	237
280	1	1	8	237	174	175	175
ELEM	MAT	TYP	REL	NODES			
281	1	1	8	237	175	238	238
282	1	1	8	175	176	238	238
283	1	1	8	238	176	177	177
284	1	1	8	238	177	239	239
285	1	1	8	177	178	239	239
286	1	1	8	239	178	179	179
287	1	1	8	239	179	240	240
288	1	1	8	179	180	240	240
289	1	1	8	241	242	243	243
290	1	1	8	241	243	244	244
291	1	1	8	241	244	245	245
292	1	1	8	241	245	246	246
293	1	1	8	241	246	247	247
294	1	1	8	241	247	248	248
295	1	1	8	241	248	249	249
296	1	1	8	241	249	250	250
297	1	1	8	241	250	251	251
298	1	1	8	241	251	252	252
299	1	1	8	241	252	253	253
300	1	1	8	241	253	254	254
ELEM	MAT	TYP	REL	NODES			
301	1	1	8	242	255	256	243
302	1	1	8	243	256	257	244
303	1	1	8	244	257	258	245
304	1	1	8	245	258	259	246
305	1	1	8	246	259	260	247
306	1	1	8	247	260	261	248
307	1	1	8	248	261	262	249
308	1	1	8	249	262	263	250
309	1	1	8	250	263	264	251
310	1	1	8	251	264	265	252
311	1	1	8	252	265	266	253

ELEM	MAT	TYP	REL	NODES			
312	1	1	8	253	266	267	254
313	1	1	8	255	185	186	186
314	1	1	8	255	186	256	256
315	1	1	8	186	187	256	256
316	1	1	8	256	187	188	188
317	1	1	8	256	188	257	257
318	1	1	8	188	189	257	257
319	1	1	8	257	189	190	190
320	1	1	8	257	190	258	258

ELEM	MAT	TYP	REL	NODES			
321	1	1	8	190	191	258	258
322	1	1	8	258	191	192	192
323	1	1	8	258	192	259	259
324	1	1	8	192	193	259	259
325	1	1	8	259	193	194	194
326	1	1	8	259	194	260	260
327	1	1	8	194	195	260	260
328	1	1	8	260	195	196	196
329	1	1	8	260	196	261	261
330	1	1	8	196	197	261	261
331	1	1	8	261	197	198	198
332	1	1	8	261	198	262	262
333	1	1	8	198	199	262	262
334	1	1	8	262	199	200	200
335	1	1	8	262	200	263	263
336	1	1	8	200	201	263	263
337	1	1	8	263	201	202	202
338	1	1	8	263	202	264	264
339	1	1	8	202	203	264	264
340	1	1	8	264	203	204	204

ELEM	MAT	TYP	REL	NODES			
341	1	1	8	264	204	265	265
342	1	1	8	204	205	265	265
343	1	1	8	265	205	206	206
344	1	1	8	265	206	266	266
345	1	1	8	206	207	266	266
346	1	1	8	266	207	208	208
347	1	1	8	266	208	267	267
348	1	1	8	208	209	267	267
373	1	2	4	365	341		
374	1	2	5	366	342		
375	1	2	6	367	343		
376	1	2	7	368	344		
377	1	1	2	340	369	370	341
378	1	1	2	341	370	371	342
379	1	1	2	342	371	372	343
380	1	1	2	343	372	373	344
381	1	1	2	344	373	374	345
382	1	1	2	345	374	375	346
383	1	1	2	346	375	376	347
384	1	1	2	347	376	377	348

'LEM	MAT	TYP	REL	NODES			
385	1	1	2	348	377	378	349
386	1	1	2	349	378	379	350

387	1	1	2	350	379	380	351
388	1	1	2	351	380	381	352
389	1	1	2	352	381	382	353
390	1	1	2	353	382	383	354
391	1	1	2	354	383	384	355
392	1	1	2	355	384	385	356
393	1	1	2	356	385	386	357
394	1	1	2	357	386	387	358
395	1	1	2	358	387	388	359
396	1	1	2	359	388	389	360
397	1	1	2	360	389	390	361
398	1	1	2	361	390	391	362
399	1	1	2	362	391	392	363
400	1	1	2	363	392	393	364
401	1	2	4	394	370		
402	1	2	5	395	371		
403	1	2	6	396	372		
404	1	2	7	397	373		

ELEM	MAT	TYP	REL	NODES			
405	1	1	2	369	398	399	370
406	1	1	2	370	399	400	371
407	1	1	2	371	400	401	372
408	1	1	2	372	401	402	373
409	1	1	2	373	402	403	374
410	1	1	2	374	403	404	375
411	1	1	2	375	404	405	376
412	1	1	2	376	405	406	377
413	1	1	2	377	406	407	378
414	1	1	2	378	407	408	379
415	1	1	2	379	408	409	380
416	1	1	2	380	409	410	381
417	1	1	2	381	410	411	382
418	1	1	2	382	411	412	383
419	1	1	2	383	412	413	384
420	1	1	2	384	413	414	385
421	1	1	2	385	414	415	386
422	1	1	2	386	415	416	387
423	1	1	2	387	416	417	388
424	1	1	2	388	417	418	389

ELEM	MAT	TYP	REL	NODES			
425	1	1	2	389	418	419	390
426	1	1	2	390	419	420	391
427	1	1	2	391	420	421	392
428	1	1	2	392	421	422	393
429	1	2	4	423	399		
430	1	2	5	424	400		
431	1	2	6	425	401		
432	1	2	7	426	402		
433	1	1	2	398	427	428	399
434	1	1	2	399	428	429	400
435	1	1	2	400	429	430	401
436	1	1	2	401	430	431	402
437	1	1	2	402	431	432	403
438	1	1	2	403	432	433	404
439	1	1	2	404	433	434	405
440	1	1	2	405	434	435	406

441	1	1	2	406	435	436	407
442	1	1	2	407	436	437	408
443	1	1	2	408	437	438	409
444	1	1	2	409	438	439	410

ELEM	MAT	TYP	REL	NODES			
445	1	1	2	410	439	440	411
446	1	1	2	411	440	441	412
447	1	1	2	412	441	442	413
448	1	1	2	413	442	443	414
449	1	1	2	414	443	444	415
450	1	1	2	415	444	445	416
451	1	1	2	416	445	446	417
452	1	1	2	417	446	447	418
453	1	1	2	418	447	448	419
454	1	1	2	419	448	449	420
455	1	1	2	420	449	450	421
456	1	1	2	421	450	451	422
457	1	2	4	452	428		
458	1	2	5	453	429		
459	1	2	6	454	430		
460	1	2	7	455	431		
461	1	1	3	427	456	457	428
462	1	1	3	428	457	458	429
463	1	1	3	429	458	459	430
464	1	1	3	430	459	460	431

ELEM	MAT	TYP	REL	NODES			
465	1	1	3	431	460	461	432
466	1	1	3	432	461	462	433
467	1	1	3	433	462	463	434
468	1	1	3	434	463	464	435
469	1	1	3	435	464	465	436
470	1	1	3	436	465	466	437
471	1	1	3	437	466	467	438
472	1	1	3	438	467	468	439
473	1	1	3	439	468	469	440
474	1	1	3	440	469	470	441
475	1	1	3	441	470	471	442
476	1	1	3	442	471	472	443
477	1	1	3	443	472	473	444
478	1	1	3	444	473	474	445
479	1	1	3	445	474	475	446
480	1	1	3	446	475	476	447
481	1	1	3	447	476	477	448
482	1	1	3	448	477	478	449
483	1	1	3	449	478	479	450
484	1	1	3	450	479	480	451

ELEM	MAT	TYP	REL	NODES			
485	1	2	4	481	457		
486	1	2	5	482	458		
487	1	2	6	483	459		
488	1	2	7	484	460		
489	1	1	3	456	485	486	457
490	1	1	3	457	486	487	458
491	1	1	3	458	487	488	[illegible]

492	1	1	3	459	488	489	460
493	1	1	3	460	489	490	461
494	1	1	3	461	490	491	462
495	1	1	3	462	491	492	463
496	1	1	3	463	492	493	464
497	1	1	3	464	493	494	465
498	1	1	3	465	494	495	466
499	1	1	3	466	495	496	467
500	1	1	3	467	496	497	468
501	1	1	3	468	497	498	469
502	1	1	3	469	498	499	470
503	1	1	3	470	499	500	471
504	1	1	3	471	500	501	472

ELEM	MAT	TYP	REL	NODES			
505	1	1	3	472	501	502	473
506	1	1	3	473	502	503	474
507	1	1	3	474	503	504	475
508	1	1	3	475	504	505	476
509	1	1	3	476	505	506	477
510	1	1	3	477	506	507	478
511	1	1	3	478	507	508	479
512	1	1	3	479	508	509	480
513	1	2	4	510	486		
514	1	2	5	511	487		
515	1	2	6	512	488		
516	1	2	7	513	489		
517	1	1	3	485	514	515	486
518	1	1	3	486	515	516	487
519	1	1	3	487	516	517	488
520	1	1	3	488	517	[illegible]	89
521	1	1	3	489	518	519	490
522	1	1	3	490	519	520	491
523	1	1	3	491	520	521	492
524	1	1	3	492	521	522	493

ELEM	MAT	TYP	REL	NODES			
525	1	1	3	493	522	523	494
526	1	1	3	494	523	524	495
527	1	1	3	495	524	525	496
528	1	1	3	496	525	526	497
529	1	1	3	497	526	527	498
530	1	1	3	498	527	528	499
531	1	1	3	499	528	529	500
532	1	1	3	500	529	530	501
533	1	1	3	501	530	531	502
534	1	1	3	502	531	532	503
535	1	1	3	503	532	533	504
536	1	1	3	504	533	534	505
537	1	1	3	505	534	535	506
538	1	1	3	506	535	536	507
539	1	1	3	507	536	537	508
540	1	1	3	508	537	538	509
541	1	2	4	539	515		
542	1	2	5	540	516		
543	1	2	6	541	517		
544	1	2	7	542	518		

ELEM	MAT	TYP	REL	NODES			
545	1	1	3	514	543	544	515
546	1	1	3	515	544	545	516
547	1	1	3	516	545	546	517
548	1	1	3	517	546	547	518
549	1	1	3	518	547	548	519
550	1	1	3	519	548	549	520
551	1	1	3	520	549	550	521
552	1	1	3	521	550	551	522
553	1	1	3	522	551	552	523
554	1	1	3	523	552	553	524
555	1	1	3	524	553	554	525
556	1	1	3	525	554	555	526
557	1	1	3	526	555	556	527
558	1	1	3	527	556	557	528
559	1	1	3	528	557	558	529
560	1	1	3	529	558	559	530
561	1	1	3	530	559	560	531
562	1	1	3	531	560	561	532
563	1	1	3	532	561	562	533
564	1	1	3	533	562	563	534

ELEM	MAT	TYP	REL	NODES			
565	1	1	3	534	563	564	535
566	1	1	3	535	564	565	536
567	1	1	3	536	565	566	537
568	1	1	3	537	566	567	538
569	1	2	4	568	544		
570	1	2	5	569	545		
571	1	2	6	570	546		
572	1	2	7	571	547		
573	1	1	2	543	572	573	544
574	1	1	2	544	573	574	545
575	1	1	2	545	574	575	546
576	1	1	2	546	575	576	547
577	1	1	2	547	576	577	548
578	1	1	2	548	577	578	549
579	1	1	2	549	578	579	550
580	1	1	2	550	579	580	551
581	1	1	2	551	580	581	552
582	1	1	2	552	581	582	553
583	1	1	2	553	582	583	554
584	1	1	2	554	583	584	555

ELEM	MAT	TYP	REL	NODES			
585	1	1	2	555	584	585	556
586	1	1	2	556	585	586	557
587	1	1	2	557	586	587	558
588	1	1	2	558	587	588	559
589	1	1	2	559	588	589	560
590	1	1	2	560	589	590	561
591	1	1	2	561	590	591	562
592	1	1	2	562	591	592	563
593	1	1	2	563	592	593	564
594	1	1	2	564	593	594	565
595	1	1	2	565	594	595	566
596	1	1	2	566	595	596	567

597	1	2	4	597	573		
598	1	2	5	598	574		
599	1	2	6	599	575		
600	1	2	7	600	576		
601	1	1	2	572	601	602	573
602	1	1	2	573	602	603	574
603	1	1	2	574	603	604	575
604	1	1	2	575	604	605	576

ELEM	MAT	TYP	REL	NODES			
605	1	1	2	576	605	606	577
606	1	1	2	577	606	607	578
607	1	1	2	578	607	608	579
608	1	1	2	579	608	609	580
609	1	1	2	580	609	610	581
610	1	1	2	581	610	611	582
611	1	1	2	582	611	612	583
612	1	1	2	583	612	613	584
613	1	1	2	584	613	614	585
614	1	1	2	585	614	615	586
615	1	1	2	586	615	616	587
616	1	1	2	587	616	617	588
617	1	1	2	588	617	618	589
618	1	1	2	589	618	619	590
619	1	1	2	590	619	620	591
620	1	1	2	591	620	621	592
621	1	1	2	592	621	622	593
622	1	1	2	593	622	623	594
623	1	1	2	594	623	624	595
624	1	1	2	595	624	625	596

ELEM	MAT	TYP	REL	NODES			
625	1	2	4	626	602		
626	1	2	5	627	603		
627	1	2	6	628	604		
628	1	2	7	629	605		
629	1	1	2	601	630	631	602
630	1	1	2	602	631	632	603
631	1	1	2	603	632	633	604
632	1	1	2	604	633	634	605
633	1	1	2	605	634	635	606
634	1	1	2	606	635	636	607
635	1	1	2	607	636	637	608
636	1	1	2	608	637	638	609
637	1	1	2	609	638	639	610
638	1	1	2	610	639	640	611
639	1	1	2	611	640	641	612
640	1	1	2	612	641	642	613
641	1	1	2	613	642	643	614
642	1	1	2	614	643	644	615
643	1	1	2	615	644	645	616
644	1	1	2	616	645	646	617

ELEM	MAT	TYP	REL	NODES			
645	1	1	2	617	646	647	618
646	1	1	2	618	647	648	619
647	1	1	2	619	648	649	620

ELEM	MAT	TYP	REL	NODES			
702	1	1	3	676	705	706	677
703	1	1	3	677	706	707	678
704	1	1	3	678	707	708	679

ELEM	MAT	TYP	REL	NODES			
705	1	1	3	679	708	709	680
706	1	1	3	680	709	710	681
707	1	1	3	681	710	711	682
708	1	1	3	682	711	712	683
709	1	2	4	713	689		
710	1	2	5	714	690		
711	1	2	6	715	691		
712	1	2	7	716	692		
713	1	1	3	688	717	718	689
714	1	1	3	689	718	719	690
715	1	1	3	690	719	720	691
716	1	1	3	691	720	721	692
717	1	1	3	692	721	722	693
718	1	1	3	693	722	723	694
719	1	1	3	694	723	724	695
720	1	1	3	695	724	725	696
721	1	1	3	696	725	726	697
722	1	1	3	697	726	727	698
723	1	1	3	698	727	728	699
724	1	1	3	699	728	729	700

ELEM	MAT	TYP	REL	NODES			
725	1	1	3	700	729	730	701
726	1	1	3	701	730	731	702
727	1	1	3	702	731	732	703
728	1	1	3	703	732	733	704
729	1	1	3	704	733	734	705
730	1	1	3	705	734	735	706
731	1	1	3	706	735	736	707
732	1	1	3	707	736	737	708
733	1	1	3	708	737	738	709
734	1	1	3	709	738	739	710
735	1	1	3	710	739	740	711
736	1	1	3	711	740	741	712
737	1	2	4	742	718		
738	1	2	5	743	719		
739	1	2	6	744	720		
740	1	2	7	745	721		
741	1	1	8	268	269	270	270
742	1	1	8	268	270	271	271
743	1	1	8	268	271	272	272
744	1	1	8	268	272	273	273

ELEM	MAT	TYP	REL	NODES			
745	1	1	8	268	273	274	274
746	1	1	8	268	274	275	275
747	1	1	8	268	275	276	276
748	1	1	8	268	276	277	277
749	1	1	8	268	277	278	278
750	1	1	8	268	278	279	279
751	1	1	8	268	279	280	280
752	1	1	8	268	280	281	281

PROPERTY TABLE NUXY MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.30000	2300.0	0.30000

PROPERTY TABLE DENS MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	0.28000	2300.0	0.28000

LIST ALL REAL SETS

REAL CONSTANT SET 1 ITEMS 1 TO 6

3.0000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 2 ITEMS 1 TO 6

0.75000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 3 ITEMS 1 TO 6

0.82000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 4 ITEMS 1 TO 6

0.20000E+09	0.13000E-01	3.0000	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 5 ITEMS 1 TO 6

0.20000E+09	0.53000E-01	3.0000	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 6 ITEMS 1 TO 6

0.20000E+09	0.12000	3.0000	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 7 ITEMS 1 TO 6

0.90000E+07	0.21400	3.0000	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 8 ITEMS 1 TO 6

2.5000	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

REAL CONSTANT SET 9 ITEMS 1 TO 6

3.0000	0.75000	0.75000	3.0000	0.00000E+00	0.00000E+00

LIST DISPLACEMENTS FOR ALL SELECTED NODES

NODE	LABEL	DISP	CDISP
152	UX	0.000000000E+00	0.000000000E+00
153	UX	0.000000000E+00	0.000000000E+00
154	UX	0.000000000E+00	0.000000000E+00
155	UX	0.000000000E+00	0.000000000E+00
181	UX	0.000000000E+00	0.000000000E+00
182	UX	0.000000000E+00	0.000000000E+00
183	UX	0.000000000E+00	0.000000000E+00
184	UX	0.000000000E+00	0.000000000E+00
210	UX	0.000000000E+00	0.000000000E+00
211	UX	0.000000000E+00	0.000000000E+00
212	UX	0.000000000E+00	0.000000000E+00
213	UX	0.000000000E+00	0.000000000E+00
365	UX	0.000000000E+00	0.000000000E+00
366	UX	0.000000000E+00	0.000000000E+00
367	UX	0.000000000E+00	0.000000000E+00
368	UX	0.000000000E+00	0.000000000E+00
394	UX	0.000000000E+00	0.000000000E+00
395	UX	0.000000000E+00	0.000000000E+00
396	UX	0.000000000E+00	0.000000000E+00

687	UY	0.000000000E+00	0.000000000E+00
713	UY	0.000000000E+00	0.000000000E+00
714	UY	0.000000000E+00	0.000000000E+00
715	UY	0.000000000E+00	0.000000000E+00
716	UY	0.000000000E+00	0.000000000E+00
742	UY	0.000000000E+00	0.000000000E+00
743	UY	0.000000000E+00	0.000000000E+00
744	UY	0.000000000E+00	0.000000000E+00
745	UY	0.000000000E+00	0.000000000E+00
717	UZ	0.000000000E+00	0.000000000E+00
717	ROTX	0.000000000E+00	0.000000000E+00
741	UX	0.000000000E+00	0.000000000E+00
718	UZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
718	ROTX	0.000000000E+00	0.000000000E+00
718	ROTY	0.000000000E+00	0.000000000E+00
719	UZ	0.000000000E+00	0.000000000E+00
719	ROTX	0.000000000E+00	0.000000000E+00
719	ROTY	0.000000000E+00	0.000000000E+00
720	UZ	0.000000000E+00	0.000000000E+00
720	ROTX	0.000000000E+00	0.000000000E+00
720	ROTY	0.000000000E+00	0.000000000E+00
721	UZ	0.000000000E+00	0.000000000E+00
721	ROTX	0.000000000E+00	0.000000000E+00
721	ROTY	0.000000000E+00	0.000000000E+00
722	UZ	0.000000000E+00	0.000000000E+00
722	ROTX	0.000000000E+00	0.000000000E+00
722	ROTY	0.000000000E+00	0.000000000E+00
723	UZ	0.000000000E+00	0.000000000E+00
23	ROTX	0.000000000E+00	0.000000000E+00
723	ROTY	0.000000000E+00	0.000000000E+00
724	UZ	0.000000000E+00	0.000000000E+00
724	ROTX	0.000000000E+00	0.000000000E+00
724	ROTY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
725	UZ	0.000000000E+00	0.000000000E+00
725	ROTX	0.000000000E+00	0.000000000E+00
725	ROTY	0.000000000E+00	0.000000000E+00
726	UZ	0.000000000E+00	0.000000000E+00
726	ROTX	0.000000000E+00	0.000000000E+00
726	ROTY	0.000000000E+00	0.000000000E+00
727	UZ	0.000000000E+00	0.000000000E+00
727	ROTX	0.000000000E+00	0.000000000E+00
727	ROTY	0.000000000E+00	0.000000000E+00
728	UZ	0.000000000E+00	0.000000000E+00
728	ROTX	0.000000000E+00	0.000000000E+00
728	ROTY	0.000000000E+00	0.000000000E+00
729	UZ	0.000000000E+00	0.000000000E+00
729	ROTX	0.000000000E+00	0.000000000E+00
729	ROTY	0.000000000E+00	0.000000000E+00
730	UZ	0.000000000E+00	0.000000000E+00
730	ROTX	0.000000000E+00	0.000000000E+00
730	ROTY	0.000000000E+00	0.000000000E+00
31	UZ	0.000000000E+00	0.000000000E+00
31	ROTX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
731	ROTY	0.000000000E+00	0.000000000E+00

180	ROTZ	0.000000000E+00	0.000000000E+00
185	ROTZ	0.000000000E+00	0.000000000E+00
209	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
717	UY	0.000000000E+00	0.000000000E+00
88	UY	0.000000000E+00	0.000000000E+00
659	UY	0.000000000E+00	0.000000000E+00
630	UY	0.000000000E+00	0.000000000E+00
601	UY	0.000000000E+00	0.000000000E+00
572	UY	0.000000000E+00	0.000000000E+00
543	UY	0.000000000E+00	0.000000000E+00
514	UY	0.000000000E+00	0.000000000E+00
485	UY	0.000000000E+00	0.000000000E+00
456	UY	0.000000000E+00	0.000000000E+00
427	UY	0.000000000E+00	0.000000000E+00
340	ROTZ	0.000000000E+00	0.000000000E+00
364	ROTZ	0.000000000E+00	0.000000000E+00
369	ROTZ	0.000000000E+00	0.000000000E+00
393	ROTZ	0.000000000E+00	0.000000000E+00
398	ROTZ	0.000000000E+00	0.000000000E+00
422	ROTZ	0.000000000E+00	0.000000000E+00
427	ROTZ	0.000000000E+00	0.000000000E+00
451	ROTZ	0.000000000E+00	0.000000000E+00
456	ROTZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
480	ROTZ	0.000000000E+00	0.000000000E+00
485	ROTZ	0.000000000E+00	0.000000000E+00
509	ROTZ	0.000000000E+00	0.000000000E+00
514	ROTZ	0.000000000E+00	0.000000000E+00
538	ROTZ	0.000000000E+00	0.000000000E+00
543	ROTZ	0.000000000E+00	0.000000000E+00
567	ROTZ	0.000000000E+00	0.000000000E+00
572	ROTZ	0.000000000E+00	0.000000000E+00
596	ROTZ	0.000000000E+00	0.000000000E+00
601	ROTZ	0.000000000E+00	0.000000000E+00
625	ROTZ	0.000000000E+00	0.000000000E+00
630	ROTZ	0.000000000E+00	0.000000000E+00
654	ROTZ	0.000000000E+00	0.000000000E+00
659	ROTZ	0.000000000E+00	0.000000000E+00
683	ROTZ	0.000000000E+00	0.000000000E+00
688	ROTZ	0.000000000E+00	0.000000000E+00
712	ROTZ	0.000000000E+00	0.000000000E+00
717	ROTZ	0.000000000E+00	0.000000000E+00
741	ROTZ	0.000000000E+00	0.000000000E+00
1	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
2	UX	0.000000000E+00	0.000000000E+00
26	UX	0.000000000E+00	0.000000000E+00
27	UX	0.000000000E+00	0.000000000E+00
51	UX	0.000000000E+00	0.000000000E+00
52	UX	0.000000000E+00	0.000000000E+00
76	UX	0.000000000E+00	0.000000000E+00
77	UX	0.000000000E+00	0.000000000E+00
1	UX	0.000000000E+00	0.000000000E+00
102	UX	0.000000000E+00	0.000000000E+00
126	UX	0.000000000E+00	0.000000000E+00
127	UX	0.000000000E+00	0.000000000E+00

732	UZ	0.000000000E+00	0.000000000E+00
732	ROTX	0.000000000E+00	0.000000000E+00
732	ROTY	0.000000000E+00	0.000000000E+00
733	UZ	0.000000000E+00	0.000000000E+00
[illegible]33	ROTX	0.000000000E+00	0.000000000E+00
[illegible]33	ROTY	0.000000000E+00	0.000000000E+00
734	UZ	0.000000000E+00	0.000000000E+00
734	ROTX	0.000000000E+00	0.000000000E+00
734	ROTY	0.000000000E+00	0.000000000E+00
735	UZ	0.000000000E+00	0.000000000E+00
735	ROTX	0.000000000E+00	0.000000000E+00
735	ROTY	0.000000000E+00	0.000000000E+00
736	UZ	0.000000000E+00	0.000000000E+00
736	ROTX	0.000000000E+00	0.000000000E+00
736	ROTY	0.000000000E+00	0.000000000E+00
737	UZ	0.000000000E+00	0.000000000E+00
737	ROTX	0.000000000E+00	0.000000000E+00
737	ROTY	0.000000000E+00	0.000000000E+00
738	UZ	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
738	ROTX	0.000000000E+00	0.000000000E+00
738	ROTY	0.000000000E+00	0.000000000E+00
739	UZ	0.000000000E+00	0.000000000E+00
739	ROTX	0.000000000E+00	0.000000000E+00
739	ROTY	0.000000000E+00	0.000000000E+00
740	UZ	0.000000000E+00	0.000000000E+00
740	ROTX	0.000000000E+00	0.000000000E+00
740	ROTY	0.000000000E+00	0.000000000E+00
[illegible]41	UZ	0.000000000E+00	0.000000000E+00
[illegible]41	ROTX	0.000000000E+00	0.000000000E+00
717	UX	0.000000000E+00	0.000000000E+00
742	UZ	0.000000000E+00	0.000000000E+00
742	ROTX	0.000000000E+00	0.000000000E+00
742	ROTY	0.000000000E+00	0.000000000E+00
743	UZ	0.000000000E+00	0.000000000E+00
743	ROTX	0.000000000E+00	0.000000000E+00
743	ROTY	0.000000000E+00	0.000000000E+00
744	UZ	0.000000000E+00	0.000000000E+00
744	ROTX	0.000000000E+00	0.000000000E+00
744	ROTY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
745	UZ	0.000000000E+00	0.000000000E+00
745	ROTX	0.000000000E+00	0.000000000E+00
745	ROTY	0.000000000E+00	0.000000000E+00
1	ROTZ	0.000000000E+00	0.000000000E+00
2	ROTZ	0.000000000E+00	0.000000000E+00
26	ROTZ	0.000000000E+00	0.000000000E+00
27	ROTZ	0.000000000E+00	0.000000000E+00
51	ROTZ	0.000000000E+00	0.000000000E+00
52	ROTZ	0.000000000E+00	0.000000000E+00
76	ROTZ	0.000000000E+00	0.000000000E+00
77	ROTZ	0.000000000E+00	0.000000000E+00
101	ROTZ	0.000000000E+00	0.000000000E+00
[illegible]2	ROTZ	0.000000000E+00	0.000000000E+00
125	ROTZ	0.000000000E+00	0.000000000E+00
127	ROTZ	0.000000000E+00	0.000000000E+00
[illegible]	ROTZ	0.000000000E+00	0.000000000E+00
[illegible]	ROTZ	0.000000000E+00	0.000000000E+00

397	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
423	UX	0.000000000E+00	0.000000000E+00
424	UX	0.000000000E+00	0.000000000E+00
425	UX	0.000000000E+00	0.000000000E+00
426	UX	0.000000000E+00	0.000000000E+00
452	UX	0.000000000E+00	0.000000000E+00
453	UX	0.000000000E+00	0.000000000E+00
454	UX	0.000000000E+00	0.000000000E+00
455	UX	0.000000000E+00	0.000000000E+00
481	UX	0.000000000E+00	0.000000000E+00
482	UX	0.000000000E+00	0.000000000E+00
483	UX	0.000000000E+00	0.000000000E+00
484	UX	0.000000000E+00	0.000000000E+00
510	UX	0.000000000E+00	0.000000000E+00
511	UX	0.000000000E+00	0.000000000E+00
512	UX	0.000000000E+00	0.000000000E+00
513	UX	0.000000000E+00	0.000000000E+00
539	UX	0.000000000E+00	0.000000000E+00
540	UX	0.000000000E+00	0.000000000E+00
541	UX	0.000000000E+00	0.000000000E+00
542	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
568	UX	0.000000000E+00	0.000000000E+00
569	UX	0.000000000E+00	0.000000000E+00
570	UX	0.000000000E+00	0.000000000E+00
571	UX	0.000000000E+00	0.000000000E+00
597	UX	0.000000000E+00	0.000000000E+00
598	UX	0.000000000E+00	0.000000000E+00
599	UX	0.000000000E+00	0.000000000E+00
600	UX	0.000000000E+00	0.000000000E+00
626	UX	0.000000000E+00	0.000000000E+00
627	UX	0.000000000E+00	0.000000000E+00
628	UX	0.000000000E+00	0.000000000E+00
629	UX	0.000000000E+00	0.000000000E+00
655	UX	0.000000000E+00	0.000000000E+00
656	UX	0.000000000E+00	0.000000000E+00
657	UX	0.000000000E+00	0.000000000E+00
658	UX	0.000000000E+00	0.000000000E+00
684	UX	0.000000000E+00	0.000000000E+00
685	UX	0.000000000E+00	0.000000000E+00
686	UX	0.000000000E+00	0.000000000E+00
687	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
713	UX	0.000000000E+00	0.000000000E+00
714	UX	0.000000000E+00	0.000000000E+00
715	UX	0.000000000E+00	0.000000000E+00
716	UX	0.000000000E+00	0.000000000E+00
742	UX	0.000000000E+00	0.000000000E+00
743	UX	0.000000000E+00	0.000000000E+00
744	UX	0.000000000E+00	0.000000000E+00
745	UX	0.000000000E+00	0.000000000E+00
152	UY	0.000000000E+00	0.000000000E+00
153	UY	0.000000000E+00	0.000000000E+00
154	UY	0.000000000E+00	0.000000000E+00
155	UY	0.000000000E+00	0.000000000E+00
181	UY	0.000000000E+00	0.000000000E+00

182	UY	0.000000000E+00	0.000000000E+00
183	UY	0.000000000E+00	0.000000000E+00
184	UY	0.000000000E+00	0.000000000E+00
210	UY	0.000000000E+00	0.000000000E+00
211	UY	0.000000000E+00	0.000000000E+00
212	UY	0.000000000E+00	0.000000000E+00
213	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
365	UY	0.000000000E+00	0.000000000E+00
366	UY	0.000000000E+00	0.000000000E+00
367	UY	0.000000000E+00	0.000000000E+00
368	UY	0.000000000E+00	0.000000000E+00
394	UY	0.000000000E+00	0.000000000E+00
395	UY	0.000000000E+00	0.000000000E+00
396	UY	0.000000000E+00	0.000000000E+00
397	UY	0.000000000E+00	0.000000000E+00
423	UY	0.000000000E+00	0.000000000E+00
424	UY	0.000000000E+00	0.000000000E+00
425	UY	0.000000000E+00	0.000000000E+00
426	UY	0.000000000E+00	0.000000000E+00
452	UY	0.000000000E+00	0.000000000E+00
453	UY	0.000000000E+00	0.000000000E+00
454	UY	0.000000000E+00	0.000000000E+00
455	UY	0.000000000E+00	0.000000000E+00
481	UY	0.000000000E+00	0.000000000E+00
482	UY	0.000000000E+00	0.000000000E+00
483	UY	0.000000000E+00	0.000000000E+00
484	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
510	UY	0.000000000E+00	0.000000000E+00
511	UY	0.000000000E+00	0.000000000E+00
512	UY	0.000000000E+00	0.000000000E+00
513	UY	0.000000000E+00	0.000000000E+00
539	UY	0.000000000E+00	0.000000000E+00
540	UY	0.000000000E+00	0.000000000E+00
541	UY	0.000000000E+00	0.000000000E+00
542	UY	0.000000000E+00	0.000000000E+00
568	UY	0.000000000E+00	0.000000000E+00
569	UY	0.000000000E+00	0.000000000E+00
570	UY	0.000000000E+00	0.000000000E+00
571	UY	0.000000000E+00	0.000000000E+00
597	UY	0.000000000E+00	0.000000000E+00
598	UY	0.000000000E+00	0.000000000E+00
599	UY	0.000000000E+00	0.000000000E+00
600	UY	0.000000000E+00	0.000000000E+00
626	UY	0.000000000E+00	0.000000000E+00
627	UY	0.000000000E+00	0.000000000E+00
628	UY	0.000000000E+00	0.000000000E+00
629	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
655	UY	0.000000000E+00	0.000000000E+00
656	UY	0.000000000E+00	0.000000000E+00
657	UY	0.000000000E+00	0.000000000E+00
658	UY	0.000000000E+00	0.000000000E+00
684	UY	0.000000000E+00	0.000000000E+00
685	UY	0.000000000E+00	0.000000000E+00
686	UY	0.000000000E+00	0.000000000E+00

753	1	1	8	269	282	283	270
754	1	1	8	270	283	284	271
755	1	1	8	271	284	285	272
756	1	1	8	272	285	286	273
757	1	1	8	273	286	287	274
758	1	1	8	274	287	288	275
759	1	1	8	275	288	289	276
760	1	1	8	276	289	290	277
761	1	1	8	277	290	291	278
762	1	1	8	278	291	292	279
763	1	1	8	279	292	293	280
764	1	1	8	280	293	294	281

ELEM	MAT	TYP	REL	NODES			
765	1	1	8	282	340	341	341
766	1	1	8	282	341	283	283
767	1	1	8	341	342	283	283
768	1	1	8	283	342	343	343
769	1	1	8	283	343	284	284
770	1	1	8	343	344	284	284
771	1	1	8	284	344	345	345
772	1	1	8	284	345	285	285
773	1	1	8	345	346	285	285
774	1	1	8	285	346	347	347
775	1	1	8	285	347	286	286
776	1	1	8	347	348	286	286
777	1	1	8	286	348	349	349
778	1	1	8	286	349	287	287
779	1	1	8	349	350	287	287
780	1	1	8	287	350	351	351
781	1	1	8	287	351	288	288
782	1	1	8	351	352	288	288
783	1	1	8	288	352	353	353
784	1	1	8	288	353	289	289

ELEM	MAT	TYP	REL	NODES			
785	1	1	8	353	354	289	289
786	1	1	8	289	354	355	355
787	1	1	8	289	355	290	290
788	1	1	8	355	356	290	290
789	1	1	8	290	356	357	357
790	1	1	8	290	357	291	291
791	1	1	8	357	358	291	291
792	1	1	8	291	358	359	359
793	1	1	8	291	359	292	292
794	1	1	8	359	360	292	292
795	1	1	8	292	360	361	361
796	1	1	8	292	361	293	293
797	1	1	8	361	362	293	293
798	1	1	8	293	362	363	363
799	1	1	8	293	363	294	294
800	1	1	8	363	364	294	294

? ALL MATERIALS PROPERTY= ALL

PROPERTY TABLE EX MAT= 1 NUM. POINTS= 2

TEMPERATURE	DATA	TEMPERATURE	DATA
0.00000E+00	28000.	2300.0	28000.

151	UX	0.000000000E+00	0.000000000E+00
156	UX	0.000000000E+00	0.000000000E+00
180	UX	0.000000000E+00	0.000000000E+00
185	UX	0.000000000E+00	0.000000000E+00
209	UX	0.000000000E+00	0.000000000E+00
98	UY	0.000000000E+00	0.000000000E+00
369	UY	0.000000000E+00	0.000000000E+00
340	UY	0.000000000E+00	0.000000000E+00
185	UY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
156	UY	0.000000000E+00	0.000000000E+00
127	UY	0.000000000E+00	0.000000000E+00
741	ROTY	0.000000000E+00	0.000000000E+00
717	ROTY	0.000000000E+00	0.000000000E+00
712	ROTY	0.000000000E+00	0.000000000E+00
688	ROTY	0.000000000E+00	0.000000000E+00
683	ROTY	0.000000000E+00	0.000000000E+00
340	UX	0.000000000E+00	0.000000000E+00
364	UX	0.000000000E+00	0.000000000E+00
369	UX	0.000000000E+00	0.000000000E+00
393	UX	0.000000000E+00	0.000000000E+00
398	UX	0.000000000E+00	0.000000000E+00
422	UX	0.000000000E+00	0.000000000E+00
427	UX	0.000000000E+00	0.000000000E+00
451	UX	0.000000000E+00	0.000000000E+00
456	UX	0.000000000E+00	0.000000000E+00
480	UX	0.000000000E+00	0.000000000E+00
485	UX	0.000000000E+00	0.000000000E+00
509	UX	0.000000000E+00	0.000000000E+00
14	UX	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
538	UX	0.000000000E+00	0.000000000E+00
543	UX	0.000000000E+00	0.000000000E+00
567	UX	0.000000000E+00	0.000000000E+00
572	UX	0.000000000E+00	0.000000000E+00
596	UX	0.000000000E+00	0.000000000E+00
601	UX	0.000000000E+00	0.000000000E+00
625	UX	0.000000000E+00	0.000000000E+00
630	UX	0.000000000E+00	0.000000000E+00
654	UX	0.000000000E+00	0.000000000E+00
659	UX	0.000000000E+00	0.000000000E+00
683	UX	0.000000000E+00	0.000000000E+00
688	UX	0.000000000E+00	0.000000000E+00
712	UX	0.000000000E+00	0.000000000E+00
1	ROTY	0.000000000E+00	0.000000000E+00
2	ROTY	0.000000000E+00	0.000000000E+00
26	ROTY	0.000000000E+00	0.000000000E+00
27	ROTY	0.000000000E+00	0.000000000E+00
51	ROTY	0.000000000E+00	0.000000000E+00
52	ROTY	0.000000000E+00	0.000000000E+00
76	ROTY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
77	ROTY	0.000000000E+00	0.000000000E+00
101	ROTY	0.000000000E+00	0.000000000E+00
102	ROTY	0.000000000E+00	0.000000000E+00
126	ROTY	0.000000000E+00	0.000000000E+00
127	ROTY	0.000000000E+00	0.000000000E+00

151	ROTY	0.000000000E+00	0.000000000E+00
156	ROTY	0.000000000E+00	0.000000000E+00
180	ROTY	0.000000000E+00	0.000000000E+00
185	ROTY	0.000000000E+00	0.000000000E+00
209	ROTY	0.000000000E+00	0.000000000E+00
659	ROTY	0.000000000E+00	0.000000000E+00
654	ROTY	0.000000000E+00	0.000000000E+00
630	ROTY	0.000000000E+00	0.000000000E+00
625	ROTY	0.000000000E+00	0.000000000E+00
601	ROTY	0.000000000E+00	0.000000000E+00
596	ROTY	0.000000000E+00	0.000000000E+00
572	ROTY	0.000000000E+00	0.000000000E+00
567	ROTY	0.000000000E+00	0.000000000E+00
543	ROTY	0.000000000E+00	0.000000000E+00
538	ROTY	0.000000000E+00	0.000000000E+00

NODE	LABEL	DISP	CDISP
514	ROTY	0.000000000E+00	0.000000000E+00
340	ROTY	0.000000000E+00	0.000000000E+00
364	ROTY	0.000000000E+00	0.000000000E+00
369	ROTY	0.000000000E+00	0.000000000E+00
393	ROTY	0.000000000E+00	0.000000000E+00
398	ROTY	0.000000000E+00	0.000000000E+00
422	ROTY	0.000000000E+00	0.000000000E+00
427	ROTY	0.000000000E+00	0.000000000E+00
451	ROTY	0.000000000E+00	0.000000000E+00
456	ROTY	0.000000000E+00	0.000000000E+00
480	ROTY	0.000000000E+00	0.000000000E+00
485	ROTY	0.000000000E+00	0.000000000E+00
509	ROTY	0.000000000E+00	0.000000000E+00

…T FORCES FOR ALL SELECTED NODES

NODE	LABEL	FORCE	CFORCE
427	FY	-4.90000000	0.000000000E+00
456	FY	-17.2480000	0.000000000E+00
485	FY	-24.6960000	0.000000000E+00
514	FY	-17.2480000	0.000000000E+00
543	FY	-4.90000000	0.000000000E+00
659	FY	-7.25200000	0.000000000E+00
688	FY	-25.3820000	0.000000000E+00
717	FY	-18.1300000	0.000000000E+00
430	FY	-8.23200000	0.000000000E+00
459	FY	-28.8120000	0.000000000E+00
488	FY	-41.1600000	0.000000000E+00
517	FY	-28.8120000	0.000000000E+00
546	FY	-8.23200000	0.000000000E+00
662	FY	-12.1520000	0.000000000E+00
691	FY	-42.5320000	0.000000000E+00
720	FY	-30.3800000	0.000000000E+00
433	FY	-4.90000000	0.000000000E+00
462	FY	-17.2480000	0.000000000E+00
491	FY	-24.6960000	0.000000000E+00
520	FY	-17.2480000	0.000000000E+00

NODE	LABEL	FORCE	CFORCE
549	FY	-4.90000000	0.000000000E+00
665	FY	-7.25200000	0.000000000E+00
694	FY	-25.3820000	0.000000000E+00
723	FY	-18.1300000	0.000000000E+00
436	FY	-1.64640000	0.000000000E+00

648	1	1	2	620	649	650	621
649	1	1	2	621	650	651	622
650	1	1	2	622	651	652	623
651	1	1	2	623	652	653	624
652	1	1	2	624	653	654	625
653	1	2	4	655	631		
654	1	2	5	656	632		
655	1	2	6	657	633		
656	1	2	7	658	634		
657	1	1	2	630	659	660	631
658	1	1	2	631	660	661	632
659	1	1	2	632	661	662	633
660	1	1	2	633	662	663	634
661	1	1	2	634	663	664	635
662	1	1	2	635	664	665	636
663	1	1	2	636	665	666	637
664	1	1	2	637	666	667	638

ELEM	MAT	TYP	REL	NODES			
665	1	1	2	638	667	668	639
666	1	1	2	639	668	669	640
667	1	1	2	640	669	670	641
668	1	1	2	641	670	671	642
669	1	1	2	642	671	672	643
670	1	1	2	643	672	673	644
671	1	1	2	644	673	674	645
672	1	1	2	645	674	675	646
673	1	1	2	646	675	676	647
674	1	1	2	647	676	677	648
675	1	1	2	648	677	678	649
676	1	1	2	649	678	679	650
677	1	1	2	650	679	680	651
678	1	1	2	651	680	681	652
679	1	1	2	652	681	682	653
680	1	1	2	653	682	683	654
681	1	2	4	684	660		
682	1	2	5	685	661		
683	1	2	6	686	662		
684	1	2	7	687	663		

ELEM	MAT	TYP	REL	NODES			
685	.1	1	3	659	688	689	660
686	1	1	3	660	689	690	661
687	1	1	3	661	690	691	662
688	1	1	3	662	691	692	663
689	1	1	3	663	692	693	664
690	1	1	3	664	693	694	665
691	1	1	3	665	694	695	666
692	1	1	3	666	695	696	667
693	1	1	3	667	696	697	668
694	1	1	3	668	697	698	669
695	1	1	3	669	698	699	670
696	1	1	3	670	699	700	671
697	1	1	3	671	700	701	672
698	1	1	3	672	701	702	673
699	1	1	3	673	702	703	674
700	1	1	3	674	703	704	675
701	1	1	3	675	704	[illegible]	676

465	FY	-5.76240000	0.000000000E+00
494	FY	-8.23200000	0.000000000E+00
523	FY	-5.76240000	0.000000000E+00
552	FY	-1.64640000	0.000000000E+00
68	FY	-2.45000000	0.000000000E+00
697	FY	-8.57500000	0.000000000E+00
26	FY	-6.12500000	0.000000000E+00

NODAL STRESSES ARE SHELL MIDDLE

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
1	1.0475993	0.00000000E+00	-1.0617915	2.1093907	1.8312
2	0.96962898	0.00000000E+00	-1.6575270	2.6271560	2.3129
3	0.98602278	0.00000000E+00	-1.6572933	2.6433161	2.3248
4	1.0349550	0.00000000E+00	-1.6603757	2.6953307	2.3635
5	1.0940590	0.00000000E+00	-1.6000265	2.6940855	2.3499
6	1.1126852	0.00000000E+00	-1.5321870	2.6448721	2.3005
7	1.0822846	0.00000000E+00	-1.4410280	2.5233126	2.1930
8	1.0187212	0.00000000E+00	-1.3475901	2.3663113	2.0571
9	0.95237188	0.00000000E+00	-1.2675509	2.2199228	1.9298
10	0.91654248	0.00000000E+00	-1.2051923	2.1217348	1.8433
11	0.91281889	0.00000000E+00	-1.1587545	2.0715733	1.7983
12	0.92477731	0.00000000E+00	-1.1186975	2.0434748	1.7727
13	0.94602001	0.00000000E+00	-1.0784016	2.0244216	1.7551

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
14	0.97187409	0.00000000E+00	-1.0366339	2.0085080	1.7406
15	0.99935295	0.00000000E+00	-0.99340177	1.9927547	1.7265
16	1.0271060	0.00000000E+00	-0.94975858	1.9768645	1.7129
17	1.0550566	0.00000000E+00	-0.90739417	1.9624508	1.7013
18	1.0836282	0.00000000E+00	-0.86819674	1.9518249	1.6938
19	1.1131228	0.00000000E+00	-0.83375299	1.9468758	1.6919
20	1.1431319	0.00000000E+00	-0.80501049	1.9481424	1.6961
21	1.1723365	0.00000000E+00	-0.78215302	1.9544895	1.7051
22	1.1986857	0.00000000E+00	-0.76483623	1.9635219	1.7164
23	1.2197472	0.00000000E+00	-0.75258198	1.9723292	1.7272
24	1.2337407	0.00000000E+00	-0.74444792	1.9781887	1.7346
25	1.2409151	0.00000000E+00	-0.73902791	1.9799430	1.7377
26	1.2429814	0.00000000E+00	-0.73657062	1.9795521	1.7379

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
27	1.0839989	0.00000000E+00	-2.9432036	4.0322025	3.6328
28	1.1245057	0.00000000E+00	-2.8375665	3.9620722	3.5[illegible]
29	1.1413294	0.00000000E+00	-2.4917613	3.6330912	3.21[illegible]
30	1.0441907	0.00000000E+00	-1.9928523	3.0370430	2.6762
31	0.88330249	0.00000000E+00	-1.7271245	2.6104270	2.3031
32	0.81201585	0.00000000E+00	-1.508[illegible]	2.3207323	2.0408

33	0.80443283	0.00000000E+00	-1.3475203	2.1519532	1.8837
34	0.81485754	0.00000000E+00	-1.2383346	2.0531921	1.7911
35	0.81258856	0.00000000E+00	-1.1678902	1.9804788	1.7246
36	0.80972422	0.00000000E+00	-1.1282820	1.9380062	1.6862
37	0.81130703	0.00000000E+00	-1.1070363	1.9183434	1.6682
38	0.82875477	0.00000000E+00	-1.0916989	1.9204536	1.6686
39	0.86666137	0.00000000E+00	-1.0760150	1.9426763	1.6858

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
40	0.92534607	0.00000000E+00	-1.0538367	1.9791828	1.7153
41	1.0020348	0.00000000E+00	-1.0200287	2.0220636	1.7512
42	1.0918199	0.00000000E+00	-0.97188295	2.0637028	1.7882
43	1.1900384	0.00000000E+00	-0.90983115	2.0998696	1.8240
44	1.2925640	0.00000000E+00	-0.83739008	2.1299541	1.8586
45	1.3959597	0.00000000E+00	-0.75999570	2.1559554	1.8941
46	1.4967971	0.00000000E+00	-0.68392645	2.1807236	1.9319
47	1.5912437	0.00000000E+00	-0.61544178	2.2066855	1.9726
48	1.6750771	0.00000000E+00	-0.56032403	2.2354011	2.0150
49	1.7408223	0.00000000E+00	-0.52510358	2.2659259	2.0550
50	1.7793028	0.00000000E+00	-0.51374687	2.2930496	2.0848
51	1.7908692	0.00000000E+00	-0.51588318	2.3067524	2.0974
52	0.83910015	0.00000000E+00	-5.5728259	6.4119260	6.0482

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
53	0.87587919	0.00000000E+00	-4.1996702	5.0755494	4.7023
54	0.77485114	0.00000000E+00	-2.7572937	3.5321448	3.2307
55	0.52108531	0.00000000E+00	-1.8384618	2.3595471	2.1473
56	0.53575358	0.00000000E+00	-1.3325226	1.8682762	1.6695
57	0.67617472	0.00000000E+00	-0.99704778	1.6732225	1.4615
58	0.77257683	0.00000000E+00	-0.86670084	1.6392777	1.4220
59	0.83799074	0.00000000E+00	-0.89098705	1.7289778	1.4978
60	0.81737995	0.00000000E+00	-1.0121429	1.8295229	1.5878
61	0.79338486	0.00000000E+00	-1.1383756	1.9317605	1.6821
62	0.77472465	0.00000000E+00	-1.2406213	2.0153460	1.7609
63	0.77868119	0.00000000E+00	-1.3093555	2.0880367	1.8277
64	0.81710945	0.00000000E+00	-1.3371608	2.1542703	1.8836
65	0.88596396	0.00000000E+00	-1.3226907	2.2086546	1.9252

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
66	0.99071521	0.00000000E+00	-1.2690153	2.2597305	1.9620
67	1.1136307	0.00000000E+00	-1.1825513	2.3011820	1.9933
68	1.2374985	0.00000000E+00	-1.0706326	2.3381311	2.0275

69	1.4274096	0.00000000E+00	-0.94394923	2.3713588	2.0681
70	1.5915727	0.00000000E+00	-0.81158830	2.4031610	2.1176
71	1.7559431	0.00000000E+00	-0.68172372	2.4376668	2.1784
72	1.9112878	0.00000000E+00	-0.56706744	2.4783552	2.2491
73	2.0556224	0.00000000E+00	-0.46762227	2.5232446	2.3250
74	2.1830309	0.00000000E+00	-0.41352998	2.5965609	2.4[illegible]
75	2.2814410	0.00000000E+00	-0.40341943	2.6848604	2.5[illegible]
76	2.3196641	0.00000000E+00	-0.49805964	2.8177238	2.6047
77	0.38468276	0.00000000E+00	-11.129520	11.514202	11.328
78	0.73081352	-0.17275280	-4.3923925	5.1232060	4.7654

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
79	0.14018913	-0.77819742E-01	-2.4694093	2.6095984	2.5144
80	0.24523714	-0.10332115	-1.1639253	1.4091624	1.2822
81	0.47158801	0.00000000E+00	-0.62322584	1.0948138	0.95771
82	0.71316215	0.00000000E+00	-0.48166446	1.1948266	1.0447
83	0.89977134	0.00000000E+00	-0.61351698	1.5132883	1.3188
84	0.98415486	0.00000000E+00	-0.80575848	1.7899133	1.5541
85	0.90560934	0.00000000E+00	-1.0650616	1.9706710	1.7099
86	0.84952856	0.00000000E+00	-1.2735410	2.1230696	1.8515
87	0.79563772	0.00000000E+00	-1.4224979	2.2181356	1.9466
88	0.77660427	0.00000000E+00	-1.5149458	2.2915501	2.0186
89	0.81530057	0.00000000E+00	-1.5489171	2.3642176	2.0800
90	0.88311799	0.00000000E+00	-1.5254539	2.4085719	2.1105
91	1.0125999	0.00000000E+00	-1.4519883	2.4645882	2.1[illegible]

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
92	1.1612110	0.00000000E+00	-1.3393553	2.5005664	2.1677
93	1.3426253	0.00000000E+00	-1.1943538	2.5369791	2.1988
94	1.5344198	0.00000000E+00	-1.0343101	2.5687300	2.2391
95	1.7269561	0.00000000E+00	-0.86812425	2.5950803	2.2884
96	1.9254186	0.00000000E+00	-0.70020066	2.6256193	2.3551
97	2.1059053	0.00000000E+00	-0.56355194	2.6694572	2.4371
98	2.2935305	0.00000000E+00	-0.41603646	2.7095669	2.5274
99	2.4450552	0.00000000E+00	-0.37392424	2.8189794	2.6519
100	2.5906546	0.00000000E+00	-0.29200266	2.8826572	2.7488
101	2.6663278	0.00000000E+00	-0.65054860	3.3168764	3.0452
102	0.00000000E+00	-2.8932054	-19.989893	19.989893	18.716
103	3.7342339	-0.95420590E-01	-3.7719817	7.5062156	6.8411
104	0.11149007	-0.51549629	-1.7813673	1.8928573	1.7700

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

AD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI

105	0.27659762	0.00000000E+00	-0.39144586	0.66804347	0.59004
106	0.59633893	0.00000000E+00	-0.34500935	0.94134828	0.84193
107	0.98327341	0.00000000E+00	-0.21684647	1.2001199	1.1096
108	1.0474593	0.00000000E+00	-0.48380631	1.5312656	1.3560
109	1.0348581	0.00000000E+00	-0.68213704	1.7169952	1.5010
110	0.83566975	0.00000000E+00	-1.0597671	1.8954368	1.6482
111	0.76638001	0.00000000E+00	-1.3582391	2.1246191	1.8657
112	0.69749703	0.00000000E+00	-1.5796407	2.2771377	2.0225
113	0.66772420	0.00000000E+00	-1.7136554	2.3813796	2.1294
114	0.71082761	0.00000000E+00	-1.7529657	2.4637933	2.1980
115	0.74406643	0.00000000E+00	-1.6979057	2.4419722	2.1701
116	0.87100203	0.00000000E+00	-1.5668647	2.4378667	2.1416
117	0.99143555	0.00000000E+00	-1.3858196	2.3772551	2.0700

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
118	1.1762546	0.00000000E+00	-1.1726375	2.3488921	2.0350
119	1.3819078	0.00000000E+00	-0.95922019	2.3411280	2.0388
120	1.6006087	0.00000000E+00	-0.76462437	2.3652331	2.0910
121	1.8552075	0.00000000E+00	-0.56546468	2.4206722	2.1947
122	2.0827895	0.00000000E+00	-0.46340918	2.5461987	2.3505
123	2.3501892	0.00000000E+00	-0.25717950	2.6073687	2.4915
124	2.5889314	0.00000000E+00	-0.34118950	2.9301209	2.7758
125	2.8126987	0.98727078E-01	-0.10685362	2.9195523	2.8230
126	2.9031630	0.00000000E+00	-0.92109807	3.8242611	3.4585
127	0.26014970	-5.8708810	-26.940004	27.200153	24.755
128	2.0347430	-0.15712035	-6.8535741	8.8883171	8.3[illegible]5
129	1.6077470	-0.19006963	-1.4860373	3.0937842	2.7712
130	0.56384054	-0.19912474	-0.94868852	1.5125291	1.3780

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
131	1.1507324	0.00000000E+00	-1.0113196	2.1620520	1.8765
132	1.7834509	0.00000000E+00	-1.4705461	3.2539970	2.8267
133	2.8411451	0.00000000E+00	-2.6238242	5.4649693	4.7408
134	3.6954419	0.00000000E+00	-3.2707577	6.9661996	6.0458
135	3.6716807	0.00000000E+00	-3.4468332	7.1185140	6.1761
136	3.1524880	0.00000000E+00	-3.1147406	6.2672286	5.4437
137	2.4325104	0.00000000E+00	-2.4942056	4.9267160	4.2920
138	1.7760779	0.00000000E+00	-1.9427012	3.7187791	3.2631
139	1.7348570	0.00000000E+00	-1.8763224	3.6111794	3.1770
140	2.3161997	0.00000000E+00	-2.3969934	4.7131931	4.1194
141	3.1688877	0.00000000E+00	-3.0976873	6.2665750	5.4568
142	3.9700309	0.00000000E+00	-3.6928078	7.6628387	6.6592
143	4.6018728	0.00000000E+00	-4.0784874	8.6803603	7.5403

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
144	5.0291052	0.00000000E+00	-4.2186789	9.2477841	8.0338
145	5.2224869	0.00000000E+00	-4.1258885	9.3483754	8.1266
146	5.2285605	0.00000000E+00	-3.8145498	9.0431103	7.8743
147	5.0315961	0.00000000E+00	-3.3567090	8.3883051	7.[illegible]08
148	4.7622277	0.00000000E+00	-2.7032608	7.4654885	6.[illegible]5
149	4.3092832	0.00000000E+00	-2.1182265	6.4275097	5.6789
150	3.7846107	0.00000000E+00	-1.0825021	4.8671129	4.4339
151	3.2196431	0.00000000E+00	-2.5241381	5.7437812	4.9864
156	0.84098527	-0.34769574E-01	-7.9259335	8.7669187	8.4643
157	0.86663154	-0.10982138	-5.9663830	6.8330146	6.4742
158	0.98429202	-0.67815599E-01	-3.2026499	4.1869420	3.8258
159	0.39613196	-0.16526547	-1.5804872	1.9766192	1.7695
160	0.27667257	-0.98094184E-01	-1.2813801	1.5580527	1.4179

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
161	0.56498653	-0.36044652E-01	-1.6325179	2.1975044	1.9955
162	1.6554423	0.00000000E+00	-2.6998396	4.3552819	3.8239
163	2.3720847	-0.55944445E-01	-2.9554834	5.3275680	4.6294
164	3.0712935	-0.92302024E-01	-3.2073909	6.2786844	5.4394
165	2.2912363	-0.14883560	-2.4788819	4.7701182	4.1380
166	1.9425711	-0.12769119	-1.9418149	3.8843860	3.3815
167	1.0243564	-0.16213613	-1.1742121	2.1985685	1.9353
168	1.2441321	-0.12102700	-1.2628178	2.5069499	2.2[illegible]4
169	1.7887697	-0.95937686E-01	-1.9587352	3.7475049	3.2[illegible]4
170	3.0048260	-0.46664193E-01	-3.0538236	6.0586496	5.2834
171	3.2768638	-0.12234021E-01	-3.3829959	6.6598597	5.8059
172	4.3531339	0.00000000E+00	-4.2718678	8.6250017	7.4885
173	4.0902040	0.00000000E+00	-3.9399077	8.0301118	6.9606

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
174	4.7806342	0.00000000E+00	-4.3921286	9.1727629	7.9485
175	4.0781074	0.00000000E+00	-3.5711760	7.6492834	6.6377
176	4.3610580	0.00000000E+00	-3.5599941	7.9210521	6.8944
177	3.5081103	0.00000000E+00	-2.5256749	6.0337852	5.2757
178	3.5577410	0.00000000E+00	-2.1211317	5.6788727	5.0100
179	2.8644363	0.00000000E+00	-1.1585181	4.0229544	3.6195
180	2.9580657	0.00000000E+00	-1.8746416	4.8327072	4.2612
185	1.8935289	-0.60438935	-10.591364	12.484893	11.682
186	1.4599539	-0.32857329	-8.7316609	10.191615	9.5509
187	1.5998992	-0.97590829E-01	-6.3908987	7.9907980	7.3698
188	0.62637857	-0.11882897	-4.6433473	5.2697259	4.9481
189	0.11886138	-0.34330885	-4.1390487	4.2579101	4.0[illegible]
190	0.85112164E-01	-0.63469265	-3.3842403	3.4693525	3.2[illegible]

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

ODE	SIG1	SIG2	SIG3	SI	SI
191	0.60516647	-0.52902032	-3.4571417	4.0623082	3.6570
192	1.5333850	-0.11816796	-2.9103982	4.4437833	3.9044
193	2.6438823	0.00000000E+00	-2.2995327	4.9434150	4.3166
194	2.4654585	0.13808386	-1.4446794	3.9101379	3.4553
195	2.7076742	0.31396703	-0.75321804	3.4608923	3.0946
196	2.4232694	0.29332197	-0.42469293	2.8479623	2.6273
197	3.3825250	0.18487239	-0.64754841	4.0300734	3.7299
198	3.9128282	0.00000000E+00	-1.4815657	5.3943939	4.8405
199	5.2784467	0.00000000E+00	-2.7337660	8.0122128	7.0575
200	5.0785240	0.00000000E+00	-3.2173096	8.2958336	7.2486
201	5.9831103	0.00000000E+00	-4.3696662	10.352777	9.0099
202	5.1241043	0.00000000E+00	-4.1174319	9.2415362	8.0321
203	5.4192462	0.00000000E+00	-4.8298382	10.249084	8.8983

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
204	4.1891948	0.00000000E+00	-3.9806314	8.1698262	7.1004
205	3.9355753	0.00000000E+00	-4.1320034	8.0675786	7.0187
206	2.7185565	0.00000000E+00	-3.0010442	5.7196006	4.9936
207	2.1855210	0.00000000E+00	-2.6561765	4.8416975	4.2532
208	1.3684344	0.00000000E+00	-1.6952232	3.0636576	2.7039
209	1.2432704	0.00000000E+00	-1.7421171	2.9853876	2.6320
214	0.65184281	-0.78672239E-01	-1.7611800	2.4130228	2.1953
215	2.1033859	0.00000000E+00	-3.2816535	5.3850395	4.9305
216	1.3916738	0.00000000E+00	-2.6751740	4.0668477	3.7190
217	0.34992569	-0.71667986E-01	-2.1158006	2.4657263	2.3075
218	0.51804152E-01	-0.87580718E-01	-2.1628968	2.2147009	2.1486
219	0.16243939	-0.75077494E-01	-2.0038273	2.1662666	2.0599
220	0.26413004	-0.97614338E-01	-1.5983329	1.8624630	1.7155

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= .0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
221	0.32054538	-0.10901174	-1.3123310	1.6328763	1.4733
222	0.29897286	-0.10475369	-1.1649698	1.4639426	1.3153
223	0.19188741	-0.97025285E-01	-1.1170971	1.3089845	1.1942
224	0.59965130E-01	-0.11522231	-1.1304609	1.1904261	1.1164
225	0.00000000E+00	-0.19925673	-1.1468776	1.1468776	1.0657
226	0.00000000E+00	-0.20604610	-1.0578967	1.0578967	0.97581
227	0.00000000E+00	-0.15177053	-1.0084852	1.0084852	0.94880
228	0.00000000E+00	-0.48114111	-9.3463934	9.3463934	9.1322
29	0.39479709E-01	-0.41288040	-3.4701735	3.5096532	3.3151
30	0.41161449E-01	-0.13699143	-1.3770692	1.4182306	1.3500
231	0.75485797E-01	-0.48698198E-01	-0.93107232	1.0065581	0.96531
232	0.00000000E+00	-0.2335[illegible]	-0.32013916	0.82013916	0.74292

233	0.00000000E+00	-0.29635551	-1.0095111	1.0095111	0.90365

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
234	0.00000000E+00	-0.23628582	-1.0894380	1.0894380	0.99843
235	0.40004675E-01	-0.69749995E-01	-1.0252396	1.0652443	1.0168
236	0.27508454	0.00000000E+00	-0.84856278	1.1236473	1.0199
237	0.58814355	0.00000000E+00	-0.62418927	1.2123328	1.0560
238	0.83790202	0.00000000E+00	-0.43562526	1.2735273	1.1325
239	1.0669118	0.00000000E+00	-0.41628522	1.4831970	1.3572
240	1.3169337	0.00000000E+00	-0.71216870	2.0291024	1.8508
241	0.85212321	-0.41533112E-01	-2.3821512	3.2342744	2.9637
242	2.2510964	0.00000000E+00	-3.6508577	5.9019540	5.4146
243	1.8088748	0.00000000E+00	-3.1343725	4.9432472	4.4949
244	0.75041233	-0.34525309E-02	-2.4883788	3.2387911	3.0030
245	0.18170570	0.00000000E+00	-2.4790277	2.6607334	2.5760
246	0.25843825	0.00000000E+00	-2.5136548	2.7720930	2.6561

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
47	0.31294834	-0.92578525E-02	-2.2144520	2.5274003	[illegible]
248	0.34806212	-0.39599479E-01	-1.9106222	2.2586843	2.[illegible]
249	0.34315393	-0.85149735E-01	-1.6649296	2.0080835	1.8362
250	0.25752496	-0.11480848	-1.4835561	1.7410810	1.5904
251	0.11721902	-0.11251643	-1.3807412	1.4979602	1.4054
252	0.19528474E-01	-0.12819313	-1.3339365	1.3534649	1.2912
253	0.12593503E-01	-0.14555587	-1.2771699	1.2897634	1.2190
254	0.24420678E-01	-0.13669033	-1.2679627	1.2923834	1.2212
255	0.00000000E+00	-1.0897987	-11.904944	11.904944	11.406
256	0.61079396E-01	-0.52899633	-5.5261471	5.5872265	5.3384
257	0.71160370E-01	-0.18367099	-2.8094995	2.8806599	2.7641
258	0.30589533	-0.73369184E-02	-1.9271069	2.2330023	2.1032
259	0.50553430	-0.96805358E-02	-1.2922932	1.7978275	1.6156

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
260	0.67695888	0.00000000E+00	-0.92621383	1.6031727	1.4010
261	0.83646788	0.00000000E+00	-0.72178724	1.5582551	1.3544
262	0.92692930	0.00000000E+00	-0.57190604	1.4988353	1.3129
263	0.93651907	0.00000000E+00	-0.45545439	1.3919735	1.2331
264	0.87478259	0.00000000E+00	-0.37061075	1.2453933	1.11[illegible]
265	0.76721780	0.00000000E+00	-0.32790078	1.0951186	0.985[illegible]
266	0.64061673	0.00000000E+00	-0.36016975	1.0007865	0.9092[illegible]
267	0.61256588	0.00000000E+00	-0.61057011	1.2231360	1.1086
268	1.6099196	0.00000000E+00	-2.7529441	4.3628637	3.934[illegible]

269	3.3746329	0.00000000E+00	-4.3108397	7.6854726	7.0618
270	3.1933676	0.00000000E+00	-3.8029438	6.9963114	6.3463
271	1.9438772	0.00000000E+00	-2.8458901	4.7897673	4.2948
272	0.83181316	0.00000000E+00	-2.7206212	3.5524344	3.2277

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
273	0.73018611	0.00000000E+00	-3.0800076	3.8101938	3.5031
274	0.64100236	0.00000000E+00	-2.9168839	3.5578862	3.2852
275	0.55419663	0.00000000E+00	-2.5226807	3.0768773	2.8465
276	0.49808873	-0.32356571E-01	-2.0482122	2.5463010	2.3339
277	0.42581397	-0.43742608E-01	-1.5953248	2.0211388	1.8365
278	0.36130493	-0.20277441E-01	-1.2683077	1.6296127	1.4774
279	0.32498753	0.00000000E+00	-1.1032733	1.4282609	1.2995
280	0.25320939	0.00000000E+00	-1.1114574	1.3646667	1.2736
281	0.19707018	0.00000000E+00	-1.1530169	1.3500870	1.2902
282	0.00000000E+00	-1.6578607	-18.041650	18.041650	17.309
283	0.30074841	-0.61178009	-9.3923052	9.6930536	9.3201
284	0.40517483	-0.13958720	-6.0168204	6.4219952	6.1771
285	1.0561910	0.00000000E+00	-4.5514489	5.6076399	5.1860

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
LL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
286	1.8668957	0.00000000E+00	-2.8700376	4.7369332	4.1769
287	2.5188179	0.00000000E+00	-1.6347889	4.1536069	3.6492
288	2.8047795	0.00000000E+00	-0.96139614	3.7661756	3.4022
289	2.6646071	0.00000000E+00	-0.65177530	3.3163824	3.0489
290	2.1849377	0.00000000E+00	-0.60055699	2.7854947	2.5446
291	1.4829706	0.00000000E+00	-0.63379963	2.1167702	1.8892
292	0.74334233	0.00000000E+00	-0.63347255	1.3768149	1.2175
293	0.27975977	-0.82144431E-02	-0.64825333	0.92801310	0.85934
294	0.31454655	0.00000000E+00	-0.75683088	1.0713774	0.98341
340	3.4667839	-1.1076649	-17.712225	21.179009	19.544
341	2.6538834	-0.47568893	-14.731719	17.385602	16.212
342	2.1592403	-0.40376187E-01	-11.269553	13.428794	12.547
343	0.43140335	-0.10173889	-8.6735240	9.1049273	8.8570

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
344	0.33885525	-0.50422995	-9.0000447	9.3389000	8.9576
[illegible]5	0.93165044	-0.83237614	-8.3567537	9.2884042	8.6262
[illegible]6	2.2439802	-1.0253776	-8.2980327	10.542013	9.4410
[illegible]7	3.4563804	-0.20199596	-6.5362393	9.9926197	8.7909
348	5.3764452	0.17109162E-01	-4.906[illegible]	10.2832[illegible]	8.3642
349	5.5839318	0.37540361	-3.40[illegible]	8.99[illegible]	7.8907

350	6.6274129	0.78887327	-2.5811876	9.2086005	8.1470
351	6.4931271	0.50924481	-1.7890881	8.2822151	7.4401
352	7.4806353	0.19245319	-1.3066543	8.7872896	8.1614
353	6.7056336	0.00000000E+00	-1.2320394	7.9376729	7.4090
354	7.1156686	0.00000000E+00	-1.6959226	8.8115912	8.1063
355	5.8719519	0.00000000E+00	-1.9414281	7.8133800	7.0651
356	5.6568928	0.00000000E+00	-2.6392607	8.2961535	7.[illegible]7

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
357	4.2635439	0.00000000E+00	-2.6958890	6.9594330	6.1000
358	3.5537319	0.00000000E+00	-3.3112429	6.8649748	5.9731
359	2.3007067	-0.63266096E-02	-3.0544163	5.3551230	4.7149
360	1.5478737	-0.19342473	-3.4552013	5.0030750	4.4321
361	0.85849862	-0.40371694	-2.9365917	3.7950903	3.3782
362	0.30184191	-0.68301928	-3.1401281	3.4419701	3.1570
363	0.14783976	-0.86863103	-2.5309683	2.6788080	2.4511
364	0.18098908	-0.87593433	-2.7502685	2.9312576	2.5920
369	6.1342699	0.00000000E+00	-7.6312599	13.765530	11.945
370	5.5853240	0.00000000E+00	-7.5262156	13.111540	11.398
371	4.1281778	0.00000000E+00	-7.8127101	11.940888	10.518
372	1.6570899	-0.12131081	-8.9979986	10.655089	9.9365
373	2.0130145	-0.18096762	-10.897115	12.910130	12.017

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
374	3.5525738	-0.22255940E-01	-13.382618	16.935191	15.571
375	6.6270050	0.00000000E+00	-15.034564	21.661569	19.283
376	10.135272	0.00000000E+00	-14.168024	24.303296	21.170
377	12.465010	0.00000000E+00	-11.652120	24.117131	20.908
378	13.117709	0.00000000E+00	-9.1007541	22.218463	19.365
379	12.981879	0.00000000E+00	-6.7710587	19.752938	17.405
380	12.324053	0.00000000E+00	-4.7744523	17.098505	15.300
381	11.176078	0.00000000E+00	-3.2900153	14.466093	13.147
382	9.7023902	0.00000000E+00	-2.2965182	11.998908	11.040
383	7.9957792	0.00000000E+00	-1.7677123	9.7634915	9.0146
384	6.1899234	0.00000000E+00	-1.6010769	7.7910003	7.1283
385	4.3886610	0.00000000E+00	-1.6860915	6.0747525	5.4346
386	2.6781061	0.00000000E+00	-1.9405498	4.6186560	4.0319

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
387	1.1470085	-0.33228856E-02	-2.2697537	3.4167622	3.0586
388	0.21066659	-0.38114378	-2.6241225	2.8347891	2.6198
389	0.00000000E+00	-1.2358142	-2.9284960	2.9284960	2.6035

390	0.00000000E+00	-2.0583507	-3.1589507	3.1589507	2.8105
391	0.00000000E+00	-2.5843431	-3.2644081	3.2644081	3.0055
392	0.00000000E+00	-2.6449178	-3.5146864	3.5146864	3.1762
393	0.00000000E+00	-1.9978168	-3.6241442	3.6241442	3.1766
398	6.4154568	0.00000000E+00	-1.2927377	7.7081945	7.1503
399	6.1986720	0.00000000E+00	-1.3395653	7.5382373	6.9676
400	5.8367791	0.00000000E+00	-1.4261883	7.2629675	6.6752
401	5.5820924	0.00000000E+00	-2.3328185	7.9149110	7.1020
402	7.3636458	0.00000000E+00	-4.4513064	11.814952	10.410
403	9.7524410	0.00000000E+00	-7.7770227	17.529464	15.267

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
404	11.685879	0.00000000E+00	-11.814807	23.500686	20.369
405	13.156561	0.00000000E+00	-13.484733	26.641294	23.073
406	13.075359	0.00000000E+00	-13.106129	26.181488	22.677
407	12.072617	0.00000000E+00	-11.698308	23.770924	20.595
408	10.831912	0.00000000E+00	-9.9123220	20.744234	17.982
409	9.3986696	0.00000000E+00	-8.0879624	17.486632	15.173
410	7.8218412	0.00000000E+00	-6.4339079	14.255749	12.381
411	6.1853215	0.00000000E+00	-5.0565406	11.241862	9.7633
412	4.5619064	0.00000000E+00	-3.9760671	8.5379735	7.4163
413	3.0243634	0.00000000E+00	-3.1770447	6.2014081	5.3893
414	1.6656265	0.00000000E+00	-2.6426335	4.3082601	3.7865
415	0.62777565	-0.18651456E-01	-2.3905913	3.0183669	2.7739
416	0.11192408	-0.14888947	-2.4415556	2.5534797	2.4373

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
417	0.00000000E+00	-0.32479473	-2.6837013	2.6837013	2.5393
418	0.00000000E+00	-0.43297802	-2.9151724	2.9151724	2.7248
419	0.00000000E+00	-0.49437927	-3.0024223	3.0024223	2.7884
420	0.00000000E+00	-0.56673522	-2.9202123	2.9202123	2.6824
421	0.00000000E+00	-0.63925397	-2.6989032	2.6989032	2.4429
422	0.00000000E+00	-0.66762658	-2.5406966	2.5406966	2.2814
427	6.4495622	3.6571850	0.00000000E+00	6.4495622	5.6022
428	6.6976456	3.5962777	0.00000000E+00	6.6976456	5.8066
429	7.4753415	3.1426202	0.00000000E+00	7.4753415	6.5313
430	9.2846823	1.9983548	0.00000000E+00	9.2846823	8.5305
431	11.296502	0.48584734	-0.71792652	12.014429	11.492
432	12.679857	0.00000000E+00	-3.8359879	16.515845	15.031
433	13.521549	0.00000000E+00	-8.2982887	21.819838	19.101

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI

434	13.506870	0.00000000E+00	-11.370162	24.877032	21.578
435	12.118632	0.00000000E+00	-12.351340	24.469972	21.196
436	10.711011	0.00000000E+00	-11.615721	22.326733	19.345
437	9.3205515	0.00000000E+00	-10.219437	19.539988	16.936
438	7.7515060	0.00000000E+00	-8.6816948	16.433201	14.249
439	6.2054690	0.00000000E+00	-7.1265431	13.332012	11.566
440	4.7064338	0.00000000E+00	-5.7288801	10.435314	9.[illegible]6
441	3.2815943	0.00000000E+00	-4.5632884	7.8448827	6.[illegible]4
442	1.9813323	0.00000000E+00	-3.6591556	5.6404879	4.9691
443	0.90400033	0.00000000E+00	-3.0373780	3.9413783	3.5888
444	0.21337719	-0.33794843E-01	-2.7412468	2.9546240	2.8431
445	0.90342306E-03	-0.13724683	-2.7493579	2.7502614	2.6848
446	0.00000000E+00	-0.17976860	-2.8810392	2.8810392	2.7955

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
447	0.00000000E+00	-0.12955454	-2.9486380	2.9486380	2.8862
448	0.00000000E+00	-0.85045354E-01	-2.8796300	2.8796300	2.8382
449	0.00000000E+00	-0.72166073E-01	-2.7014145	2.7014145	2.6663
450	0.00000000E+00	-0.75966397E-01	-2.5194846	2.5194846	2.4826
451	0.00000000E+00	-0.79093123E-01	-2.4622586	2.4622586	2.4239
456	8.1157401	7.0573745	0.00000000E+00	8.1157401	7.6469
457	8.5320989	6.9907934	0.00000000E+00	8.5320989	7.8912
458	9.6962294	6.5056983	0.00000000E+00	9.6962294	8.6110
459	11.925356	5.9474825	0.00000000E+00	11.925356	10.409
460	13.175696	4.2193952	0.00000000E+00	13.[illegible]	11.[illegible]
461	13.259901	1.5545835	-0.797[illegible]288	14[illegible]	1[illegible]
462	13.062492	0.95095331E-02	-3.4599208	16.522413	15.[illegible]0
463	12.040368	0.00000000E+00	-7.5359118	19.576279	17.143

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
464	10.127947	0.00000000E+00	-9.9439281	20.071875	17.392
465	8.8326695	0.00000000E+00	-10.147837	18.980506	16.456
466	7.6835411	0.00000000E+00	-9.4660148	17.149556	14.892
467	6.2844351	0.00000000E+00	-8.5327152	14.817150	12.901
468	4.9519874	0.00000000E+00	-7.3710352	12.323023	10.765
469	3.6777435	0.00000000E+00	-6.1969347	9.8746782	8.6719
470	2.4768164	0.00000000E+00	-5.1516682	7.6284846	6.7699
471	1.4083364	0.00000000E+00	-4.3131505	5.7214870	5.1910
472	0.57690972	-0.14545312E-01	-3.7238049	4.3007146	4.0546
473	0.11943196	-0.10167060	-3.3890704	3.5085023	3.4071
474	0.00000000E+00	-0.23362070	-3.2396410	3.2396410	3.1315
475	0.00000000E+00	-0.29729126	-3.1406525	3.1406525	3.0035
476	0.00000000E+00	-0.29015052	-2.9854252	2.9854252	2.8515

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

LOAD STEP [illegible] ITERATION= 10 SECTION= 1
TIME= 0.0000[illegible] LOAD CASE= 1

SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
477	0.00000000E+00	-0.28046125	-2.7498609	2.7498609	2.6209
78	0.00000000E+00	-0.28817741	-2.4834170	2.4834170	2.3526
79	0.00000000E+00	-0.30539294	-2.2754397	2.2754397	2.1392
30	0.00000000E+00	-0.31427720	-2.1978168	2.1978168	2.0587
485	9.6602046	8.0039453	0.00000000E+00	9.6602046	8.9620
486	10.042614	7.6983894	0.00000000E+00	10.042614	9.1179
487	10.940858	7.0245374	0.00000000E+00	10.940858	9.6198
488	12.411992	6.9635389	0.00000000E+00	12.411992	10.796
489	12.716066	6.5452190	0.00000000E+00	12.716066	11.107
490	11.977024	4.4820908	0.00000000E+00	11.977024	10.761
491	10.742299	2.1642797	-0.65737914	11.399678	10.488
492	9.2611379	0.29742933	-3.0651864	12.326324	11.107
493	7.5399306	0.00000000E+00	-6.5099368	14.049867	12.203

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
494	6.6245310	0.00000000E+00	-8.0359947	14.660526	12.716
495	5.8755800	0.00000000E+00	-8.5470993	14.422679	12.573
496	4.8328241	0.00000000E+00	-8.5596777	13.392502	11.769
497	3.7854796	0.00000000E+00	-8.0816058	11.867085	10.531
498	2.7423978	0.00000000E+00	-7.3405296	10.082927	9.0685
99	1.7568576	0.00000000E+00	-6.5234702	8.2803278	7.5959
00	0.9C[illegible]8365	[illegible].00000000E+00	[illegible]614558	6.6699395	6.2971
01	0.35923120	-0.88364863E-0[illegible]	[illegible].1210407	5.4802719	5.2811
502	0.91696344E-01	-0.22007446	-4.6016835	4.6933799	4.5473
503	0.00000000E+00	-0.32526124	-4.1498534	4.1498534	3.9998
504	0.00000000E+00	-0.39482031	-3.7019082	3.7019082	3.5218
505	0.00000000E+00	-0.40914617	-3.2289626	3.2289626	3.0452
506	0.00000000E+00	-0.41459274	-2.7518265	2.7518265	2.5698

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
507	0.00000000E+00	-0.43072858	-2.3277511	2.3277511	2.1452
508	0.00000000E+00	-0.45493148	-2.0281865	2.0281865	1.8434
509	0.00000000E+00	-0.46763155	-1.9184578	1.9184578	1.7326
514	11.625549	3.5829125	0.00000000E+00	11.625549	10.312
515	11.708184	3.4405337	0.00000000E+00	11.708184	10.423
516	11.947769	3.0830613	0.00000000E+00	11.947769	10.745
517	12.421331	3.0037526	0.00000000E+00	12.421331	11.225
518	12.264622	3.1548402	0.00000000E+00	12.264622	11.031
519	11.239637	3.0335689	0.00000000E+00	11.239637	10.074
20	9.0423366	3.0692837	0.00000000E+00	9.0423366	8.0044
21	6.3492143	1.4574424	-0.41434306	6.7635574	6.2072
22	4.9896215	0.00000000E+00	-3.0571488	8.0467703	7.1032
523	4.7108761	0.00000000E+00	-5.5638578	10.274734	8.9125

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
524	4.4421715	0.00000000E+00	-7.2312749	11.673446	10.207
525	3.7009438	0.00000000E+00	-8.2923776	11.993321	10.642
526	2.8781829	0.00000000E+00	-8.6630811	11.541264	10.415
527	2.0174076	0.00000000E+00	-8.5105208	10.527928	9.6924
528	1.2023222	0.00000000E+00	-8.0230849	9.2254071	8.7012
529	0.54781829	-0.22693712E-01	-7.3566947	7.9045130	7.6439
530	0.15454061	-0.10988219	-6.6122370	6.7667776	6.6409
531	0.20949443E-01	-0.25585784	-5.8351490	5.8560985	5.7239
532	0.00000000E+00	-0.35550621	-5.0380840	5.0380840	4.8709
533	0.00000000E+00	-0.37789120	-4.2321143	4.2321143	4.0566
534	0.00000000E+00	-0.35725513	-3.4469512	3.4469512	3.2830
535	0.00000000E+00	-0.33261630	-2.7321096	2.7321096	2.5819
536	0.00000000E+00	-0.32579940	-2.1465815	2.1465815	2.0037

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
537	0.00000000E+00	-0.33891592	-1.7515682	1.7515682	1.6092
538	0.00000000E+00	-0.34975903	-1.6089518	1.6089518	1.4657
543	13.302466	1.8400214	0.00000000E+00	13.302466	[illegible]
544	13.274436	1.7945709	0.00000000E+00	13.274436	[illegible]
545	13.174176	1.7105469	0.00000000E+00	13.174176	12.408
546	12.968264	2.0337497	0.00000000E+00	12.968264	12.085
547	12.659746	2.1248666	0.00000000E+00	12.659746	11.745
548	11.796595	1.6037073	0.00000000E+00	11.796595	11.084
549	9.2282837	1.6562893	0.00000000E+00	9.2282837	8.5271
550	5.8553660	1.3407311	0.00000000E+00	5.8553660	5.3479
551	3.8786088	0.16608708E-01	-1.3797085	5.2583173	4.7611
552	3.7767554	0.00000000E+00	-4.2478000	8.0245554	6.9578
553	3.6241157	0.00000000E+00	-6.5918942	10.216010	8.9712

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
554	3.1101288	0.00000000E+00	-8.3510248	11.461154	10.267
555	2.4255487	0.00000000E+00	-9.3481239	11.773673	10.772
556	1.6552627	0.00000000E+00	-9.6575780	11.312841	10.590
557	0.92189909	0.00000000E+00	-9.4270399	10.348939	9.9280
558	0.37513197	-0.46660230E-01	-8.8141099	9.1892419	8.9889
559	0.84155294E-01	-0.15776921	-7.9519725	8.0361278	7.9190
560	0.00000000E+00	-0.28868880	-6.9402995	6.9402995	[illegible]
561	0.00000000E+00	-0.35911794	-5.8547679	5.8547679	[illegible]
562	0.00000000E+00	-0.34091724	-4.7620977	4.7620977	4.6016
563	0.00000000E+00	-0.28539501	-3.7289366	3.7289366	3.5950
564	0.00000000E+00	-0.23103401	-2.8216517	2.8216517	2.7136
565	0.00000000E+00	-0.20152688	-2.1019953	2.1019953	2.0088

566 0.00000000E+00 -0.20144424 -1.6276449 1.6276449 1.5[illegible]

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	S
567	0.00000000E+00	-0.20853485	-1.4582646	1.4582646	1.365
572	14.565708	0.48614201E-01	-0.51574381E-01	14.617282	14.56
573	14.479741	0.24306494E-01	-0.16096128	14.640702	14.54
574	14.219198	0.00000000E+00	-0.45096832	14.670166	14.45
575	13.619547	0.00000000E+00	-0.75583302	14.375380	14.01
576	13.243896	0.00000000E+00	-0.76673674	14.010633	13.64
577	12.312681	0.00000000E+00	-0.57303958	12.885720	12.60
578	9.6586701	0.00000000E+00	-0.37590410	10.034574	9.852
579	7.0734095	0.11349400E-01	-0.20222891	7.2756384	7.171
580	4.4829697	0.00000000E+00	-1.1916944	5.6746641	5.204
581	3.7752547	0.00000000E+00	-3.6592316	7.4344863	6.456
582	3.3097332	0.00000000E+00	-6.2812197	9.5909529	8.439
583	2.7794879	0.00000000E+00	-8.4934992	11.272987	10.17

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	
584	2.1132658	0.00000000E+00	-10.010010	12.123275	11.2
585	1.3892520	0.00000000E+00	-10.754027	12.143279	11.51
586	0.72084955	0.00000000E+00	-10.780414	11.501263	11.16
587	0.26661173	-0.75809437E-01	-10.222672	10.489284	10.324
588	0.59601543E-01	-0.22645077	-9.2423243	9.3019259	9.1628
589	0.00000000E+00	-0.36172475	-7.9976812	7.9976812	7.8242
590	0.00000000E+00	-0.43071653	-6.6297548	6.6297548	6.4256
591	0.00000000E+00	-0.42020528	-5.2592869	5.2592869	5.0624
592	0.00000000E+00	-0.37326725	-3.9876387	3.9876387	3.8148
593	0.00000000E+00	-0.32386691	-2.8973064	2.8973064	2.7497
594	0.00000000E+00	-0.29561256	-2.0521977	2.0521977	1.9215
595	0.00000000E+00	-0.29730457	-1.5034646	1.5034646	1.3791
596	0.00000000E+00	-0.30705258	-1.3076132	1.3076132	1.1843

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
601	14.988263	0.00000000E+00	-1.4575344	16.445797	15.767
602	14.912921	0.00000000E+00	-1.5238473	16.436768	15.730
603	14.678890	0.00000000E+00	-1.6681685	16.347058	15.580
604	14.168358	0.00000000E+00	-1.8445136	16.012871	15.175
605	13.761357	0.00000000E+00	-2.0457562	15.807114	14.891
606	12.827959	0.00000000E+00	-2.0371203	14.865079	13.959
607	10.642038	0.00000000E+00	-1.7083142	12.350352	11.594
608	8.9502247	0.00000000E+00	-1.4234370	10.373662	9.7425
609	6.2664824	0.00000000E+00	-1.7914631	8.0579455	7.3308

610	4.54[illegible]	0.00000000E+00	-3.2651447	7.8061591	6.7957
611	3.4[illegible]	0.00000000E+00	-5.7637459	9.1710768	8.0295
612	2.5[illegible]	0.00000000E+00	-8.4042656	10.943184	9.9254
613	1.7625579	0.00000000E+00	-10.512247	12.274805	11.505

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
614	1.0572174	0.00000000E+00	-11.767139	12.824357	12.340
615	0.50699394	-0.48086064E-01	-12.101638	12.608632	12.345
616	0.17246703	-0.16794746	-11.617400	11.789867	11.624
617	0.30381587E-01	-0.32527148	-10.510412	10.540793	10.368
618	0.00000000E+00	-0.45566378	-9.0079117	9.0079117	8.7901
619	0.00000000E+00	-0.51111669	-7.3257026	7.3257026	7.0845
620	0.00000000E+00	-0.49931448	-5.6459250	5.6459250	5.4137
621	0.00000000E+00	-0.45469404	-4.1099269	4.1099269	3.9026
622	0.00000000E+00	-0.40476038	-2.8196541	2.8196541	2.6406
623	0.00000000E+00	-0.37062141	-1.8425621	1.8425621	1.6880
624	0.00000000E+00	-0.36632722	-1.2202201	1.2202201	1.0846
625	0.00000000E+00	-0.37688853	-0.99763956	0.99763956	0.87267
630	14.929507	0.70706634	0.00000000E+00	14.929507	14.588

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
IME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT MID LE

NODE	SIG1	SIG2	SIG3	SI	SI
631	14.922711	0.64030765	0.00000000E+00	14.922711	14.613
632	14.893829	0.44238046	0.00000000E+00	14.893829	14.678
633	14.801979	0.17714133	-0.30567283E-01	14.832546	14.730
634	14.617613	0.21522274E-01	-0.18142680	14.799040	14.699
635	14.060098	0.00000000E+00	-0.59375995	14.653857	14.370
636	12.495016	0.00000000E+00	-1.1432150	13.638231	13.107
637	11.198380	0.00000000E+00	-1.3540805	12.552461	11.934
638	7.8252435	0.00000000E+00	-1.8845964	9.7098399	8.9194
639	5.0818947	0.00000000E+00	-3.2915691	8.3734638	7.3074
640	3.1296520	0.00000000E+00	-5.7569526	8.8866047	7.8104
641	1.9714523	0.00000000E+00	-8.7041327	10.675585	9.8452
642	1.1735951	0.00000000E+00	-11.212880	12.386475	11.849
643	0.55987719	0.00000000E+00	-12.788627	13.348505	13.081

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
644	0.17143005	-0.73811030E-01	-13.291732	13.463162	13.[illegible]3
645	0.26734145E-01	-0.24741768	-12.815890	12.842624	12.[illegible]3
646	0.00000000E+00	-0.40890297	-11.582641	11.582641	11.384
647	0.00000000E+00	-0.49018030	-9.8625307	9.8625307	9.6271
648	0.00000000E+00	-0.49298753	-7.9195838	7.9195838	7.6851
649	0.00000000E+00	-0.44659048	-5.9788707	5.9788707	5.7686

650	0.00000000E+00	-0.37752119	-4.2131897	[illegible]	4.0378
651	0.00000000E+00	-0.30776734	-2.7430320	2.7430320	2.6029
652	0.00000000E+00	-0.25502357	-1.6436855	1.6436855	1.5322
653	0.00000000E+00	-0.23354793	-0.95567557	0.95567557	0.86303
654	0.00000000E+00	-0.23688522	-0.71308426	0.71308426	0.62905
659	14.006554	1.9129943	0.00000000E+00	14.006554	13.155
660	14.059720	1.8959298	0.00000000E+00	14.059720	13.214

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
661	14.177241	1.8313050	0.00000000E+00	14.177241	13.356
662	14.434184	1.8981960	0.00000000E+00	14.434184	13.585
663	14.560449	1.8221883	0.00000000E+00	14.560449	13.741
664	14.537380	1.3728373	0.00000000E+00	14.537380	13.904
665	14.005070	1.2284407	0.00000000E+00	14.005070	13.433
666	11.942529	0.62829814	0.00000000E+00	11.942529	11.650
667	7.8648681	0.00000000E+00	-1.0507912	8.9156593	8.4403
668	4.9668619	0.00000000E+00	-2.7509735	7.7178355	6.7769
669	3.1787686	0.00000000E+00	-5.4767398	8.6555084	7.5879
670	1.9317622	0.00000000E+00	-8.6328456	10.564608	9.7478
671	1.1008667	0.00000000E+00	-11.212438	12.313305	11.804
672	0.50971164	0.00000000E+00	-12.805417	13.315128	13.069
673	0.13074805	-0.45818444E-01	-13.311397	13.442145	13.355

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

AD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
674	0.55924516E-03	-0.20417816	-12.833070	12.833629	12.733
675	0.00000000E+00	-0.37530184	-11.589087	11.589087	11.406
676	0.00000000E+00	-0.45029029	-9.8462847	9.8462847	9.6293
677	0.00000000E+00	-0.45157799	-7.8695778	7.8695778	7.6540
678	0.00000000E+00	-0.40357578	-5.8895036	5.8895036	5.6986
679	0.00000000E+00	-0.32998064	-4.0860716	4.0860716	3.9317
680	0.00000000E+00	-0.25204487	-2.5859160	2.5859160	2.4697
681	0.00000000E+00	-0.18790467	-1.4682698	1.4682698	1.3840
682	0.00000000E+00	-0.15298359	-0.77512742	0.77512742	0.71110
683	0.00000000E+00	-0.14856251	-0.53400310	0.53400310	0.47738
688	13.116972	2.7631816	0.00000000E+00	13.116972	11.976
689	13.163640	2.7550419	0.00000000E+00	13.163640	12.025
690	13.304964	2.7368120	0.00000000E+00	13.304964	12.169

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
691	13.801206	2.8272749	0.00000000E+00	13.801206	12.627
692	14.250355	2.9837308	0.00000000E+00	14.250355	13.017
693	14.794895	2.9204834	0.00000000E+00	14.794895	13.573

694	15.059647	3.6096931	0.00000000E+00	15.059647	13.638
695	11.561763	3.3042412	0.00000000E+00	11.561763	10.375
696	6.6313504	0.96988986	-0.67525255E-01	6.6988756	6.3155
697	4.1402788	0.00000000E+00	-1.5311240	5.6714027	5.0882
98	3.0621293	0.00000000E+00	-4.9887179	8.0508472	7.[illegible]13
699	1.9271492	0.00000000E+00	-8.4243166	10.351466	9.[illegible]2
700	1.1100364	0.00000000E+00	-11.023019	12.133056	11.622
701	0.51058342	0.00000000E+00	-12.562240	13.072824	12.827
702	0.12798482	-0.57965530E-01	-13.029746	13.157731	13.066
703	0.00000000E+00	-0.24218927	-12.549269	12.549269	12.430

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
704	0.00000000E+00	-0.44403450	-11.330348	11.330348	11.115
705	0.00000000E+00	-0.55091134	-9.6229461	9.6229461	9.3597
706	0.00000000E+00	-0.58030986	-7.6791377	7.6791377	7.4060
707	0.00000000E+00	-0.55267818	-5.7238520	5.7238520	5.4685
708	0.00000000E+00	-0.49025174	-3.9371540	3.9371540	3.7165
709	0.00000000E+00	-0.41500593	-2.4484755	2.4484755	2.2698
710	0.00000000E+00	-0.34661491	-1.3406301	1.3406301	1.2055
711	0.00000000E+00	-0.30152748	-0.65908023	0.65908023	0.57174
712	0.00000000E+00	-0.28989941	-0.42531932	0.42531932	0.37691
717	12.998296	3.6881102	0.00000000E+00	12.998296	11.602
718	13.024024	3.6961617	0.00000000E+00	13.024024	11.625
19	13.15895[illegible]	3.73733[illegible]	0.00000000E+00	13.1[illegible]58	11.[illegible]
20	13.7643[illegible]	[illegible]	0.0000[illegible]000E+0[illegible]	[illegible]96	12.[illegible]

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT MIDDLE

NODE	SIG1	SIG2	SIG3	SI	SI
721	14.428433	4.1923473	0.00000000E+00	14.428433	12.855
722	15.290273	3.9387481	0.00000000E+00	15.290273	13.752
723	15.683497	4.6155120	0.00000000E+00	15.683497	13.982
724	11.406318	4.7345569	0.00000000E+00	11.406318	9.9470
725	5.8440219	2.2969154	0.00000000E+00	5.8440219	5.1129
726	3.5418952	0.00000000E+00	-0.88077479	4.4226700	4.0555
727	2.6397144	0.00000000E+00	-4.8360977	7.4758121	6.5777
728	1.6026987	0.00000000E+00	-8.4972638	10.099963	9.4082
729	0.82499647	0.00000000E+00	-11.167264	11.992261	11.605
730	0.25704489	0.00000000E+00	-12.714746	12.971791	12.846
731	0.10570164E-01	-0.14973712	-13.171689	13.182259	13.103
732	0.00000000E+00	-0.40068831	-12.678695	12.678695	12.483
733	0.00000000E+00	-0.55718149	-11.446207	11.446207	11.178

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

AD STEP 1 ITERATION= 10 SECTION= 1
IME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT MIDDLE

ODE SIG1 SIG2 SIG3 SI SI

734	0.00000000E+00	-0.63066384	[illegible]	9.7208244	9.4213
735	0.00000000E+00	-0.63922847	-7.7529454	7.7529454	7.4539
736	0.00000000E+00	-0.60074102	-5.7689818	5.7689818	5.4933
737	0.00000000E+00	-0.53411622	-3.9525844	3.9525844	3.7145
738	0.00000000E+00	-0.45835715	-2.4372175	2.4372175	2.2436
739	0.00000000E+00	-0.39058748	-1.3091464	1.3091464	1.1643
740	0.00000000E+00	-0.34415643	-0.61724885	0.61724885	0.53579
741	0.00000000E+00	-0.32747230	-0.38467791	0.38467791	0.35950

MAXIMUMS

NODE	723	485	127	127	127
VALUE	15.683497	8.0039453	-26.940004	27.200153	24.75

NODAL STRESSES ARE SHELL TOP

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
1	0.46729864	0.35188352E-02	-0.30946452	0.77676316	0.70058
2	0.71155450E-01	-0.18762353	-0.78616962	0.85732507	0.76551
3	0.71574913E-01	-0.16618567	-0.78144064	0.85301556	0.77092
4	0.66223188E-01	-0.96024172E-01	-0.79728191	0.86350510	0.80998
5	0.10482842	0.00000000E+00	-0.76111302	0.86594145	0.82724
6	0.17911775	0.00000000E+00	-0.72164944	0.90076718	0.82679
7	0.24242029	0.00000000E+00	-0.66649009	0.90891038	0.82402
8	0.32760088	0.00000000E+00	-0.62331108	0.95091196	0.86181
9	0.41175569	0.00000000E+00	-0.60495011	1.0167058	0.91360
10	0.49177999	0.00000000E+00	-0.57463865	1.0664186	0.94155
11	0.55088214	0.00000000E+00	-0.53349653	1.0843787	0.94517
12	0.60325924	0.00000000E+00	-0.48398075	1.0872400	0.94478
13	0.65366539	0.00000000E+00	-0.43134316	1.0850085	0.94697

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
14	0.69994330	0.00000000E+00	-0.37908131	1.0790246	0.94941
15	0.73889745	0.00000000E+00	-0.32911345	1.0680109	0.94837
16	0.76767490	0.00000000E+00	-0.28313931	1.0508142	0.94210
17	0.78508286	0.00000000E+00	-0.24289207	1.0279749	0.93097
18	0.79169295	0.00000000E+00	-0.21012735	1.0018203	0.91648
19	0.78951574	0.00000000E+00	-0.18591177	0.97542751	0.90022
20	0.78111868	0.00000000E+00	-0.17024553	0.95136421	0.88343
21	0.76885182	0.00000000E+00	-0.16202918	0.93088100	0.86684
22	0.75488488	0.00000000E+00	-0.15982209	0.91470697	0.85149
23	0.74134268	0.00000000E+00	-0.16273077	0.90407345	0.83916
24	0.73072488	0.00000000E+00	-0.16906880	0.89979368	0.83181
	0.72481718	0.00000000E+00	-0.17563886	0.90045604	0.82962
	0.72358429	0.00000000E+00	-0.17811718	0.90170147	0.82984

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	S
27	0.21118582	-0.11440526	-3.1632845	3.3744703	[illegible]229
28	0.19822245	-0.31926171E-01	-3.0558232	3.2540456	3.151
29	0.24779973	-0.15821197E-01	-2.7447387	2.9925385	2.872
30	0.37541597	-0.27430110E-01	-2.2708583	2.6462743	2.475
31	0.35070844	-0.17399385E-01	-2.0573575	2.4080659	2.254
32	0.45324659	0.00000000E+00	-1.8233651	2.2766116	2.097
33	0.63372521	0.00000000E+00	-1.4817850	2.1155102	1.887
34	0.74929599	0.00000000E+00	-1.1149132	1.8642092	1.628
35	0.85308616	0.00000000E+00	-0.75689961	1.6099858	1.396
36	0.93807629	0.00000000E+00	-0.49831282	1.4363891	1.263
37	1.0230589	0.00000000E+00	-0.28954061	1.3125995	1.194
38	1.0923118	0.00000000E+00	-0.11629443	1.2086063	1.155
39	1.1271223	0.27007064E-01	-0.95550568E-03	1.1280778	1.114

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	S
40	1.1214594	0.14014072	0.00000000E+00	1.1214594	1.058
41	1.0807972	0.22515148	0.00000000E+00	1.0807972	0.9884
42	1.0140577	0.28064249	0.00000000E+00	1.0140577	0.9093
43	0.93109113	0.30962118	0.00000000E+00	0.93109113	0.[illegible]2
44	0.83814463	0.31700858	0.00000000E+00	0.83814463	0.[illegible]82
45	0.74121804	0.30809919	0.00000000E+00	0.74121804	0.6713
46	0.64730837	0.28478050	0.00000000E+00	0.64730837	0.5968
47	0.56313105	0.25089623	0.00000000E+00	0.56313105	0.5246
48	0.49925147	0.20830192	0.00000000E+00	0.49925147	0.4581
49	0.44975829	0.17223140	0.00000000E+00	0.44975829	0.4024
50	0.40615067	0.14994119	0.00000000E+00	0.40615067	0.3579
51	0.39489678	0.14877573	0.00000000E+00	0.39489678	0.3454
52	0.27239491	-0.31395715E-01	-6.6265039	6.8988988	6.758

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
53	0.33022194	0.00000000E+00	-5.2817413	5.6119632	5.4591
54	0.44341873	-0.91238986E-01	-3.9046852	4.3481040	4.118
55	0.27477425	0.00000000E+00	-3.0710636	3.3458378	3.222
56	0.29467087	0.00000000E+00	-2.5902975	2.8849684	2.751
57	0.40187348	0.00000000E+00	-2.1057321	2.5076056	2.335
58	0.49434392	0.00000000E+00	-1.5479085	2.0422524	1.8467
59	0.68833568	0.00000000E+00	-0.98031635	1.6686520	1.453
60	0.89404323	0.00000000E+00	-0.45524129	1.3492845	1.[illegible]
61	1.0386748	0.12977191E-01	-0.95428372E-01	1.1341032	1.0847
62	1.1450490	0.21452780	0.00000000E+00	1.1450490	1.058
63	1.2015152	0.44125087	0.00000000E+00	1.2015152	1.055
64	1.2090303	0.60077978	0.00000000E+00	1.2090303	1.0484

65	1.1670003	0.68984171	0.00000000E+00	1.1670003	1.016

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
66	1.0997911	0.72503054	0.00000000E+00	1.0997911	0.96854
67	1.0129228	0.70025327	0.00000000E+00	1.0129228	0.89955
68	0.93115921	0.63620713	0.00000000E+00	0.93115921	0.82787
69	0.85938913	0.53743146	0.00000000E+00	0.85938913	0.75819
70	0.80190176	0.42528637	0.00000000E+00	0.80190176	0.70188
71	0.76019846	0.31623029	0.00000000E+00	0.76019846	0.66738
72	0.71737529	0.20547482	0.00000000E+00	0.71737529	0.64438
73	0.66961602	0.10496115	0.00000000E+00	0.66961602	0.62617
74	0.57781059	0.19425099E-01	-0.25904321E-01	0.60371492	0.58274
75	0.47198668	0.00000000E+00	-0.67108069E-01	0.53909475	0.51022
76	0.40857932	0.00000000E+00	-0.14033879	0.54891810	0.49593
77	0.14009973	-0.47813337E-01	-12.755067	12.895166	12.802
78	0.63349900	-0.44145947	-5.9951009	6.6285999	6.1683

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
79	0.14796116	-0.18476218	-3.9959716	4.1439328	3.9947
80	0.13809819	-0.10128727	-2.7853376	2.9234357	2.8143
81	0.12563442	0.00000000E+00	-2.2375428	2.3631772	2.3045
82	0.15226962	0.00000000E+00	-1.8765081	2.0287777	1.9576
83	0.17367874	0.00000000E+00	-1.4423187	1.6159974	1.5369
84	0.52839872	0.00000000E+00	-0.76917025	1.2975690	1.1331
85	0.80577733	0.14163095E-01	-0.14655278	0.95233010	0.88492
86	1.0247141	0.27758837	0.00000000E+00	1.0247141	0.92495
87	1.1827104	0.58490257	0.00000000E+00	1.1827104	1.0290
88	1.2796811	0.78854565	0.00000000E+00	1.2796811	1.1200
89	1.3476524	0.89649170	0.00000000E+00	1.3476524	1.1885
90	1.3425523	0.89828076	0.00000000E+00	1.3425523	1.1853
91	1.3305676	0.83736790	0.00000000E+00	1.3305676	1.1669

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
92	1.2685915	0.70926019	0.00000000E+00	1.2685915	1.1046
93	1.2044936	0.56327595	0.00000000E+00	1.2044936	1.0477
94	1.1311598	0.39934652	0.00000000E+00	1.1311598	0.99728
95	1.0554976	0.24265154	0.00000000E+00	1.0554976	0.96021
96	1.0151846	0.11122977	0.00000000E+00	1.0151846	0.96597
97	0.96656797	0.12816339E-01	-0.42099126E-01	1.0086671	0.98308
98	0.96782324	0.00000000E+00	-0.10221854	1.0700418	1.0236
99	0.86120716	0.00000000E+00	-0.28180684	1.1430140	1.0328
100	0.70338656	0.00000000E+00	-0.33465353	1.0380401	0.92334

101	0.32712260	0.00000000E+00	-0.83209697	1.1592196	1.[illegible]
102	0.00000000E+00	-2.8021052	-21.610211	21.610211	20.256
103	2.7145128	-0.20516559	-4.7740184	7.4885312	6.9106
104	0.69713614E-01	-0.42412411	-2.9684253	3.0381389	2.8846

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
105	0.20377307	-0.68192571E-01	-1.7014296	1.9052027	1.8024
106	0.00000000E+00	-0.82939079E-01	-1.6325850	1.6325850	1.5939
107	0.96303014E-01	-0.52752318E-01	-1.2054650	1.3017680	1.2416
108	0.13405162E-01	-0.15671822	-1.0134060	1.0268111	0.95825
109	0.41328397	0.22473253E-01	-0.47232193	0.88560590	0.79783
110	0.64287649	0.95905103E-01	-0.15391789	0.79679439	0.72349
111	0.95955305	0.24939958	-0.10748552	1.0670386	0.95378
112	1.1464063	0.36967445	-0.75419591E-01	1.2218259	1.0968
113	1.2576834	0.43606497	-0.61878359E-01	1.3195618	1.1944
114	1.3807561	0.46634600	-0.47680418E-01	1.4284365	1.3002
115	1.3377696	0.46032842	-0.45950208E-01	1.3837198	1.2537
116	1.3571048	0.44351508	-0.53039270E-01	1.4101441	1.2645
117	1.2566676	0.39129931	-0.55025942E-01	1.3116935	1.1676

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
"ELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
118	1.2089642	0.31770369	-0.44941125E-01	1.2539054	1.1237
119	1.1581133	0.22013937	-0.33083983E-01	1.1911973	1.0900
120	1.1140250	0.10378788	-0.22168459E-01	1.1361935	1.0801
121	1.1557723	0.50711852E-01	-0.27017478E-01	1.1827898	1.1464
122	1.1655386	0.00000000E+00	-0.15113817	1.3166768	1.2495
123	1.3039020	0.26446306E-01	-0.11294573	1.4168477	1.3560
124	1.3321769	0.00000000E+00	-0.43342524	1.7656021	1.5980
125	1.3322813	0.22087149	-0.32797592	1.6602572	1.4735
126	0.57828652	0.00000000E+00	-1.8199824	2.3982689	2.1754
127	0.00000000E+00	-7.7520732	-42.920361	42.920361	39.848
128	0.00000000E+00	-10.300901	-23.368748	23.368748	20.625
129	0.16253446	-2.2483024	-12.340775	12.503309	11.531
130	0.00000000E+00	-2.3986511	-7.9742031	7.9742031	7.1064

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

Calc. Pckg. VSC02.6.2.3.08
Rev. No: 2
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
131	0.00000000E+00	-1.0200506	-6.5298368	6.5298368	6.0872
132	0.74164329E-01	-0.42359890	-5.3032386	5.3774029	5.15[illegible]
33	1.3019995	0.00000000E+00	-4.3036274	5.6056269	5.111
134	3.8296138	0.00000000E+00	-2.5088019	6.3384157	5.5582
135	6.3053776	0.00000000E+00	-0.91876673	7.2241443	6.8253
136	8.2348552	0.32769694	-0.13990174	8.3747569	8.1536

137	9.6682581	1.1007879	0.00000000E+00	9.6682582	9.1723
138	10.519061	1.5988127	0.00000000E+00	10.519061	9.8234
139	11.130174	1.7703514	0.00000000E+00	11.130174	10.365
140	11.126026	1.5810440	0.00000000E+00	11.126026	10.430
141	10.906930	1.1181703	0.00000000E+00	10.906930	10.399
142	10.228048	0.45638618	0.00000000E+00	10.228048	10.017
143	9.3663231	0.15707710	-0.44378745	9.8101106	9.5244

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
144	8.2985529	0.00000000E+00	-1.0684240	9.3669769	8.8917
145	7.1346178	0.00000000E+00	-1.7781950	8.9128128	8.1758
146	5.9814233	0.00000000E+00	-2.4189146	8.4003379	7.4925
147	4.8256138	0.00000000E+00	-2.9725689	7.7981827	6.8181
148	3.7374000	0.00000000E+00	-3.4925952	7.2299952	6.2827
149	2.7133782	0.00000000E+00	-4.4524538	7.1658320	6.2860
150	1.0569364	-0.81599398E-01	-6.4725673	7.5295037	7.0903
151	0.70621329E-01	-0.34157496E-02	-10.934588	11.005210	10.968
156	12.147949	5.0609702	-8.4734499	20.621399	18.913
157	4.6799238	-2.5668240	-10.001255	14.681179	13.806
158	3.2782292	-1.2167408	-5.2727455	8.5509746	7.9325
159	0.67898340	-1.1839101	-5.2325679	5.9115513	5.3637
160	0.47596432	-1.2539793	-5.5546097	6.0305740	5.4119

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

AD STEP 1 ITERATION= 10 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
161	0.35391700	-1.0224897	-5.2371627	5.5910797	5.0760
162	0.81998296	-0.57341701	-5.5407726	6.3607555	5.8332
163	1.3065393	-0.20317679E-01	-4.6022469	5.9087862	5.4672
164	2.8067170	-0.25904127	-4.2013674	7.0080844	6.3564
165	3.2744937	-0.24273932	-3.2481444	6.5226381	6.0755
166	4.4562253	-0.27238601	-3.5129838	7.9692091	7.3834
167	4.5698689	-0.38975502E-01	-3.1005156	7.6703845	6.9553
168	5.3685292	-0.65005107E-01	-3.6868992	9.0554284	8.2201
169	4.9566862	0.44050543E-01	-3.2299661	8.1866523	7.5639
170	5.3043128	-0.12391392E-01	-4.0047332	9.3090460	8.7207
171	4.5595392	0.12071251	-3.6772987	8.2368379	7.7447
172	4.7453013	0.37786112E-01	-4.6946757	9.4399770	8.7346
173	3.7651273	0.22505921	-4.3625686	8.1276959	7.4013

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

Calc. Pckg. VSC02.6.2.3.08
Rev. No: 2
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT TOP

	SIG1	SIG2	SIG3	SI	SI
[illegible]	3.8005815	0.10410675	-5.3244945	9.1250760	8.1353
175	2.7995483	0.35175351E-01	-4.6373925	7.4369408	6.5849
176	2.6806312	0.00000000E+00	-5.3149304	7.9955616	7.0996

177	1.8091773	-0.33678275E-02	-4.4351276	[illegible]	5.628[illegible]
178	1.9990588	0.00000000E+00	-4.4248120	6.4238709	5.8280
179	1.4831836	0.20805100	-3.1891635	4.6723472	4.3089
180	2.7087215	0.00000000E+00	-3.3580267	6.0667483	5.4136
185	7.3365342	3.5658561	-8.6589987	15.995533	15.026
186	2.2430079	-1.2726108	-12.256317	14.499325	1[illegible]89
187	2.9811982	-0.56928385	-6.9392447	9.9204429	9.[illegible]88
188	2.3306745	-0.81011968	-5.8957323	8.2264068	7.7257
189	2.5992120	-1.6055579	-5.8388725	8.4380844	7.7866
190	1.7594297	-1.2753503	-5.3297593	7.0891890	6.4984

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
191	1.7465322	-1.0112262	-4.9532840	6.6998162	6.0823
192	1.7169166	-0.54960546	-4.0626756	5.7795922	5.1484
193	2.0405510	0.17163515	-3.5953072	5.6358582	5.1381
194	2.6517316	0.87079401E-01	-3.1495901	5.8013217	5.3281
195	3.4981479	0.35434712	-3.6871827	7.1853306	6.6861
196	3.9689762	0.25352105	-3.5144902	7.4834664	6.8796
197	4.6727451	0.22906568	-4.3945132	9.0672584	8.4043
198	4.5564057	0.28939198	-4.1356116	8.6920173	8.1691
199	5.0622574	0.81300359E-01	-5.1916217	10.253879	9.6054
200	4.5756408	0.24899873	-4.8849130	9.4605538	8.7558
201	4.8974465	0.14884044	-6.0471434	10.944590	9.8754
202	4.1677611	0.61815064E-01	-5.2927506	9.4605116	8.3873
203	4.2304677	0.00000000E+00	-6.0664280	10.296896	9.[illegible]1

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
204	3.1930826	0.00000000E+00	-5.0026147	8.1956973	7.2115
205	3.0441394	-0.15225945E-01	-5.1753101	8.2194495	7.3810
206	2.1592629	-0.14532912	-3.8919175	6.0511803	5.5475
207	2.1092495	-0.29185263	-3.3713821	5.4806316	5.1322
208	1.1517282	-0.96995539E-01	-2.2407081	3.3924363	3.1981
209	1.5226749	-0.59357756E-01	-1.7706495	3.2933244	3.0865
214	0.72393197	-0.31947158E-01	-0.86570533	1.5896373	1.4681
215	2.9587237	0.00000000E+00	-2.3345801	5.2933038	4.7894
216	2.1142807	0.00000000E+00	-1.8023722	3.9166529	3.5077
217	0.83527427	-0.60983023E-01	-1.4104999	2.2457741	1.9980
218	0.41163486	-0.64065568E-01	-1.6142757	2.0259105	1.8656
219	0.42864868	-0.30825453E-02	-1.4501266	1.8787752	1.7282
220	0.42566486	0.00000000E+00	-0.96065270	1.3863176	1.2481

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI

221	0.39852636	0.00000000E+00	-0.61039376	1.0089201	0.9306
222	0.31549542	0.00000000E+00	-0.39335885	0.70885427	0.6677
223	0.26793690	0.00000000E+00	-0.34226738	0.61020428	0.5563
224	0.34069649	-0.12827925E-01	-0.46223214	0.80292863	0.7366
225	0.44201170	-0.31775907E-01	-0.56766879	1.0096805	0.9549
226	0.57401383	0.29351752E-01	-0.41950522	0.99351905	0.9189
227	0.60184336	0.79477019E-01	-0.23695037	0.83879372	0.7504
228	0.00000000E+00	-0.76615517	-11.900518	11.900518	11.56
229	0.45998559E-01	-0.64424135	-5.8986166	5.9446152	5.643
230	0.00000000E+00	-0.43428312	-3.4753391	3.4753391	3.291
231	0.10601333	-0.14893900	-2.1551687	2.2611821	2.158
232	0.84468737	0.62452172E-02	-0.72197626	1.5666636	1.409
233	1.5079569	0.35034924	-0.55930244E-01	1.5638871	1.436

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
234	1.8030294	0.81066258	0.00000000E+00	1.8030294	1.6040
235	1.6894440	0.87138285	0.00000000E+00	1.6894440	1.4895
236	1.2812812	0.59969409	0.00000000E+00	1.2812812	1.1316
237	0.74456590	0.21100368	0.00000000E+00	0.74456590	0.68145
238	0.28832353	0.77488407E-02	-0.14695670	0.43528023	0.40396
239	0.24963659	-0.16760733E-01	-0.60280810	0.85244469	0.78162
240	0.27413975	-0.63140391E-01	-1.2875805	1.5617202	1.4330
241	0.77849411	-0.76884971E-01	-1.6915148	2.4700089	2.2628
242	2.8645122	0.00000000E+00	-2.9723001	5.8368123	5.2744
243	2.2825316	0.00000000E+00	-2.5085299	4.7910615	4.2827
244	1.0507539	-0.21399256E-01	-2.0320947	3.0828486	2.7758
245	0.46564082	-0.21399256E-01	-2.2084428	2.6740837	2.4949
246	0.52611330	0.00000000E+00	-2.2408100	2.7669233	2.5638

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
247	0.46690245	0.00000000E+00	-1.8237122	2.2906146	2.1023
248	0.35975276	-0.14667856E-01	-1.4147043	1.7744571	1.6305
249	0.25942326	-0.36381263E-01	-1.1088236	1.3682468	1.2564
250	0.22543166	-0.33757188E-01	-0.97327101	1.1987027	1.0995
251	0.25793852	-0.48215611E-01	-0.94950337	1.2074419	1.1203
252	0.31448530	-0.15513725	-0.86464859	1.1791339	1.0804
253	0.33949300	-0.10903546	-0.64824875	0.98774174	0.89338
254	0.30461100	-0.29191416E-01	-0.49580907	0.80042006	0.72531
255	0.00000000E+00	-1.1543800	-14.132844	14.132844	13.601
256	0.66127725E-01	-0.67636571	-7.8439355	7.9100632	7.5870
257	0.00000000E+00	-0.64118111	-5.2379437	5.2379437	4.9649
258	0.19185996	-0.16369790	-3.6629702	3.8548301	3.6998
259	1.3875140	0.00000000E+00	-1.6618047	3.0493187	2.7023

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
260	2.4857333	0.12149180	-0.31664622	2.8023795	2.6249
261	2.9814966	0.53899562	0.00000000E+00	2.9814966	2.7700
262	2.7501885	0.63018098	0.00000000E+00	2.7501885	[illegible]
263	1.9424826	0.29902544	-0.15203102E-01	1.9576857	[illegible]
264	0.91798994	0.22970162E-01	-0.26336377	1.1813537	1.0835
265	0.12177274	-0.76249019E-01	-0.67695055	0.79872329	0.73293
266	0.19543513E-01	-0.28004893	-1.0579720	1.0775155	0.98738
267	0.39087027E-01	-0.19389409	-1.8212936	1.8603806	1.7577
268	1.5409274	0.00000000E+00	-2.3134722	3.8543996	3.4737
269	3.5670799	0.00000000E+00	-3.8044813	7.3715613	6.7100
270	3.2931315	0.00000000E+00	-3.3437331	6.6368646	5.9709
271	1.9702237	0.00000000E+00	-2.5669311	4.5371548	4.0332
272	0.97247207	0.00000000E+00	-2.6287911	3.6012631	3.2336

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
273	0.99078986	0.00000000E+00	-2.9285621	3.9193520	3.5354
274	0.95344763	0.00000000E+00	-2.6017224	3.5551700	3.1895
275	0.85235773	0.00000000E+00	-2.1459598	2.9983176	2.6853
276	0.69800307	0.00000000E+00	-1.6829168	2.3809198	2.1350
277	0.57217412	0.00000000E+00	-1.3122221	1.8843962	1.6789
278	0.48973925	0.00000000E+00	-1.0623905	1.5521298	1.3916
279	0.39681063	0.00000000E+00	-0.89454930	1.2913599	[illegible]
280	0.38203832	0.43802501E-01	-0.89813650	1.2801748	[illegible]
281	0.40001608	0.11356867	-0.98276085	1.3827769	1.3373
282	0.10183949	-1.2824377	-18.899955	19.001794	18.365
283	1.0640164	-0.35203537	-10.412208	11.476225	10.873
284	1.7123544	0.00000000E+00	-7.1557611	8.8681155	8.1877
285	2.4904925	0.00000000E+00	-5.7264908	8.2169833	7.3232

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
286	3.1554127	0.00000000E+00	-4.1477203	7.3031330	6.3880
287	3.7203313	0.00000000E+00	-2.7341273	6.4544585	5.6377
288	3.9006343	0.00000000E+00	-1.8639162	5.7645505	5.1078
289	3.5589241	0.00000000E+00	-1.4681136	5.0270377	4.4842
290	2.7716004	0.00000000E+00	-1.4156726	4.1872730	3.6991
291	1.7902938	0.00000000E+00	-1.4953506	3.2856444	2.8685
292	0.96974593	0.00000000E+00	-1.5365400	2.5062859	2.2114
293	0.68161958	0.00000000E+00	-1.5561176	2.2377371	2.0274
294	0.87011943	0.00000000E+00	-1.9326439	2.8027633	2.5423
340	8.0761615	2.5360932	-12.540539	20.616701	19.239
341	3.8222511	-0.84671030	-17.604767	21.427018	[illegible]
342	8.4475570	0.00000000E+00	-10.684265	19.131822	[illegible]
343	11.219585	0.36271851	-5.6707233	16.890308	15.801

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	S
344	13.972342	0.51442902	-4.6121689	18.584511	17.48
345	11.614455	0.28065987	-4.2168609	15.831315	14.85
346	10.846157	0.00000000E+00	-4.2255214	15.071678	13.92
347	7.2763640	0.00000000E+00	-5.4849533	12.761317	11.20
348	5.4539484	0.00000000E+00	-6.5104379	11.964386	10.39
349	3.8443039	0.00000000E+00	-7.1216564	10.965960	9.739
350	3.5127117	0.00000000E+00	-8.3565375	11.869249	10.78
351	3.1784571	0.00000000E+00	-8.1318464	11.310303	10.44
352	3.3325696	0.00000000E+00	-9.1316788	12.464248	11.57
353	3.3310410	-0.48686473E-01	-7.9511348	11.282176	10.435
354	3.6271908	-0.58666581E-01	-8.3354268	11.962618	10.990
355	3.5986399	-0.10307166	-6.6220667	10.220707	9.2571
356	3.7917521	-0.97850998E-01	-6.2931325	10.084885	9.0389

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
357	3.5419843	-0.72852233E-01	-4.5131135	8.0550978	7.1228
358	3.5827381	-0.44902582E-01	-3.6199892	7.2027273	6.3116
359	3.2761350	0.00000000E+00	-2.2698761	5.5460112	4.8549
360	3.7030847	0.17494538	-1.8073245	5.5104092	4.9269
361	3.6871942	0.22887778	-1.4124155	5.0996097	4.6574
362	4.2676611	0.22167301	-1.3942159	5.6618770	5.2784
363	3.7932403	0.37714441	-1.6059502	5.3991906	4.9938
364	4.3194835	0.12832734	-2.1566910	6.4761745	6.1163
369	14.577268	10.903421	0.00000000E+00	14.577268	13.133
370	7.1118242	0.00000000E+00	-7.7676049	14.879429	13.124
371	5.7818780	-0.25768643	-12.216698	17.998576	16.394
372	4.5533241	0.00000000E+00	-10.009989	14.563313	13.122
373	5.1391300	0.00000000E+00	-10.001337	15.140467	13.400

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

Calc. Pckg. VSC02.6.2.3.08
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
374	8.5834095	0.00000000E+00	-12.040015	20.623425	18.009
375	12.636447	0.00000000E+00	-15.590331	28.226778	24.652
376	14.872668	0.00000000E+00	-17.113670	31.986339	27.906
377	14.947704	0.00000000E+00	-15.200601	30.148305	26.207
378	13.729249	0.00000000E+00	-12.618704	26.347954	22.865
379	12.451347	0.00000000E+00	-9.9277655	22.379113	19.447
380	10.738735	0.00000000E+00	-7.5701097	18.308845	15.945
381	9.1798036	0.00000000E+00	-5.3003089	14.480113	12.692
382	7.3230621	0.00000000E+00	-3.7106387	11.033701	9.7289
[illegible]	5.7439198	0.00000000E+00	-2.4349170	8.1788368	7.2880
384	4.0912048	0.00000000E+00	-1.7480533	5.8392581	5.2313
385	2.7372281	0.00000000E+00	-1.3386574	4.0758854	3.6824

386	1.5914101	-0.4952[illegible]	-1.3060853	2.8974954	2.6355

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
387	0.86659598	-0.27088944	-1.4428716	2.3094676	2.0828
388	0.31773399	-0.43645635	-1.6362036	1.9539376	1.8384
389	0.40292798E-01	-0.66462540	-1.9746745	2.0149673	1.8655
390	0.33339792E-01	-0.74736188	-2.2524849	2.2858247	2.0502
391	0.11886740E-02	-0.75226583	-2.6903205	2.6915091	2.4284
392	0.92688169E-01	-0.38688801	-2.7822308	2.8749190	2.6770
393	0.48651899	-0.22639131	-3.4412601	3.9277791	3.6279
398	29.103754	14.612549	0.00000000E+00	29.103754	25.414
399	16.140325	7.3018627	0.00000000E+00	16.140325	14.014
400	10.162613	0.37832480	-4.6992999	14.861913	13.572
401	3.1907417	-0.98306920	-14.132015	17.322757	15.678
402	2.7392487	-1.6043619	-12.737702	15.476950	13.969
403	4.9387895	-0.44783264E-02	-13.777252	18.716041	17.023

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
04	11.167484	0.00000000E+00	-18.631134	29.798618	26.[illegible]
405	18.473261	0.00000000E+00	-17.792653	36.265914	31.483
406	18.561219	0.00000000E+00	-13.890561	32.451780	28.216
407	16.834340	0.00000000E+00	-10.992566	27.826906	24.295
408	15.081132	0.00000000E+00	-8.2086092	23.289741	20.479
409	12.676800	0.00000000E+00	-5.4896184	18.166418	16.163
410	10.128845	0.00000000E+00	-3.2823855	13.411231	12.134
411	7.6206382	0.00000000E+00	-1.7355857	9.3562240	8.6440
412	5.2349145	0.00000000E+00	-0.75309084	5.9880054	5.6713
413	3.0445217	0.74620962E-01	-0.28329568	3.3278173	3.1772
414	1.1162358	0.99407142E-01	-0.14725785	1.2634937	1.1754
415	0.22378747	-0.53930174E-01	-0.83827988	1.0620674	0.99122
416	0.34223840E-02	-0.14960630	-2.1161101	2.1195325	2.0522

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

Calc. Pckg. VSC02.6.2.3.08
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
417	0.00000000E+00	-0.43629916	-3.1801447	3.1801447	2.9884
418	0.00000000E+00	-0.78100232	-3.8989102	3.8989102	3.5748
419	0.00000000E+00	-1.1714308	-4.3157523	4.3157523	3.8671
420	0.00000000E+00	-1.6104240	-4.4798276	4.4798276	3.93[illegible]
21	0.00000000E+00	-2.0186472	-4.4791653	4.4791653	3.88[illegible]
22	0.00000000E+00	-2.2434689	-4.3918410	4.3918410	3.8042
427	43.865016	18.980285	0.00000000E+00	43.865016	38.289
428	31.176887	14.048437	0.00000000E+00	31.176887	27.186
429	15.923913	4.3815570	-1.5403892	17.464303	15.592

430	0.00000000E+00	-4.8919249	-27.730474	27.730474	25.7[illegible]
431	3.7072259	-1.0663672	-12.825600	16.532826	14.88
432	8.5840301	0.00000000E+00	-7.6425921	16.226622	14.41
433	6.9556846	0.00000000E+00	-20.293861	27.249546	24.57

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
434	20.834011	0.00000000E+00	-13.543595	34.377605	30.120
435	19.577803	0.00000000E+00	-10.635915	30.213719	26.550
436	15.316873	0.00000000E+00	-10.764166	26.081038	22.724
437	14.098045	0.00000000E+00	-8.2572164	22.355262	19.589
438	11.328603	0.00000000E+00	-6.0210460	17.349649	15.280
439	8.3354789	0.00000000E+00	-4.3344617	12.669941	11.183
440	5.6112059	0.00000000E+00	-3.0766973	8.6879032	7.6639
441	3.2704343	0.00000000E+00	-2.1775175	5.4479518	4.7865
442	1.3536586	0.00000000E+00	-1.6166355	2.9702941	2.6175
443	0.12846198	-0.95936998E-01	-1.5562831	1.6847451	1.5891
444	0.00000000E+00	-0.45422883	-2.1819629	2.1819629	2.0041
445	0.00000000E+00	-0.56727643	-2.9769140	2.9769140	2.7477
446	0.00000000E+00	-0.66869486	-3.5408082	3.5408082	3.2638

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
447	0.00000000E+00	-0.82169801	-3.8147180	3.8147180	3.4800
448	0.00000000E+00	-1.0503395	-3.8545255	3.8545255	3.4522
449	0.00000000E+00	-1.3377622	-3.7480054	3.7480054	3.2905
450	0.00000000E+00	-1.6258876	-3.6250106	3.6250106	3.1467
451	0.00000000E+00	-1.7407019	-3.5778307	3.5778307	3.1015
456	54.509208	22.109925	0.00000000E+00	54.509208	47.507
457	44.651367	18.123199	0.00000000E+00	44.651367	38.932
458	20.299340	6.4572703	0.00000000E+00	20.299340	18.128
459	0.00000000E+00	-10.647069	-37.258789	37.258789	33.307
460	1.5887139	-0.41226901	-10.360845	11.949559	11.134
461	9.1626174	0.86699147	-2.5600713	11.722689	10.602
462	2.4347092	-0.28246813	-20.194117	22.628826	21.415
463	19.522247	0.00000000E+00	-7.8014229	27.323670	24.489

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
464	19.409378	0.00000000E+00	-7.4639607	26.873339	24.041
465	13.908933	0.00000000E+00	-9.8150938	23.724027	20.659
466	13.455993	0.00000000E+00	-7.6470105	21.103004	18.528
467	10.799945	0.00000000E+00	-6.2026673	17.002612	14.947
468	7.6709288	0.00000000E+00	-5.1166483	12.787577	11.208
469	4.8246463	0.00000000E+00	-4.1919455	9.0165918	7.8812

470	2.5023181	0.00000000E+00	-3.4540388	5.9563568	5.23
471	0.78742155	0.00000000E+00	-3.0137533	3.8011749	3.505
472	0.15736360E-01	-0.26637300	-2.9968341	3.0125705	2.884
473	0.00000000E+00	-0.71339915	-3.3131744	3.3131744	3.024
474	0.00000000E+00	-0.90157655	-3.6502600	3.6502600	3.298
475	0.00000000E+00	-1.0296122	-3.7973162	3.7973162	04
476	0.00000000E+00	-1.1818023	-3.7196657	3.7196657	3.293

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	S
477	0.00000000E+00	-1.3898007	-3.4752152	3.4752152	3.030
478	0.00000000E+00	-1.6474872	-3.1570495	3.1570495	2.735
479	0.00000000E+00	-1.9064884	-2.8637777	2.8637777	2.529
480	0.00000000E+00	-2.0421670	-2.7148321	2.7148321	2.458
485	55.752844	24.368419	0.00000000E+00	55.752844	48.417
486	53.976104	24.043891	0.00000000E+00	53.976104	46.838
487	25.574346	13.781685	0.00000000E+00	25.574346	22.214
488	0.00000000E+00	-3.6903747	-34.427441	34.427441	32.749
489	2.9043896	-0.32841664E-01	-12.411076	15.315466	14.267
490	5.6119312	0.00000000E+00	-3.5239881	9.1359194	8.2397
491	0.73373779	-1.3695226	-22.358750	23.092488	22.161
492	13.747898	1.1951874	-3.8869344	17.634833	15.858
493	18.108526	0.20413691	-3.4050456	21.513571	20.004

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
494	14.469139	0.00000000E+00	-6.2643236	20.733463	18.425
495	15.149459	0.00000000E+00	-5.1669442	20.316403	18.304
496	13.032735	0.00000000E+00	-4.8769472	17.909682	16.087
497	9.8164076	0.00000000E+00	-4.7211209	14.537528	12.933
498	6.4856194	0.00000000E+00	-4.5477126	11.033332	9.7123
499	3.5643359	0.00000000E+00	-4.4083972	7.9727332	7.0120
500	1.2995766	0.00000000E+00	-4.4031824	5.7027590	5.2258
501	0.89402279E-01	-0.33434665	-4.5697898	4.6591921	4.4636
502	0.00000000E+00	-1.1805293	-4.8035028	4.8035028	4.3383
503	0.00000000E+00	-1.7122392	-4.9259468	4.9259468	4.3351
504	0.00000000E+00	-2.0141774	-4.8284554	4.8284554	4.2032
505	0.00000000E+00	-2.1950805	-4.5160169	4.5160169	3.9124
506	0.00000000E+00	-2.3223224	-4.0697498	4.0697498	3.5363

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
507	0.00000000E+00	-2.4425213	-3.5959472	3.5959472	3.1807
508	0.00000000E+00	-2.5871220	-3.1865202	3.1865202	2.9347
509	0.00000000E+00	-2.7017240	-2.9746099	2.9746099	2.8479

514	49.070680	25.605612	0.00000000E+00	49.070680	42.51
515	49.562510	25.917072	0.00000000E+00	49.562510	42.94
516	24.244551	17.849849	0.00000000E+00	24.244551	21.82
517	3.4343640	0.00000000E+00	-26.664572	30.098936	28.56
518	6.7609571	0.00000000E+00	-14.676105	21.437062	19.09
519	4.7516812	0.00000000E+00	-12.842864	17.594545	15.85
520	0.00000000E+00	-4.5919882	-29.799402	29.799402	27.82
521	5.6623708	0.37630986	-2.7252570	8.3876278	7.483
522	13.343154	0.69649162	-2.2499222	15.593076	14.38
523	13.150108	0.00000000E+00	-4.4731118	17.623220	15.88

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
524	16.285558	0.00000000E+00	-3.5850600	19.870618	18.345
525	15.483623	0.00000000E+00	-3.7969119	19.280535	17.704
526	12.598861	0.00000000E+00	-4.3236720	16.922533	15.265
527	8.9229701	0.00000000E+00	-4.8363999	13.759370	12.142
528	5.2732174	0.00000000E+00	-5.2849310	10.558148	9.1927
529	2.1474935	0.00000000E+00	-5.6761040	7.8235975	7.0300
530	0.98401574E-01	-0.30798937	-5.9813279	6.0797295	5.8874
531	0.00000000E+00	-1.7653437	-6.1239453	6.1239453	5.4612
532	0.00000000E+00	-2.6337101	-6.0246518	6.0246518	5.2340
533	0.00000000E+00	-2.9946125	-5.6589933	5.6589933	4.9063
534	0.00000000E+00	-3.0331110	-5.0813228	5.0813228	4.4290
535	0.00000000E+00	-2.9104924	-4.4064754	4.4064754	3.8812
536	0.00000000E+00	-2.7572419	-3.7692084	3.7692084	3.3796

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
537	0.00000000E+00	-2.6629864	-3.2955681	3.2955681	3.0306
538	0.00000000E+00	-2.6387205	-3.1144333	3.1144333	2.9059
543	46.301879	26.687308	0.00000000E+00	46.301879	40.336
544	45.011314	25.977351	0.00000000E+00	45.011314	39.227
545	22.237946	15.223086	0.00000000E+00	22.237946	19.857
546	2.2541910	0.00000000E+00	-21.577770	23.831961	22.794
547	4.7379957	0.00000000E+00	-16.966054	21.704049	19.914
548	4.8454199	0.00000000E+00	-17.452019	22.297439	20.336
549	0.50015903	-1.4121387	-28.100259	28.600418	27.701
550	4.0106687	0.00000000E+00	-4.5279846	8.5386533	7.5917
551	10.549541	0.76961506	-1.0929559	11.642497	10.861
552	12.859224	0.00000000E+00	-2.5470072	15.406231	14.335
553	15.890006	0.00000000E+00	-2.6256019	18.515608	17.353

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI

554	15.738981	0.00000000E+00	-3.7366609	19.475642	17.909
555	13.230541	0.00000000E+00	-4.9594445	18.189986	16.305
556	9.5640392	0.00000000E+00	-6.0266581	15.590697	13.644
557	5.6954845	0.00000000E+00	-6.8497738	12.545258	10.905
558	2.2662470	0.00000000E+00	-7.3887207	9.6549677	8.7[illegible]4
559	0.00000000E+00	-0.38046952	-7.6098792	7.6098792	7.[illegible]9
560	0.00000000E+00	-2.1484590	-7.4933075	7.4933075	6.6842
561	0.00000000E+00	-3.1163563	-7.0520452	7.0520452	6.1231
562	0.00000000E+00	-3.4624778	-6.3455359	6.3455359	5.5050
563	0.00000000E+00	-3.4014101	-5.4780653	5.4780653	4.7910
564	0.00000000E+00	-3.1403070	-4.5819675	4.5819675	4.0583
565	0.00000000E+00	-2.8546320	-3.7920743	3.7920743	3.4224
566	0.00000000E+00	-2.6710962	-3.2263896	3.2263896	2.9905

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
567	0.00000000E+00	-2.6150934	-3.0149304	3.0149304	2.8375
572	42.337697	26.905257	0.00000000E+00	42.337697	37.111
573	36.970808	25.273917	0.00000000E+00	36.970808	32.738
574	21.338748	15.802328	0.00000000E+00	21.338748	19.260
575	13.786245	0.00000000E+00	-10.431736	24.217981	21.061
576	9.8613163	0.00000000E+00	-17.992732	27.854049	24.577
577	5.9584434	0.00000000E+00	-23.033630	28.992073	26.525
578	4.2665740	0.00000000E+00	-23.696145	27.962719	26.118
579	4.0693963	0.00000000E+00	-10.092464	14.161860	12.6[illegible]
580	7.7544098	0.14361974	-1.9541165	9.7085263	8.91[illegible]
581	12.844692	0.84175462E-01	-1.4489306	14.293623	13.608
582	15.687247	0.00000000E+00	-2.0781306	17.765377	16.827
583	15.918781	0.00000000E+00	-3.7159395	19.634721	18.077

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
584	13.818372	0.00000000E+00	-5.3718330	19.190205	17.169
585	10.250781	0.00000000E+00	-6.8633941	17.114175	14.943
586	6.2225966	0.00000000E+00	-8.0218633	14.244460	12.387
587	2.5121781	0.00000000E+00	-8.7157921	11.227970	10.213
588	0.00000000E+00	-0.42404644	-8.8885057	8.8885057	8.6856
589	0.00000000E+00	-2.4183691	-8.5628860	8.5628860	7.6471
590	0.00000000E+00	-3.5137273	-7.8288490	7.8288490	6.7935
591	0.00000000E+00	-3.8796008	-6.8247471	6.8247471	5.9306
592	0.00000000E+00	-3.7410084	-5.7155059	5.7155059	5.0285
593	0.00000000E+00	-3.3310371	-4.6660453	4.6660453	4.1625
594	0.00000000E+00	-2.8649265	-3.8138245	3.8138245	3.4441
595	0.00000000E+00	-2.5196769	-3.2540852	3.2540852	2.9726
596	0.00000000E+00	-2.3929146	-3.0598466	3.0598466	2.809

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	S:
601	41.332464	27.912900	0.00000000E+00	41.332464	36.52
602	33.720136	25.437252	0.00000000E+00	33.720136	30.43
603	19.775976	15.515645	0.00000000E+00	19.775976	18.04
604	13.071799	0.00000000E+00	-5.5736207	18.645420	16.59
605	8.9614624	0.00000000E+00	-17.683175	26.644637	23.49
606	5.4618907	0.00000000E+00	-26.512925	31.974816	29.64
607	3.4147327	0.00000000E+00	-27.003161	30.417893	28.929
608	3.4293569	-0.13807205E-01	-17.033707	20.463064	19.087
609	6.5300209	0.00000000E+00	-4.8771763	11.407197	10.001
610	12.289923	0.00000000E+00	-1.2485483	13.538471	12.971
611	16.871199	0.00000000E+00	-1.4020343	18.273233	17.617
612	18.200415	0.00000000E+00	-2.8746686	21.075084	19.811
613	16.403185	0.00000000E+00	-4.9387490	21.341934	19.382

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
614	12.544154	0.00000000E+00	-7.0219616	19.566116	17.203
615	7.8290285	0.00000000E+00	-8.6985319	16.527560	14.347
616	3.2753735	0.00000000E+00	-9.7172765	12.992650	11.717
617	0.18625174E-01	-0.46144925	-9.9944649	10.013090	9.7838
618	0.00000000E+00	-3.0158528	-9.5874152	9.5874152	8.4916
619	0.00000000E+00	-4.4305858	-8.6547380	8.6547380	7.4970
620	0.00000000E+00	-4.8643523	-7.4148830	7.4148830	6.5269
621	0.00000000E+00	-4.5773177	-6.1153894	6.1153894	5.5108
622	0.00000000E+00	-3.8612600	-4.9782967	4.9782967	4.5246
623	0.00000000E+00	-3.0620833	-4.1071949	4.1071949	3.7003
624	0.00000000E+00	-2.4741392	-3.5506489	3.5506489	3.1585
625	0.00000000E+00	-2.2618557	-3.3573830	3.3573830	2.9710
630	44.062468	27.840909	0.00000000E+00	44.062468	38.598

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
631	35.634543	25.320528	0.00000000E+00	35.634543	31.760
632	21.871746	20.438500	0.00000000E+00	21.871746	21.213
633	15.406724	0.27582881	-0.74283734	16.149562	15.671
634	11.214702	0.00000000E+00	-12.207843	23.422544	20.319
635	7.7210401	0.00000000E+00	-25.295749	33.016789	30.040
636	5.1266378	0.00000000E+00	-34.383696	39.510333	37.259
637	6.5953762	0.00000000E+00	-19.874219	26.469595	24.038
638	8.6232267	0.00000000E+00	-4.0637053	12.686932	11.282
639	13.454728	0.76648755	0.00000000E+00	13.454728	13.092
640	18.510757	0.45147448	-0.34781067E-01	18.545538	18.308
641	19.967505	0.00000000E+00	-1.9066846	21.874189	20.994
642	18.047086	0.00000000E+00	-4.7375476	22.784634	20.835
643	13.787207	0.00000000E+00	-7.4696891	21.256896	18.690

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

```
LOAD STEP       1  ITERATION=     10  SECTION=  1
TIME=   0.00000E+00      LOAD CASE=  1
SHELL STRESSES ARE AT TOP
```

NODE	SIG1	SIG2	SIG3	SI	SI
644	8.5593938	0.00000000E+00	-9.6109557	18.170350	15.754
645	3.5044939	0.00000000E+00	-10.863983	14.368477	12.981
646	0.00000000E+00	-0.63737057	-11.157766	11.157766	10.854
647	0.00000000E+00	-3.5182317	-10.602821	10.602821	9.3541
648	0.00000000E+00	-5.1038279	-9.4224290	9.4224290	8.1702
649	0.00000000E+00	-5.5681651	-7.8971088	7.8971088	7.0294
650	0.00000000E+00	-5.1639416	-6.3526203	6.3526203	5.8501
651	0.00000000E+00	-4.1544248	-5.1173472	5.1173472	4.7108
652	0.00000000E+00	-3.0595264	-4.1967948	4.1967948	3.7613
653	0.00000000E+00	-2.3012724	-3.5753372	3.5753372	3.1413
654	0.00000000E+00	-2.0353311	-3.3524383	3.3524383	2.9285
659	47.799575	27.778931	0.00000000E+00	47.799575	41.636
660	38.838118	24.912627	0.00000000E+00	38.838118	34.144

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

```
LOAD STEP       1  ITERATION=     10  SECTION=  1
TIME=   0.00000E+00      LOAD CASE=  1
SHELL STRESSES ARE AT TOP
```

NODE	SIG1	SIG2	SIG3	SI	SI
661	25.552279	19.840047	0.00000000E+00	25.552279	23.265
662	12.196931	0.31362150	-0.55690628	12.753837	12.349
663	10.936171	0.00000000E+00	-7.3833704	18.319541	15.978
664	6.9008088	0.00000000E+00	-22.370292	29.271101	26.[illegible]
665	0.00000000E+00	-3.3869064	-48.286429	48.286429	46.691
666	6.9768787	0.00000000E+00	-17.287559	24.264438	21.918
667	10.679815	0.31138294	-0.48914312	11.168958	10.796
668	13.182679	1.3311375	0.00000000E+00	13.182679	12.573
669	20.480417	1.0958717	0.00000000E+00	20.480417	19.960
670	22.065820	0.00000000E+00	-1.1341142	23.199934	22.659
671	19.621119	0.00000000E+00	-4.2395182	23.860637	22.050
672	14.837249	0.00000000E+00	-7.2429170	22.080166	19.496
673	9.1751095	0.00000000E+00	-9.5494589	18.724568	16.218

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

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LOAD STEP       1  ITERATION=     10  SECTION=  1
TIME=   0.00000E+00      LOAD CASE=  1
SHELL STRESSES ARE AT TOP
```

NODE	SIG1	SIG2	SIG3	SI	SI
674	3.7561450	0.00000000E+00	-10.888868	14.645013	13.176
675	0.00000000E+00	-0.68690882	-11.224246	11.224246	10.897
676	0.00000000E+00	-3.7960595	-10.681928	10.681928	9.3805
677	0.00000000E+00	-5.5244148	-9.4909811	9.4909811	8.2635
678	0.00000000E+00	-6.0341729	-7.9460867	7.9460867	7.1938
679	0.00000000E+00	-5.4967831	-6.4745598	6.4745598	6.0459
680	0.00000000E+00	-4.3023914	-5.3134981	5.3134981	4.894[illegible]
681	0.00000000E+00	-3.1099781	-4.3713715	4.3713715	3.909
82	0.00000000E+00	-2.3059201	-3.7065523	3.7065523	3.2531
683	0.00000000E+00	-2.0261671	-3.4646229	3.4646229	3.0255
688	49.067227	27.024385	0.00000000E+00	49.067227	42.567
689	40.761789	24.619889	0.00000000E+00	40.761789	35.555

690	28.377133	21.174769	0.00000000E+00	28.377133	25.553

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
691	14.538858	3.2887425	0.00000000E+00	14.538858	13.222
692	12.654042	0.00000000E+00	-3.5079392	16.161981	14.731
693	6.1998793	0.00000000E+00	-20.310493	26.510372	24.052
694	0.00000000E+00	-8.1066304	-57.069243	57.069243	53.516
695	5.5942189	0.00000000E+00	-12.894101	18.488320	16.444
696	10.420262	2.6788108	0.00000000E+00	10.420262	9.4791
697	12.457613	1.3340370	0.00000000E+00	12.457613	11.854
698	21.820709	1.3086123	0.00000000E+00	21.820709	21.198
699	23.567178	0.00000000E+00	-0.86297754	24.430156	24.012
700	20.808849	0.00000000E+00	-3.9530915	24.761940	23.043
701	15.679110	0.00000000E+00	-6.9022777	22.581388	20.043
702	9.7167739	0.00000000E+00	-9.1503344	18.867108	16.342
703	4.0295143	0.00000000E+00	-10.458249	14.487764	12.952

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
704	0.00000000E+00	-0.65895482	-10.798474	10.798474	10.484
705	0.00000000E+00	-3.9801771	-10.286207	10.286207	8.9837
706	0.00000000E+00	-5.8710409	-9.1313012	9.1313012	8.0154
707	0.00000000E+00	-6.4823856	-7.6148666	7.6148666	7.1182
708	0.00000000E+00	-5.7085956	-6.4374980	6.4374980	6.1064
709	0.00000000E+00	-4.2048108	-5.5870182	5.5870182	5.0442
710	0.00000000E+00	-2.9383128	-4.6903642	4.6903642	4.1123
711	0.00000000E+00	-2.1150160	-4.0140629	4.0140629	3.4881
712	0.00000000E+00	-1.8303356	-3.7643842	3.7643842	3.2719
717	47.937285	26.162809	0.00000000E+00	47.937285	41.572
718	41.560858	24.530118	0.00000000E+00	41.560858	36.187
719	30.430123	21.409176	0.00000000E+00	30.430123	27.071
720	15.163456	6.6567141	0.00000000E+00	15.163456	13.164

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
721	12.858718	0.00000000E+00	-0.62407650	13.482795	13.183
722	7.0215597	0.00000000E+00	-19.564461	26.586021	23.887
723	0.00000000E+00	-6.2555732	-58.975654	58.975654	56.111
724	5.9243082	0.00000000E+00	-11.786638	17.710946	15.651
725	11.016347	4.9014851	0.00000000E+00	11.016347	9.5843
[illegible]	13.166309	3.2120122	0.00000000E+00	13.166309	11.890
[illegible]	22.379391	2.5079105	0.00000000E+00	22.379391	21.236
728	23.997588	0.00000000E+00	-0.24237984	24.239968	24.120
729	21.045423	0.00000000E+00	-3.6387960	24.684219	23.082

730	15.729450	0.00000000E+00	-6.7983455	22.527795	20.[illegible]
731	9.6524410	0.00000000E+00	-9.2088065	18.861248	16.33
732	3.9112210	0.00000000E+00	-10.632838	14.544059	13.03
733	0.00000000E+00	-0.80865813	-11.044234	11.044234	10.66

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT TOP

NODE	SIG1	SIG2	SIG3	SI	SI
734	0.00000000E+00	-4.1632202	-10.564262	10.564262	9.2171
735	0.00000000E+00	-6.0942050	-9.4061078	9.4061078	8.2640
736	0.00000000E+00	-6.7675855	-7.8318588	7.8318588	7.3581
737	0.00000000E+00	-6.0787541	-6.5399552	6.5399552	6.3225
738	0.00000000E+00	-4.4576845	-5.7524755	5.7524755	5.2271
739	0.00000000E+00	-3.1359956	-4.8500111	4.8500111	4.2601
740	0.00000000E+00	-2.2785002	-4.1606741	4.1606741	3.6087
741	0.00000000E+00	-1.9818728	-3.9052413	3.9052413	3.3821

MAXIMUMS					
NODE	485	601	723	723	723
VALUE	55.752844	27.912900	-58.975654	58.975654	56.11

NODAL STRESSES ARE SHELL BOTTOM

PRINT PRIN NODAL STRESSES PER NODE

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
1	2.3192718	0.00000000E+00	-2.5090091	4.8282809	4.1835
2	2.1271410	0.00000000E+00	-2.6002994	4.7274404	4.1009
3	2.1424757	0.00000000E+00	-2.6089653	4.7514411	4.1215
4	2.2042661	0.00000000E+00	-2.6280246	4.8322907	4.1903
5	2.2579917	0.00000000E+00	-2.6136420	4.8716337	4.2228
6	2.2945041	0.00000000E+00	-2.5909760	4.8854801	4.2337
7	2.2684952	0.00000000E+00	-2.5619123	4.8304075	4.1860
8	2.1901448	0.00000000E+00	-2.5521724	4.7423172	4.1110
9	2.1091365	0.00000000E+00	-2.5463001	4.6554366	4.0382
10	2.0625878	0.00000000E+00	-2.5570288	4.6196166	4.0096
11	2.0593490	0.00000000E+00	-2.5686058	4.6279548	4.0174
12	2.0797333	0.00000000E+00	-2.5868521	4.6665854	4.0506
13	2.1134371	0.00000000E+00	-2.6005225	4.7139596	4.0908

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
14	2.1524589	0.00000000E+00	-2.6028405	4.7552994	4.1253
15	2.1920440	0.00000000E+00	-2.5899256	4.7819696	4.1468
16	2.2312535	0.00000000E+00	-2.5610943	4.7923479	4.1541

17	2.2718604	0.00000000E+00	-2.5187264	4.7905869	4.150
18	2.3165775	0.00000000E+00	-2.4672801	4.7838576	4.143
19	2.3672534	0.00000000E+00	-2.4121178	4.7793712	4.139
20	2.4235850	0.00000000E+00	-2.3582154	4.7818004	4.141
21	2.4827881	0.00000000E+00	-2.3092438	4.7920319	4.151
22	2.5403277	0.00000000E+00	-2.2676915	4.8080192	4.167
23	2.5911870	0.00000000E+00	-2.2354684	4.8266554	4.186
24	2.6306501	0.00000000E+00	-2.2137205	4.8443706	4.203
25	2.6555591	0.00000000E+00	-2.2009631	4.8565222	4.215
26	2.6637030	0.00000000E+00	-2.1963485	4.8600515	4.219

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
27	2.0712178	0.00000000E+00	-2.7331232	4.8043409	4.1809
28	2.0953796	0.00000000E+00	-2.6319745	4.7273541	4.1065
29	2.1078487	0.00000000E+00	-2.2959533	4.4038019	3.8156
30	1.9291917	0.00000000E+00	-1.9036424	3.8328341	3.3252
31	1.7877230	0.00000000E+00	-1.7513186	3.5390417	3.0690
32	1.7247335	0.00000000E+00	-1.7480162	3.4727498	3.0098
33	1.7239703	0.00000000E+00	-1.9620855	3.6860558	3.1972
34	1.7492758	0.00000000E+00	-2.2306127	3.9798885	3.4571
35	1.7039185	0.00000000E+00	-2.5107083	4.2146268	3.6735
36	1.6300809	0.00000000E+00	-2.7069600	4.3370409	3.7949
37	1.5467262	0.00000000E+00	-2.8717032	4.4184294	3.8836
38	1.4868860	0.00000000E+00	-2.9887916	4.4756776	3.9482
39	1.4744760	0.00000000E+00	-3.0463571	4.5208331	3.9934

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
40	1.5198688	0.00000000E+00	-3.0384503	4.5583191	4.0201
41	1.6235918	0.00000000E+00	-2.9655283	4.5891200	4.0307
42	1.7780286	0.00000000E+00	-2.8328549	4.6108835	4.0279
43	1.9716332	0.00000000E+00	-2.6519309	4.6235641	4.0186
44	2.1919342	0.00000000E+00	-2.4367396	4.6286739	4.0104
45	2.4267991	0.00000000E+00	-2.2041882	4.6309873	4.0121
46	2.6656884	0.00000000E+00	-1.9720359	4.6377244	4.0316
47	2.8976111	0.00000000E+00	-1.7600345	4.6576456	4.0743
48	3.1097960	0.00000000E+00	-1.5878432	4.6976391	4.1402
49	3.2835565	0.00000000E+00	-1.4741088	4.7576652	4.2201
50	3.3978757	0.00000000E+00	-1.4228557	4.8207314	4.2913
51	3.4280864	0.00000000E+00	-1.4217869	4.8498732	4.3190
52	1.4403802	0.00000000E+00	-4.5223270	5.9627071	5.4039

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI

53	1.4294827	0.00000000E+00	-3.1255453	4.5550[illegible]	4.0368
54	1.2404119	0.00000000E+00	-1.6527914	2.8932033	2.5382
55	1.0050829	0.00000000E+00	-0.84354664	1.8486296	1.6346
56	1.3339968	0.00000000E+00	-0.63190824	1.9659050	1.7557
57	1.7840322	0.00000000E+00	-0.72191966	2.5059518	2.[illegible]14
58	2.0442564	0.00000000E+00	-1.1789398	3.2231962	2.[illegible]72
59	1.9711458	0.00000000E+00	-1.7851577	3.7563035	3.2560
60	1.6235457	0.00000000E+00	-2.4518736	4.0754194	3.5546
61	1.3018965	0.00000000E+00	-2.9481017	4.2499983	3.7717
62	1.0370571	0.00000000E+00	-3.3284273	4.3654844	3.9504
63	0.86863430	0.00000000E+00	-3.5727490	4.4413833	4.0770
64	0.82222084	0.00000000E+00	-3.6721337	4.4943545	4.1448
65	0.89425451	0.00000000E+00	-3.6245499	4.5188045	4.1447

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
66	1.0742362	0.00000000E+00	-3.4556580	4.5298942	4.0998
67	1.3404275	0.00000000E+00	-3.1814446	4.5218721	4.0228
68	1.6658018	0.00000000E+00	-2.8394365	4.5052384	3.9455
69	2.0266892	0.00000000E+00	-2.4565890	4.4832783	3.8885
70	2.3977441	0.00000000E+00	-2.0649634	4.4627075	3.8684
71	2.7615226	0.00000000E+00	-1.6895125	4.4510351	3.8919
72	3.1118991	0.00000000E+00	-1.3463085	4.4582076	3.9608
73	3.4484296	0.00000000E+00	-1.0470066	4.4954361	4.0747
74	3.7977990	0.00000000E+00	-0.83012847	4.6279275	4.2[illegible]
75	4.0989612	0.00000000E+00	-0.74779667	4.8467579	4.5[illegible]
76	4.2353094	0.00000000E+00	-0.86034094	5.0956503	4.7246
77	0.68751352	0.00000000E+00	-9.5144073	10.201921	9.8781
78	1.0938677	-0.83605607E-01	-2.8758643	3.9697320	3.5921

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
79	0.44864476	0.00000000E+00	-1.2299520	1.6785967	1.5575
80	0.91140184	0.44339987E-01	-0.25123372	1.1626356	1.1010
81	1.8526092	0.45404218E-01	-0.89380696E-01	1.9419899	1.8787
82	2.3703122	0.81143450E-02	-0.19119277	2.5615050	2.4699
83	2.6107643	0.00000000E+00	-0.76961569	3.3803800	3.0703
84	2.2361153	0.00000000E+00	-1.6385510	3.8746663	3.3708
85	1.5810621	0.00000000E+00	-2.5733543	4.1544164	3.6327
86	1.0772083	0.00000000E+00	-3.2275357	4.3047440	3.8802
87	0.68845909	0.00000000E+00	-3.7097924	4.3982515	4.0977
88	0.45067069	0.00000000E+00	-3.9955805	4.4462512	4.2389
89	0.38714390	0.00000000E+00	-4.0985210	4.4856649	4.3051
90	0.48194108	0.00000000E+00	-4.0074459	4.4893870	4.2689
91	0.72113109	0.00000000E+00	-3.7678434	4.4889745	4.17[illegible]

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
92	1.0672517	0.00000000E+00	-3.4013919	4.4686436	4.0421
93	1.4862843	0.00000000E+00	-2.9575108	4.4437951	3.9181
94	1.9413919	0.00000000E+00	-2.4716788	4.4130707	3.8310
95	2.4019969	0.00000000E+00	-1.9824824	4.3844793	3.8028
96	2.8404535	0.00000000E+00	-1.5164320	4.3568855	3.8308
97	3.2487310	0.00000000E+00	-1.1013095	4.3500405	3.9173
98	3.6218820	0.00000000E+00	-0.73249870	4.3543807	4.0385
99	4.0295968	0.00000000E+00	-0.46673530	4.4963321	4.2823
100	4.4835517	0.00000000E+00	-0.25498094	4.7385326	4.6172
101	5.0073144	0.00000000E+00	-0.47078167	5.4780961	5.2585
102	0.00000000E+00	-2.9649813	-18.388898	18.388898	17.109
103	4.9967111	0.00000000E+00	-2.9983765	7.9950876	7.2961
104	0.67071086	-0.31716476	-1.4014573	2.0721682	1.9238

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
105	1.3741851	0.54501253E-01	-0.92533764E-01	1.4667189	1.4005
106	2.1702155	0.12979568	-0.81827928E-01	2.2520435	2.1572
107	2.6586967	0.10487310	-0.68801567E-01	2.7274982	2.6459
108	2.7235128	0.00000000E+00	-0.43948774	3.1630005	2.9725
109	2.0935159	0.00000000E+00	-1.3515090	3.4450249	3.0119
110	1.2953685	0.00000000E+00	-2.3284269	3.6237954	3.1841
111	0.74565942	0.00000000E+00	-3.0308448	3.7765042	3.4665
112	0.35062319	0.00000000E+00	-3.5555717	3.9061949	3.7442
113	0.12664819	0.00000000E+00	-3.8503807	3.9770288	3.9155
114	0.63496077E-01	0.00000000E+00	-3.9471939	4.0106900	3.9793
115	0.16084086	0.00000000E+00	-3.8206673	3.9815082	3.9039
116	0.39025046	0.00000000E+00	-3.5295564	3.9198069	3.7410
117	0.72936797	0.00000000E+00	-3.1110769	3.8404449	3.5344

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
118	1.1468864	0.00000000E+00	-2.6213790	3.7682654	3.3475
119	1.6091766	0.00000000E+00	-2.1089700	3.7181465	3.2317
120	2.0909153	0.00000000E+00	-1.6145911	3.7055064	3.2206
121	2.5584306	0.00000000E+00	-1.1584116	3.7168422	3.2980
122	3.0031967	0.00000000E+00	-0.77883654	3.7820333	3.4633
123	3.3988314	0.00000000E+00	-0.43021449	3.8290459	3.6377
124	3.8497242	0.20273519E-01	-0.27326553	4.1229897	3.9864
125	4.2988410	0.15756495	-0.72438451E-01	4.3712794	4.2641
126	5.2378519	0.10941076E-01	-0.42967244E-01	5.2808192	5.2541
127	13.786023	-4.2719570	-23.943102	37.729126	34.038
128	19.776259	7.6886355	-3.7471482	23.523407	20.983
[illegible]	11.116605	3.1732175	0.00000000E+00	11.116605	9.9798
130	6.6804556	2.5244531	0.00000000E+00	6.6804556	5.9050

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	S
131	5.4074386	2.4212745	0.00000000E+00	5.4074386	4.694
132	4.8978337	1.3806489	0.00000000E+00	4.8978337	4.409
133	4.6452609	0.20916273E-01	-1.2299077	5.8751686	5.420
134	3.6995723	0.00000000E+00	-4.1710157	7.8705879	6.888
135	1.6483671	-0.26371685E-02	-6.5826458	8.2310129	7.638
136	0.51128441	-1.0080352	-7.8504047	8.3616891	7.719
137	0.44047394E-02	-2.3976760	-8.4991651	8.5035699	7.663
138	0.00000000E+00	-3.7158479	-8.7352725	8.7352725	7.615
139	0.00000000E+00	-4.0551462	-9.1283098	9.1283098	7.9265
140	0.00000000E+00	-3.3656431	-9.5030147	9.5030147	8.3869
141	0.10552436	-2.1806859	-9.8075380	9.9130623	9.0374
142	0.62222711	-1.1643455	-9.5878690	10.210096	9.4465
143	1.2172953	-0.22082469	-9.0293126	10.246608	9.6893

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
144	2.4274501	0.00000000E+00	-8.0367263	10.464176	9.5901
145	3.6280661	0.00000000E+00	-6.7912919	10.419358	9.2386
146	4.5918351	0.00000000E+00	-5.3263223	9.9181574	8.[illegible]8
147	5.2563978	0.00000000E+00	-3.7596683	9.0160661	7.[illegible]5
148	5.8456623	0.00000000E+00	-1.9725334	7.8181956	7.0604
149	6.2493680	0.29908598	-0.42726490	6.6766329	6.3522
150	7.9295186	2.9719289	0.00000000E+00	7.9295186	7.0124
151	8.1736205	4.0847722	0.00000000E+00	8.1736205	7.1581
156	1.9972697	-7.2818941	-17.690280	19.687550	18.485
157	3.8373459	1.1579246	-7.5262606	11.363606	10.695
158	3.8803184	-1.3797313	-3.8616770	7.7419954	7.1967
159	3.6204908	0.28453033	-0.86676797	4.4872587	4.1398
160	4.0606485	0.73065402	-0.66428129	4.7249298	4.3069

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
161	3.4486570	0.85124063	-0.60131430	4.0499713	3.6296
162	4.1181568	0.25413305	-1.1668777	5.2850345	4.8160
163	4.0095477	-0.32939116E-01	-1.9392696	5.9488173	5.3951
164	4.3655191	-0.15396658	-3.0146597	7.3801788	6.7963
165	3.2778073	-0.36008575	-3.3742940	6.6521013	6.3254
166	3.7934236	-0.71805216	-4.0000969	7.7935205	7.1469
167	3.3944996	-1.2373624	-4.2114988	7.6059984	6.78[illegible]
168	4.0185506	-1.1241776	-4.7904231	8.8089737	7.86[illegible]
169	3.5146306	-0.86948045	-4.9477272	8.4623578	7.7083
170	4.0491351	-0.19971667	-5.3279303	9.3770654	8.9533
171	3.9628210	-0.32554451	-4.8769618	8.8397828	8.3771
172	5.1641960	-0.18886755	-4.9012077	10.065404	9.3960

173	4.8649286	-0.43494038E-01	-4.1484598	9.0133884	8.2365

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
IELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
174	6.0371089	0.00000000E+00	-3.8402915	9.8774004	8.8487
175	5.5361977	0.00000000E+00	-2.7196660	8.2558637	7.3655
176	6.2798139	0.00000000E+00	-2.0433869	8.3232007	7.5332
177	5.5366863	0.00000000E+00	-0.94249755	6.4791838	6.0772
178	5.5551789	0.30171768	-0.55792483	6.1131037	5.7562
179	4.7138266	0.80318027	-0.60724173	5.3210683	4.8746
180	3.6874396	0.51462085	-1.3859070	5.0733466	4.6620
185	2.2701748	-3.9777404	-19.140274	21.410449	19.362
186	3.2149214	-0.38161197	-6.7479504	9.9628719	9.4529
187	2.6223928	-1.5168087	-6.3554344	8.9778272	8.1624
188	2.0078912	-1.2198067	-4.6845025	6.6923937	5.9250
189	2.4429343	-1.6168397	-4.7078686	7.1508029	6.2915
190	1.6347670	-1.1214089	-3.5353197	5.1700867	4.5521

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
191	1.0054658	-0.43537018	-3.1141088	4.1195746	3.8361
192	2.0129849	0.62990258E-01	-2.1709731	4.1839579	3.7861
193	3.5649506	-0.66130958E-01	-1.4269993	4.9919499	4.6219
194	3.5977948	0.67598495E-01	-0.93688816	4.5346830	4.2964
195	4.7116519	0.81347700	-1.1535947	5.8652466	5.2692
196	4.7795007	1.0083647	-1.9120758	6.6915765	5.8962
197	6.3126127	1.4399970	-2.4202094	8.7328221	7.6856
198	6.0304214	0.90493605	-2.7830184	8.8134398	7.7991
199	7.4560298	0.77244700	-3.0910513	10.547081	9.4977
200	6.5828598	0.11225594	-2.9124135	9.4952732	8.7738
201	7.5954102	0.00000000E+00	-3.3676655	10.963076	10.055
202	6.3721758	0.00000000E+00	-3.2956566	9.6678324	8.6274
203	6.7890933	0.00000000E+00	-3.7743170	10.563410	9.2973

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
204	5.3881972	0.00000000E+00	-3.1615382	8.5497355	7.5357
205	5.0777671	0.35924762E-01	-3.3601514	8.4379185	7.4976
206	3.8119932	0.60048239E-01	-2.5590331	6.3710263	5.7783
207	2.9883616	0.94849889E-01	-2.4705373	5.4588989	5.0980
208	2.3860220	0.52044319E-01	-1.9056685	4.2916905	3.9628
[illegible]	1.8427451	-0.17954915	-2.3535570	4.1963021	3.9281
[illegible]	0.68492421	-0.58919398E-01	-2.8283032	3.5132274	3.2404
215	1.6202664	-0.27388226	-4.3270629	5.9473293	5.3645
216	0.98780940	-0.16472532	-3.7019930	4.6898024	4.3119

217	0.17767619	-0.12161403	-[illegible]9394	3.2726156	3.143
218	0.12456301	-0.21479133	-3.0404120	3.1649750	3.016
219	0.29584866	-0.19880181	-2.9054171	3.2012658	2.988
220	0.37442755	-0.77737955E-01	-2.6253362	2.9997637	2.810

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
221	0.44950329	-0.66388983E-02	-2.4325916	2.8820949	2.7005
222	0.47704401	0.00000000E+00	-2.3406818	2.8177258	2.6269
223	0.36657738	-0.39347304E-02	-2.3327821	2.6993595	2.5449
224	0.17910542	-0.40928518E-01	-2.3752496	2.5543550	2.4549
225	0.29744699E-01	-0.14225882	-2.4223216	2.4520663	2.3720
226	0.00000000E+00	-0.29730997	-2.4144361	2.4144361	2.2821
227	0.00000000E+00	-0.37383100	-2.3910504	2.3910504	2.2288
228	0.17307207E-02	-0.10591246	-6.8842145	6.8859452	6.8352
229	0.41100041	-0.57995172E-01	-1.5432943	1.9542947	1.8401
230	1.3484505	0.48894037E-01	-0.43352063	1.7819712	1.6706
231	0.95360287	0.16953725E-01	-0.58103164	1.5346345	1.4073
232	0.00000000E+00	-0.46681696	-1.7694311	1.7694311	1.6113
233	0.00000000E+00	-1.4127824	-3.0013269	3.0013269	2.6097

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
234	0.00000000E+00	-1.7058484	-3.5592912	3.5592912	3.0903
235	0.00000000E+00	-1.3180137	-3.3527830	3.3527830	2.9361
236	0.12133413E-01	-0.44453355	-2.5955317	2.6076651	2.4263
237	0.63259576	0.00000000E+00	-1.6602568	2.2928526	2.0760
238	1.5533286	0.00000000E+00	-0.89789073	2.4512193	2.1751
239	2.2479296	0.17124514E-01	-0.59386880	2.8417984	2.6223
240	2.9608304	0.00000000E+00	-0.67471925	3.6355497	3.3912
241	0.97374265	-0.26032018E-01	-3.1009271	4.0746698	3.7274
242	1.9543584	-0.24175476	-4.4043383	6.3586967	5.7495
243	1.5458432	-0.11810473	-3.8527354	5.3985786	4.9187
244	0.71326865	-0.68874400E-01	-3.1244921	3.8377608	3.5652
245	0.32368681	-0.18498884	-2.9691408	3.2928276	3.0727
246	0.36844296	-0.15538911	-3.0087901	3.3772331	3.1547

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
247	0.43361779	-0.38061603E-01	-2.8602694	3.2938872	3.08[illegible]
248	0.54585388	0.00000000E+00	-2.6805536	3.2264075	2.99[illegible]
249	0.57447406	0.00000000E+00	-2.5025433	3.0770174	2.8386
250	0.45414098	-0.23839375E-02	-2.3518397	2.8059807	2.6159
251	0.28491957	-0.33262627E-01	-2.2639536	2.5488732	2.4091
252	0.10011543	-0.39927659E-01	-2.2400895	2.3402049	2.2755

253	0.67327521E-02	-0.14519565	-2.2640104	2.2707432	2.201
254	0.00000000E+00	-0.26733171	-2.2727436	2.2727436	2.151
255	0.00000000E+00	-0.97781974	-9.7244420	9.7244420	9.277
256	0.16180748	-0.32592462	-3.3698375	3.5316450	3.3654
257	0.83266878	-0.13320399E-01	-0.78424386	1.6169126	1.4933
258	0.90338340	0.66132855E-01	-0.59180522	1.4951886	1.3627
259	0.86043243E-01	-0.18680677	-1.2178247	1.3038680	1.2006

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
260	0.00000000E+00	-0.82116093	-1.9679279	1.9679279	1.7194
261	0.00000000E+00	-0.95942943	-2.3317015	2.3317015	2.0333
262	0.00000000E+00	-0.52037460	-2.1499484	2.1499484	1.9620
263	0.36540739	-0.78207628E-01	-1.5513753	1.9167827	1.7441
264	1.1683184	0.00000000E+00	-0.83757105	2.0058895	1.7727
265	1.8171303	0.35924762E-01	-0.34299417	2.1601245	2.0166
266	2.1245694	0.94849889E-01	-0.34004797	2.4646174	2.2912
267	2.5259390	0.00000000E+00	-0.54584680	3.0717858	2.8528
268	1.6883082	0.00000000E+00	-3.2018126	4.8901208	4.4261
269	3.2671226	-0.21166646E-01	-4.8809681	8.1480907	7.5308
270	3.1683884	-0.10018281E-01	-4.3269211	7.4953095	6.8394
271	2.0403692	0.00000000E+00	-3.2476876	5.2880567	4.7699
272	0.85469241	-0.46215025E-01	-2.9297745	3.7844669	3.4488

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
273	0.56869255	-0.29265937E-01	-3.3012974	3.8699900	3.6160
274	0.45222306	0.00000000E+00	-3.3557114	3.8079344	3.6037
275	0.44204486	0.00000000E+00	-3.0854109	3.5274557	3.3288
276	0.46118189	0.00000000E+00	-2.6412283	3.1024102	2.9018
277	0.44945511	0.00000000E+00	-2.1359141	2.5853692	2.3999
278	0.45001837	-0.24386408E-02	-1.7294890	2.1795073	2.0013
279	0.47103175	0.00000000E+00	-1.5298647	2.0008964	1.8166
280	0.34451705	0.00000000E+00	-1.5887173	1.9332344	1.7907
281	0.19751892	0.00000000E+00	-1.6402362	1.8377551	1.7477
282	0.00000000E+00	-2.0813794	-17.237090	17.237090	16.337
283	0.00000000E+00	-1.2745738	-8.4318726	8.4318726	7.9675
284	0.00000000E+00	-1.1205860	-4.9384728	4.9384728	4.4896
285	0.10208314	-0.36761465	-3.4889861	3.5910692	3.3863

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

	SIG1	SIG2	SIG3	SI	SI
286	0.82132656	0.00000000E+00	-1.8353028	2.6566294	2.3938
287	1.5004901	0.00000000E+00	-0.71863602	2.2191261	1.9944
288	1.9237115	0.44339727E-02	-0.27809679	2.2018083	2.0933

289	2.0558178	0.7[illegible]8E-01	-0.19198277	2.2478005	2.132
290	1.9499378	0.89058944E-01	-0.22620306	2.1761408	2.044
291	1.6387541	0.29518779E-01	-0.26487415	1.9036282	1.789
292	1.1440472	0.00000000E+00	-0.35751357	1.5015607	1.374
293	0.68448897	0.00000000E+00	-0.56340700	1.2478960	1[illegible]6
294	0.86180446	0.00000000E+00	-0.68384865	1.5456531	1.542
340	3.5001246	-4.3568139	-27.921238	31.421363	28.50
341	3.2319670	-1.3627473	-12.347042	15.579009	14.721
342	0.00000000E+00	-2.8649105	-13.199760	13.199760	12.227
343	0.00000000E+00	-6.9607284	-15.638570	15.638570	13.743

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
344	0.00000000E+00	-8.5309976	-19.674444	19.674444	17.151
345	0.00000000E+00	-6.9986126	-17.194600	17.194600	15.124
346	0.32082110E-02	-5.2323099	-15.550394	15.553602	14.000
347	0.93046230	-0.85267922	-8.4329034	9.3633657	8.7203
348	5.5880853	0.67043850E-01	-3.6251743	9.2132596	8.1531
349	8.3420096	0.85170972	-0.81699412	9.1590037	8.6324
350	12.025305	2.6732879	-0.18457026	12.209875	11.255
351	12.079442	3.5109560	-0.21044131	12.289884	11.029
352	14.362237	4.1905861	-0.20845587E-01	14.383083	12.861
353	12.295285	3.3606804	-0.39997231E-01	12.335283	11.061
354	12.798688	2.8077064	0.00000000E+00	12.798688	11.719
355	9.6333574	1.5934015	-0.23921281	9.8725702	9.1[illegible]3
356	8.6639294	1.1576765	-1.1871103	9.8510398	8.9[illegible]3

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
357	5.5405926	0.35619536	-1.7174967	7.2580892	6.5469
358	3.7817344	0.15483376E-01	-3.2300862	7.0118206	6.1799
359	1.6850485	-0.52474002E-01	-4.1589059	5.8439544	5.3781
360	0.67535509	-0.72966106	-6.2179044	6.8932595	6.4155
361	0.31428638	-1.4586494	-6.3229135	6.6371999	6.0695
362	0.87574785E-01	-2.5026568	-7.7226472	7.8102220	6.9085
363	0.28388072	-2.6725707	-6.6792637	6.9631444	6.0608
364	0.34890209	-2.8362410	-6.6942085	7.0431106	6.1192
369	1.5612083	-2.1402119	-27.895666	29.456874	27.795
370	6.7895881	0.00000000E+00	-10.015591	16.805179	14.941
371	8.7862319	0.00000000E+00	-9.4627903	18.249022	16.476
372	3.1140134	-0.12396665	-12.457821	15.571834	14.337
373	0.90965685	-0.63582019	-13.541767	14.451423	13.763

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

AD STEP 1 ITERATION= 10 SECTION= 1
ME= 0.00000E+00 LOAD CASE= 1
IELL STRESSES ARE AT BOTTOM

IODE	SIG1	SIG2	SIG3	SI	SI

374	0.83909431	-1.6363877	-15.450700	16.289794	15.2
375	1.6372211	-0.72808056	-14.770375	16.407596	15.4
376	5.4201310	0.00000000E+00	-11.244634	16.664765	14.8
377	10.038105	0.00000000E+00	-8.1594282	18.197533	15.8
378	12.599942	0.00000000E+00	-5.6765772	18.276519	16.2
379	13.691622	0.00000000E+00	-3.7935631	17.485185	15.9
380	14.140341	0.00000000E+00	-2.2097656	16.350106	15.40
381	13.471928	0.00000000E+00	-1.5792982	15.051226	14.34
382	12.385397	0.00000000E+00	-1.1860762	13.571473	13.04
383	10.591934	0.00000000E+00	-1.4448026	12.036736	11.39
384	8.6425252	0.00000000E+00	-1.8079838	10.450509	9.691
385	6.4710834	0.00000000E+00	-2.4645151	8.9355984	8.017
386	4.3543464	0.00000000E+00	-3.1150383	7.4693847	6.533

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
387	2.3804308	0.00000000E+00	-3.7854018	6.1658326	5.4304
388	0.71060125	-0.13517669	-4.4096979	5.1202992	4.7592
389	0.00000000E+00	-0.83395424	-4.8956591	4.8956591	4.5651
390	0.00000000E+00	-2.1036420	-5.3644537	5.3644537	4.7063
391	0.00000000E+00	-2.8073348	-5.4487699	5.4487699	4.7471
392	0.00000000E+00	-3.7295993	-5.5131786	5.5131786	4.9198
393	0.00000000E+00	-3.2650653	-4.7977243	4.7977243	4.2947
398	1.1726481	-2.9871977	-31.656315	32.828963	31.001
399	3.6582480	-0.17082169	-17.211401	20.869649	19.378
400	11.288792	0.00000000E+00	-8.3092482	19.598040	17.498
401	18.053984	1.2792734	-0.91036711	18.964351	18.022
402	15.205711	2.2217820	0.00000000E+00	15.205711	14.279
403	14.667243	0.18771273	-2.0611784	16.728421	15.763

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
404	12.619506	0.00000000E+00	-5.4137116	18.033217	16.082
405	7.8586885	0.00000000E+00	-9.1956402	17.054329	14.889
406	7.6462310	0.00000000E+00	-12.378428	20.024659	17.515
407	7.3164193	0.00000000E+00	-12.409575	19.725994	17.277
408	6.5863909	0.00000000E+00	-11.619734	18.206125	15.975
409	6.1226243	0.00000000E+00	-10.688391	16.811015	14.748
410	5.5217328	0.00000000E+00	-9.5923260	15.114059	13.260
411	4.7849788	0.00000000E+00	-8.4124696	13.197448	11.588
412	3.9645058	0.00000000E+00	-7.2746508	11.239157	9.8911
413	3.1074239	0.00000000E+00	-6.2486336	9.3560575	8.2726
414	2.3164363	0.00000000E+00	-5.3388354	7.6552717	6.8192
415	1.6498079	0.00000000E+00	-4.5443195	6.1941274	5.5737
416	1.1627861	0.00000000E+00	-3.8575340	5.0203201	4.5651

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	S
417	0.85824654	0.00000000E+00	-3.2587948	4.1170413	3.[illegible]769
418	0.71495363	0.00000000E+00	-2.7313420	3.4462956	[illegible]3.
419	0.68955082	0.00000000E+00	-2.1959707	2.8855216	2.610
420	0.74660715	0.00000000E+00	-1.6302505	2.3768577	2.106
421	0.82435241	0.00000000E+00	-1.0028542	1.8272067	1.586
422	0.92770450	0.00000000E+00	-0.70904101	1.6367455	1.421
427	0.00000000E+00	-6.1013550	-36.530452	36.530452	34.06
428	0.99224723	-1.7453785	-23.884347	24.876594	23.652
429	11.531923	0.00000000E+00	-9.0610812	20.593005	18.539
430	39.027335	16.161137	0.00000000E+00	39.027335	34.019
431	21.968514	10.345073	0.00000000E+00	21.968514	19.271
432	16.804067	0.79800693	-0.85577266	17.659839	16.922
433	22.029105	2.1333556	-0.37776226	22.406867	21.311

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
434	6.2213376	0.00000000E+00	-9.2383384	15.459676	13.707
435	4.8175164	0.00000000E+00	-14.224820	19.042337	17.167
436	6.1234606	0.00000000E+00	-12.485588	18.609049	16.430
437	4.6480223	0.00000000E+00	-12.286622	16.934644	15.171
438	4.3014941	0.00000000E+00	-11.469429	15.770923	14.[illegible]1
439	4.1717253	0.00000000E+00	-10.014891	14.186616	12.[illegible]
440	3.8612356	0.00000000E+00	-8.4406367	12.301872	10.903
441	3.3327398	0.00000000E+00	-6.9890447	10.321784	9.1297
442	2.6639865	0.00000000E+00	-5.7566563	8.4206428	7.4601
443	2.0046704	0.00000000E+00	-4.7476675	6.7523379	6.0119
444	1.4777874	0.00000000E+00	-3.9649246	5.4427120	4.8797
445	1.1614101	0.00000000E+00	-3.3886224	4.5500325	4.0981
446	1.0500300	0.00000000E+00	-2.9621425	4.0121726	3.6056

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
447	1.0776753	0.00000000E+00	-2.5976442	3.6753195	3.2735
448	1.1871458	0.00000000E+00	-2.2116314	3.3987772	2.9885
449	1.3365202	0.00000000E+00	-1.7979139	3.1344341	2.7252
450	1.5109054	0.00000000E+00	-1.4509091	2.9618146	2.5665
451	1.5835900	0.00000000E+00	-1.3477609	2.9313509	2.5424
456	0.00000000E+00	-7.5634591	-38.709445	38.709445	35.703
457	0.37917664	-3.0893562	-29.018601	29.397778	27.905
458	11.901332	0.00000000E+00	-6.2540863	18.155418	16.188
459	55.437103	28.214432	0.00000000E+00	55.437103	48.05[illegible]
460	28.588000	15.386583	0.00000000E+00	28.588000	24.93
461	17.405617	3.1582480	0.00000000E+00	17.405617	16.180
462	28.566024	8.7000126	0.00000000E+00	28.566024	25.387
463	4.6232470	0.00000000E+00	-7.3351595	11.958406	10.503

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
464	1.2469946	-0.10651848	-12.717857	13.964851	13.36
465	3.7919751	0.00000000E+00	-10.516149	14.308124	12.84
466	2.1880747	0.00000000E+00	-11.562005	13.750080	12.81
467	2.1464376	0.00000000E+00	-11.240275	13.386713	12.47
468	2.5912532	0.00000000E+00	-9.9836294	12.574883	11.518
469	2.8406588	0.00000000E+00	-8.5117419	11.352401	10.250
470	2.7398517	0.00000000E+00	-7.1378347	9.8776864	8.8520
471	2.3791376	0.00000000E+00	-5.9624341	8.3415717	7.4651
472	1.9283395	0.00000000E+00	-5.0037497	6.9320892	6.2209
473	1.5381010	0.00000000E+00	-4.2541455	5.7922464	5.2192
474	1.2874530	0.00000000E+00	-3.6821398	4.9695928	4.4861
475	1.1766637	0.00000000E+00	-3.2256227	4.4022864	3.9629
476	1.1638247	0.00000000E+00	-2.8135081	3.9773328	3.5542

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
477	1.2130037	0.00000000E+00	-2.4086321	3.6216357	3.2037
478	1.2991346	0.00000000E+00	-2.0377867	3.3369213	2.9233
479	1.3873771	0.00000000E+00	-1.7787762	3.1661533	2.7583
480	1.4220367	0.00000000E+00	-1.6892255	3.1112623	2.7064
85	0.00000000E+00	-5.3480392	-39.444925	39.444925	37.117
486	0.00000000E+00	-4.5594385	-37.978549	37.978549	35.964
487	7.0480533	0.00000000E+00	-10.473294	17.521347	15.606
488	51.110975	25.757902	0.00000000E+00	51.110975	44.359
489	31.485397	16.576702	0.00000000E+00	31.485397	27.289
490	21.421209	9.4090783	0.00000000E+00	21.421209	18.733
491	33.698718	13.794216	0.00000000E+00	33.698718	29.348
492	4.8024980	0.00000000E+00	-2.8718874	7.6743854	6.9062
493	0.00000000E+00	-2.6588309	-10.188799	10.188799	9.4237

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

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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
494	0.21146647	-1.3946287	-9.8445808	10.056047	9.4414
495	0.00000000E+00	-2.9202847	-12.405269	12.405269	11.291
496	0.00000000E+00	-2.6695668	-12.939928	12.939928	11.872
497	0.00000000E+00	-1.5698755	-12.117664	12.117664	11.445
498	0.15420939	-0.56470467	-10.723675	10.877885	10.553
499	0.70531249	-0.21678596	-9.1776903	9.8830028	9.4597
500	1.1179877	-0.35536413E-01	-7.6847898	8.8027775	8.3070
501	1.4515209	0.00000000E+00	-6.3371355	7.7886563	7.2005
	1.6885842	0.00000000E+00	-5.1646754	6.8532596	6.2087
503	1.8460023	0.00000000E+00	-4.1580454	6.0040477	5.3475
504	1.9381085	0.00000000E+00	-3.2889327	5.2270413	4.5929
505	1.9699824	0.00000000E+00	-2.5351026	4.5050850	3.9221

[illegible]	1.9574437	0.00000000E+00	-1.8982101	3.8556538	3.344

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
507	1.9251695	0.00000000E+00	-1.4036603	3.3288298	2.8963
508	1.8948480	0.00000000E+00	-1.0874417	2.9822897	2.6143
509	1.8824404	0.00000000E+00	-0.97828519	2.8607255	2.5183
514	0.00000000E+00	-2.3753311	-41.884038	41.884038	40.749
515	0.00000000E+00	-2.6250295	-42.557117	42.557117	41.309
516	5.2310339	0.00000000E+00	-17.263774	22.494808	20.443
517	33.790319	20.290056	0.00000000E+00	33.790319	29.593
518	24.471943	14.282129	0.00000000E+00	24.471943	21.306
519	22.310643	14.326951	0.00000000E+00	22.310643	19.655
520	37.669585	20.945045	0.00000000E+00	37.669585	32.695
521	7.8037893	3.6674145	0.00000000E+00	7.8037893	6.9394
522	0.00000000E+00	-2.4185963	-5.5061815	5.5061815	4.9063
523	0.00000000E+00	-3.3935015	-6.9894583	6.9894583	6.1640

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	
524	0.00000000E+00	-6.1063392	-12.172365	12.172365	10.[illegible]
525	0.00000000E+00	-6.6375303	-14.232049	14.232049	12.344
526	0.00000000E+00	-5.6360931	-14.208892	14.208892	12.407
527	0.00000000E+00	-3.9593944	-13.113402	13.113402	11.668
528	0.00000000E+00	-2.1399642	-11.489848	11.489848	10.599
529	0.32098404E-02	-0.47190224	-9.6658373	9.6690472	9.4513
530	0.91018450	0.00000000E+00	-7.8544259	8.7646104	8.3546
531	1.9330046	0.00000000E+00	-6.1838305	8.1168352	7.3498
532	2.5862076	0.00000000E+00	-4.7150261	7.3012337	6.4167
533	2.8998009	0.00000000E+00	-3.4662061	6.3660070	5.5230
534	2.9441569	0.00000000E+00	-2.4381358	5.3822927	4.6688
535	2.8173187	0.00000000E+00	-1.6298027	4.4471213	3.8973
536	2.6248243	0.00000000E+00	-1.0431359	3.6679601	3.2767

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

Calc. Pckg. VSC02.6.2.3.08
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
537	2.4616246	0.00000000E+00	-0.68403833	3.1456630	2.8735
538	2.3981009	0.00000000E+00	-0.56236880	2.9604697	2.7336
543	0.22997718	-0.32133153	-42.612858	42.842836	42.569
544	0.45995164	0.00000000E+00	-41.310603	41.770555	41.54[illegible]
545	9.3359159	0.00000000E+00	-17.027502	26.363418	23.406
46	28.208401	21.119205	0.00000000E+00	28.208401	25.471
547	25.382472	16.414811	0.00000000E+00	25.382472	22.310
548	22.217275	17.189930	0.00000000E+00	22.217275	20.219
549	31.935577	18.845808	0.00000000E+00	31.935577	27.829

550	9.6022182	5.3072919	0.00000000E+00	9.6022182	8.363
551	0.00000000E+00	-1.1396547	-4.0555278	4.0555278	3.698
552	0.00000000E+00	-4.2210037	-7.0333019	7.0333019	6.179
553	0.00000000E+00	-6.8848137	-12.315148	12.315148	10.70

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
554	0.00000000E+00	-7.8462565	-14.637855	14.637855	12.688
555	0.00000000E+00	-7.0997152	-15.016532	15.016532	13.013
556	0.00000000E+00	-5.3222796	-14.219732	14.219732	12.452
557	0.00000000E+00	-3.1549316	-12.701061	12.701061	11.465
558	0.00000000E+00	-1.0458981	-10.802905	10.802905	10.329
559	0.73578856	0.00000000E+00	-8.7966127	9.5324013	9.1954
560	2.0561450	0.00000000E+00	-6.8723551	8.9285002	8.1082
561	2.8828917	0.00000000E+00	-5.1422620	8.0251537	7.0512
562	3.2623860	0.00000000E+00	-3.6604022	6.9227882	6.0072
563	3.2970011	0.00000000E+00	-2.4461889	5.7431900	4.9976
564	3.1188068	0.00000000E+00	-1.5019038	4.6207106	4.0849
565	2.8635195	0.00000000E+00	-0.82385767	3.6873772	3.3527
566	2.6506221	0.00000000E+00	-0.41131446	3.0619365	2.8785

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
567	2.5681298	0.00000000E+00	-0.27170487	2.8398347	2.7145
572	2.2227985	0.00000000E+00	-42.340257	44.563056	43.494
573	3.6195691	0.00000000E+00	-37.178122	40.797691	39.115
574	7.8184391	0.00000000E+00	-17.423056	25.241495	22.552
575	14.577209	7.7957110	0.00000000E+00	14.577209	12.694
576	20.432389	12.653346	0.00000000E+00	20.432389	18.018
577	23.334494	17.219975	0.00000000E+00	23.334494	20.968
578	23.771429	14.223674	0.00000000E+00	23.771429	20.733
579	12.034993	7.7531348	0.00000000E+00	12.034993	10.608
580	2.5281352	0.00000000E+00	-1.8894977	4.4176329	3.9248
581	0.00000000E+00	-3.2146518	-8.0332391	8.0332391	7.0812
582	0.00000000E+00	-6.8314426	-12.720646	12.720646	11.051
583	0.00000000E+00	-8.5332830	-15.097581	15.097581	13.112

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

Calc. Pckg. VSC02.6.2.3.08
Rev. No: 2
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LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
ELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
584	0.00000000E+00	-8.3891054	-15.850921	15.850921	13.745
585	0.00000000E+00	-6.7136521	-15.403284	15.403284	13.395
[illegible]	0.00000000E+00	-4.2617738	-14.058088	14.058088	12.502
587	0.00000000E+00	-1.7301717	-12.129954	12.129954	11.375
588	0.50682270	-0.69573611E-01	-9.9430441	10.449867	10.177
589	2.0242654	0.00000000E+00	-7.7618221	9.7860874	8.9563

590	2.9847541	0.00000000E+00	-5.7631205	8.7478746	7.71[illegible]
591	3.3895142	0.00000000E+00	-4.0441507	7.4336648	6.458
592	3.3794312	0.00000000E+00	-2.6447288	6.0241600	5.242
593	3.1247405	0.00000000E+00	-1.5700048	4.6947453	4.151
594	2.7922695	0.00000000E+00	-0.80913899	3.6014084	[illegible]32
595	2.5234941	0.00000000E+00	-0.35127042	2.8747645	2.724
596	2.4204961	0.16475182E-01	-0.21354153	2.6340376	2.532

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
601	2.0599936	0.00000000E+00	-44.243901	46.303895	45.309
602	4.3692305	0.00000000E+00	-36.748470	41.117701	39.119
603	9.7460919	0.00000000E+00	-19.016270	28.762362	25.362
604	15.552656	1.5968532	0.00000000E+00	15.552656	14.843
605	19.603453	12.549462	0.00000000E+00	19.603453	17.202
606	24.621222	18.011491	0.00000000E+00	24.621222	22.089
607	24.958427	16.497447	0.00000000E+00	24.958427	22.064
608	16.101603	12.570130	0.00000000E+00	16.101603	14.765
609	6.7058919	0.63519215	-0.43890006E-01	6.7497819	6.4855
610	0.27439878	-0.72028416	-8.0437501	8.3181489	7.8851
611	0.00000000E+00	-6.2666331	-13.915362	13.915362	12.099
612	0.00000000E+00	-10.080532	-16.975908	16.975908	14.790
613	0.00000000E+00	-11.207634	-17.756181	17.756181	15.572

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
614	0.00000000E+00	-9.6387286	-17.303308	17.303308	15.044
615	0.00000000E+00	-6.4881276	-15.927830	15.927830	13.886
616	0.00000000E+00	-2.9942439	-13.789613	13.789613	12.569
617	0.22190442	-0.15647593	-11.238743	11.460647	11.276
618	2.3037503	0.00000000E+00	-8.6276332	10.931384	9.9870
619	3.6264527	0.00000000E+00	-6.2147676	9.8412203	8.6274
620	4.1384069	0.00000000E+00	-4.1496506	8.2880576	7.1841
621	4.0567107	0.00000000E+00	-2.4932454	6.5499561	5.7302
622	3.6391622	0.00000000E+00	-1.2484346	4.8875968	4.3998
623	3.1317000	0.00000000E+00	-0.38878878	3.5204888	3.3432
624	2.7348238	0.11686966	0.00000000E+00	2.7348238	2.6793
625	2.5852712	0.28491135	0.00000000E+00	2.5852712	2.4572
630	2.0133882	0.00000000E+00	-42.643618	44.657007	43.687

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
HELL STRESSES ARE AT BOTTOM

ODE	SIG1	SIG2	SIG3	SI	SI
631	4.5108258	0.00000000E+00	-34.339859	38.850685	36.803
632	8.4102473	0.00000000E+00	-20.048075	28.458322	25.326
633	14.434698	0.85591877	-0.33322658	14.767924	14.220

634	18.851511	[illegible]	0.00000000E+00	18.851511	16.
635	26.972670	17.534715	0.00000000E+00	26.972670	23.
636	33.350769	18.609891	0.00000000E+00	33.350769	29.
637	18.327336	14.640106	0.00000000E+00	18.327336	16.
638	7.4326367	0.58177994	-0.69264388	8.1252806	7.6
639	0.00000000E+00	-0.92098702	-9.7195776	9.7195776	9.30
640	0.00000000E+00	-7.8705350	-16.311516	16.311516	14.1
641	0.00000000E+00	-12.249103	-19.277077	19.277077	16.9
642	0.00000000E+00	-13.843403	-19.544705	19.544705	17.4
643	0.00000000E+00	-11.998811	-18.776207	18.776207	16.4

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	S
644	0.00000000E+00	-8.0864812	-17.250183	17.250183	14.95
645	0.00000000E+00	-3.7996338	-14.914023	14.914023	13.42
646	0.32472459E-01	-0.11300498	-12.107419	12.139892	12.068
647	2.6278944	0.00000000E+00	-9.2122641	11.840158	10.770
648	4.2232133	0.00000000E+00	-6.5220989	10.745312	9.3767
649	4.8319153	0.00000000E+00	-4.2175639	9.0494792	7.8431
650	4.7141811	0.00000000E+00	-2.3790409	7.0932221	6.2535
651	4.1838722	0.00000000E+00	-1.0136988	5.1975710	4.7755
652	3.5455395	0.10958569	-0.19622212	3.7417617	3.5994
653	3.0494321	0.44873044	0.00000000E+00	3.0494321	2.8698
654	2.8634941	0.62433623	0.00000000E+00	2.8634941	2.6301
659	0.22701933	0.00000000E+00	-43.966429	44.193448	44.080
660	3.1799842	0.00000000E+00	-35.019429	38.199413	36.713

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
661	8.0703102	0.00000000E+00	-21.445544	29.515854	26.434
662	16.900035	3.8110785	0.00000000E+00	16.900035	15.376
663	18.738180	10.474294	0.00000000E+00	18.738180	16.274
664	28.492445	18.797474	0.00000000E+00	28.492445	25.178
665	51.764993	30.375364	0.00000000E+00	51.764993	45.138
666	19.418567	16.033768	0.00000000E+00	19.418567	17.990
667	5.5452362	0.00000000E+00	-2.4191372	7.9643734	7.1022
668	0.00000000E+00	-1.0501606	-9.0318794	9.0318794	8.5614
669	0.00000000E+00	-9.0459293	-17.126302	17.126302	14.847
670	0.00000000E+00	-13.823107	-20.510765	20.510765	18.122
671	0.00000000E+00	-15.428087	-20.176658	20.176658	18.285
672	0.00000000E+00	-13.341699	-18.844043	18.844043	16.828
673	0.00000000E+00	-8.8558955	-17.222691	17.222691	14.936

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

OAD STEP 1 ITERATION= 10 SECTION= 1
0.00000E+00 LOAD CASE= 1
STRESSES ARE AT BOTTOM

DE	SIG1	SIG2	SIG3	SI	SI

674	0.00000000E+00	-4.0952523	-14.845403	14.845403	11.[illegible]
675	0.49003800E-01	-0.68874751E-01	-11.997753	12.046757	11.9[illegible]
676	2.9362103	0.00000000E+00	-9.0513729	11.987583	10.8[illegible]
677	4.6762363	0.00000000E+00	-6.3031520	10.979388	9.544
678	5.3381153	0.00000000E+00	-3.9440145	9.2821298	[illegible]69
679	5.2032012	0.00000000E+00	-2.0639627	7.2671640	6.486
680	4.6144110	0.00000000E+00	-0.67444320	5.2888542	4.986
681	3.9077262	0.26127457	0.00000000E+00	3.9077262	3.784
682	3.3601446	0.79610578	0.00000000E+00	3.3601446	3.043
683	3.1555200	0.97013866	0.00000000E+00	3.1555200	2.801
688	0.00000000E+00	-0.80137307	-43.529931	43.529931	43.13
689	1.6875174	0.00000000E+00	-35.231831	36.919349	36.10
690	5.2902040	0.00000000E+00	-22.758555	28.048759	25.82

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
691	13.285478	2.1438823	0.00000000E+00	13.285478	12.367
692	16.485955	8.8361131	0.00000000E+00	16.485955	14.291
693	27.781343	21.760027	0.00000000E+00	27.781343	25.530
694	64.813129	37.701425	0.00000000E+00	64.813129	56.386
695	20.353115	16.678776	0.00000000E+00	20.353115	18.799
696	4.1417645	0.00000000E+00	-2.1734079	6.3151724	5.5891
697	0.00000000E+00	-1.5704595	-7.0028811	7.0028811	6.3867
698	0.00000000E+00	-9.9756149	-17.006884	17.006884	14.806
699	0.00000000E+00	-15.000054	-20.698481	20.698481	18 [illegible] 9
700	0.00000000E+00	-16.841109	-19.840614	19.840614	18.[illegible]9
701	0.00000000E+00	-14.324854	-18.555292	18.555292	16.854
702	0.00000000E+00	-9.4721137	-17.013779	17.013779	14.767
703	0.00000000E+00	-4.4671748	-14.687007	14.687007	13.041

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
704	0.90710366E-02	-0.21013644	-11.890272	11.899343	11.791
705	2.9020325	0.00000000E+00	-8.9833629	11.885395	10.733
706	4.7412253	0.00000000E+00	-6.2577783	10.999004	9.5572
707	5.4520839	0.00000000E+00	-3.9078920	9.3599759	8.1453
708	5.3218890	0.00000000E+00	-2.0306069	7.3524958	6.5804
709	4.7078630	0.00000000E+00	-0.64299683	5.3508598	5.0652
710	3.9649153	0.28927162	0.00000000E+00	3.9649153	3.8349
711	3.3880951	0.81976839	0.00000000E+00	3.3880951	3.0692
712	3.1726973	0.99158505	0.00000000E+00	3.1726973	2.8192
717	0.00000000E+00	-0.16945114	-40.557831	40.557831	40.473
718	1.5131485	0.00000000E+00	-34.163753	35.676901	34.945
719	4.7878840	0.00000000E+00	-22.834607	27.622491	25.569
720	12.692422	0.99174145	0.00000000E+00	12.692422	12.2

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1

			SIG3	SI	SI
721	16.183319	8.8236002	0.00000000E+00	16.183319	14.034
722	28.622172	22.378772	0.00000000E+00	28.622172	26.127
723	68.335766	37.493480	0.00000000E+00	68.335766	59.273
724	21.406944	16.737135	0.00000000E+00	21.406944	19.[illegible]72
725	2.5760204	0.00000000E+00	-2.2119782	4.7879986	4.[illegible]7
726	0.00000000E+00	-3.7583875	-7.2976930	7.2976930	6.3288
727	0.00000000E+00	-11.728529	-17.551540	17.551540	15.486
728	0.00000000E+00	-16.349919	-21.194419	21.194419	19.235
729	0.00000000E+00	-17.915853	-20.175309	20.175309	19.145
730	0.00000000E+00	-15.013485	-18.833022	18.833022	17.243
731	0.00000000E+00	-9.8666604	-17.198686	17.198686	14.948
732	0.00000000E+00	-4.6834656	-14.753683	14.753683	13.057
733	0.00000000E+00	-0.29017282	-11.863712	11.863712	11.721

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

LOAD STEP 1 ITERATION= 10 SECTION= 1
TIME= 0.00000E+00 LOAD CASE= 1
SHELL STRESSES ARE AT BOTTOM

NODE	SIG1	SIG2	SIG3	SI	SI
734	2.9112566	0.00000000E+00	-8.8867506	11.798007	10.645
735	4.8227320	0.00000000E+00	-6.1067668	10.929499	9.4869
736	5.5759939	0.00000000E+00	-3.7159953	9.2919892	8.1006
737	5.4574896	0.00000000E+00	-1.8121815	7.2696711	6.5542
738	4.8308617	0.00000000E+00	-0.41185094	5.2427127	5.0494
739	4.0635154	0.52302353	0.00000000E+00	4.0635154	3.8288
740	3.4646801	1.0516836	0.00000000E+00	3.4646801	3.0767
741	3.2405770	1.2222367	0.00000000E+00	3.2405770	2.8[illegible]5

MAXIMUMS

NODE	723	694	601	723	723
VALUE	68.335766	37.701425	-44.243901	68.335766	59.27