

Design Analysis Cover Sheet

Complete only applicable items.

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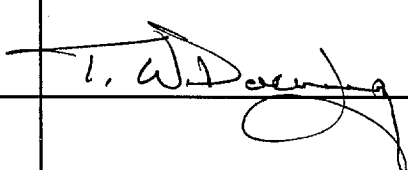
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This is an approved SCOPING Design Analysis. The QAP-2-0 Activity Evaluation, "Perform Criticality, Thermal, Structural, and Shielding Scoping Analysis", DI#: BB0000000-01717-2200-00026 REV 01, lists the procedural controls which are required. Therefore, this design analysis is NOT subject to the QAP-3-series procedures and does not require QAP-3-9 signatures. All information contained in this analysis is TBV and has received a technical review only.

Design Analysis Revision Record

Complete only applicable items.

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Finite-Element Analysis of Rock Fall on Uncanistered Fuel Waste Package Designs

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4. Revision No.

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1. PURPOSE

The objective of this analysis is to explore the Uncanistered Fuel (UCF) Tube Design waste package (WP) resistance to rock falls. This analysis will also be used to determine the size of rock that can strike the WP without causing failure in the containment barriers from a height based on the starter tunnel dimensions. The purpose of this analysis is to document the models and methods used in the calculations.

2. QUALITY ASSURANCE

The Quality Assurance (QA) program applies to this analysis. The waste package has been identified as an MGDS Q-List item important to safety and waste isolation (pp. 5, 16, Ref. 5.1). The waste package is on the Q-List by direct inclusion by the Department of Energy (DOE); a QAP-2-3 evaluation has yet to be conducted. The work performed for this analysis is covered by a Waste Package Development (WPD) QAP-2-0 work control Activity Evaluation entitled *Perform Criticality, Thermal, Structural, and Shielding Scoping Analyses* (Ref. 5.2). The QAP-2-0 evaluation determined that such activities are subject to Quality Assurance Requirements and Description (QARD) (Ref. 5.3) controls. This is a scoping design analysis; applicable procedural controls are listed in Ref. 5.2. This design analysis is not subject to the QAP-3-9 series procedures and does not require QAP-3-9 signatures.

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

3. METHOD

Finite element solution of the problem is introduced by making use of the commercially available ANSYS finite element code. Basic principles of strain energy and calculations of stiffness are used to develop inputs and interpret outputs from the finite-element model.

4. DESIGN INPUTS

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

4.1 Design Parameters

Three-dimensional (3-D) finite-element models of the 12 Pressurized Water Reactor (PWR) UCF and 21 PWR UCF Tube Design Waste Packages (including outer and inner barriers) are created according to the WPD design sketches. The spent nuclear fuel (SNF) basket assembly is not included in the model in order to use an increased number of elements through the thicknesses of the containment barriers, to keep the ANSYS run times down, and to increase the accuracy of the finite-element solution. Since no structural credit is taken for the basket assembly, the results are considered to be conservative. The 12 PWR WP dimensions are as follows:

Outer barrier, outer diameter = 1.2977 m (Ref. 5.4)

Outer barrier, inner diameter = 1.0977 m (Ref. 5.4)

Inner barrier, outer diameter = 1.0977 m (Ref. 5.4)

Inner barrier, inner diameter = 1.0577 m (Ref. 5.4)

Length of the waste package = 5.335 m (Ref. 5.4)

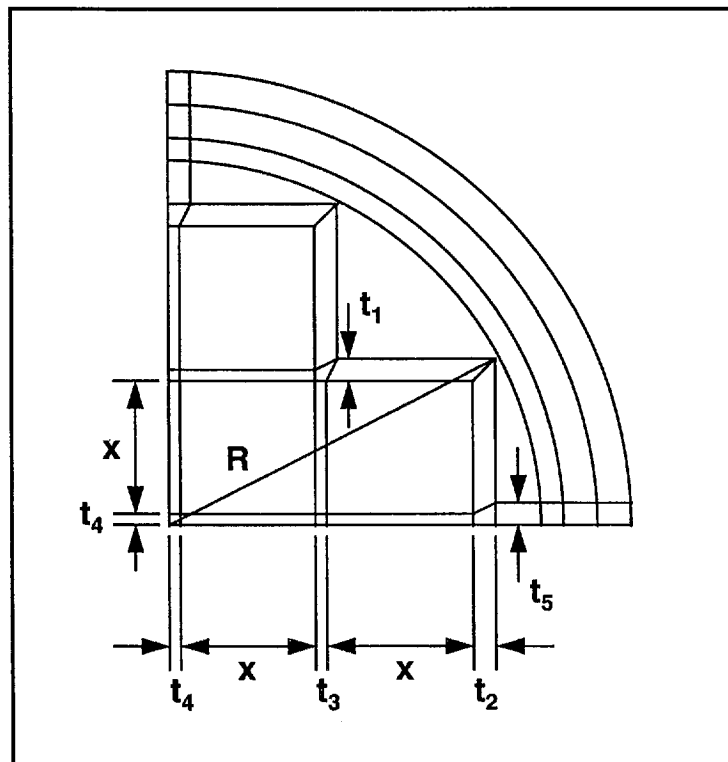


Figure 4-1. Geometry of the 12 PWR basket assembly

Although the finite-element models were developed separately; the inner barrier, outer barrier, outer barrier extension (skirt), and basket assembly (12 PWR UCF) are shown in Figure 4-1 in order to identify the modeling parameters. The dimensions of the SNF basket assembly geometry are dependent on the inner barrier diameter, the basket assembly tube thickness, and structural angle thickness. Therefore, simple trigonometric calculations are used to determine the keypoint locations of the inner structure.

The basket structural member corners have been tapered at the contact surfaces with the inner barrier on the waste package design sketches. However, the finite-element model assumes line contacts between the basket assembly structural member corners and the inner barrier in order to provide a more conservative and simplified approach for the development of the finite-element model (see Assumption 4.3.1).

The basket structure thicknesses were calculated by assuming that the tubes and structural angles were one piece through the thickness and the material used for the structural angles was also assumed same as the material used for the tubes (316L stainless steel was used for the structural angles instead of Alloy 825) (see Assumption 4.3.2).

The radius R can be written in terms of x and t as follows (Figure 4-1):

$$R^2 = (2x + t_2 + t_3 + t_4)^2 + (x + t_1 + t_4)^2$$

The thicknesses (t_1 , t_2 , t_3 , t_4 , t_5), and radius (R) have been considered as constant values and x has been calculated from above equation:

$$t_1 = 9.5 + 5 = 14.5 \text{ mm (Ref. 5.5)}$$

$$t_2 = 9.5 + 5 = 14.5 \text{ mm (Ref. 5.5)}$$

$$t_3 = 5 + 5 = 10 \text{ mm (Ref. 5.5)}$$

$$t_4 = 5 \text{ mm (Ref. 5.5)}$$

$$t_5 = 9.5 \text{ mm (Ref. 5.5)}$$

and since the inner radius of the inner barrier, $R = 528.85 \text{ mm}$,

$$(528.85)^2 = (2x + 14.5 + 10 + 5)^2 + (x + 14.5 + 5)^2$$

$$279682.32 = 5x^2 + 157x + 1250.5$$

$$x = 220.8 \text{ mm}$$

The 24 BWR UCF WP dimensions are provided below for use in Section 7.4 for inertia calculations:

$$\text{Outer barrier, outer diameter} = 1.2646 \text{ m (Ref. 5.6)}$$

$$\text{Inner barrier, inner diameter} = 1.0246 \text{ m (Ref. 5.6)}$$

The 21 PWR WP dimensions are as follows:

Outer barrier, outer diameter = 1.629 m (Ref. 5.7)

Outer barrier, inner diameter = 1.429 m (Ref. 5.7)

Inner barrier, outer diameter = 1.429 m (Ref. 5.7)

Inner barrier, inner diameter = 1.389 m (Ref. 5.7)

Length of the waste package = 5.335 m (Ref. 5.7)

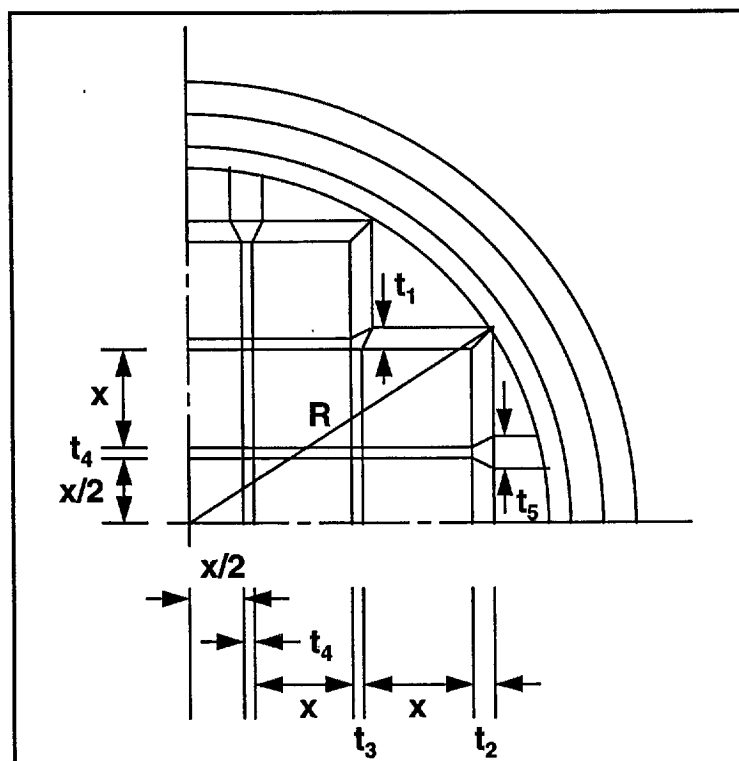


Figure 4-2. Geometry of the 21 PWR basket assembly

Figure 4-2 shows the modeling parameters used in the 21 PWR basket assembly. The calculations and assumptions made for the 21 PWR basket assembly are similar to the calculations made for the 12 PWR basket assembly.

The radius R can be written in terms of x and t as follows (Figure 4-2):

$$R^2 = (2.5x + t_2 + t_3 + t_4)^2 + (1.5x + t_1 + t_4)^2$$

the basket structure thicknesses,

$$t_1 = 9.5 + 5 = 14.5 \text{ mm (Ref. 5.8)}$$

$$t_2 = 9.5 + 5 = 14.5 \text{ mm (Ref. 5.8)}$$

$$t_3 = 5 + 5 = 10 \text{ mm (Ref. 5.8)}$$

$$t_4 = 5 + 5 = 10 \text{ mm (Ref. 5.8)}$$

$$t_5 = 9.5 + 9.5 = 19 \text{ mm (Ref. 5.8)}$$

and since the inner radius of the inner barrier, $R = 694.5 \text{ mm}$,

$$(694.5)^2 = (2.5x + 14.5 + 10 + 10)^2 + (1.5x + 14.5 + 10)^2$$

$$482330.25 = 8.5x^2 + 246x + 1790.5$$

$$x = 223.74 \text{ mm}$$

The difference between the "x" values and the corresponding dimensions given on the sketches is due to the fact that parameters R, x, and t have to be assigned unique values in order to obtain the geometries in Figures 4-1 and 4-2, and to satisfy the derived relations between R, x, and t.

The 44 BWR UCF WP dimensions are provided below for use in Section 7.4 for inertia calculations:

Outer barrier, outer diameter = 1.626 m (Ref. 5.9)

Inner barrier, inner diameter = 1.386 m (Ref. 5.9)

The rock is assumed to have a spherical shape having a radius of 1 m (see Assumption 4.3.3). This geometry was selected because the impact of a sphere will result in a global distribution of stress onto the WP, whereas a sharp-wedge geometry would deform the pointed region of the rock as a result of high stress concentration at the impact point. That provides a conservative approach to the problem since the most severe effect of impact on the WP will be determined without any failure on the rock surface. In order to simplify the finite element analysis (FEA) evaluations, instead of changing the geometry of the model, the density of the rock was varied to simulate different rock sizes.

Four different material property sets are defined in this finite element analysis. The first set is used for a temporary element "shell43" (Ref. 5.10), and its function will be explained in Section 7.2. The other three sets consist of the properties that belong to 3-D structural solid elements.

Because of limited data in the literature for temperature dependent mechanical and physical properties, room-temperature (20°C) is used as a reference for all materials in the finite-element model (see Assumption 4.3.4).

ASTM A 516 carbon steel (outer barrier material, Refs. 5.4, 5.6, 5.7, and 5.9):

Density = 8131 kg/m³ (Ref. 5.11, page 670)

Poisson's ratio = 0.3 (Ref. 5.12, page 374) (see Assumption 4.3.5)

Modulus of elasticity = 206 GPa (calculated from English Unit, 30*10⁶ psi * 6895*10⁻⁹ GPa/psi) (Ref. 5.12, page 374) (see Assumption 4.3.5)

Tensile Strength = 380 MPa (Ref. 5.13) (see Assumption 4.3.6)

Yield strength = 205 MPa (Ref. 5.13)

Elongation % in 2 in. = 27 (Ref. 5.13)

The results of this impact simulation are required to include elastic and plastic deformations in the WP. When the materials are driven into the plastic range, the slope of the stress-strain curve continuously changes. Thus, a simplification for this curve is needed to incorporate plasticity into the model. A standard approximation is commonly used in engineering by assuming a straight line that connects the yield point to the ultimate tensile strength point of the material (see Assumption 4.3.7). Figure 4-3 illustrates the procedure and the parameters used in the following calculations.

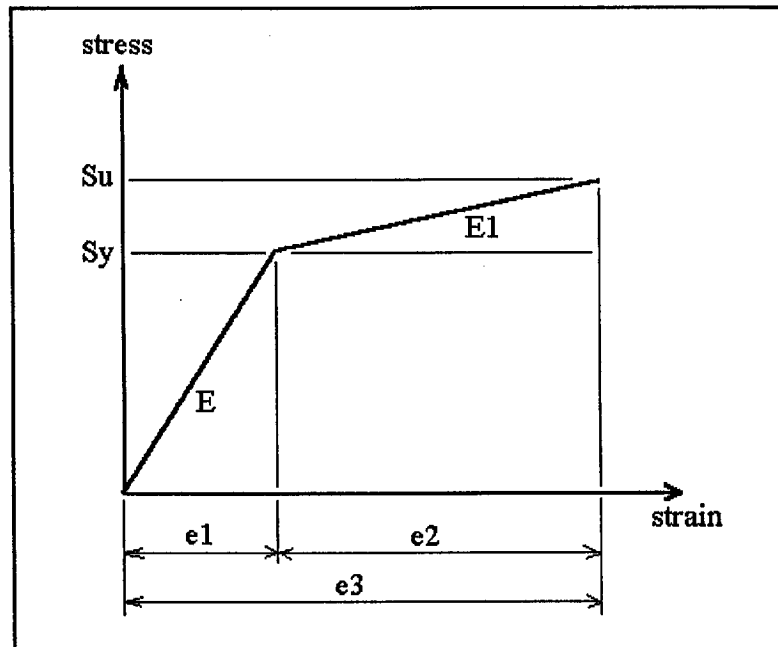


Figure 4-3. Simplified stress-strain curve for the materials

where,

- S_y = Yield strength of the material
- S_u = Ultimate tensile strength
- e_1, e_2, e_3 = strain magnitudes
- E = Elastic modulus (slope of the line in the elastic region)
- E_1 = Tangent Modulus (slope of the line in the plastic region)

The slope, E_1 is determined by :

$e_1 = S_y / E$ and $e_2 = e_3 - e_1$ where e_3 = elongation specified for material

Hence, $E_1 = (S_u - S_y) / e_2 = (0.380 - 0.205) / (0.27 - (0.205 / 206))$

Calculated value is given as, $E_1 = 0.6505$ GPa

Alloy 825 (inner barrier material, Refs. 5.4, 5.6, 5.7, and 5.9):

Density = 8140 kg/m³ (Ref. 5.14)

Poisson's ratio = 0.42 (Ref. 5.14)

Modulus of elasticity = 206 GPa (Ref. 5.14)

Tensile Strength = 662 MPa (Ref. 5.14)

Yield strength = 338 MPa (Ref. 5.14)

Elongation % in 2 in. = 45 (Ref. 5.14)

$E_1 = (S_u - S_y) / (e_3 - (S_y / E)) = (0.662 - 0.338) / (0.45 - (0.338 / 206))$

Therefore, $E_1 = 0.722$ GPa

Type 316L stainless steel (structural members of the basket assembly, see Assumptions 4.3.2 and 4.3.9):

Density = 7953 kg/m³ (Ref. 5.15)

Poisson's ratio = 0.298 (Ref. 5.16, page 755) (see Assumption 4.3.8)

Modulus of elasticity = 195 GPa (Ref. 5.17, Part D, Subpart 2, Table TM-1)

Tensile Strength = 482 MPa (Ref. 5.15)

Yield strength = 172 MPa (Ref. 5.15)

Elongation % in 2 in. = 40 (Ref. 5.15)

$E_1 = (S_u - S_y) / (e_3 - (S_y / E)) = (0.482 - 0.172) / (0.4 - (0.172 / 195))$

Therefore, $E_1 = 0.776$ GPa

Due to limited data available in the literature for the compressive strength of A 516 carbon steel and Alloy 825, the compressive strength of malleable cast iron (1358 MPa) is assumed for all materials (Ref. 5.18) (also see Assumption 4.3.10).

Material properties of the rock :

Poisson's ratio = 0.22 (Ref. 5.19, page 3)

Modulus of elasticity = 32.7 GPa (Ref. 5.19, page 3)

Fall height of the rock is calculated from the given dimensions of the starter tunnel (Ref. 5.20). Figure 4-4 depicts the tunnel boring machine (TBM) starter tunnel geometry. Drop height is the distance from the top surface of the WP to the bottom of the rock. The invert depth is not available and is therefore neglected, adding conservatism to the analysis.

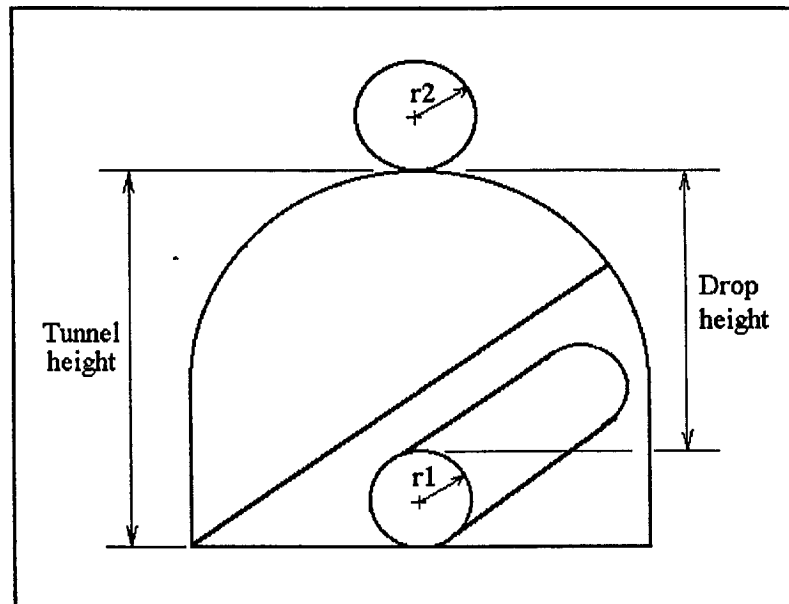


Figure 4-4. TBM Starter Tunnel geometry

Rock fall height calculations for the 12 PWR UCF WP (Figure 4-4):

Tunnel height = $9.857 - 0.152 = 9.705$ m (Ref. 5.20)

r_1 = WP outer barrier radius = 0.64885 m (Ref. 5.4)

r_2 = Rock radius

Fall height = Tunnel height - $2*(r_1) = 9.705 - 2*(0.64885) = 8.4073$ m

Rock fall height calculations for the 21 PWR UCF WP (Figure 4-4):

Tunnel height = $9.857 - 0.152 = 9.705$ m (Ref. 5.20)

r_1 = WP outer barrier radius = 0.8145 m (Ref. 5.7)

r_2 = Rock radius

Fall height = Tunnel height - $2*(r_1) = 9.705 - 2*(0.8145) = 8.076$ m

These rock fall heights are calculated by ANSYS in the finite-element solution of the problem. Input files including above parameters are included in Attachment IV.

The magnitude of the contact stiffness between the rock and the WP is one of the parameters that affects the results. If the stiffness value is very large, stiffness matrix ill-conditioning and divergence occur. Similarly, an extremely small stiffness value results in compatibility violations. Therefore, an optimum value for the contact stiffness is one that is between and is arrived at iteratively. The result of iterations revealed that the contact stiffness between the rock and the WP that works best is $2*10^8$ N/m (Assumption 4.3.11).

Although there is no significant lateral motion between the surfaces of the WP and the rock, the following approximate values of coefficients of friction are obtained from the literature

(Ref. 5.21, page 31) as inputs to the analysis (see Assumption 4.3.12):

Coefficient of static friction = 0.74

Coefficient of kinetic friction = 0.57

The ANSYS output files include the inner and outer barrier masses of the 12 PWR and 21 PWR UCF WPs. The finite-element model of the 12 PWR UCF WP was initially developed as one-half symmetric model including the inner and outer lids in order to use the same finite-element model for all accident scenarios with slight modifications. After the models were modified to include the full size WP without the lids, the differences in the calculated masses were observed because of the changes in the WP total volume. Although the same densities have been used in the modified WP models, excluding the lids and including the full WP size caused small differences in the total mass of the inner and outer barriers. Therefore, when the total inner and outer barrier mass of the 12 PWR WP excluding the lids, which is obtained from the ANSYS output file (17,393 kg) (see Attachment IV, page 287), is compared to the mass calculated from the Ref. 5.22 (17,646 kg), a slight difference is observed.

In order to determine the effect of the small difference in the weight of the WP, a separate analytical calculation was performed for the 21 PWR UCF WP (see Section 7.5). Thus, it has been shown that the dynamic load on the WP is much higher than the static load due to the weight of the WP and the small differences in the WP mass will have negligible effect in the results.

A similar discussion can be made for the mass values of the 21 PWR WP. The finite-element model was initially developed as one-half symmetric model including the inner and outer lids. After the models were modified to include the full size WP without the lids, the differences in the calculated masses were observed because of the changes in the WP total volume. Although the same densities have been used in the modified WP models, excluding the lids and including the full WP size caused small differences in the total mass of the inner and outer barriers. Therefore, when the total inner and outer barrier mass of the 21 PWR WP excluding the lids, which is obtained from the ANSYS output file (20,553 kg, see Attachment IV, page 78), is compared to the mass calculated from the Ref. 5.22 (22,599 kg), a difference is observed.

The calculations performed in Section 7.5 show that the dynamic load on the WP is much higher than the static load due to the weight of the WP and the small differences in the WP mass will have negligible effect on the results.

Input/output files of all analyses performed in this document are provided in Attachments IV, V, and VI.

4.2 Criteria

The following criteria are applicable to the design subject; however, it is not the intent of these analyses to show complete compliance or resolution of the following requirements from the Engineered Barrier Design Requirements Document (EBDRD) (Ref. 5.23):

- 4.2.1 “The Engineered Barrier Segment shall maintain performance under rock-induced loading (TBD).”

[EBDRD 3.7.F]

- 4.2.2 “The waste package shall contribute to limiting the dispersal of radioactive waste materials in the event of accidents or other dynamic effects.”

[EBDRD 3.7.1.H]

- 4.2.3 “The container shall contain the radioactive waste materials during all normal handling and emplacement operations and, in the event of accidents or other dynamic effects, contribute to limiting dispersal of the waste. The container shall also have the mechanical integrity to sustain routine handling and transportation loads (TBD).”

[EBDRD 3.7.1.2.A]

This analysis contributes to the design meeting requirements identified from 4.2.1 through 4.2.3 by examining the ability of the WP to withstand a rock fall onto the WP.

- 4.2.4 “The design of waste packages shall include, but not be limited to, consideration of the following factors: solubility, oxidation/reduction reactions, corrosion, hydriding, gas generation, thermal effects, mechanical strength, mechanical stress, radiolysis, radiation damage, radionuclide retardation, leaching, fire and explosion hazards, thermal loads, and synergistic interactions.”

[EBDRD 3.7.1.B]

EBDRD requirement 3.7.1.B items addressed in this design analysis are considerations of mechanical strength and mechanical stress. The purpose of this document is to report the results of structural analyses in terms of the mechanical stress and strength.

- 4.2.5 “Waste packages shall be designed to maintain waste containment during transportation, emplacement, and retrieval.”

[EBDRD 3.7.1.E]

Since the WP will be in the starter tunnel for a short period of time during emplacement and the waste package is required to maintain containment during the process, EBDRD requirement 3.7.1.E is also listed as a design criterion.

- 4.2.6 “The internal structure of the waste package shall be configured to accommodate the spent fuel waste form, provide mechanical stability of the waste form, and facilitate

loading of the waste form into the waste package.”

[EBDRD 3.7.1.3.B]

The internal structure of the waste package is analyzed for structural integrity and stability. Thus, EBDRD requirement 3.7.1.3.B is addressed throughout the document.

The notation “TBD” (to be determined) in EBDRD requirements 3.7.F and 3.7.1.2.A will not be carried to the conclusions of this analysis based on the rationale that the conclusions derived by this analysis are for conceptual or preliminary design that will not be used as input into documents supporting construction, fabrication, or procurement.

4.3 Assumptions

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

- 4.3.1 The basket structural member corners have been tapered at the contact surfaces with the inner barrier on the sketches. However, the finite-element model assumes line contacts between the basket assembly structural member corners and the inner barrier in order to provide a more conservative and simplified approach for the development of the finite-element model. This assumption is used in Section 4.1.
- 4.3.2 The material used for the structural angles was specified as Alloy 825 in sketches (Ref. 5.4 and Ref. 5.6). However, the basket structure thicknesses were calculated by assuming that the tubes and structural angles were one piece through the thickness, and the material used for the structural angles was also assumed to be the same as the material used for the tubes (316L stainless steel). Since the yield and ultimate tensile strengths of Alloy 825 are higher than the strengths of 316L stainless steel, this is considered as a conservative assumption. This assumption is used in Section 4.1.
- 4.3.3 The rock is assumed to have a spherical shape having a radius of 1 m. This geometry was selected because the impact of a sphere will result in a global distribution of stress onto the WP, whereas a sharp-wedge geometry would deform the pointed region of the rock as a result of high stress concentration at the impact point. That provides a conservative approach to the problem since the most severe effect of impact on the WP will be determined without any failure on the rock surface. The effect of assuming 1 m for the rock radius is minor because ANSYS cannot model the rock as a perfect sphere since the element faces must be flat. Thus, there is a small point on the rock which makes initial contact with the WP regardless of the size of the rock. This assumption is used in Section 4.1.
- 4.3.4 Because of limited data in the literature for temperature dependent mechanical and physical properties, room-temperature (20°C) is used as a reference for all materials in the finite-element model. Mechanical properties of Type 316L stainless steel and Alloy

825 have little temperature dependence for the temperature range of interest. ASTM A 516 carbon steel has decreasing strength but increasing ductility at high temperatures. Therefore, this assumption has only minor effects on the results. This Assumption is used in Section 4.1.

- 4.3.5 The elastic modulus and Poisson's ratio of cast carbon steel (Ref. 5.12) are assumed for A 516 carbon steel. Since the physical properties of cast steel are generally similar to those of wrought steel (Ref. 5.12), this assumption has minor effect on the results. This assumption is used in section 4.1.
- 4.3.6 The lower limit of the given ultimate tensile strength range for A 516 (Ref. 5.13) is used in this analysis. This is a conservative assumption and used in Section 4.1.
- 4.3.7 The stress-strain curve given in Figure 4-3, in Section 4.1, is an approximation to the real material behavior. The materials are assumed to reach the ultimate tensile strength at the maximum percent elongation. The basis for this assumption is that the failure criterion (maximum normal-stress theory) is solely based on the ultimate tensile and compressive strengths of the materials, and not on the path followed by the curve in the plastic region of the stress-strain diagram. Hence, the stress distribution results are conservative in this analysis. This assumption is used in Section 4.1.
- 4.3.8 The Poisson's ratio for 316L stainless steel was not available in the literature. Therefore, the Poisson's ratio of 316 stainless steel has been used (Ref. 5.16). This assumption is used in Section 4.1.
- 4.3.9 Type 316L stainless steel has been assumed for the basket assembly tubes; the material has been listed as 316B6A stainless steel in the WPD sketches (Refs. 5.4, 5.5, 5.6, 5.7, 5.8, and 5.9). 316L stainless steel is the closest material for which properties are available. This assumption is also based on the observation that for the material properties which are used in the finite-element analysis, the 304B6A properties essentially are the same as those for 304L stainless steel, Refs. 5.17 and 5.30. This assumption is used in Section 4.1.
- 4.3.10 Due to limited data available in the literature for the compressive strength of A 516 carbon steel and Alloy 825, the compressive strength of malleable cast iron (1358 MPa) is assumed for all materials (Ref. 5.18). This assumption is used throughout.
- 4.3.11 The magnitude of the contact stiffness between the rock and the WP is one of the parameters that affects the results. If the stiffness value is very large, stiffness matrix ill-conditioning and divergence occur. Similarly, an extremely small stiffness value results in compatibility violations. Therefore, an optimum value for the contact stiffness is one that is in between and is arrived at iteratively. The result of iterations revealed that the contact stiffness between the rock and the WP that works best is 2×10^8 N/m. This assumption is used in Section 4.1.

- 4.3.12 The coefficients of static and dynamic friction values have been provided for steel on steel, which have been obtained from the limited data in the literature. Since there is no relative displacement between the rock and the WP along the surface perpendicular to the line of impact, the friction coefficients do not have significant effect on the results. However, the following numbers had to be specified in order to meet the computational requirements:

Coefficient of static friction = 0.74 (Ref. 5.21)

Coefficient of kinetic friction = 0.57 (Ref. 5.21)

This assumption is used in Section 4.1.

- 4.3.13 The maximum normal stress theory is assumed to be applicable in determining when material failure will occur. Thus, material failure will occur when the first principal stress, S_1 , exceeds the ultimate tensile strength, S_{ut} , or when the third principal stress, S_3 , exceeds the ultimate compressive strength, S_{uc} . This assumption is used in Section 7.1.

- 4.3.14 The WP 3-D models consist of the outer and inner barriers. The basket assembly, inner lid, outer lid, and the weight of the fuel assemblies are not included in this analysis. Since the effect of dynamic loading will not be observed at either end of the WP structure and the dynamic loading on the WP is very large compared to the static load (see Section 7.5), these components are excluded from the model. This assumption is used in Section 7.2.

- 4.3.15 Impact occurs at the surface of the outer barrier in the middle of the WP length. The weight of the fuel assemblies would have a significant effect on the stress distribution in a static equilibrium analysis of the WP. However, considering the fact that magnitude of dynamic loading on the WP is very large compared to the static load, and overall stiffness of the system will not be considerably affected by absence of the fuel assemblies, the fuel assembly load is not incorporated in the model. This assumption is used in Section 7.2.

- 4.3.16 The maximum effect of the dynamic impact on the containment barriers was assumed to be obtained for a 45° rotated configuration of the 12 PWR UCF WP (see Figure I-6). Since the maximum deflection of containment barriers will be transmitted to the basket assembly, the same configuration is used for the 2-D analysis of the basket assembly. The maximum effect of the dynamic impact on the 21 PWR UCF WP, however, was assumed to be obtained for a non-rotated configuration. Thus, the corresponding 2-D basket assembly is also analyzed for the 21 PWR UCF WP. This assumption is used in Section 7.2.

- 4.3.17 No structural credit is taken for the basket guide and structural stiffener. Because of their negligible contributions to the overall moment of inertia, these structural members

are not included in the 2-D models. This is a conservative assumption which simplifies the finite-element model. This assumption is used in Section 7.2.

- 4.3.18 The finite-element model does not include the transporter shield. The metallic multi-barrier waste package is placed on the floor of the starter tunnel to obtain the most conservative results. This assumption is used in Section 7.2.
- 4.3.19 There is no structural damping in the materials used for this simulation. Attenuation of stress waves is not of interest because the failure criteria is based solely on the comparison of maximum stress with the ultimate tensile strength. However, absence of structural damping also provides conservative results to the FEA since the computed peak stress magnitudes will be larger. This assumption is used in Section 7.2.
- 4.3.20 It should also be noted that the warning message related to the excessively stiff elements in the rock is considered to be a desirable property so that our design will be more conservative. This assumption is used in Section 7.2.
- 4.3.21 The element shape checking is deactivated in order to extrude a 2-D element mesh into a 3-D solid model. The warning messages written in the output file have resulted from the meshing of volumes which produced elements with excessive aspect ratios. Since the stress gradient in each element (i.e., difference in the stress magnitude along the element) is not large, and the number of elements used in the extrusion process is sufficient for this analysis, these warning messages can be disregarded. This assumption is used in Section 7.2.
- 4.3.22 It is assumed that all of the kinetic energy of the falling rock is imparted onto the WP as mechanical energy. Furthermore, the rock does not shatter and deflection of the rock as compared to deflection of the WP is negligible. This assumption is used in Section 7.3.
- 4.3.23 The rock fall height in the analytical calculations is conservatively assumed to be the same for all waste packages considered in this design analysis. Since the 12 PWR UCF has a smaller diameter than the 21 PWR UCF, the actual 21 PWR UCF rock fall height is slightly less than the one calculated for the 12 PWR UCF. The length of the WP, and elastic moduli are also the same for all WPs. Since the correlations are performed to find the rock mass which will keep the bending stress the same, the bending stress is also considered as a constant in the calculations. This assumption is used in Section 7.3.
- 4.3.24 It is assumed that plastic deformation of the basket material is permitted as long as there is no rupturing of the material. This assumption is used in Sections 8.1.2 and 8.3.2.
- 4.3.25 The rock fall stress analyses are performed in the time interval where the rock is in contact with the waste package. Although the stress magnitudes at the end of the

simulation seem to slightly increase, since the rock loses its contact with the WP just prior to time step 34, this is considered as one of the local stress peaks resulting from the fact that there is no damping in the finite-element model. Therefore, the 12 PWR UCF WP stress magnitudes after the time step 34 are not significant in this analysis (see Attachment III). Figure I-7 shows that the rock has no contact with the waste package at this time step. This is one of the reasons for terminating the finite-element analyses after a certain time step which can be seen from the output files in Attachment IV. This procedure keeps the run times down and avoids unnecessary output files. This assumption is used throughout.

4.4 Codes and Standards

N/A. Mechanical design of waste packages is not controlled by codes and standards. The standards of the American Society of Testing and Materials (ASTM) have been used as source of material properties for A 516 Carbon Steel. The modulus of elasticity for 316L was obtained from the American Society of Mechanical Engineers (ASME) 1992 Boiler and Pressure Vessel Code. The complete list of references used as sources of material properties is included in Section 5.

5. REFERENCES

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- 5.5 *Waste Package Tube Design (12-PWR)*, DI Number: BBA000000-01717-2100-15022 REV 00B, DWG 3 and DWG 4, CRWMS M&O.
- 5.6 *Waste Package Tube Design (24-BWR)*, DI Number: BBA000000-01717-2100-15029 REV 00B, DWG 1 and DWG 2, CRWMS M&O.
- 5.7 *Waste Package Tube Design (21-PWR)*, DI Number: BBA000000-01717-2100-15057 REV 00A, DWG 1 and DWG 2, CRWMS M&O.

- 5.8 *Waste Package Tube Design (21-PWR)*, DI Number: BBA000000-01717-2100-15057 REV 00A, DWG 3 and DWG 4, CRWMS M&O.
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- 5.29 *Mechanics of Materials*, SI Metric Edition, Ferdinand P. Beer and E. Russell Johnston, Jr., McGraw-Hill Ryerson Limited, Toronto, Canada, 1987.
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6. USE OF COMPUTER SOFTWARE

The ANSYS finite element code is used on Hewlett Packard workstation HP9000-series 735. The revision number of ANSYS currently installed on the HP workstation is 5.0 A. Qualification of the ANSYS software is documented in the Verification and Validation Final Report for ANSYS 5.0A, Ref. 5.24, and use of the code is in accordance with the Life Cycle Plan for ANSYS 5.0A, Ref. 5.25, and the QAP-SI series procedures. The Computer Software Configuration Item (CSCI) number for ANSYS 5.0A is specified as B00000000-01717-1200-30003, Ver. 5.0A. The ANSYS code is a respected industry standard for structural evaluations and has been previously accepted by the Nuclear Regulatory Commission (NRC) for use in licensing evaluations. The ANSYS finite element analysis code used in the design analysis is appropriate for this application and was only used within the range as described in the verification and validation documentation.

The input-output files and results for all computer analyses performed in this report are presented in Attachments I through VI.

7. DESIGN ANALYSIS

7.1 Theory and Background

The behavior of structures to intense impulsive loading is studied in two different regimes. For loading conditions that result in stresses below the yield point, materials behave elastically. In this case, Hooke's law is applicable for the metals. As the load is increased on the material, it is driven into the plastic range where large deformations and material nonlinearities occur (Ref. 5.26).

A very large mass of rock is impacted on the WP. Hence, the stress waves are reflected in the complex geometry of the WP many times before the rock is brought to rest at the instant of maximum displacement, and sudden changes in stress associated with the passage of the stress wave in the WP are small compared with the general stress level. The good approximation of the stress in the WP can then be found by ignoring dynamic effects in the WP. The maximum stress in the WP, which occurs at the instant the rock comes to rest can be determined by equating the maximum strain energy stored in the WP to the loss of kinetic energy of the rock. An analysis of a dynamic problem with this approach is referred to as quasi-static since the external dynamic loads are considered to be in equilibrium with a statically determined stress field (Ref. 5.27).

It should be kept in mind that real solids do not usually fit the idealized models developed to describe their behavior. When a wave disturbance is propagated through a real medium, part of the mechanical energy is converted into heat. Internal friction of the structures is the reason for this energy transformation. Because of complexity introduced and negligible amount of energy transformation, such phenomena are not considered in mathematical models.

Principal stress distribution on the WP will be analyzed in order to explore the failure locations. Two different failure criteria are incorporated in this analysis. Maximum-distortion-energy theory (Von Mises criterion) is used to predict the beginning of yield in the materials. The ANSYS computer code is capable of including Von Mises theory in the finite element solution. According to this criterion, a given structural component is in the elastic region as long as the maximum value of the distortion energy per unit volume in that material remains smaller than the distortion energy per unit volume required to cause yield in a tensile-test specimen of the same material. Figure 7-1 shows this theory for triaxial stress states (Ref 5.29). Any given state of stress will be represented in that figure by a point of coordinates S_1 , S_2 , and S_3 which are the three principal stress magnitudes. If this point falls within the volume shown in the figure, the structural component experiences elastic deformation only. If it falls outside this volume, the component will plastically deform. In order to decide whether there is a failure due to excessive plastic deformation, another criterion is considered that is called the maximum-normal-stress theory (Ref. 5.28) (also see Assumption 4.3.13).

The maximum-normal-stress-theory states that failure occurs whenever one of the three principal stresses equals the strength. If the three principal stresses are arranged in the ordered

form:

$$S_1 > S_2 > S_3$$

Then failure occurs whenever

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

where S_{ut} and S_{uc} are ultimate tensile and compressive strengths, respectively. Figure 7-2 illustrates stress states associated with safety and with failure. If the stress state falls within the volume of the rectangular prism, the structural component is safe. If it falls outside this volume, the component will fail as a result of excessive plastic deformation.

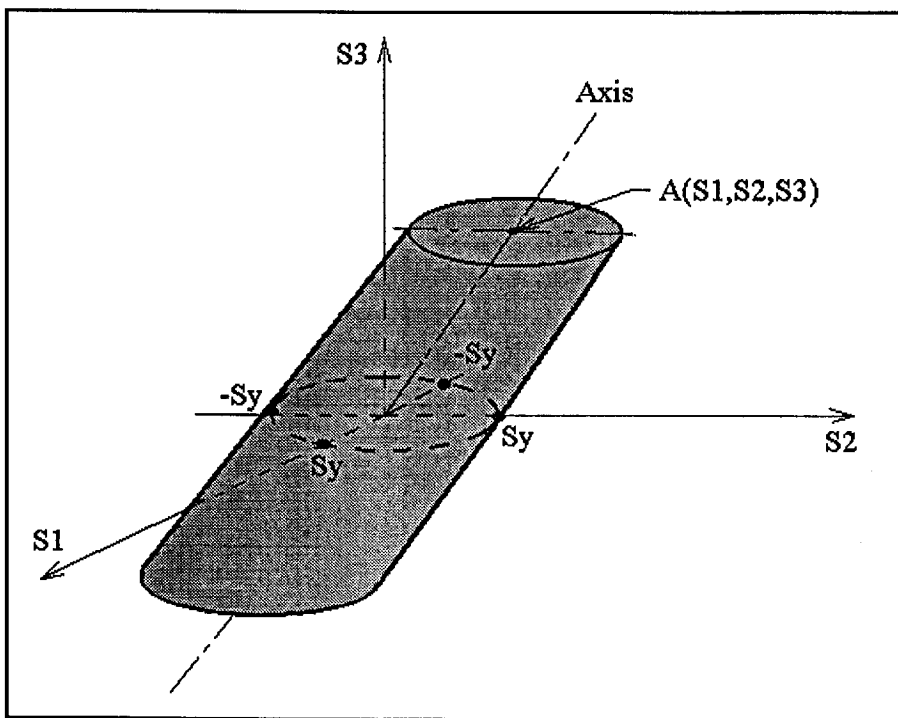


Figure 7-1. Von Mises theory in three dimensions. The oblique elliptical cylinder encloses all values of stress resulting in elastic deformation given by S_1 , S_2 , and S_3 . Cylinder axis is the line $S_1 = S_2 = S_3$.

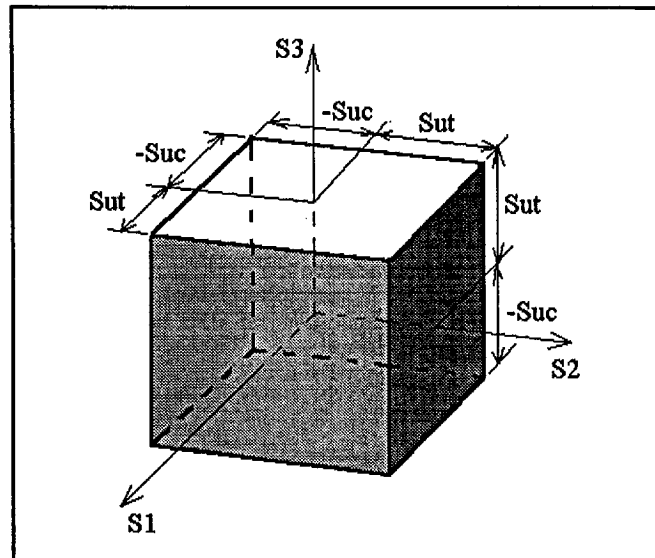


Figure 7-2. The maximum-normal-stress theory in three dimensions. The right rectangular prism encloses all safe values of any combination of stress components. The ultimate compressive strength, S_{uc} , is not necessarily equal to the ultimate tensile strength, S_{ut} .

7.2 Model Development

Three-dimensional finite-element models of the 12 PWR and 21 PWR UCF Tube WPs (including inner and outer barriers) have been developed in accordance with the WP conceptual designs. The SNF basket assembly is not included in the model in order to use an increased number of elements through the thicknesses of the containment barriers, to keep the ANSYS run times down, and to increase the accuracy of the finite-element solution. Since no structural credit is taken for the basket assembly, the results are considered to be conservative.

A transient dynamic analysis solution is produced, with gravitational acceleration as the only load on the system. The support structures have not been designed yet. Thus, the WP is assumed to be resting on pedestal supports. A conservative approach is taken by simulating pedestal supports with displacement constraints on the outer barrier since the deflection on the support structure is not allowed. Displacement constraints at support locations prevent vertical motion and horizontal motion normal to the axis of the WP. There are two support locations at each end, along the length of the WP. Outer supports are at the extreme ends of the outer barrier, which in this model includes the skirt. Inner supports are located one element length inside of the outer supports. The combination of kinetic-strain energy and linear bending stress relations reveals that the stress on a beam is inversely proportional to the square root of the beam length (see Section 7.3). In other words, if the volume of the beam is increased, more kinetic energy can be absorbed in terms of strain energy in the beam. Since the inner supports provide a smaller unsupported length than the basket assembly length, the finite-element model is considered to be conservative.

For the present WP conceptual designs, the outer and inner barriers of 12 PWR and 21 PWR WPs are fabricated as one piece. However, material properties are unique to each specific material.

The keypoints in the first quadrant of a two dimensional (2-D) sectional view are used to duplicate the keypoints in the other three quadrants. Lines and arcs connecting those keypoints are defined in the next step. The following 2-D mesh operation of all areas is accomplished using the plastic shell elements (shell43) (Ref. 5.10). Plastic shell elements are temporarily used in order to extrude a 2-D model into a 3-D solid element (solid45) (Ref. 5.10) mesh. After the extrusion is completed, the shell43 elements are deleted from the model since the multi-barrier waste package analysis is not intended to include these elements but only to use them as a "bridge" to create the solid45 finite element mesh.

Solid45 is commonly used for the three dimensional modeling of solid structures. This element is defined by eight nodes having three degrees of freedom at each node (translations in the nodal x, y, z directions). Solid45 also has plasticity, creep, swelling, stress stiffening, large deflection, and large strain capabilities. The plasticity, large deflection, and large strain options are of interest for this analysis.

The WP length for the outer barrier is meshed in three subsequent operations. The first and the third sections include coarse element meshes at both ends of the WP. The region where the rock impacts is meshed with many small elements that will result in more accurate stress distribution in the vicinity of the impact area. The same procedure is followed with different material specifications in those areas associated with the inner barrier. One difficulty of area extrusion in three different steps is that after each operation, the intersections between the volumes include coincident nodes and keypoints that may result in numerical difficulties for the proceeding calculations. This difficulty is overcome by merging those nodes and keypoints.

Different rock sizes have been simulated by changing densities instead of the geometry of the problem. The relation between density, mass, and volume is, $d = m / V$. The mass of the rock can be increased by keeping the radius (eventually, the volume) constant, and increasing density proportional to the mass. This procedure allows us to use the same geometry for the finite element model of the rock (see Assumption 4.3.3). After the maximum allowable mass of the rock is determined, its radius corresponding to real density is calculated by the same formula.

The WP 3-D models consist of the outer and inner barriers. The basket assembly, inner lid, outer lid, and the weight of the fuel assemblies are not included in this analysis. Since the effect of dynamic loading will not be observed at either end of the WP structure and the dynamic loading on the WP is very large compared to the static load (see Section 7.5), these components are excluded from the model (Assumption 4.3.14).

Two-dimensional static finite-element models are also developed in order to analyze the 12 PWR and 21 PWR basket assemblies. The plane passing through the center of the impact

region was used as the basket assembly cross-section in the 2-D models. The fuel assembly weights were not included in the finite-element models (see Assumption 4.3.15). Since the impact load is much greater than the static load of the fuel assemblies, this assumption has negligible effect in the results. Displacements at the inner barrier-basket assembly contact points are obtained from the 3-D dynamic containment barrier model results and applied as specified displacements on the basket assembly. Since the basket was not included in the 3-D model, the displacement magnitudes taken from that model provide a conservative approach to the analysis.

The maximum effect of the dynamic impact on the containment barriers was assumed to be obtained for a 45° rotated configuration of the 12 PWR UCF WP (Assumption 4.3.16). Since the maximum deflection of containment barriers will be transmitted to the basket assembly, the same configuration is used for the 2-D analysis of the basket assembly. The maximum effect of the dynamic impact on the 21 PWR UCF WP, however, was assumed to be obtained for a non-rotated configuration. Thus, the corresponding 2-D basket assembly is also analyzed for the 21 PWR UCF WP.

No structural credit is taken for the basket guide and structural stiffener. Because of their negligible contributions to the overall moment of inertia, these structural members are not included in the 2-D models. This is a conservative assumption which simplifies the finite-element model (Assumption 4.3.17).

The finite-element model does not include the transporter shield. The metallic multi-barrier waste package is assumed to be placed on the floor of the starter tunnel to obtain the most conservative results (Assumption 4.3.18).

There is no structural damping in the materials used for this simulation. Attenuation of stress waves is not of interest because the failure criteria is based solely on the comparison of maximum stress with the ultimate tensile strength. However, absence of structural damping also provides conservative results to the FEA since the peak stress magnitudes will be larger (Assumption 4.3.19).

It should also be noted that the warning message related to the excessively stiff elements in the rock is considered to be a desirable property so that our design will be more conservative (Assumption 4.3.20).

The element shape checking is deactivated in order to extrude a 2-D element mesh into a 3-D solid model. The warning messages written in the output file have resulted from the meshing of volumes which produced elements with excessive aspect ratios. Since the stress gradient in each element (i.e., difference in the stress magnitude along the element) is not large, and the number of elements used in the extrusion process is sufficient for this analysis, these warning messages can be disregarded (Assumption 4.3.21).

7.3 Correlation Method for Large and Small UCF Tube Designs

In order to develop a correlation factor between the UCF Tube WPs, an analytical solution is needed for the same problem. A quasi-static approach can be used to simplify the dynamic load into a static, concentrated force applied at midspan on the outer and inner barriers.

Figure 7-3 illustrates the WP, applied force, shear force, and bending moment diagrams.

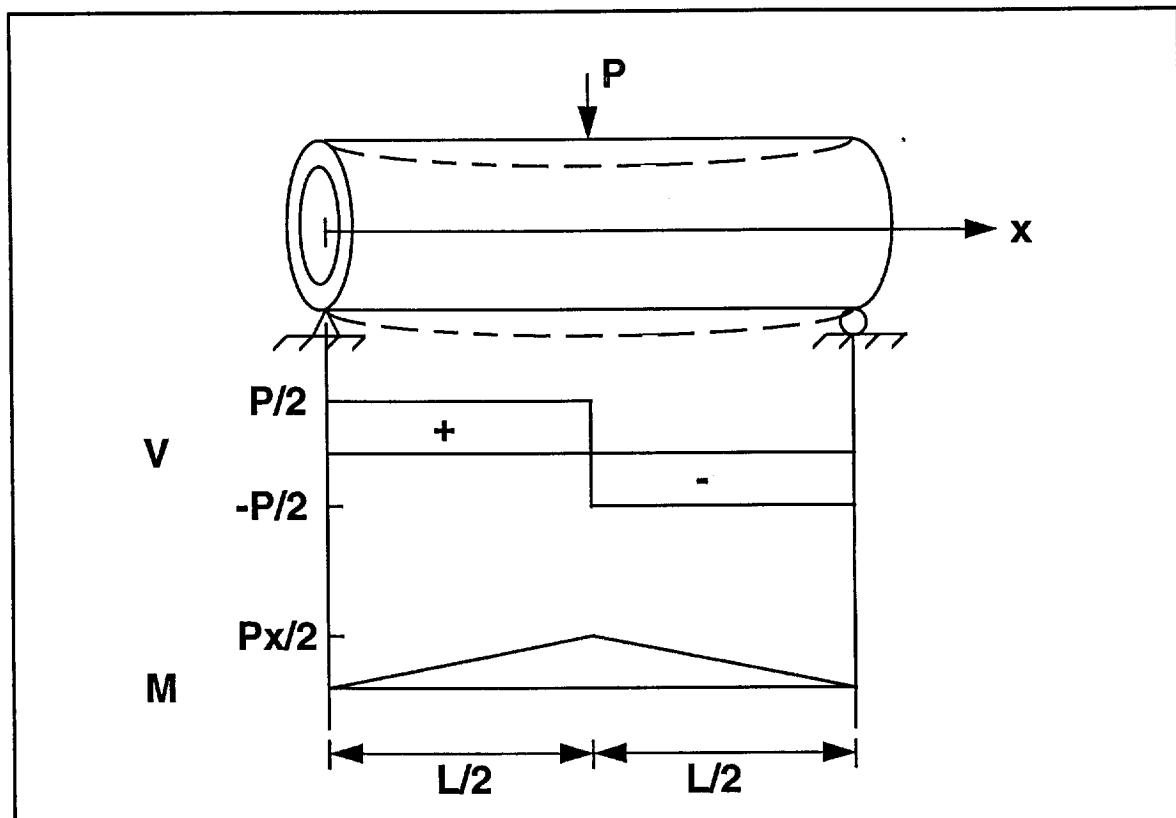


Figure 7-3. Shear force and bending moment diagrams of analytical model

In the analytical model it is assumed that the normal stress varies linearly with the distance from the neutral surface. A compressive normal stress state is active above the neutral axis, and a tensile normal stress state is active below the neutral axis. Furthermore, the magnitudes of maximum compressive and tensile stresses are identical due to the symmetric geometry of the WP cross-sectional area with respect to the plane passing through the center of the WP.

The finite-element evaluations are based on a slightly different mechanism of impact and subsequent stress distribution on the finite-element model. Plastic deformation in a material leads to a nonlinear stress profile across the material thickness. The impacted region of the WP experiences high stress concentration due to localized plastic deformation. Thus, the analytical formulations will be used only for correlating between WPs of similar size, the 21 PWR with the 44 BWR and the 12 PWR with the 24 BWR.

The strain energy relation for a beam in bending is obtained from Beer and Johnston's "Mechanics of Materials" (Ref. 5.29, p. 477):

$$U = \int_0^L \frac{M^2}{2EI} dx \quad (\text{Equation 7.1})$$

where: U = strain energy in the beam
 M = bending moment
 E = modulus of elasticity of the beam
 L = length of the beam
 I = area moment of inertia of the beam
 x = independent variable along the beam length

The shear force-bending moment diagram of the cylindrical beam model for the WP (Figure 7-3) reveals that the total strain energy can be determined by performing the above integration in two regions of the beam. The reaction forces on both sides of the beam are the same and equal to half the value of the applied force P since the problem is symmetric about the mid-plane. Therefore, the bending-moment in either of the two regions depends on the relation (Px/2). Placing this into the strain energy relation and making use of the symmetry,

$$U = 2 \int_0^{L/2} \left(\frac{Px}{2} \right)^2 \frac{1}{2EI} dx \quad (\text{Equation 7.2})$$

Therefore,

$$U = \frac{P^2 L^3}{96 EI} \quad (\text{Equation 7.3})$$

The potential energy of the rock is converted into kinetic energy by the time it falls to the top surface of the outer barrier. Assuming that all of the kinetic energy of the rock is spent deflecting the containment barriers, which is a conservative approach, strain energy stored in the barriers will be equal to the kinetic energy of the rock (see Assumption 4.3.22).

Hence,

Kinetic Energy = Strain Energy

$$\frac{1}{2}mv^2 = \frac{P^2 L^3}{96 EI} \quad (\text{Equation 7.4})$$

where: m = mass of rock
 v = velocity of rock
 P = force on barriers
 L = length of basket assembly
 E = modulus of elasticity of barrier materials
 I = area moment of inertia of barriers

It is also known that:

$\sigma = M*c/I$ (Ref. 5.29, p. 157), and $M = P*L/4$ for this problem. " σ " is the bending stress, " c " is the outer barrier outer radius, and " M " is the bending moment. Placing these relations into Equation 7.4 and considering L , c , I , and E as constant values, the following is obtained:

$$\frac{1}{2}mv^2 = \left(\frac{4\sigma I}{cL} \right)^2 \frac{L^3}{96 EI} \quad (\text{Equation 7.5})$$

If two different waste package sizes are compared in terms of their radii and area moment of inertias, Equation 7.5 can be divided side by side in order to obtain the following relation:

$$m_1 = m_2 \left(\frac{I_1}{I_2} \right) \left(\frac{c_2}{c_1} \right)^2 \quad (\text{Equation 7.6})$$

Note that the parameters v , σ , L , and E are assumed to be constant for the waste packages (Assumption 4.3.23).

The magnitude of the force calculated from these formulations has been used to obtain the maximum value of the bending moment and the bending stress on the surface of the barrier. When the maximum stress magnitudes of analytical and finite-element solutions are compared, a difference is expected because the finite-element model uses an elastic-plastic approach while the analytical solution is purely elastic.

7.4 Inertia Calculations for UCF Waste Packages

The area moment of inertia of a hollow circle with its neutral axis through its center is calculated from the following relation (Ref. 5.29):

$$I = \pi (d_o^4 - d_i^4) / 64 \quad (\text{Equation 7.7})$$

where d_o is the outer diameter of the outer barrier and d_i is the inner diameter of the inner barrier. The following inertia values are obtained by placing waste package diameters (Refs. 5.4, 5.6, 5.7, and 5.9) into Equation 7.7:

$$I_{12 \text{ PWR}} = \pi (1297.7^4 - 1057.7^4) / 64 = 77,773 * 10^6 \text{ mm}^4$$

$$I_{24 \text{ BWR}} = \pi (1264.6^4 - 1024.6^4) / 64 = 71,441 * 10^6 \text{ mm}^4$$

$$I_{21 \text{ PWR}} = \pi (1629^4 - 1389^4) / 64 = 162,947 * 10^6 \text{ mm}^4$$

$$I_{44 \text{ BWR}} = \pi (1626.0^4 - 1386.0^4) / 64 = 161,981 * 10^6 \text{ mm}^4$$

7.5 Bending Stress Calculations Due to Static Weights of UCF Waste Packages

The maximum bending moment and stress can be calculated on the 21 PWR WP due to its own weight assumed a point load at the center of the span (see Figure 7-3):

$\sigma = M*c/I$ (Ref. 5.29), and $M = P*L/4$ for this problem,

$$\sigma = m*g*L*c / (4*I)$$

where $m = 47797 \text{ kg}$ (Ref. 5.22) and $L = 5.335 \text{ m}$ (Ref. 5.7)

$$\text{Therefore, } \sigma = 47797*9.81*5.335*(1.629/2) / (4*(0.162947)) = 3.1 \text{ MPa}$$

This magnitude of stress is small compared to the stresses obtained from the finite-element solutions for dynamic loading on the waste packages (see Section 8).

8. CONCLUSIONS

As identified in Sections 2.0 and 4.0, this analysis is based on unqualified/unconfirmed input data, and use of any data from this analysis for input into documents supporting construction, fabrication, or procurement is required to be controlled as TBV in accordance with the appropriate procedures.

8.1 21 PWR UCF Tube Design

8.1.1 Barrier Response to Rock Fall Accident

At the instant contact is reached between the rock and the WP, the top surface of the WP deforms elastically (deformation is based on the elastic modulus) until the yield strengths of the containment barrier materials are reached. The materials then begin to deform plastically (deformation is based on the hardening modulus). The UCF WP response to the impact indicates that there are large local deformations in the impact region and that global deformation is minor.

The maximum-normal-stress theory is based on a comparison of the ultimate tensile and compressive strengths of the materials with the maximum values of tensile and compressive stresses they experience during an impact. The critical stresses in the barriers during a rock fall accident are tensile stresses due to local bending. The maximum first principal stress magnitude occurs on the inner surface of the inner barrier where large local deformation occurs in the region of impact. The maximum first principal stress magnitude in the inner barrier is 556 MPa, see Figure I-1 (Figures I-1 through I-6 are provided in Attachment I) and Attachment II, page 7. When the ultimate tensile strength of the inner barrier (662 MPa) is compared to the first principal stress value (556 MPa) (see Attachment II, page 7), it can be concluded that there is no material failure around the region of impact in the inner barrier. A similar comparison between the maximum first principal stress (288 MPa) (see Figure I-2 and Attachment II, page 14) and ultimate tensile strength (380 MPa) of A 516 carbon steel shows that there is no failure in the outer barrier due to the impact of a 6,000 kg rock falling from the starter tunnel height.

The ultimate compressive strength (UCS) of the materials used in this model is 1358 MPa (Ref. 5.18) (Assumption 4.3.10) and is well above the maximum compressive stress magnitude (684 MPa) (see Attachment II, page 29).

Having evaluated the results of the finite-element analysis of the 21 PWR UCF in accordance with the maximum-normal-stress theory, it is determined that the WP is able to withstand the maximum dynamic loading from the fall of a 6,000 kg rock through 8.076 m (see Section 4.1) without failure in the containment barriers.

8.1.2 Spent Fuel Assembly Basket Response to Rock Fall Accident

The stresses in the 2-D model of the 21 PWR basket for the rock fall accident are read from the results of the ANSYS analysis. The first principal stress (229 MPa) is above the yield strength of the basket material, 172 MPa, in the region of maximum deflection, see Figure I-3. This indicates that some localized plastic deformation will take place in the walls of the basket. It is assumed that plastic deformation of the basket material is permitted as long as there is no rupturing of the material (see Assumption 4.3.24). Since the maximum stress is well below the ultimate tensile strength of the material, it is concluded that there is no material failure in the basket assembly, and the separation of the SNF assemblies is maintained after a 6,000 kg rock fall on the 21 PWR WP.

8.2 44 BWR UCF Tube Design Barrier and Spent Fuel Assembly Basket Responses to Rock Fall Accident

Beam theory is used in analytical correlations between 21 PWR and 44 BWR WPs. This correlation is made by assuming that the kinetic energy of the falling rock is converted entirely into strain energy in the containment barriers. The results of nonlinear finite-element analyses show that there is local deformation in the region of impact. In order to minimize the error introduced by the local deformation, these analytical relations are used only to compare WPs with similar area moments of inertia and masses (see Section 7.3). When the results of the analytical relations of the 21 PWR are compared to the 44 BWR, it is observed that the maximum allowable rock mass decreases as the area moment of inertia of the WP becomes smaller. This can be observed in Equation 7.6. Because the difference in the moment of inertia values between the 21 PWR and the 44 BWR WPs is small, the difference in the calculated critical mass values is also small.

The area moment of inertia of the 44 BWR containment barriers (including inner and outer barriers) is calculated as 0.1619 m^4 (see Section 7.4). The rock fall height is conservatively assumed to be the same for the 44 BWR as it is for the 21 PWR, 8.076 m. Using Equation 7.6 in Section 7.3, the critical mass of the rock is determined as 5986 kg (see Section 8.5).

The size, mass, and area moment of inertia are all very close between the 21 PWR and the 44 BWR. Therefore, the loads on the tubes of the basket assembly during rock fall will be nearly the same. However, the 44 BWR basket assembly has a larger number of tubes that have a smaller side length than the tubes for the 21 PWR, but have thinner walls. Since dynamic impact load is distributed over a larger number of basket assembly walls in the 44 BWR compared to the 21 PWR, the resulting deformation pattern will also be less critical in the 44 BWR. The majority of the load is taken up by three basket walls in the 44 BWR, but by only two basket walls in the 21 PWR. Therefore, the basket of the 44 BWR will be able to take more load than the basket of the 21 PWR. For this reason, the basket stresses of the 21 PWR are considered limiting, see Section 8.1.2.

8.3 12 PWR UCF Tube Design

8.3.1 Barrier Response to Rock Fall Accident

The mechanism of impact for the 12 PWR UCF WP is the same as it was discussed in Section 8.1.1 for the 21 PWR UCF WP.

The maximum first principal stress magnitude occurs on the inner surface of the inner barrier at the lower section of the WP. The maximum first principal stress magnitude in the inner barrier is 391 MPa, see Figure I-4, Attachment III, page 7, and Assumption 4.3.25. When the ultimate tensile strength of the inner barrier (662 MPa) is compared to the first principal stress value (391 MPa), it can be concluded that there is no material failure around the region of impact in the inner barrier. A similar comparison between the maximum first principal stress (301 MPa) (see Figure I-5 and Attachment III, page 20) and ultimate tensile strength (380 MPa) of A 516 carbon steel shows that there is no failure in the outer barrier due to the impact of a 13,000 kg rock falling from the starter tunnel height.

The UCS of the materials used in this model is 1358 MPa (Ref. 5.18) (Assumption 4.3.10) and is well above the maximum compressive stress magnitude (594 MPa) (see Attachment III, page 47).

Having evaluated the results of the finite-element analysis of the 12 PWR UCF in accordance with the maximum-normal-stress theory, it is determined that the WP is able to withstand the maximum dynamic loading from the fall of a 13,000 kg rock through 8.4073 m (see Section 4.1) without failure in the containment barriers.

8.3.2 Spent Fuel Assembly Basket Response to Rock Fall Accident

The stresses in the 2-D model of the 12 PWR basket for the rock fall accident are read from the results of the ANSYS analysis. The first principal stress (285 MPa) is above the yield strength of the basket material, 172 MPa, in some localized areas at the point of contact between the basket assembly and the inner barrier, see Figure I-6. This indicates that some localized plastic deformation may take place in the walls of the basket. It is assumed that plastic deformation of the basket material is permitted as long as there is no rupturing of the material (see Assumption 4.3.24). Since the maximum stress is well below the ultimate tensile strength of the material, 482 MPa, it is concluded that the basket assembly can withstand the fall of a 13,000 kg rock and still function properly.

8.4 24 BWR UCF Tube Design Barrier and Spent Fuel Assembly Basket Responses to Rock Fall Accident

The area moment of inertia of the 24 BWR containment barriers (including inner and outer barriers) is calculated as 0.0714 m^4 (see Section 7.4). The rock drop height is conservatively assumed to be the same for the 24 BWR as it was for the 12 PWR, 8.4073 m. Using Equation

7.6 in Section 7.3, the critical mass of the rock is determined as 12,575 kg (see Section 8.5).

The size, mass, and area moment of inertia are all very close between the 12 PWR and the 24 BWR. Therefore, the loads on the tubes of the basket assembly during rock fall will be nearly the same. However, the 24 BWR basket assembly has a larger number of tubes that have a smaller side length than the tubes for the 12 PWR, but have smaller wall thickness. Since dynamic impact load is distributed over twice as many tubes in the 24 BWR as in the 12 PWR, the resulting deformation pattern will be less critical in the 24 BWR. Therefore, the basket of the 24 BWR will be able to take more load than the basket of the 12 PWR. For this reason, the basket stresses of the 12 PWR are considered limiting, see Section 8.3.2.

8.5 Rock Mass Calculations for 24 BWR and 44 BWR UCF Waste Packages

Equation 7.6 is used to calculate the allowable rock masses for 24 BWR and 44 BWR UCF designs:

$$m_{24 \text{ BWR}} = 13000 * (71,441/77,773) * (1297.7/1264.6)^2 = 12575 \text{ kg (see Section 8.4)}$$

$$m_{44 \text{ BWR}} = 6000 * (161,981/162,947) * (1629.0/1626.0)^2 = 5986 \text{ kg (see Section 8.2)}$$

9. ATTACHMENTS

The rock fall stress analyses are performed in the time interval where the rock is in contact with the waste package. Although the stress magnitudes at the end of the simulation seem to slightly increase, since the rock loses its contact with the WP just prior to time step 34, this is considered as one of the local stress peaks resulting from the fact that there is no damping in the finite-element model. Therefore, the 12 PWR UCF WP stress magnitudes after the time step 34 are not significant in this analysis (see Attachment III). Figure I-7 shows that the rock has no contact with the waste package at this time step. This is one of the reasons for terminating the finite-element analyses after a certain time step which can be seen from the output files in Attachment IV. This procedure keeps the run times down and avoids unnecessary output files (see Assumption 4.3.25).

The following attachments are provided in this section :

Attachment I (7 pages): Stress contours obtained from ANSYS 5.0A.

Attachment II (30 pages): Maximum principal stresses for 21 PWR UCF WP.

ANSYS Solution File: rockfal.res: Nov 26 1995

- Contents:
- II-1: Maximum principal tensile stresses in the WP.
 - II-8: Maximum principal tensile stresses in the Outer Barrier.
 - II-15: Maximum principal tensile stresses in the Inner Barrier.
 - II-23: Maximum principal compressive stresses in the WP.

Attachment III (53 pages): Maximum principal stresses for 12 PWR UCF WP.

ANSYS Solution File: rock12.res: Nov 26 1995

- Contents:
- II-1: Maximum principal tensile stresses in the WP.
 - II-13: Maximum principal tensile stresses in the Outer Barrier.
 - II-27: Maximum principal tensile stresses in the Inner Barrier.
 - II-40: Maximum principal compressive stresses in the WP.

Attachment IV (362 pages): Input/output files for the finite-element analyses.

Concatenated ANSYS Input/Output Files: iofiles.out: Nov 26 1995

- Contents:
- II-1: Input/output files for the 21 PWR Containment Barrier Solution.
 - II-98: Input/output files for the 21 PWR Basket Assembly Solution.
 - II-222: Input/output files for the 12 PWR Containment Barrier Solution.
 - II-313: Input/output files for the 12 PWR Basket Assembly Solution.

Attachment V (1 page): ANSYS Postprocessing Input File for 12 PWR UCF WP: post1.inp:
Nov 26 1995

Attachment VI (1 page): ANSYS Postprocessing Input File for 21 PWR UCF WP: post1.inp:
Nov 26 1995

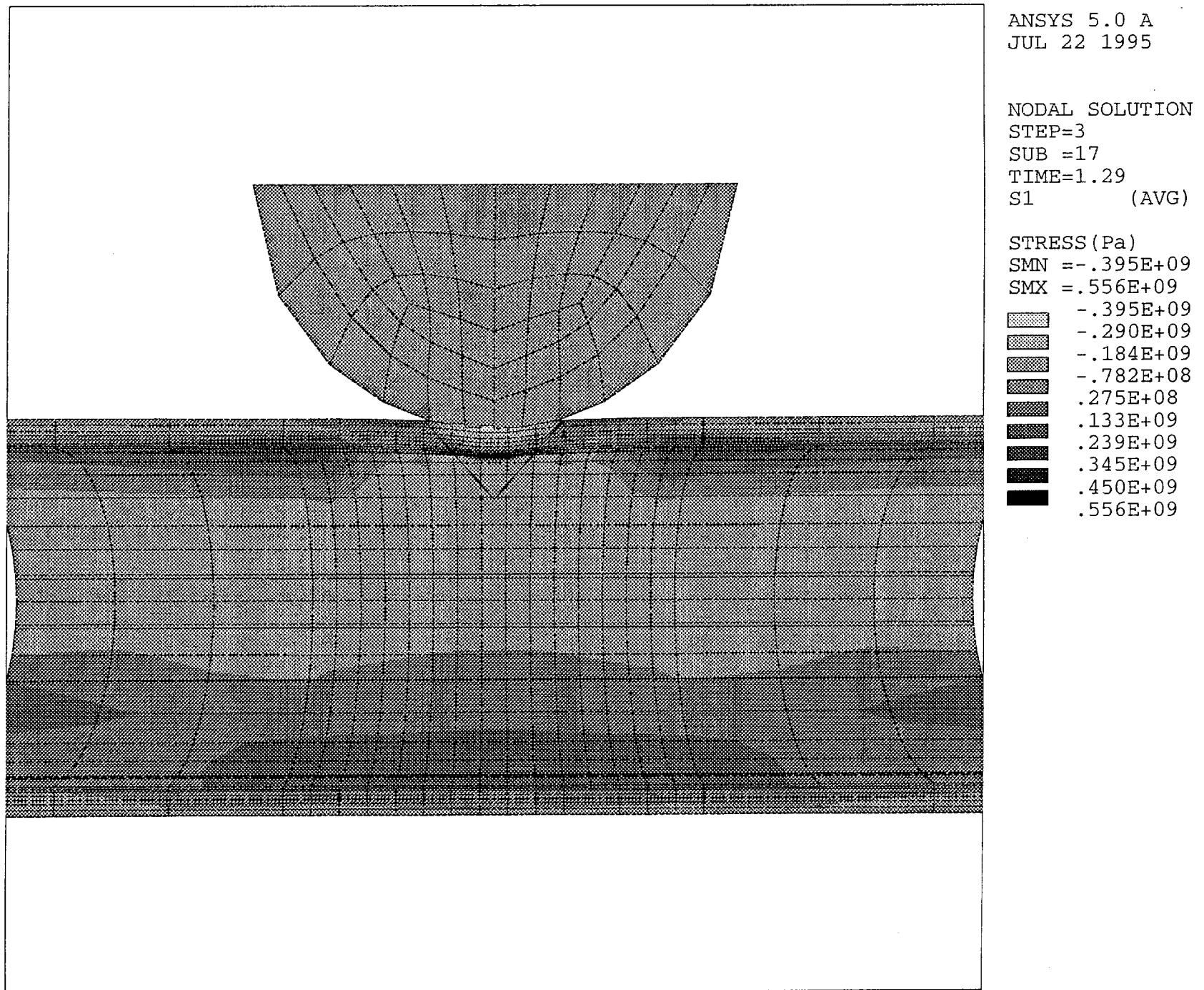


Figure I-1. 21 PWR UCF Design Rock Fall Stress Contour

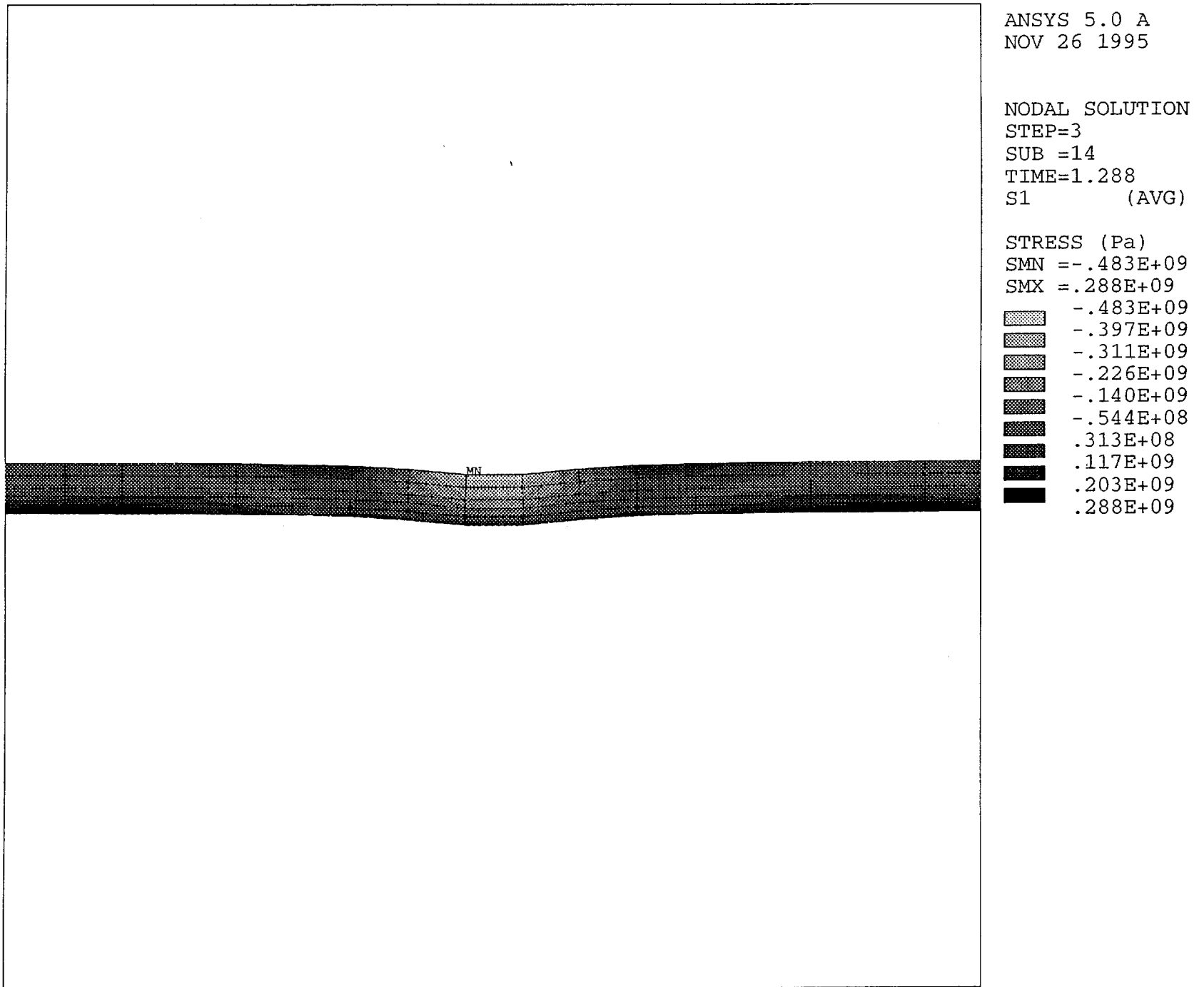


Figure I-2. 21 PWR UCF Design Rock Fall Stress Contour (Outer Barrier)

ANSYS 5.0 A
JUL 25 1995

NODAL SOLUTION
STEP=6
SUB =29
TIME=6
S1 (AVG)
STRESS (Pa)
SMX =.229E+09
0
.100E+07
.295E+08
.580E+08
.865E+08
.115E+09
.144E+09
.172E+09
.201E+09
.229E+09

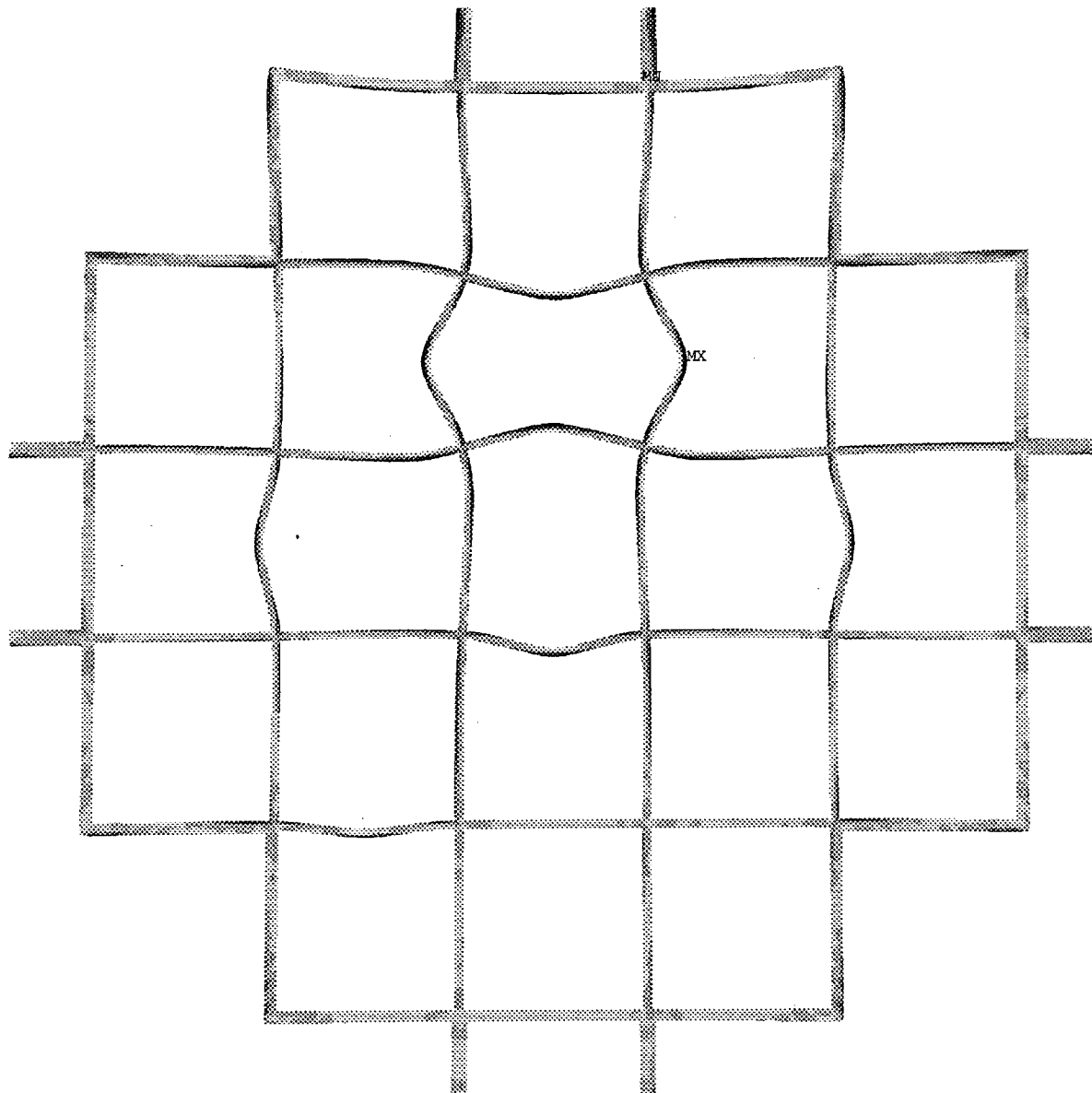


Figure I-3. 21 PWR UCF Design Rock Fall Stress Contour (Basket Assembly)

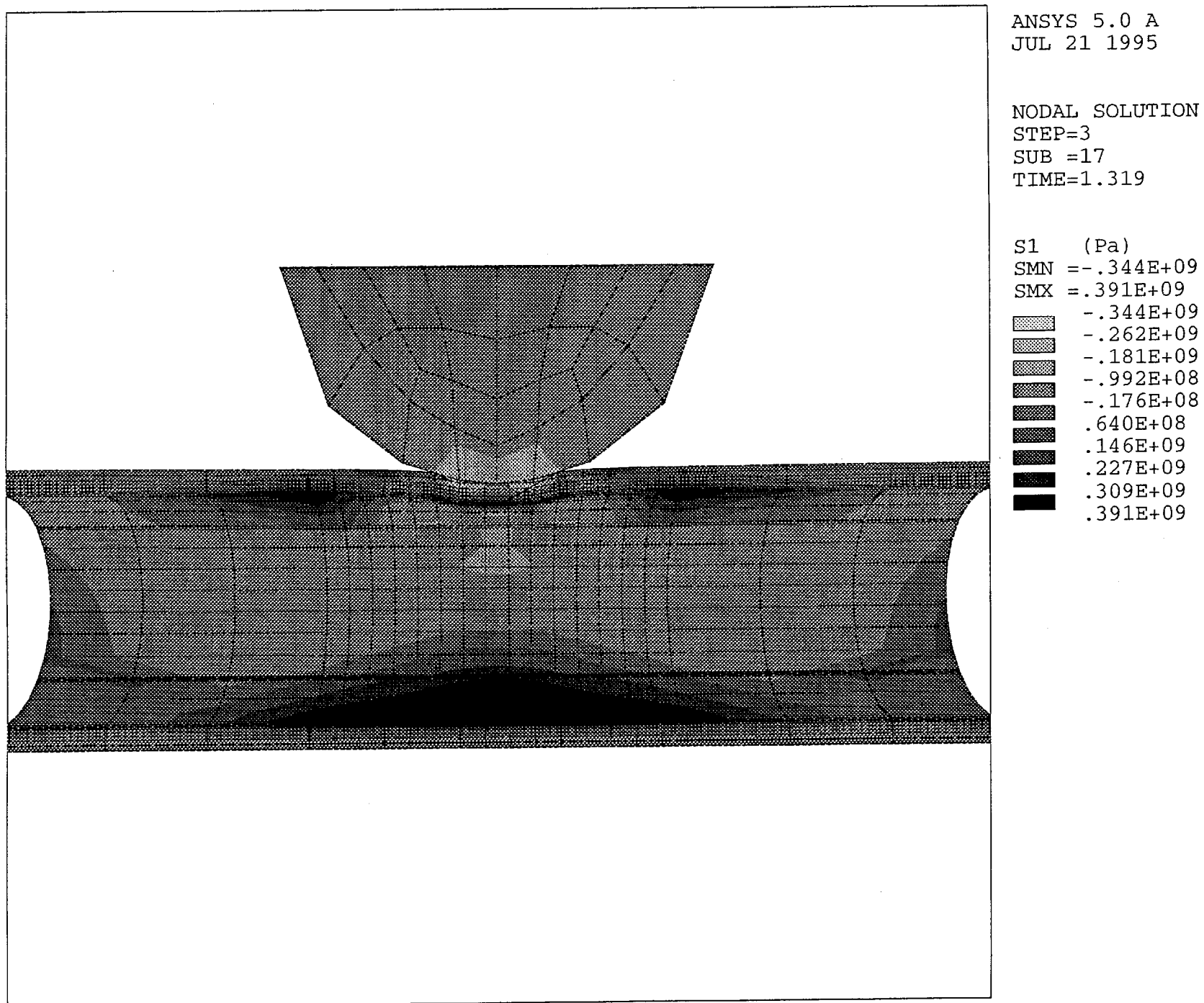


Figure I-4. 12 PWR UCF Design Rock Fall Stress Contour

ANSYS 5.0 A
JUL 21 1995

NODAL SOLUTION
STEP=3
SUB =17
TIME=1.319
S1 (AVG)

STRESS (Pa)
SMN = -.344E+09
SMX = .301E+09

	-.344E+09
	-.272E+09
	-.201E+09
	-.129E+09
	-.574E+08
	.143E+08
	.860E+08
	.158E+09
	.229E+09
	.301E+09

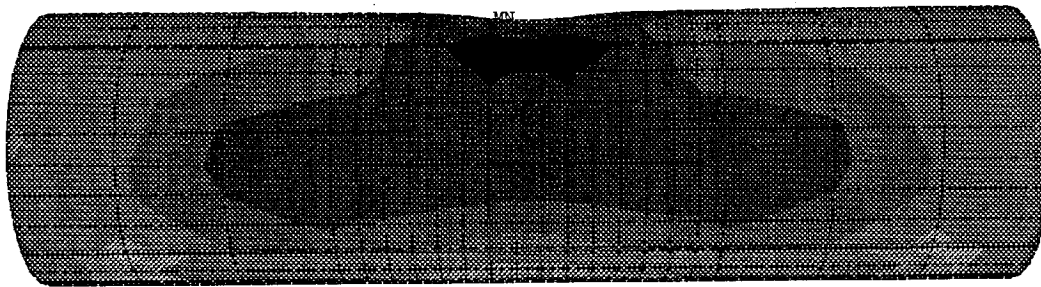


Figure I-5. 12 PWR UCF Design Rock Fall Stress Contour (Outer Barrier)

ANSYS 5.0 A
JUL 22 1995

NODAL SOLUTION

S1 (AVG)
STRESS (Pa)
SMN = -.201E+09
SMX = .285E+09

	-.201E+09
	-.147E+09
	-.931E+08
	-.391E+08
	.150E+08
	.690E+08
	.123E+09
	.177E+09
	.231E+09
	.285E+09

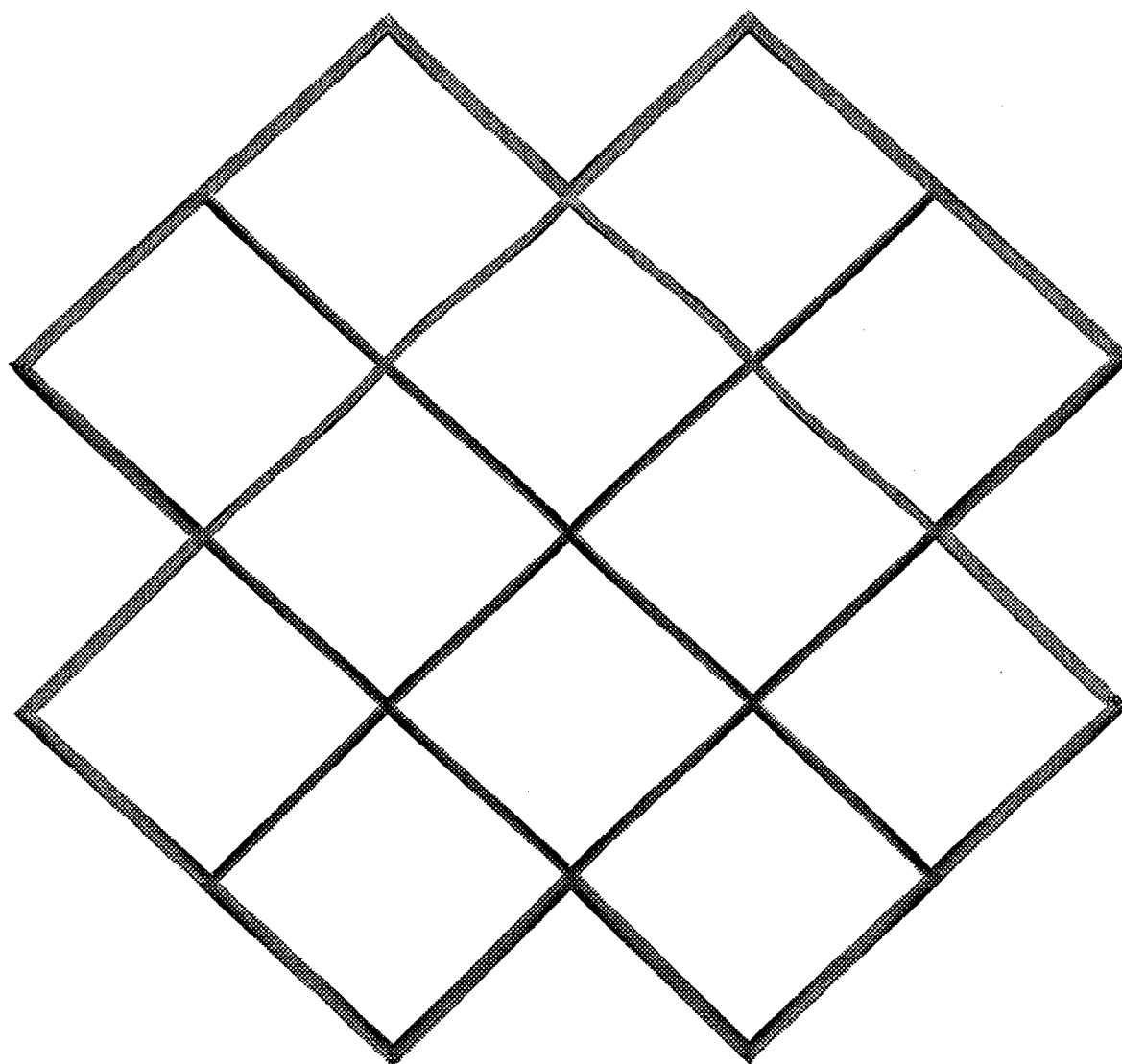


Figure I-6. 12 PWR UCF Design Rock Fall Stress Contour (Basket Assembly)

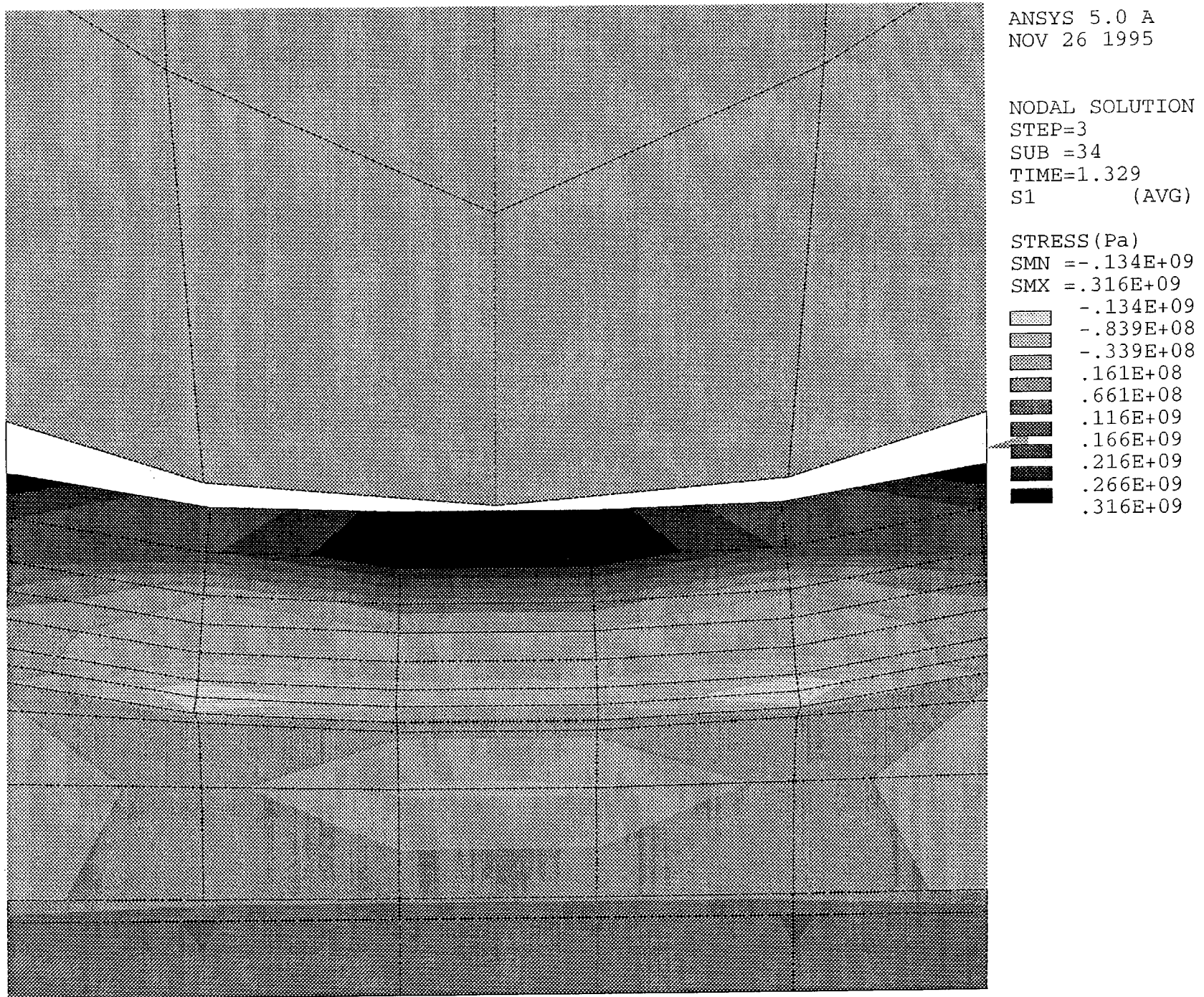


Figure I-7. 12 PWR UCF Design Rock Fall Stress Contour (Rock bouncing off the WP surface)

MAXIMUM PRINCIPAL STRESSES IN THE WASTE PACKAGE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 238 STEP 1

238 VOLUMES (OF 238 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 968 STEP 1

870 AREAS (OF 870 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 1345 STEP 1

1131 LINES (OF 1131 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10012 STEP 1

496 KEYPOINTS (OF 496 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8886 STEP 1

8886 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 18.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 9.850 TIME= 20:27:56
Page file used.

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
TIME/FREQUENCY= 1.2806

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:28:55 NOV 25, 1995 CP= 23.460
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.2806 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11562	.58923E+06	.44185E+06	-.17782E+06	.76705E+06	.70501E+06

MINIMUM VALUES
 NODE 11562 11562 11562 11562 11562
 VALUE .58923E+06 .44185E+06 -.17782E+06 .76705E+06 .70501E+06

MAXIMUM VALUES
 NODE 11562 11562 11562 11562 11562
 VALUE .58923E+06 .44185E+06 -.17782E+06 .76705E+06 .70501E+06

*ENDDO INDEX= I

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:30:42 NOV 25, 1995 CP= 45.030
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
 TIME= 1.2812 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1247	.10933E+07	.72007E+06	-.24817E+06	.13414E+07	.11992E+07

MINIMUM VALUES
 NODE 1247 1247 1247 1247 1247
 VALUE .10933E+07 .72007E+06 -.24817E+06 .13414E+07 .11992E+07

MAXIMUM VALUES
 NODE 1247 1247 1247 1247 1247
 VALUE .10933E+07 .72007E+06 -.24817E+06 .13414E+07 .11992E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:32:17 NOV 25, 1995 CP= 65.870
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
 TIME= 1.2818 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1247	.16406E+07	.10475E+07	-.36094E+06	.20016E+07	.17807E+07

MINIMUM VALUES
 NODE 1247 1247 1247 1247 1247
 VALUE .16406E+07 .10475E+07 -.36094E+06 .20016E+07 .17807E+07

MAXIMUM VALUES
 NODE 1247 1247 1247 1247 1247
 VALUE .16406E+07 .10475E+07 -.36094E+06 .20016E+07 .17807E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:34:05 NOV 25, 1995 CP= 86.890
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
TIME= 1.2824 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
20	.22805E+07	.13984E+07	-.53605E+06	.28165E+07	.24953E+07

MINIMUM VALUES

NODE	20	20	20	20	20
VALUE	.22805E+07	.13984E+07	-.53605E+06	.28165E+07	.24953E+07

MAXIMUM VALUES

NODE	20	20	20	20	20
VALUE	.22805E+07	.13984E+07	-.53605E+06	.28165E+07	.24953E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:36:01 NOV 25, 1995 CP= 108.220
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
TIME= 1.2830 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
20	.26790E+07	.16037E+07	-.61266E+06	.32917E+07	.29072E+07

MINIMUM VALUES

NODE	20	20	20	20	20
VALUE	.26790E+07	.16037E+07	-.61266E+06	.32917E+07	.29072E+07

MAXIMUM VALUES

NODE	20	20	20	20	20
VALUE	.26790E+07	.16037E+07	-.61266E+06	.32917E+07	.29072E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:37:48 NOV 25, 1995 CP= 129.840
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
TIME= 1.2836 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1176	.39071E+08	.37475E+08	-.66086E+07	.45679E+08	.44902E+08

MINIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.39071E+08	.37475E+08	-.66086E+07	.45679E+08	.44902E+08

MAXIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.39071E+08	.37475E+08	-.66086E+07	.45679E+08	.44902E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:39:26 NOV 25, 1995 CP= 150.660
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
TIME= 1.2842 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1176	.19911E+09	.17608E+09	-.24534E+08	.22364E+09	.21306E+09

MINIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.19911E+09	.17608E+09	-.24534E+08	.22364E+09	.21306E+09

MAXIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.19911E+09	.17608E+09	-.24534E+08	.22364E+09	.21306E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:40:59 NOV 25, 1995 CP= 171.640
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
TIME= 1.2848 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1175	.34269E+09	.13671E+09	-.24004E+08	.36669E+09	.31837E+09

MINIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.34269E+09	.13671E+09	-.24004E+08	.36669E+09	.31837E+09

MAXIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.34269E+09	.13671E+09	-.24004E+08	.36669E+09	.31837E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:42:47 NOV 25, 1995 CP= 192.870
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
TIME= 1.2854 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1175	.32478E+09	.81411E+08	.42521E+07	.32053E+09	.28976E+09

MINIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.32478E+09	.81411E+08	.42521E+07	.32053E+09	.28976E+09

MAXIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.32478E+09	.81411E+08	.42521E+07	.32053E+09	.28976E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:44:37 NOV 25, 1995 CP= 214.230
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
TIME= 1.2860 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1175	.29230E+09	.42733E+08	-.15969E+08	.30827E+09	.28351E+09

MINIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.29230E+09	.42733E+08	-.15969E+08	.30827E+09	.28351E+09

MAXIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.29230E+09	.42733E+08	-.15969E+08	.30827E+09	.28351E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:46:23 NOV 25, 1995 CP= 235.830
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
TIME= 1.2866 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1170	.33506E+09	.12216E+08	.29091E+07	.33215E+09	.32760E+09

MINIMUM VALUES

NODE	1170	1170	1170	1170	1170
VALUE	.33506E+09	.12216E+08	.29091E+07	.33215E+09	.32760E+09

MAXIMUM VALUES

NODE	1170	1170	1170	1170	1170
VALUE	.33506E+09	.12216E+08	.29091E+07	.33215E+09	.32760E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:47:57 NOV 25, 1995 CP= 256.780
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12
TIME= 1.2872 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
10548	.36937E+09	.76723E+08	-.10137E+07	.37039E+09	.33828E+09

MINIMUM VALUES

NODE	10548	10548	10548	10548	10548
VALUE	.36937E+09	.76723E+08	-.10137E+07	.37039E+09	.33828E+09

VALUE .36937E+09 .76723E+08 -.10137E+07 .37039E+09 .33828E+09

MAXIMUM VALUES

NODE 10548 10548 10548 10548 10548
VALUE .36937E+09 .76723E+08 -.10137E+07 .37039E+09 .33828E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:49:45 NOV 25, 1995 CP= 278.700
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.2878 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
10548	.37910E+09	.10119E+09	.61001E+07	.37300E+09	.33571E+09

MINIMUM VALUES

NODE	10548	10548	10548	10548	10548
VALUE	.37910E+09	.10119E+09	.61001E+07	.37300E+09	.33571E+09

MAXIMUM VALUES

NODE	10548	10548	10548	10548	10548
VALUE	.37910E+09	.10119E+09	.61001E+07	.37300E+09	.33571E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:51:38 NOV 25, 1995 CP= 300.120
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14
TIME= 1.2884 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
246	.38449E+09	.98153E+08	.24851E+07	.38200E+09	.34429E+09

MINIMUM VALUES

NODE	246	246	246	246	246
VALUE	.38449E+09	.98153E+08	.24851E+07	.38200E+09	.34429E+09

MAXIMUM VALUES

NODE	246	246	246	246	246
VALUE	.38449E+09	.98153E+08	.24851E+07	.38200E+09	.34429E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:53:28 NOV 25, 1995 CP= 321.360
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.2890 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.44965E+09	.29618E+09	.89842E+08	.35980E+09	.31272E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
11373	.44965E+09	.29618E+09	.89842E+08	.35980E+09	.31272E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
11373	.44965E+09	.29618E+09	.89842E+08	.35980E+09	.31272E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:55:24 NOV 25, 1995 CP= 343.060
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
 TIME= 1.2896 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.54371E+09	.34738E+09	.17864E+09	.36507E+09	.31646E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
11373	.54371E+09	.34738E+09	.17864E+09	.36507E+09	.31646E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
11373	.54371E+09	.34738E+09	.17864E+09	.36507E+09	.31646E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:57:16 NOV 25, 1995 CP= 364.210
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
 TIME= 1.2900 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.55588E+09	.35075E+09	.19087E+09	.36500E+09	.31691E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
11373	.55588E+09	.35075E+09	.19087E+09	.36500E+09	.31691E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
11373	.55588E+09	.35075E+09	.19087E+09	.36500E+09	.31691E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:58:58 NOV 25, 1995 CP= 385.420
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
 TIME= 1.2903 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.50982E+09	.34548E+09	.16754E+09	.34229E+09	.29651E+09

MINIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.50982E+09	.34548E+09	.16754E+09	.34229E+09	.29651E+09

MAXIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.50982E+09	.34548E+09	.16754E+09	.34229E+09	.29651E+09

MAXIMUM PRINCIPAL STRESSES IN THE OUTER BARRIER

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 238 STEP 1

238 VOLUMES (OF 238 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 968 STEP 1

870 AREAS (OF 870 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 1345 STEP 1

1131 LINES (OF 1131 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 10012 STEP 1

496 KEYPOINTS (OF 496 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 8886 STEP 1

8886 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
 IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

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

4200 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

5280 NODES (OF 7599 DEFINED) SELECTED FROM
 4200 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

7482 ELEMENTS (OF 8886 DEFINED) SELECTED FROM
 5280 SELECTED NODES BY ESLN COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 18.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
TIME/FREQUENCY= 1.2806

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:00:32 NOV 25, 1995 CP= 407.390
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.2806 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
14381	.48448E+06	.14424E+06	23439.	.46104E+06	.41407E+06

MINIMUM VALUES

NODE	14381	14381	14381	14381	14381
VALUE	.48448E+06	.14424E+06	23439.	.46104E+06	.41407E+06

MAXIMUM VALUES

NODE	14381	14381	14381	14381	14381
VALUE	.48448E+06	.14424E+06	23439.	.46104E+06	.41407E+06

*ENDDO INDEX= 1

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:02:04 NOV 25, 1995 CP= 428.060
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
TIME= 1.2812 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
12097	.80046E+06	.18738E+06	30461.	.77000E+06	.70477E+06

MINIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.80046E+06	.18738E+06	30461.	.77000E+06	.70477E+06

MAXIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.80046E+06	.18738E+06	30461.	.77000E+06	.70477E+06

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:03:45 NOV 25, 1995 CP= 448.630
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
TIME= 1.2818 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
12097	.12919E+07	.29984E+06	48954.	.12430E+07	.11385E+07

MINIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.12919E+07	.29984E+06	48954.	.12430E+07	.11385E+07

MAXIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.12919E+07	.29984E+06	48954.	.12430E+07	.11385E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:05:28 NOV 25, 1995 CP= 469.390
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
TIME= 1.2824 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
12097	.18615E+07	.41080E+06	67080.	.17944E+07	.16496E+07

MINIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.18615E+07	.41080E+06	67080.	.17944E+07	.16496E+07

MAXIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.18615E+07	.41080E+06	67080.	.17944E+07	.16496E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:07:09 NOV 25, 1995 CP= 490.380
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
TIME= 1.2830 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
12097	.22497E+07	.48440E+06	77398.	.21723E+07	.20001E+07

MINIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.22497E+07	.48440E+06	77398.	.21723E+07	.20001E+07

MAXIMUM VALUES

NODE	12097	12097	12097	12097	12097
VALUE	.22497E+07	.48440E+06	77398.	.21723E+07	.20001E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:08:40 NOV 25, 1995 CP= 511.070
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
 TIME= 1.2836 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3708	.28839E+08	-.10940E+08	-.21797E+08	.50637E+08	.46175E+08

MINIMUM VALUES

NODE	3708	3708	3708	3708	3708
VALUE	.28839E+08	-.10940E+08	-.21797E+08	.50637E+08	.46175E+08

MAXIMUM VALUES

NODE	3708	3708	3708	3708	3708
VALUE	.28839E+08	-.10940E+08	-.21797E+08	.50637E+08	.46175E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:10:11 NOV 25, 1995 CP= 531.530
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
 TIME= 1.2842 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1162	.87055E+08	.81558E+08	-.40511E+08	.12757E+09	.12491E+09

MINIMUM VALUES

NODE	1162	1162	1162	1162	1162
VALUE	.87055E+08	.81558E+08	-.40511E+08	.12757E+09	.12491E+09

MAXIMUM VALUES

NODE	1162	1162	1162	1162	1162
VALUE	.87055E+08	.81558E+08	-.40511E+08	.12757E+09	.12491E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:11:56 NOV 25, 1995 CP= 552.200
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
 TIME= 1.2848 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1162	.16346E+09	.14154E+09	-.54160E+08	.21762E+09	.20753E+09

MINIMUM VALUES

NODE	1162	1162	1162	1162	1162
VALUE	.16346E+09	.14154E+09	-.54160E+08	.21762E+09	.20753E+09

MAXIMUM VALUES
NODE 1162 1162 1162 1162 1162
VALUE .16346E+09 .14154E+09 -.54160E+08 .21762E+09 .20753E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:13:42 NOV 25, 1995 CP= 573.170
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
TIME= 1.2854 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1118	.18248E+09	.13254E+09	-.89640E+08	.27212E+09	.25090E+09

MINIMUM VALUES
NODE 1118 1118 1118 1118 1118
VALUE .18248E+09 .13254E+09 -.89640E+08 .27212E+09 .25090E+09

MAXIMUM VALUES
NODE 1118 1118 1118 1118 1118
VALUE .18248E+09 .13254E+09 -.89640E+08 .27212E+09 .25090E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:15:14 NOV 25, 1995 CP= 594.130
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
TIME= 1.2860 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1030	.21762E+09	.15581E+09	-.41495E+08	.25911E+09	.23440E+09

MINIMUM VALUES
NODE 1030 1030 1030 1030 1030
VALUE .21762E+09 .15581E+09 -.41495E+08 .25911E+09 .23440E+09

MAXIMUM VALUES
NODE 1030 1030 1030 1030 1030
VALUE .21762E+09 .15581E+09 -.41495E+08 .25911E+09 .23440E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:16:41 NOV 25, 1995 CP= 614.740
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
TIME= 1.2866 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
13857	.23705E+09	.12611E+09	-.49872E+07	.24204E+09	.20985E+09

MINIMUM VALUES

NODE	13857	13857	13857	13857	13857
VALUE	.23705E+09	.12611E+09	-.49872E+07	.24204E+09	.20985E+09

MAXIMUM VALUES

NODE	13857	13857	13857	13857	13857
VALUE	.23705E+09	.12611E+09	-.49872E+07	.24204E+09	.20985E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:18:14 NOV 25, 1995 CP= 635.690
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12
TIME= 1.2872 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1156	.25557E+09	.87971E+07	-.42321E+07	.25980E+09	.25353E+09

MINIMUM VALUES

NODE	1156	1156	1156	1156	1156
VALUE	.25557E+09	.87971E+07	-.42321E+07	.25980E+09	.25353E+09

MAXIMUM VALUES

NODE	1156	1156	1156	1156	1156
VALUE	.25557E+09	.87971E+07	-.42321E+07	.25980E+09	.25353E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:19:58 NOV 25, 1995 CP= 656.600
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.2878 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1156	.27852E+09	.15772E+08	.79031E+07	.27061E+09	.26677E+09

MINIMUM VALUES

NODE	1156	1156	1156	1156	1156
VALUE	.27852E+09	.15772E+08	.79031E+07	.27061E+09	.26677E+09

MAXIMUM VALUES

NODE	1156	1156	1156	1156	1156
VALUE	.27852E+09	.15772E+08	.79031E+07	.27061E+09	.26677E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:21:44 NOV 25, 1995 CP= 677.790
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14

TIME= 1.2884 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
244	.28839E+09	.56559E+08	.53147E+07	.28308E+09	.26125E+09

MINIMUM VALUES

NODE	244	244	244	244	244
VALUE	.28839E+09	.56559E+08	.53147E+07	.28308E+09	.26125E+09

MAXIMUM VALUES

NODE	244	244	244	244	244
VALUE	.28839E+09	.56559E+08	.53147E+07	.28308E+09	.26125E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:23:12 NOV 25, 1995 CP= 698.590
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.2890 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
244	.28785E+09	.53274E+08	.53428E+07	.28251E+09	.26186E+09

MINIMUM VALUES

NODE	244	244	244	244	244
VALUE	.28785E+09	.53274E+08	.53428E+07	.28251E+09	.26186E+09

MAXIMUM VALUES

NODE	244	244	244	244	244
VALUE	.28785E+09	.53274E+08	.53428E+07	.28251E+09	.26186E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:24:36 NOV 25, 1995 CP= 719.020
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
TIME= 1.2896 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
244	.26629E+09	.43568E+08	.41297E+07	.26216E+09	.24484E+09

MINIMUM VALUES

NODE	244	244	244	244	244
VALUE	.26629E+09	.43568E+08	.41297E+07	.26216E+09	.24484E+09

MAXIMUM VALUES

NODE	244	244	244	244	244
VALUE	.26629E+09	.43568E+08	.41297E+07	.26216E+09	.24484E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:26:15 NOV 25, 1995 CP= 739.490
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
TIME= 1.2900 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11431	.26407E+09	.18770E+09	.99595E+06	.26307E+09	.23441E+09

MINIMUM VALUES

NODE	11431	11431	11431	11431	11431
VALUE	.26407E+09	.18770E+09	.99595E+06	.26307E+09	.23441E+09

MAXIMUM VALUES

NODE	11431	11431	11431	11431	11431
VALUE	.26407E+09	.18770E+09	.99595E+06	.26307E+09	.23441E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:27:57 NOV 25, 1995 CP= 760.570
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
TIME= 1.2903 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11431	.24883E+09	.16414E+09	-.48135E+07	.25364E+09	.22366E+09

MINIMUM VALUES

NODE	11431	11431	11431	11431	11431
VALUE	.24883E+09	.16414E+09	-.48135E+07	.25364E+09	.22366E+09

MAXIMUM VALUES

NODE	11431	11431	11431	11431	11431
VALUE	.24883E+09	.16414E+09	-.48135E+07	.25364E+09	.22366E+09

MAXIMUM PRINCIPAL STRESSES IN THE INNER BARRIER

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 238 STEP 1

238 VOLUMES (OF 238 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 968 STEP 1

870 AREAS (OF 870 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 1345 STEP 1

1131 LINES (OF 1131 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10012 STEP 1

496 KEYPOINTS (OF 496 DEFINED) SELECTED BY KSEL COMMAND.

```
ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8886 STEP 1

8886 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

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

1680 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

2640 NODES (OF 7599 DEFINED) SELECTED FROM
1680 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2916 ELEMENTS (OF 8886 DEFINED) SELECTED FROM
2640 SELECTED NODES BY ESLN COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 18.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
TIME/FREQUENCY= 1.2806

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:29:27 NOV 25, 1995 CP= 778.900
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.2806 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE S1 S2 S3 SINT SEQV
11562 .58923E+06 .44185E+06 -.17782E+06 .76705E+06 .70501E+06

MINIMUM VALUES
NODE 11562 11562 11562 11562 11562
VALUE .58923E+06 .44185E+06 -.17782E+06 .76705E+06 .70501E+06

MAXIMUM VALUES
NODE 11562 11562 11562 11562 11562
VALUE .58923E+06 .44185E+06 -.17782E+06 .76705E+06 .70501E+06

*ENDDO INDEX= I
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:30:42 NOV 25, 1995 CP= 796.020
```

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
TIME= 1.2812 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1247	.10933E+07	.72007E+06	-.24817E+06	.13414E+07	.11992E+07

MINIMUM VALUES

NODE	1247	1247	1247	1247	1247
VALUE	.10933E+07	.72007E+06	-.24817E+06	.13414E+07	.11992E+07

MAXIMUM VALUES

NODE	1247	1247	1247	1247	1247
VALUE	.10933E+07	.72007E+06	-.24817E+06	.13414E+07	.11992E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:31:59 NOV 25, 1995 CP= 813.030
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
TIME= 1.2818 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1247	.16406E+07	.10475E+07	-.36094E+06	.20016E+07	.17807E+07

MINIMUM VALUES

NODE	1247	1247	1247	1247	1247
VALUE	.16406E+07	.10475E+07	-.36094E+06	.20016E+07	.17807E+07

MAXIMUM VALUES

NODE	1247	1247	1247	1247	1247
VALUE	.16406E+07	.10475E+07	-.36094E+06	.20016E+07	.17807E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:33:13 NOV 25, 1995 CP= 829.990
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
TIME= 1.2824 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
20	.22805E+07	.13984E+07	-.53605E+06	.28165E+07	.24953E+07

MINIMUM VALUES

NODE	20	20	20	20	20
VALUE	.22805E+07	.13984E+07	-.53605E+06	.28165E+07	.24953E+07

MAXIMUM VALUES

NODE	20	20	20	20	20
VALUE	.22805E+07	.13984E+07	-.53605E+06	.28165E+07	.24953E+07

VALUE .22805E+07 .13984E+07 -.53605E+06 .28165E+07 .24953E+07
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:34:36 NOV 25, 1995 CP= 846.900
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
TIME= 1.2830 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
20	.26790E+07	.16037E+07	-.61266E+06	.32917E+07	.29072E+07

MINIMUM VALUES

NODE	20	20	20	20	20
VALUE	.26790E+07	.16037E+07	-.61266E+06	.32917E+07	.29072E+07

MAXIMUM VALUES

NODE	20	20	20	20	20
VALUE	.26790E+07	.16037E+07	-.61266E+06	.32917E+07	.29072E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:36:00 NOV 25, 1995 CP= 863.920
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
TIME= 1.2836 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1176	.39071E+08	.37475E+08	-.66086E+07	.45679E+08	.44902E+08

MINIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.39071E+08	.37475E+08	-.66086E+07	.45679E+08	.44902E+08

MAXIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.39071E+08	.37475E+08	-.66086E+07	.45679E+08	.44902E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:37:24 NOV 25, 1995 CP= 880.840
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
TIME= 1.2842 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1176	.19911E+09	.17608E+09	-.24534E+08	.22364E+09	.21306E+09

MINIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.19911E+09	.17608E+09	-.24534E+08	.22364E+09	.21306E+09

MAXIMUM VALUES

NODE	1176	1176	1176	1176	1176
VALUE	.19911E+09	.17608E+09	-.24534E+08	.22364E+09	.21306E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:38:40 NOV 25, 1995 CP= 897.700
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
 TIME= 1.2848 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1175	.34269E+09	.13671E+09	-.24004E+08	.36669E+09	.31837E+09

MINIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.34269E+09	.13671E+09	-.24004E+08	.36669E+09	.31837E+09

MAXIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.34269E+09	.13671E+09	-.24004E+08	.36669E+09	.31837E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:39:53 NOV 25, 1995 CP= 914.520
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
 TIME= 1.2854 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1175	.32478E+09	.81411E+08	.42521E+07	.32053E+09	.28976E+09

MINIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.32478E+09	.81411E+08	.42521E+07	.32053E+09	.28976E+09

MAXIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.32478E+09	.81411E+08	.42521E+07	.32053E+09	.28976E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:41:06 NOV 25, 1995 CP= 931.460
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
 TIME= 1.2860 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1175	.29230E+09	.42733E+08	-.15969E+08	.30827E+09	.28351E+09

MINIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.29230E+09	.42733E+08	-.15969E+08	.30827E+09	.28351E+09

MAXIMUM VALUES

NODE	1175	1175	1175	1175	1175
VALUE	.29230E+09	.42733E+08	-.15969E+08	.30827E+09	.28351E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:42:31 NOV 25, 1995 CP= 948.340
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
TIME= 1.2866 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1170	.33506E+09	.12216E+08	.29091E+07	.33215E+09	.32760E+09

MINIMUM VALUES

NODE	1170	1170	1170	1170	1170
VALUE	.33506E+09	.12216E+08	.29091E+07	.33215E+09	.32760E+09

MAXIMUM VALUES

NODE	1170	1170	1170	1170	1170
VALUE	.33506E+09	.12216E+08	.29091E+07	.33215E+09	.32760E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:43:53 NOV 25, 1995 CP= 965.170
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12
TIME= 1.2872 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
10548	.36937E+09	.76723E+08	-.10137E+07	.37039E+09	.33828E+09

MINIMUM VALUES

NODE	10548	10548	10548	10548	10548
VALUE	.36937E+09	.76723E+08	-.10137E+07	.37039E+09	.33828E+09

MAXIMUM VALUES

NODE	10548	10548	10548	10548	10548
VALUE	.36937E+09	.76723E+08	-.10137E+07	.37039E+09	.33828E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:45:16 NOV 25, 1995 CP= 982.300
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.2878 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
10548	.37910E+09	.10119E+09	.61001E+07	.37300E+09	.33571E+09

MINIMUM VALUES

NODE	10548	10548	10548	10548	10548
VALUE	.37910E+09	.10119E+09	.61001E+07	.37300E+09	.33571E+09

MAXIMUM VALUES

NODE	10548	10548	10548	10548	10548
VALUE	.37910E+09	.10119E+09	.61001E+07	.37300E+09	.33571E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:46:30 NOV 25, 1995 CP= 999.160
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14
TIME= 1.2884 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
246	.38449E+09	.98153E+08	.24851E+07	.38200E+09	.34429E+09

MINIMUM VALUES

NODE	246	246	246	246	246
VALUE	.38449E+09	.98153E+08	.24851E+07	.38200E+09	.34429E+09

MAXIMUM VALUES

NODE	246	246	246	246	246
VALUE	.38449E+09	.98153E+08	.24851E+07	.38200E+09	.34429E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:47:43 NOV 25, 1995 CP= 1016.180
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.2890 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.44965E+09	.29618E+09	.89842E+08	.35980E+09	.31272E+09

MINIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.44965E+09	.29618E+09	.89842E+08	.35980E+09	.31272E+09

MAXIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.44965E+09	.29618E+09	.89842E+08	.35980E+09	.31272E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:48:54 NOV 25, 1995 CP= 1033.180

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
TIME= 1.2896 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.54371E+09	.34738E+09	.17864E+09	.36507E+09	.31646E+09

MINIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.54371E+09	.34738E+09	.17864E+09	.36507E+09	.31646E+09

MAXIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.54371E+09	.34738E+09	.17864E+09	.36507E+09	.31646E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:50:14 NOV 25, 1995 CP= 1049.930
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
TIME= 1.2900 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.55588E+09	.35075E+09	.19087E+09	.36500E+09	.31691E+09

MINIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.55588E+09	.35075E+09	.19087E+09	.36500E+09	.31691E+09

MAXIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.55588E+09	.35075E+09	.19087E+09	.36500E+09	.31691E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:51:36 NOV 25, 1995 CP= 1066.900
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
TIME= 1.2903 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
11373	.50982E+09	.34548E+09	.16754E+09	.34229E+09	.29651E+09

MINIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.50982E+09	.34548E+09	.16754E+09	.34229E+09	.29651E+09

MAXIMUM VALUES

NODE	11373	11373	11373	11373	11373
VALUE	.50982E+09	.34548E+09	.16754E+09	.34229E+09	.29651E+09

VALUE .50982E+09 .34548E+09 .16754E+09 .34229E+09 .29651E+09

MAXIMUM PRINCIPAL STRESSES (COMPRESSIVE) IN THE WASTE PACKAGE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 238 STEP 1

238 VOLUMES (OF 238 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 968 STEP 1

870 AREAS (OF 870 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 1345 STEP 1

1131 LINES (OF 1131 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10012 STEP 1

496 KEYPOINTS (OF 496 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8886 STEP 1

8886 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 2 TO 3 STEP 1

5880 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 18.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
TIME/FREQUENCY= 1.2806

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:53:21 NOV 25, 1995 CP= 1087.360
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.2806 LOAD CASE= 0

SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1450	.24609E+06	-.38666E+06	-.14273E+07	.16734E+07	.14635E+07

MINIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.24609E+06	-.38666E+06	-.14273E+07	.16734E+07	.14635E+07

MAXIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.24609E+06	-.38666E+06	-.14273E+07	.16734E+07	.14635E+07

*ENDDO INDEX= 1

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:54:51 NOV 25, 1995 CP= 1107.290
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
 TIME= 1.2812 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1450	.52225E+06	-.57420E+06	-.27264E+07	.32486E+07	.28625E+07

MINIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.52225E+06	-.57420E+06	-.27264E+07	.32486E+07	.28625E+07

MAXIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.52225E+06	-.57420E+06	-.27264E+07	.32486E+07	.28625E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:56:25 NOV 25, 1995 CP= 1127.690
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
 TIME= 1.2818 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1450	.67667E+06	-.77522E+06	-.35397E+07	.42164E+07	.37100E+07

MINIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.67667E+06	-.77522E+06	-.35397E+07	.42164E+07	.37100E+07

MAXIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.67667E+06	-.77522E+06	-.35397E+07	.42164E+07	.37100E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 21:58:08 NOV 25, 1995 CP= 1148.110
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
TIME= 1.2824 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1450	.70787E+06	-.90611E+06	-.37523E+07	.44602E+07	.39115E+07

MINIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.70787E+06	-.90611E+06	-.37523E+07	.44602E+07	.39115E+07

MAXIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.70787E+06	-.90611E+06	-.37523E+07	.44602E+07	.39115E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:59:53 NOV 25, 1995 CP= 1168.680
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
TIME= 1.2830 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1450	.63177E+06	-.89393E+06	-.33701E+07	.40019E+07	.34982E+07

MINIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.63177E+06	-.89393E+06	-.33701E+07	.40019E+07	.34982E+07

MAXIMUM VALUES

NODE	1450	1450	1450	1450	1450
VALUE	.63177E+06	-.89393E+06	-.33701E+07	.40019E+07	.34982E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:01:37 NOV 25, 1995 CP= 1189.150
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
TIME= 1.2836 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3738	-.58619E+08	-.62624E+08	-.64251E+08	.56317E+07	.50202E+07

MINIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.58619E+08	-.62624E+08	-.64251E+08	.56317E+07	.50202E+07

MAXIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.58619E+08	-.62624E+08	-.64251E+08	.56317E+07	.50202E+07

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:03:11 NOV 25, 1995 CP= 1209.440
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
TIME= 1.2842 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3738	-.14526E+09	-.20919E+09	-.23893E+09	.93674E+08	.82906E+08

MINIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.14526E+09	-.20919E+09	-.23893E+09	.93674E+08	.82906E+08

MAXIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.14526E+09	-.20919E+09	-.23893E+09	.93674E+08	.82906E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:04:40 NOV 25, 1995 CP= 1229.430
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
TIME= 1.2848 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3738	-.27768E+09	-.33986E+09	-.42244E+09	.14476E+09	.12578E+09

MINIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.27768E+09	-.33986E+09	-.42244E+09	.14476E+09	.12578E+09

MAXIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.27768E+09	-.33986E+09	-.42244E+09	.14476E+09	.12578E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:06:24 NOV 25, 1995 CP= 1249.530
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
TIME= 1.2854 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3738	-.37143E+09	-.44783E+09	-.50987E+09	.13845E+09	.12011E+09

MINIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.37143E+09	-.44783E+09	-.50987E+09	.13845E+09	.12011E+09

MAXIMUM VALUES

NODE 3738 3738 3738 3738 3738
VALUE -.37143E+09 -.44783E+09 -.50987E+09 .13845E+09 .12011E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:08:12 NOV 25, 1995 CP= 1269.960
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
TIME= 1.2860 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE S1 S2 S3 SINT SEQV
3738 -.42525E+09 -.54507E+09 -.58132E+09 .15606E+09 .14146E+09

MINIMUM VALUES

NODE 3738 3738 3738 3738 3738
VALUE -.42525E+09 -.54507E+09 -.58132E+09 .15606E+09 .14146E+09

MAXIMUM VALUES

NODE 3738 3738 3738 3738 3738
VALUE -.42525E+09 -.54507E+09 -.58132E+09 .15606E+09 .14146E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:09:45 NOV 25, 1995 CP= 1290.320
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
TIME= 1.2866 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE S1 S2 S3 SINT SEQV
3738 -.44862E+09 -.60640E+09 -.62497E+09 .17635E+09 .16783E+09

MINIMUM VALUES

NODE 3738 3738 3738 3738 3738
VALUE -.44862E+09 -.60640E+09 -.62497E+09 .17635E+09 .16783E+09

MAXIMUM VALUES

NODE 3738 3738 3738 3738 3738
VALUE -.44862E+09 -.60640E+09 -.62497E+09 .17635E+09 .16783E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:11:12 NOV 25, 1995 CP= 1310.560
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12
TIME= 1.2872 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE S1 S2 S3 SINT SEQV

3738 -.46431E+09 -.63760E+09 -.64288E+09 .17857E+09 .17599E+09

MINIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.46431E+09	-.63760E+09	-.64288E+09	.17857E+09	.17599E+09

MAXIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.46431E+09	-.63760E+09	-.64288E+09	.17857E+09	.17599E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:12:50 NOV 25, 1995 CP= 1330.910
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.2878 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3738	-.47881E+09	-.65765E+09	-.66410E+09	.18529E+09	.18215E+09

MINIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.47881E+09	-.65765E+09	-.66410E+09	.18529E+09	.18215E+09

MAXIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.47881E+09	-.65765E+09	-.66410E+09	.18529E+09	.18215E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:14:38 NOV 25, 1995 CP= 1350.960
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14
TIME= 1.2884 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3738	-.48279E+09	-.66478E+09	-.68071E+09	.19792E+09	.19045E+09

MINIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.48279E+09	-.66478E+09	-.68071E+09	.19792E+09	.19045E+09

MAXIMUM VALUES

NODE	3738	3738	3738	3738	3738
VALUE	-.48279E+09	-.66478E+09	-.68071E+09	.19792E+09	.19045E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:16:24 NOV 25, 1995 CP= 1371.500
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.2890 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3739	-.43053E+09	-.62974E+09	-.68357E+09	.25304E+09	.23088E+09

MINIMUM VALUES

NODE	3739	3739	3739	3739	3739
VALUE	-.43053E+09	-.62974E+09	-.68357E+09	.25304E+09	.23088E+09

MAXIMUM VALUES

NODE	3739	3739	3739	3739	3739
VALUE	-.43053E+09	-.62974E+09	-.68357E+09	.25304E+09	.23088E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:17:51 NOV 25, 1995 CP= 1391.750
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
TIME= 1.2896 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3739	-.39800E+09	-.60491E+09	-.65745E+09	.25944E+09	.23757E+09

MINIMUM VALUES

NODE	3739	3739	3739	3739	3739
VALUE	-.39800E+09	-.60491E+09	-.65745E+09	.25944E+09	.23757E+09

MAXIMUM VALUES

NODE	3739	3739	3739	3739	3739
VALUE	-.39800E+09	-.60491E+09	-.65745E+09	.25944E+09	.23757E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:19:18 NOV 25, 1995 CP= 1411.680
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
TIME= 1.2900 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3739	-.39521E+09	-.60771E+09	-.65381E+09	.25860E+09	.23891E+09

MINIMUM VALUES

NODE	3739	3739	3739	3739	3739
VALUE	-.39521E+09	-.60771E+09	-.65381E+09	.25860E+09	.23891E+09

MAXIMUM VALUES

NODE	3739	3739	3739	3739	3739
VALUE	-.39521E+09	-.60771E+09	-.65381E+09	.25860E+09	.23891E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:21:01 NOV 25, 1995 CP= 1432.110
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
TIME= 1.2903 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1043	-.22449E+09	-.26755E+09	-.57701E+09	.35252E+09	.33308E+09

MINIMUM VALUES

NODE	1043	1043	1043	1043	1043
VALUE	-.22449E+09	-.26755E+09	-.57701E+09	.35252E+09	.33308E+09

MAXIMUM VALUES

NODE	1043	1043	1043	1043	1043
VALUE	-.22449E+09	-.26755E+09	-.57701E+09	.35252E+09	.33308E+09

MAXIMUM PRINCIPAL STRESSES IN THE WASTE PACKAGE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 166 STEP 1

166 VOLUMES (OF 166 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 665 STEP 1

606 AREAS (OF 606 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 930 STEP 1

787 LINES (OF 787 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10012 STEP 1

344 KEYPOINTS (OF 344 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 6311 STEP 1

6311 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 34.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

*** NOTE *** CP= 7.270 TIME= 18:37:29
Page file used.

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
TIME/FREQUENCY= 1.3086

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:37:54 NOV 26, 1995 CP= 14.860
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.3086 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1181	.14798E+07	.81598E+06	-.13879E+06	.16186E+07	.14093E+07

MINIMUM VALUES

NODE	1181	1181	1181	1181	1181
VALUE	.14798E+07	.81598E+06	-.13879E+06	.16186E+07	.14093E+07

MAXIMUM VALUES

NODE	1181	1181	1181	1181	1181
VALUE	.14798E+07	.81598E+06	-.13879E+06	.16186E+07	.14093E+07

*ENDDO INDEX= 1

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:38:47 NOV 26, 1995 CP= 28.590
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
TIME= 1.3093 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
53	.22142E+07	.12437E+07	-.23613E+06	.24504E+07	.21373E+07

MINIMUM VALUES

NODE	53	53	53	53	53
VALUE	.22142E+07	.12437E+07	-.23613E+06	.24504E+07	.21373E+07

MAXIMUM VALUES

NODE	53	53	53	53	53
VALUE	.22142E+07	.12437E+07	-.23613E+06	.24504E+07	.21373E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:39:47 NOV 26, 1995 CP= 44.020
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
TIME= 1.3099 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.18435E+08	.15865E+08	-.51475E+07	.23583E+08	.22408E+08

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.18435E+08	.15865E+08	-.51475E+07	.23583E+08	.22408E+08

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.18435E+08	.15865E+08	-.51475E+07	.23583E+08	.22408E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:40:36 NOV 26, 1995 CP= 59.320
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
TIME= 1.3106 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.72942E+08	.63143E+08	-.17827E+08	.90769E+08	.86288E+08

MINIMUM VALUES
NODE 455 455 455 455 455
VALUE .72942E+08 .63143E+08 -.17827E+08 .90769E+08 .86288E+08

MAXIMUM VALUES
NODE 455 455 455 455 455
VALUE .72942E+08 .63143E+08 -.17827E+08 .90769E+08 .86288E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:41:21 NOV 26, 1995 CP= 74.140
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
TIME= 1.3112 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.18992E+09	.13897E+09	-.29583E+08	.21951E+09	.19899E+09

MINIMUM VALUES
NODE 454 454 454 454 454
VALUE .18992E+09 .13897E+09 -.29583E+08 .21951E+09 .19899E+09

MAXIMUM VALUES
NODE 454 454 454 454 454
VALUE .18992E+09 .13897E+09 -.29583E+08 .21951E+09 .19899E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:42:05 NOV 26, 1995 CP= 88.670
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
TIME= 1.3118 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.35279E+09	.23617E+09	-.57742E+08	.41053E+09	.36641E+09

MINIMUM VALUES
NODE 455 455 455 455 455
VALUE .35279E+09 .23617E+09 -.57742E+08 .41053E+09 .36641E+09

MAXIMUM VALUES
NODE 455 455 455 455 455
VALUE .35279E+09 .23617E+09 -.57742E+08 .41053E+09 .36641E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:42:50 NOV 26, 1995 CP= 103.050
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
TIME= 1.3125 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.34690E+09	.24074E+09	-.27661E+08	.37456E+09	.33437E+09

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.34690E+09	.24074E+09	-.27661E+08	.37456E+09	.33437E+09

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.34690E+09	.24074E+09	-.27661E+08	.37456E+09	.33437E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:43:36 NOV 26, 1995 CP= 117.700
FOR SUPPORT CALL ROBERT BANNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
TIME= 1.3131 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.35109E+09	.25347E+09	-.21120E+08	.37221E+09	.33427E+09

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35109E+09	.25347E+09	-.21120E+08	.37221E+09	.33427E+09

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35109E+09	.25347E+09	-.21120E+08	.37221E+09	.33427E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:44:31 NOV 26, 1995 CP= 132.170
FOR SUPPORT CALL ROBERT BANNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
TIME= 1.3138 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.35515E+09	.27481E+09	-.18654E+08	.37380E+09	.34081E+09

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35515E+09	.27481E+09	-.18654E+08	.37380E+09	.34081E+09

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35515E+09	.27481E+09	-.18654E+08	.37380E+09	.34081E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:45:30 NOV 26, 1995 CP= 147.210
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
 TIME= 1.3144 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
93	.36916E+09	.75556E+08	-.51648E+07	.37433E+09	.34121E+09

MINIMUM VALUES
 NODE 93 93 93 93 93
 VALUE .36916E+09 .75556E+08 -.51648E+07 .37433E+09 .34121E+09

MAXIMUM VALUES
 NODE 93 93 93 93 93
 VALUE .36916E+09 .75556E+08 -.51648E+07 .37433E+09 .34121E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:46:22 NOV 26, 1995 CP= 161.990
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
 TIME= 1.3150 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.37714E+09	.30537E+09	-.70662E+07	.38421E+09	.35382E+09

MINIMUM VALUES
 NODE 454 454 454 454 454
 VALUE .37714E+09 .30537E+09 -.70662E+07 .38421E+09 .35382E+09

MAXIMUM VALUES
 NODE 454 454 454 454 454
 VALUE .37714E+09 .30537E+09 -.70662E+07 .38421E+09 .35382E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:47:14 NOV 26, 1995 CP= 177.090
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12
 TIME= 1.3157 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.38191E+09	.31599E+09	-.42566E+07	.38617E+09	.35779E+09

MINIMUM VALUES
 NODE 454 454 454 454 454

VALUE .38191E+09 .31599E+09 -.42566E+07 .38617E+09 .35779E+09

MAXIMUM VALUES

NODE 454 454 454 454 454
VALUE .38191E+09 .31599E+09 -.42566E+07 .38617E+09 .35779E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:48:13 NOV 26, 1995 CP= 192.450
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.3163 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38565E+09	.32659E+09	-.23068E+07	.38796E+09	.36206E+09

MINIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38565E+09	.32659E+09	-.23068E+07	.38796E+09	.36206E+09

MAXIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38565E+09	.32659E+09	-.23068E+07	.38796E+09	.36206E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:49:09 NOV 26, 1995 CP= 207.650
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14
TIME= 1.3170 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38817E+09	.33603E+09	-.25628E+07	.39074E+09	.36745E+09

MINIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38817E+09	.33603E+09	-.25628E+07	.39074E+09	.36745E+09

MAXIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38817E+09	.33603E+09	-.25628E+07	.39074E+09	.36745E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:49:59 NOV 26, 1995 CP= 222.520
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.3176 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38774E+09	.34526E+09	-.41059E+07	.39184E+09	.37243E+09

MINIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38774E+09	.34526E+09	-.41059E+07	.39184E+09	.37243E+09

MAXIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38774E+09	.34526E+09	-.41059E+07	.39184E+09	.37243E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:50:49 NOV 26, 1995 CP= 237.510
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
 TIME= 1.3182 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4391	.38764E+09	.23975E+09	.83559E+07	.37928E+09	.33111E+09

MINIMUM VALUES

NODE	4391	4391	4391	4391	4391
VALUE	.38764E+09	.23975E+09	.83559E+07	.37928E+09	.33111E+09

MAXIMUM VALUES

NODE	4391	4391	4391	4391	4391
VALUE	.38764E+09	.23975E+09	.83559E+07	.37928E+09	.33111E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:51:41 NOV 26, 1995 CP= 252.500
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
 TIME= 1.3189 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4429	.39054E+09	.25307E+09	.79828E+07	.38256E+09	.33565E+09

MINIMUM VALUES

NODE	4429	4429	4429	4429	4429
VALUE	.39054E+09	.25307E+09	.79828E+07	.38256E+09	.33565E+09

MAXIMUM VALUES

NODE	4429	4429	4429	4429	4429
VALUE	.39054E+09	.25307E+09	.79828E+07	.38256E+09	.33565E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:52:29 NOV 26, 1995 CP= 267.200
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
TIME= 1.3195 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38945E+09	.35509E+09	-.42206E+07	.39367E+09	.37766E+09

MINIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38945E+09	.35509E+09	-.42206E+07	.39367E+09	.37766E+09

MAXIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38945E+09	.35509E+09	-.42206E+07	.39367E+09	.37766E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:53:13 NOV 26, 1995 CP= 281.830
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 19
TIME= 1.3202 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.38758E+09	.36013E+09	-.43490E+07	.39193E+09	.37895E+09

MINIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38758E+09	.36013E+09	-.43490E+07	.39193E+09	.37895E+09

MAXIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38758E+09	.36013E+09	-.43490E+07	.39193E+09	.37895E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:53:58 NOV 26, 1995 CP= 296.560
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 20
TIME= 1.3205 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.38596E+09	.36249E+09	-.44853E+07	.39045E+09	.37925E+09

MINIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38596E+09	.36249E+09	-.44853E+07	.39045E+09	.37925E+09

MAXIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38596E+09	.36249E+09	-.44853E+07	.39045E+09	.37925E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:54:43 NOV 26, 1995 CP= 311.220
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 21
TIME= 1.3209 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4309	.35334E+09	.18253E+09	.20586E+08	.33275E+09	.28821E+09

MINIMUM VALUES

NODE	4309	4309	4309	4309	4309
VALUE	.35334E+09	.18253E+09	.20586E+08	.33275E+09	.28821E+09

MAXIMUM VALUES

NODE	4309	4309	4309	4309	4309
VALUE	.35334E+09	.18253E+09	.20586E+08	.33275E+09	.28821E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:55:28 NOV 26, 1995 CP= 325.890
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 22
TIME= 1.3213 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4308	.36195E+09	.19000E+09	.21560E+08	.34039E+09	.29479E+09

MINIMUM VALUES

NODE	4308	4308	4308	4308	4308
VALUE	.36195E+09	.19000E+09	.21560E+08	.34039E+09	.29479E+09

MAXIMUM VALUES

NODE	4308	4308	4308	4308	4308
VALUE	.36195E+09	.19000E+09	.21560E+08	.34039E+09	.29479E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 18:56:22 NOV 26, 1995 CP= 340.320
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 23
TIME= 1.3217 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.37529E+09	.19599E+09	.21591E+08	.35370E+09	.30632E+09

MINIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.37529E+09	.19599E+09	.21591E+08	.35370E+09	.30632E+09

MAXIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.37529E+09	.19599E+09	.21591E+08	.35370E+09	.30632E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:57:18 NOV 26, 1995 CP= 355.150
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 24
TIME= 1.3223 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.37787E+09	.19194E+09	.20913E+08	.35696E+09	.30922E+09

MINIMUM VALUES
NODE 3705 3705 3705 3705 3705
VALUE .37787E+09 .19194E+09 .20913E+08 .35696E+09 .30922E+09

MAXIMUM VALUES
NODE 3705 3705 3705 3705 3705
VALUE .37787E+09 .19194E+09 .20913E+08 .35696E+09 .30922E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:58:07 NOV 26, 1995 CP= 369.800
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 25
TIME= 1.3230 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.36031E+09	.17915E+09	.20470E+08	.33984E+09	.29453E+09

MINIMUM VALUES
NODE 3705 3705 3705 3705 3705
VALUE .36031E+09 .17915E+09 .20470E+08 .33984E+09 .29453E+09

MAXIMUM VALUES
NODE 3705 3705 3705 3705 3705
VALUE .36031E+09 .17915E+09 .20470E+08 .33984E+09 .29453E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:58:58 NOV 26, 1995 CP= 384.630
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 26
TIME= 1.3236 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.32676E+09	.16397E+09	.17304E+08	.30945E+09	.26811E+09

MINIMUM VALUES
NODE 3705 3705 3705 3705 3705

VALUE .32676E+09 .16397E+09 .17304E+08 .30945E+09 .26811E+09

MAXIMUM VALUES

NODE 3705 3705 3705 3705 3705
VALUE .32676E+09 .16397E+09 .17304E+08 .30945E+09 .26811E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 18:59:50 NOV 26, 1995 CP= 399.630
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 27
TIME= 1.3242 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1005	.28499E+09	.16265E+09	.13666E+07	.28363E+09	.24640E+09

MINIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.28499E+09	.16265E+09	.13666E+07	.28363E+09	.24640E+09

MAXIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.28499E+09	.16265E+09	.13666E+07	.28363E+09	.24640E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:00:38 NOV 26, 1995 CP= 414.360
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 28
TIME= 1.3249 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2814	.25141E+09	.19986E+09	.66047E+08	.18536E+09	.16571E+09

MINIMUM VALUES

NODE	2814	2814	2814	2814	2814
VALUE	.25141E+09	.19986E+09	.66047E+08	.18536E+09	.16571E+09

MAXIMUM VALUES

NODE	2814	2814	2814	2814	2814
VALUE	.25141E+09	.19986E+09	.66047E+08	.18536E+09	.16571E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:01:23 NOV 26, 1995 CP= 429.000
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 29
TIME= 1.3255 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2814	.28217E+09	.24829E+09	.64284E+08	.21788E+09	.20307E+09

MINIMUM VALUES

NODE	2814	2814	2814	2814	2814
VALUE	.28217E+09	.24829E+09	.64284E+08	.21788E+09	.20307E+09

MAXIMUM VALUES

NODE	2814	2814	2814	2814	2814
VALUE	.28217E+09	.24829E+09	.64284E+08	.21788E+09	.20307E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:02:08 NOV 26, 1995 CP= 443.670
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 30
 TIME= 1.3262 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.29455E+09	.28139E+09	.60397E+08	.23415E+09	.22786E+09

MINIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.29455E+09	.28139E+09	.60397E+08	.23415E+09	.22786E+09

MAXIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.29455E+09	.28139E+09	.60397E+08	.23415E+09	.22786E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:02:54 NOV 26, 1995 CP= 458.060
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 31
 TIME= 1.3268 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.29673E+09	.27622E+09	.58607E+08	.23812E+09	.22856E+09

MINIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.29673E+09	.27622E+09	.58607E+08	.23812E+09	.22856E+09

MAXIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.29673E+09	.27622E+09	.58607E+08	.23812E+09	.22856E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:03:40 NOV 26, 1995 CP= 472.780
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 32
TIME= 1.3274 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.30315E+09	.26352E+09	.56879E+08	.24627E+09	.22904E+09

MINIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.30315E+09	.26352E+09	.56879E+08	.24627E+09	.22904E+09

MAXIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.30315E+09	.26352E+09	.56879E+08	.24627E+09	.22904E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:04:35 NOV 26, 1995 CP= 487.720
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 33
TIME= 1.3281 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.30645E+09	.24994E+09	.54400E+08	.25205E+09	.22908E+09

MINIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.30645E+09	.24994E+09	.54400E+08	.25205E+09	.22908E+09

MAXIMUM VALUES

NODE	2841	2841	2841	2841	2841
VALUE	.30645E+09	.24994E+09	.54400E+08	.25205E+09	.22908E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:05:31 NOV 26, 1995 CP= 502.550
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 34
TIME= 1.3287 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2885	.31626E+09	.26051E+09	.51174E+08	.26508E+09	.24207E+09

MINIMUM VALUES

NODE	2885	2885	2885	2885	2885
VALUE	.31626E+09	.26051E+09	.51174E+08	.26508E+09	.24207E+09

MAXIMUM VALUES

NODE	2885	2885	2885	2885	2885
VALUE	.31626E+09	.26051E+09	.51174E+08	.26508E+09	.24207E+09

MAXIMUM PRINCIPAL STRESSES IN THE OUTER BARRIER

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 166 STEP 1

166 VOLUMES (OF 166 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 665 STEP 1

606 AREAS (OF 606 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 930 STEP 1

787 LINES (OF 787 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10012 STEP 1

344 KEYPOINTS (OF 344 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 6311 STEP 1

6311 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

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

3570 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

4488 NODES (OF 6173 DEFINED) SELECTED FROM
3570 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

5361 ELEMENTS (OF 6311 DEFINED) SELECTED FROM
4488 SELECTED NODES BY ESLN COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 34.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
TIME/FREQUENCY= 1.3086

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:06:23 NOV 26, 1995 CP= 517.700
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.3086 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
52	.64345E+06	.37489E+06	9115.2	.63433E+06	.55149E+06

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
52	.64345E+06	.37489E+06	9115.2	.63433E+06	.55149E+06

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
52	.64345E+06	.37489E+06	9115.2	.63433E+06	.55149E+06

*ENDDO INDEX= I

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:07:10 NOV 26, 1995 CP= 531.900
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
TIME= 1.3093 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1180	.10340E+07	.59263E+06	20438.	.10136E+07	.88020E+06

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
1180	.10340E+07	.59263E+06	20438.	.10136E+07	.88020E+06

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
1180	.10340E+07	.59263E+06	20438.	.10136E+07	.88020E+06

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:07:59 NOV 26, 1995 CP= 546.470
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
TIME= 1.3099 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
497	.84900E+07	.68310E+07	-.49186E+07	.13409E+08	.12661E+08

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
497	.84900E+07	.68310E+07	-.49186E+07	.13409E+08	.12661E+08

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
497	.84900E+07	.68310E+07	-.49186E+07	.13409E+08	.12661E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:08:43 NOV 26, 1995 CP= 560.510
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
TIME= 1.3106 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
497	.32386E+08	.28923E+08	-.16311E+08	.48698E+08	.47062E+08

MINIMUM VALUES
NODE 497 497 497 497 497
VALUE .32386E+08 .28923E+08 -.16311E+08 .48698E+08 .47062E+08

MAXIMUM VALUES
NODE 497 497 497 497 497
VALUE .32386E+08 .28923E+08 -.16311E+08 .48698E+08 .47062E+08

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:09:27 NOV 26, 1995 CP= 574.540
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
TIME= 1.3112 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
496	.87310E+08	.61363E+08	-.22863E+08	.11017E+09	.99764E+08

MINIMUM VALUES
NODE 496 496 496 496 496
VALUE .87310E+08 .61363E+08 -.22863E+08 .11017E+09 .99764E+08

MAXIMUM VALUES
NODE 496 496 496 496 496
VALUE .87310E+08 .61363E+08 -.22863E+08 .11017E+09 .99764E+08

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:10:11 NOV 26, 1995 CP= 588.290
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
TIME= 1.3118 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
496	.17645E+09	.10373E+09	-.38391E+08	.21485E+09	.18927E+09

MINIMUM VALUES
NODE 496 496 496 496 496
VALUE .17645E+09 .10373E+09 -.38391E+08 .21485E+09 .18927E+09

MAXIMUM VALUES
NODE 496 496 496 496 496
VALUE .17645E+09 .10373E+09 -.38391E+08 .21485E+09 .18927E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:10:56 NOV 26, 1995 CP= 602.150
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
TIME= 1.3125 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2707	.26862E+09	.86577E+08	.43516E+07	.26426E+09	.23424E+09

MINIMUM VALUES
NODE 2707 2707 2707 2707 2707
VALUE .26862E+09 .86577E+08 .43516E+07 .26426E+09 .23424E+09

MAXIMUM VALUES
NODE 2707 2707 2707 2707 2707
VALUE .26862E+09 .86577E+08 .43516E+07 .26426E+09 .23424E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:11:41 NOV 26, 1995 CP= 616.070
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
TIME= 1.3131 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2707	.27293E+09	.12736E+09	.42108E+08	.23082E+09	.20216E+09

MINIMUM VALUES
NODE 2707 2707 2707 2707 2707
VALUE .27293E+09 .12736E+09 .42108E+08 .23082E+09 .20216E+09

MAXIMUM VALUES
NODE 2707 2707 2707 2707 2707
VALUE .27293E+09 .12736E+09 .42108E+08 .23082E+09 .20216E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:12:33 NOV 26, 1995 CP= 630.020
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
TIME= 1.3138 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2707	.28535E+09	.15581E+09	.54453E+08	.23090E+09	.20046E+09

MINIMUM VALUES

NODE	2707	2707	2707	2707	2707
VALUE	.28535E+09	.15581E+09	.54453E+08	.23090E+09	.20046E+09

MAXIMUM VALUES

NODE	2707	2707	2707	2707	2707
VALUE	.28535E+09	.15581E+09	.54453E+08	.23090E+09	.20046E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:13:28 NOV 26, 1995 CP= 644.350
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
 TIME= 1.3144 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2707	.28696E+09	.15894E+09	.52172E+08	.23479E+09	.20361E+09

MINIMUM VALUES

NODE	2707	2707	2707	2707	2707
VALUE	.28696E+09	.15894E+09	.52172E+08	.23479E+09	.20361E+09

MAXIMUM VALUES

NODE	2707	2707	2707	2707	2707
VALUE	.28696E+09	.15894E+09	.52172E+08	.23479E+09	.20361E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:14:18 NOV 26, 1995 CP= 658.320
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
 TIME= 1.3150 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2706	.28331E+09	.13326E+09	.47465E+08	.23584E+09	.20675E+09

MINIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.28331E+09	.13326E+09	.47465E+08	.23584E+09	.20675E+09

MAXIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.28331E+09	.13326E+09	.47465E+08	.23584E+09	.20675E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:15:06 NOV 26, 1995 CP= 672.460
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12

TIME= 1.3157 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2706	.27981E+09	.11654E+09	.45291E+08	.23452E+09	.20825E+09

MINIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.27981E+09	.11654E+09	.45291E+08	.23452E+09	.20825E+09

MAXIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.27981E+09	.11654E+09	.45291E+08	.23452E+09	.20825E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:15:59 NOV 26, 1995 CP= 686.800
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.3163 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2706	.28213E+09	.12217E+09	.45445E+08	.23669E+09	.20916E+09

MINIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.28213E+09	.12217E+09	.45445E+08	.23669E+09	.20916E+09

MAXIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.28213E+09	.12217E+09	.45445E+08	.23669E+09	.20916E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:16:44 NOV 26, 1995 CP= 700.850
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14
TIME= 1.3170 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2706	.28767E+09	.14819E+09	.45983E+08	.24169E+09	.21013E+09

MINIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.28767E+09	.14819E+09	.45983E+08	.24169E+09	.21013E+09

MAXIMUM VALUES

NODE	2706	2706	2706	2706	2706
VALUE	.28767E+09	.14819E+09	.45983E+08	.24169E+09	.21013E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:17:29 NOV 26, 1995 CP= 714.700
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.3176 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
402	.29639E+09	.73180E+08	.90715E+07	.28732E+09	.26123E+09

MINIMUM VALUES

NODE	402	402	402	402	402
VALUE	.29639E+09	.73180E+08	.90715E+07	.28732E+09	.26123E+09

MAXIMUM VALUES

NODE	402	402	402	402	402
VALUE	.29639E+09	.73180E+08	.90715E+07	.28732E+09	.26123E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:18:14 NOV 26, 1995 CP= 728.710
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
TIME= 1.3182 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
402	.30038E+09	.80943E+08	.79612E+07	.29242E+09	.26362E+09

MINIMUM VALUES

NODE	402	402	402	402	402
VALUE	.30038E+09	.80943E+08	.79612E+07	.29242E+09	.26362E+09

MAXIMUM VALUES

NODE	402	402	402	402	402
VALUE	.30038E+09	.80943E+08	.79612E+07	.29242E+09	.26362E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:18:58 NOV 26, 1995 CP= 742.610
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
TIME= 1.3189 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
402	.30100E+09	.82477E+08	.70895E+07	.29391E+09	.26440E+09

MINIMUM VALUES

NODE	402	402	402	402	402
VALUE	.30100E+09	.82477E+08	.70895E+07	.29391E+09	.26440E+09

MAXIMUM VALUES

NODE	402	402	402	402	402
VALUE	.30100E+09	.82477E+08	.70895E+07	.29391E+09	.26440E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:19:42 NOV 26, 1995 CP= 756.510
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
TIME= 1.3195 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
402	.29620E+09	.72321E+08	.59522E+07	.29024E+09	.26341E+09

MINIMUM VALUES
NODE 402 402 402 402 402
VALUE .29620E+09 .72321E+08 .59522E+07 .29024E+09 .26341E+09

MAXIMUM VALUES
NODE 402 402 402 402 402
VALUE .29620E+09 .72321E+08 .59522E+07 .29024E+09 .26341E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:20:32 NOV 26, 1995 CP= 770.530
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 19
TIME= 1.3202 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2706	.29367E+09	.15722E+09	.49219E+08	.24445E+09	.21218E+09

MINIMUM VALUES
NODE 2706 2706 2706 2706 2706
VALUE .29367E+09 .15722E+09 .49219E+08 .24445E+09 .21218E+09

MAXIMUM VALUES
NODE 2706 2706 2706 2706 2706
VALUE .29367E+09 .15722E+09 .49219E+08 .24445E+09 .21218E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:21:23 NOV 26, 1995 CP= 784.730
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 20
TIME= 1.3205 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2706	.29095E+09	.14764E+09	.47494E+08	.24346E+09	.21194E+09

MINIMUM VALUES
NODE 2706 2706 2706 2706 2706
VALUE .29095E+09 .14764E+09 .47494E+08 .24346E+09 .21194E+09

MAXIMUM VALUES
NODE 2706 2706 2706 2706 2706
VALUE .29095E+09 .14764E+09 .47494E+08 .24346E+09 .21194E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:22:10 NOV 26, 1995 CP= 798.970
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 21
TIME= 1.3209 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2706	.27942E+09	.14046E+09	.46564E+08	.23285E+09	.20291E+09

MINIMUM VALUES
NODE 2706 2706 2706 2706 2706
VALUE .27942E+09 .14046E+09 .46564E+08 .23285E+09 .20291E+09

MAXIMUM VALUES
NODE 2706 2706 2706 2706 2706
VALUE .27942E+09 .14046E+09 .46564E+08 .23285E+09 .20291E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:22:57 NOV 26, 1995 CP= 812.990
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 22
TIME= 1.3213 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
403	.27672E+09	.54529E+08	.51561E+07	.27157E+09	.25056E+09

MINIMUM VALUES
NODE 403 403 403 403 403
VALUE .27672E+09 .54529E+08 .51561E+07 .27157E+09 .25056E+09

MAXIMUM VALUES
NODE 403 403 403 403 403
VALUE .27672E+09 .54529E+08 .51561E+07 .27157E+09 .25056E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:23:49 NOV 26, 1995 CP= 827.340
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 23
TIME= 1.3217 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
403	.27734E+09	.55811E+08	.50696E+07	.27227E+09	.25078E+09

MINIMUM VALUES

NODE	403	403	403	403	403
VALUE	.27734E+09	.55811E+08	.50696E+07	.27227E+09	.25078E+09

MAXIMUM VALUES

NODE	403	403	403	403	403
VALUE	.27734E+09	.55811E+08	.50696E+07	.27227E+09	.25078E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:24:39 NOV 26, 1995 CP= 841.140
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 24
TIME= 1.3223 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
403	.27989E+09	.55226E+08	.56182E+07	.27428E+09	.25314E+09

MINIMUM VALUES

NODE	403	403	403	403	403
VALUE	.27989E+09	.55226E+08	.56182E+07	.27428E+09	.25314E+09

MAXIMUM VALUES

NODE	403	403	403	403	403
VALUE	.27989E+09	.55226E+08	.56182E+07	.27428E+09	.25314E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:25:25 NOV 26, 1995 CP= 855.750
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 25
TIME= 1.3230 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
403	.26915E+09	.56251E+08	.54290E+07	.26372E+09	.24234E+09

MINIMUM VALUES

NODE	403	403	403	403	403
VALUE	.26915E+09	.56251E+08	.54290E+07	.26372E+09	.24234E+09

MAXIMUM VALUES

NODE	403	403	403	403	403
VALUE	.26915E+09	.56251E+08	.54290E+07	.26372E+09	.24234E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:26:11 NOV 26, 1995 CP= 870.400
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 26

TIME= 1.3236 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
403	.24544E+09	.58498E+08	.40697E+07	.24137E+09	.21929E+09

MINIMUM VALUES

NODE	403	403	403	403	403
VALUE	.24544E+09	.58498E+08	.40697E+07	.24137E+09	.21929E+09

MAXIMUM VALUES

NODE	403	403	403	403	403
VALUE	.24544E+09	.58498E+08	.40697E+07	.24137E+09	.21929E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:26:58 NOV 26, 1995 CP= 884.940
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 27
 TIME= 1.3242 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2749	.23849E+09	.76303E+08	.12128E+08	.22636E+09	.20207E+09

MINIMUM VALUES

NODE	2749	2749	2749	2749	2749
VALUE	.23849E+09	.76303E+08	.12128E+08	.22636E+09	.20207E+09

MAXIMUM VALUES

NODE	2749	2749	2749	2749	2749
VALUE	.23849E+09	.76303E+08	.12128E+08	.22636E+09	.20207E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:27:45 NOV 26, 1995 CP= 899.820
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 28
 TIME= 1.3249 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2814	.25141E+09	.19986E+09	.66047E+08	.18536E+09	.16571E+09

MINIMUM VALUES

NODE	2814	2814	2814	2814	2814
VALUE	.25141E+09	.19986E+09	.66047E+08	.18536E+09	.16571E+09

MAXIMUM VALUES

NODE	2814	2814	2814	2814	2814
VALUE	.25141E+09	.19986E+09	.66047E+08	.18536E+09	.16571E+09

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:28:31 NOV 26, 1995 CP= 914.240
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 29
TIME= 1.3255 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2814	.28217E+09	.24829E+09	.64284E+08	.21788E+09	.20307E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
2814	.28217E+09	.24829E+09	.64284E+08	.21788E+09	.20307E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
2814	.28217E+09	.24829E+09	.64284E+08	.21788E+09	.20307E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:29:27 NOV 26, 1995 CP= 928.620
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 30
TIME= 1.3262 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.29455E+09	.28139E+09	.60397E+08	.23415E+09	.22786E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
2841	.29455E+09	.28139E+09	.60397E+08	.23415E+09	.22786E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
2841	.29455E+09	.28139E+09	.60397E+08	.23415E+09	.22786E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:30:18 NOV 26, 1995 CP= 942.850
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 31
TIME= 1.3268 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.29673E+09	.27622E+09	.58607E+08	.23812E+09	.22856E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
2841	.29673E+09	.27622E+09	.58607E+08	.23812E+09	.22856E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
2841	.29673E+09	.27622E+09	.58607E+08	.23812E+09	.22856E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:31:06 NOV 26, 1995 CP= 957.050
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 32
TIME= 1.3274 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.30315E+09	.26352E+09	.56879E+08	.24627E+09	.22904E+09

MINIMUM VALUES
NODE 2841 2841 2841 2841 2841
VALUE .30315E+09 .26352E+09 .56879E+08 .24627E+09 .22904E+09

MAXIMUM VALUES
NODE 2841 2841 2841 2841 2841
VALUE .30315E+09 .26352E+09 .56879E+08 .24627E+09 .22904E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:31:54 NOV 26, 1995 CP= 972.150
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 33
TIME= 1.3281 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2841	.30645E+09	.24994E+09	.54400E+08	.25205E+09	.22908E+09

MINIMUM VALUES
NODE 2841 2841 2841 2841 2841
VALUE .30645E+09 .24994E+09 .54400E+08 .25205E+09 .22908E+09

MAXIMUM VALUES
NODE 2841 2841 2841 2841 2841
VALUE .30645E+09 .24994E+09 .54400E+08 .25205E+09 .22908E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:32:44 NOV 26, 1995 CP= 987.100
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 34
TIME= 1.3287 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2885	.31626E+09	.26051E+09	.51174E+08	.26508E+09	.24207E+09

MINIMUM VALUES
NODE 2885 2885 2885 2885 2885
VALUE .31626E+09 .26051E+09 .51174E+08 .26508E+09 .24207E+09

MAXIMUM VALUES
 NODE 2885 2885 2885 2885 2885
 VALUE .31626E+09 .26051E+09 .51174E+08 .26508E+09 .24207E+09

MAXIMUM PRINCIPAL STRESSES IN THE INNER BARRIER

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 166 STEP 1

166 VOLUMES (OF 166 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 665 STEP 1

606 AREAS (OF 606 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 930 STEP 1

787 LINES (OF 787 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 10012 STEP 1

344 KEYPOINTS (OF 344 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 6311 STEP 1

6311 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
 IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

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

1428 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

SELECT ALL NODES HAVING ANY ELEMENT IN ELEMENT SET.

2244 NODES (OF 6173 DEFINED) SELECTED FROM
 1428 SELECTED ELEMENTS BY NSLE COMMAND.

SELECT ALL ELEMENTS HAVING ANY NODE IN NODAL SET.

2466 ELEMENTS (OF 6311 DEFINED) SELECTED FROM
 2244 SELECTED NODES BY ESLN COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 34.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
 TIME/FREQUENCY= 1.3086

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:33:28 NOV 26, 1995 CP= 1000.740
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.3086 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
53	.14798E+07	.81598E+06	-.13879E+06	.16186E+07	.14093E+07

MINIMUM VALUES
NODE 53 53 53 53 53
VALUE .14798E+07 .81598E+06 -.13879E+06 .16186E+07 .14093E+07

MAXIMUM VALUES
NODE 53 53 53 53 53
VALUE .14798E+07 .81598E+06 -.13879E+06 .16186E+07 .14093E+07

*ENDDO INDEX= 1

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:34:07 NOV 26, 1995 CP= 1013.230
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
TIME= 1.3093 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1181	.22142E+07	.12437E+07	-.23613E+06	.24504E+07	.21373E+07

MINIMUM VALUES
NODE 1181 1181 1181 1181 1181
VALUE .22142E+07 .12437E+07 -.23613E+06 .24504E+07 .21373E+07

MAXIMUM VALUES
NODE 1181 1181 1181 1181 1181
VALUE .22142E+07 .12437E+07 -.23613E+06 .24504E+07 .21373E+07

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:34:47 NOV 26, 1995 CP= 1025.480
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
TIME= 1.3099 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.18435E+08	.15865E+08	-.51475E+07	.23583E+08	.22408E+08

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.18435E+08	.15865E+08	-.51475E+07	.23583E+08	.22408E+08

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.18435E+08	.15865E+08	-.51475E+07	.23583E+08	.22408E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:35:25 NOV 26, 1995 CP= 1037.860
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
TIME= 1.3106 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.72942E+08	.63143E+08	-.17827E+08	.90769E+08	.86288E+08

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.72942E+08	.63143E+08	-.17827E+08	.90769E+08	.86288E+08

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.72942E+08	.63143E+08	-.17827E+08	.90769E+08	.86288E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:36:05 NOV 26, 1995 CP= 1050.240
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
TIME= 1.3112 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.18992E+09	.13897E+09	-.29583E+08	.21951E+09	.19899E+09

MINIMUM VALUES

NODE	454	454	454	454	454
VALUE	.18992E+09	.13897E+09	-.29583E+08	.21951E+09	.19899E+09

MAXIMUM VALUES

NODE	454	454	454	454	454
VALUE	.18992E+09	.13897E+09	-.29583E+08	.21951E+09	.19899E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:36:44 NOV 26, 1995 CP= 1062.700
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
TIME= 1.3118 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.35279E+09	.23617E+09	-.57742E+08	.41053E+09	.36641E+09

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35279E+09	.23617E+09	-.57742E+08	.41053E+09	.36641E+09

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35279E+09	.23617E+09	-.57742E+08	.41053E+09	.36641E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:37:32 NOV 26, 1995 CP= 1075.170
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
 TIME= 1.3125 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.34690E+09	.24074E+09	-.27661E+08	.37456E+09	.33437E+09

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.34690E+09	.24074E+09	-.27661E+08	.37456E+09	.33437E+09

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.34690E+09	.24074E+09	-.27661E+08	.37456E+09	.33437E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:38:24 NOV 26, 1995 CP= 1087.630
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
 TIME= 1.3131 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.35109E+09	.25347E+09	-.21120E+08	.37221E+09	.33427E+09

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35109E+09	.25347E+09	-.21120E+08	.37221E+09	.33427E+09

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35109E+09	.25347E+09	-.21120E+08	.37221E+09	.33427E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:39:07 NOV 26, 1995 CP= 1100.090
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
TIME= 1.3138 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
455	.35515E+09	.27481E+09	-.18654E+08	.37380E+09	.34081E+09

MINIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35515E+09	.27481E+09	-.18654E+08	.37380E+09	.34081E+09

MAXIMUM VALUES

NODE	455	455	455	455	455
VALUE	.35515E+09	.27481E+09	-.18654E+08	.37380E+09	.34081E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:39:51 NOV 26, 1995 CP= 1112.250
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
TIME= 1.3144 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
93	.36916E+09	.75556E+08	-.51648E+07	.37433E+09	.34121E+09

MINIMUM VALUES

NODE	93	93	93	93	93
VALUE	.36916E+09	.75556E+08	-.51648E+07	.37433E+09	.34121E+09

MAXIMUM VALUES

NODE	93	93	93	93	93
VALUE	.36916E+09	.75556E+08	-.51648E+07	.37433E+09	.34121E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:40:37 NOV 26, 1995 CP= 1124.820
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
TIME= 1.3150 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.37714E+09	.30537E+09	-.70662E+07	.38421E+09	.35382E+09

MINIMUM VALUES

NODE	454	454	454	454	454
VALUE	.37714E+09	.30537E+09	-.70662E+07	.38421E+09	.35382E+09

MAXIMUM VALUES

NODE	454	454	454	454	454
VALUE	.37714E+09	.30537E+09	-.70662E+07	.38421E+09	.35382E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:41:26 NOV 26, 1995 CP= 1137.370

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12
TIME= 1.3157 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.38191E+09	.31599E+09	-.42566E+07	.38617E+09	.35779E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
454	.38191E+09	.31599E+09	-.42566E+07	.38617E+09	.35779E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
454	.38191E+09	.31599E+09	-.42566E+07	.38617E+09	.35779E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:42:08 NOV 26, 1995 CP= 1149.860
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.3163 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38565E+09	.32659E+09	-.23068E+07	.38796E+09	.36206E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
440	.38565E+09	.32659E+09	-.23068E+07	.38796E+09	.36206E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
440	.38565E+09	.32659E+09	-.23068E+07	.38796E+09	.36206E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:42:48 NOV 26, 1995 CP= 1162.260
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14
TIME= 1.3170 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38817E+09	.33603E+09	-.25628E+07	.39074E+09	.36745E+09

MINIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
440	.38817E+09	.33603E+09	-.25628E+07	.39074E+09	.36745E+09

MAXIMUM VALUES

NODE	S1	S2	S3	SINT	SEQV
440	.38817E+09	.33603E+09	-.25628E+07	.39074E+09	.36745E+09

VALUE .38817E+09 .33603E+09 -.25628E+07 .39074E+09 .36745E+09
1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:43:29 NOV 26, 1995 CP= 1174.600
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.3176 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38774E+09	.34526E+09	-.41059E+07	.39184E+09	.37243E+09

MINIMUM VALUES
NODE 440 440 440 440 440
VALUE .38774E+09 .34526E+09 -.41059E+07 .39184E+09 .37243E+09

MAXIMUM VALUES
NODE 440 440 440 440 440
VALUE .38774E+09 .34526E+09 -.41059E+07 .39184E+09 .37243E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:44:09 NOV 26, 1995 CP= 1186.950
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
TIME= 1.3182 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4391	.38764E+09	.23975E+09	.83559E+07	.37928E+09	.33111E+09

MINIMUM VALUES
NODE 4391 4391 4391 4391 4391
VALUE .38764E+09 .23975E+09 .83559E+07 .37928E+09 .33111E+09

MAXIMUM VALUES
NODE 4391 4391 4391 4391 4391
VALUE .38764E+09 .23975E+09 .83559E+07 .37928E+09 .33111E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:44:48 NOV 26, 1995 CP= 1199.480
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
TIME= 1.3189 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4429	.39054E+09	.25307E+09	.79828E+07	.38256E+09	.33565E+09

MINIMUM VALUES

NODE	4429	4429	4429	4429	4429
VALUE	.39054E+09	.25307E+09	.79828E+07	.38256E+09	.33565E+09

MAXIMUM VALUES

NODE	4429	4429	4429	4429	4429
VALUE	.39054E+09	.25307E+09	.79828E+07	.38256E+09	.33565E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:45:36 NOV 26, 1995 CP= 1211.700
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
 TIME= 1.3195 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
440	.38945E+09	.35509E+09	-.42206E+07	.39367E+09	.37766E+09

MINIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38945E+09	.35509E+09	-.42206E+07	.39367E+09	.37766E+09

MAXIMUM VALUES

NODE	440	440	440	440	440
VALUE	.38945E+09	.35509E+09	-.42206E+07	.39367E+09	.37766E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:46:31 NOV 26, 1995 CP= 1224.610
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 19
 TIME= 1.3202 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.38758E+09	.36013E+09	-.43490E+07	.39193E+09	.37895E+09

MINIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38758E+09	.36013E+09	-.43490E+07	.39193E+09	.37895E+09

MAXIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38758E+09	.36013E+09	-.43490E+07	.39193E+09	.37895E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:47:13 NOV 26, 1995 CP= 1237.350
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 20
 TIME= 1.3205 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
454	.38596E+09	.36249E+09	-.44853E+07	.39045E+09	.37925E+09

MINIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38596E+09	.36249E+09	-.44853E+07	.39045E+09	.37925E+09

MAXIMUM VALUES

NODE	454	454	454	454	454
VALUE	.38596E+09	.36249E+09	-.44853E+07	.39045E+09	.37925E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:47:55 NOV 26, 1995 CP= 1249.900
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 21
 TIME= 1.3209 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4309	.35334E+09	.18253E+09	.20586E+08	.33275E+09	.28821E+09

MINIMUM VALUES

NODE	4309	4309	4309	4309	4309
VALUE	.35334E+09	.18253E+09	.20586E+08	.33275E+09	.28821E+09

MAXIMUM VALUES

NODE	4309	4309	4309	4309	4309
VALUE	.35334E+09	.18253E+09	.20586E+08	.33275E+09	.28821E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:48:38 NOV 26, 1995 CP= 1262.410
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 22
 TIME= 1.3213 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
4308	.36195E+09	.19000E+09	.21560E+08	.34039E+09	.29479E+09

MINIMUM VALUES

NODE	4308	4308	4308	4308	4308
VALUE	.36195E+09	.19000E+09	.21560E+08	.34039E+09	.29479E+09

MAXIMUM VALUES

NODE	4308	4308	4308	4308	4308
VALUE	.36195E+09	.19000E+09	.21560E+08	.34039E+09	.29479E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:49:30 NOV 26, 1995 CP= 1275.240
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 23
TIME= 1.3217 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.37529E+09	.19599E+09	.21591E+08	.35370E+09	.30632E+09

MINIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.37529E+09	.19599E+09	.21591E+08	.35370E+09	.30632E+09

MAXIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.37529E+09	.19599E+09	.21591E+08	.35370E+09	.30632E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:50:13 NOV 26, 1995 CP= 1288.140
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 24
TIME= 1.3223 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.37787E+09	.19194E+09	.20913E+08	.35696E+09	.30922E+09

MINIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.37787E+09	.19194E+09	.20913E+08	.35696E+09	.30922E+09

MAXIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.37787E+09	.19194E+09	.20913E+08	.35696E+09	.30922E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:50:53 NOV 26, 1995 CP= 1300.510
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 25
TIME= 1.3230 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.36031E+09	.17915E+09	.20470E+08	.33984E+09	.29453E+09

MINIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.36031E+09	.17915E+09	.20470E+08	.33984E+09	.29453E+09

MAXIMUM VALUES

NODE	3705	3705	3705	3705	3705
VALUE	.36031E+09	.17915E+09	.20470E+08	.33984E+09	.29453E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:51:33 NOV 26, 1995 CP= 1312.630

FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 26
TIME= 1.3236 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3705	.32676E+09	.16397E+09	.17304E+08	.30945E+09	.26811E+09

MINIMUM VALUES					
NODE	3705	3705	3705	3705	3705
VALUE	.32676E+09	.16397E+09	.17304E+08	.30945E+09	.26811E+09

MAXIMUM VALUES					
NODE	3705	3705	3705	3705	3705
VALUE	.32676E+09	.16397E+09	.17304E+08	.30945E+09	.26811E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:52:17 NOV 26, 1995 CP= 1325.300
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 27
TIME= 1.3242 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1005	.28499E+09	.16265E+09	.13666E+07	.28363E+09	.24640E+09

MINIMUM VALUES					
NODE	1005	1005	1005	1005	1005
VALUE	.28499E+09	.16265E+09	.13666E+07	.28363E+09	.24640E+09

MAXIMUM VALUES					
NODE	1005	1005	1005	1005	1005
VALUE	.28499E+09	.16265E+09	.13666E+07	.28363E+09	.24640E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:53:01 NOV 26, 1995 CP= 1338.130
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 28
TIME= 1.3249 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1005	.24894E+09	.12362E+09	.13545E+07	.24759E+09	.21442E+09

MINIMUM VALUES					
NODE	1005	1005	1005	1005	1005
VALUE	.24894E+09	.12362E+09	.13545E+07	.24759E+09	.21442E+09

MAXIMUM VALUES					
NODE	1005	1005	1005	1005	1005
VALUE	.24894E+09	.12362E+09	.13545E+07	.24759E+09	.21442E+09

VALUE .24894E+09 .12362E+09 .13545E+07 .24759E+09 .21442E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:53:43 NOV 26, 1995 CP= 1350.630
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 29
 TIME= 1.3255 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1005	.24488E+09	.10491E+09	.13658E+07	.24351E+09	.21168E+09

MINIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.24488E+09	.10491E+09	.13658E+07	.24351E+09	.21168E+09

MAXIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.24488E+09	.10491E+09	.13658E+07	.24351E+09	.21168E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:54:31 NOV 26, 1995 CP= 1363.380
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 30
 TIME= 1.3262 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1005	.24239E+09	.97631E+08	.12728E+07	.24111E+09	.21021E+09

MINIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.24239E+09	.97631E+08	.12728E+07	.24111E+09	.21021E+09

MAXIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.24239E+09	.97631E+08	.12728E+07	.24111E+09	.21021E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:55:22 NOV 26, 1995 CP= 1375.350
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 31
 TIME= 1.3268 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
42	.23666E+09	.29308E+08	-.27672E+07	.23943E+09	.22511E+09

MINIMUM VALUES

NODE	42	42	42	42	42
VALUE	.23666E+09	.29308E+08	-.27672E+07	.23943E+09	.22511E+09

MAXIMUM VALUES

NODE	42	42	42	42	42
VALUE	.23666E+09	.29308E+08	-.27672E+07	.23943E+09	.22511E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:56:07 NOV 26, 1995 CP= 1387.870
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 32
 TIME= 1.3274 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1005	.22689E+09	.83808E+08	.12406E+07	.22565E+09	.19774E+09

MINIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.22689E+09	.83808E+08	.12406E+07	.22565E+09	.19774E+09

MAXIMUM VALUES

NODE	1005	1005	1005	1005	1005
VALUE	.22689E+09	.83808E+08	.12406E+07	.22565E+09	.19774E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:56:52 NOV 26, 1995 CP= 1400.920
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 33
 TIME= 1.3281 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
772	.25764E+09	.18739E+08	-.34269E+07	.26106E+09	.25072E+09

MINIMUM VALUES

NODE	772	772	772	772	772
VALUE	.25764E+09	.18739E+08	-.34269E+07	.26106E+09	.25072E+09

MAXIMUM VALUES

NODE	772	772	772	772	772
VALUE	.25764E+09	.18739E+08	-.34269E+07	.26106E+09	.25072E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 19:57:38 NOV 26, 1995 CP= 1413.780
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 34
 TIME= 1.3287 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
772	.25680E+09	.24971E+08	-.25533E+07	.25935E+09	.24674E+09

MINIMUM VALUES

NODE	772	772	772	772	772
VALUE	.25680E+09	.24971E+08	-.25533E+07	.25935E+09	.24674E+09

MAXIMUM VALUES

NODE	772	772	772	772	772
VALUE	.25680E+09	.24971E+08	-.25533E+07	.25935E+09	.24674E+09

MAXIMUM PRINCIPAL STRESSES (COMPRESSIVE) IN THE WASTE PACKAGE

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 166 STEP 1

166 VOLUMES (OF 166 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 665 STEP 1

606 AREAS (OF 606 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 930 STEP 1

787 LINES (OF 787 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10012 STEP 1

344 KEYPOINTS (OF 344 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 6311 STEP 1

6311 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

SELECT FOR ITEM=MAT COMPONENT=
IN RANGE 2 TO 3 STEP 1

4998 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

*DO LOOP ON PARAMETER= I FROM 1.0000 TO 34.000 BY 1.0000

USE LOAD STEP 3 SUBSTEP 1 FOR LOAD CASE 0

SET COMMAND GOT LOAD STEP= 3 SUBSTEP= 1 CUMULATIVE ITERATION= 24
TIME/FREQUENCY= 1.3086

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

SORT COMPLETED FOR 1 VALUES.

PRINT S NODAL SOLUTION PER NODE

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****

38303 VERSION=HP 9000/7XX 19:58:36 NOV 26, 1995 CP= 1430.600
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 1
TIME= 1.3086 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
3544	-.89310E+06	-.15358E+07	-.21331E+07	.12400E+07	.10741E+07

MINIMUM VALUES
NODE 3544 3544 3544 3544 3544
VALUE -.89310E+06 -.15358E+07 -.21331E+07 .12400E+07 .10741E+07

MAXIMUM VALUES
NODE 3544 3544 3544 3544 3544
VALUE -.89310E+06 -.15358E+07 -.21331E+07 .12400E+07 .10741E+07

*ENDDO INDEX= 1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:59:26 NOV 26, 1995 CP= 1446.750
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 2
TIME= 1.3093 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
1599	-.14490E+07	-.25012E+07	-.34757E+07	.20266E+07	.17555E+07

MINIMUM VALUES
NODE 1599 1599 1599 1599 1599
VALUE -.14490E+07 -.25012E+07 -.34757E+07 .20266E+07 .17555E+07

MAXIMUM VALUES
NODE 1599 1599 1599 1599 1599
VALUE -.14490E+07 -.25012E+07 -.34757E+07 .20266E+07 .17555E+07

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:00:15 NOV 26, 1995 CP= 1462.650
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 3
TIME= 1.3099 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2858	-.13622E+08	-.25320E+08	-.28412E+08	.14790E+08	.13512E+08

MINIMUM VALUES
NODE 2858 2858 2858 2858 2858
VALUE -.13622E+08 -.25320E+08 -.28412E+08 .14790E+08 .13512E+08

MAXIMUM VALUES
 NODE 2858 2858 2858 2858 2858
 VALUE -.13622E+08 -.25320E+08 -.28412E+08 .14790E+08 .13512E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:01:02 NOV 26, 1995 CP= 1478.190
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 4
 TIME= 1.3106 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2858	-.45392E+08	-.95442E+08	-.10868E+09	.63291E+08	.57819E+08

MINIMUM VALUES
 NODE 2858 2858 2858 2858 2858
 VALUE -.45392E+08 -.95442E+08 -.10868E+09 .63291E+08 .57819E+08

MAXIMUM VALUES
 NODE 2858 2858 2858 2858 2858
 VALUE -.45392E+08 -.95442E+08 -.10868E+09 .63291E+08 .57819E+08

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:01:51 NOV 26, 1995 CP= 1493.490
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 5
 TIME= 1.3112 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2858	-.58187E+08	-.20569E+09	-.25089E+09	.19270E+09	.17455E+09

MINIMUM VALUES
 NODE 2858 2858 2858 2858 2858
 VALUE -.58187E+08 -.20569E+09 -.25089E+09 .19270E+09 .17455E+09

MAXIMUM VALUES
 NODE 2858 2858 2858 2858 2858
 VALUE -.58187E+08 -.20569E+09 -.25089E+09 .19270E+09 .17455E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:02:39 NOV 26, 1995 CP= 1508.950
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 6
 TIME= 1.3118 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2858	-.58187E+08	-.20569E+09	-.25089E+09	.19270E+09	.17455E+09

2856 -.13321E+09 -.25125E+09 -.34274E+09 .20953E+09 .18194E+09

MINIMUM VALUES

NODE	2856	2856	2856	2856	2856
VALUE	-.13321E+09	-.25125E+09	-.34274E+09	.20953E+09	.18194E+09

MAXIMUM VALUES

NODE	2856	2856	2856	2856	2856
VALUE	-.13321E+09	-.25125E+09	-.34274E+09	.20953E+09	.18194E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:03:38 NOV 26, 1995 CP= 1524.670
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 7
 TIME= 1.3125 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
631	-.18349E+08	-.18809E+09	-.40217E+09	.38382E+09	.33314E+09

MINIMUM VALUES

NODE	631	631	631	631	631
VALUE	-.18349E+08	-.18809E+09	-.40217E+09	.38382E+09	.33314E+09

MAXIMUM VALUES

NODE	631	631	631	631	631
VALUE	-.18349E+08	-.18809E+09	-.40217E+09	.38382E+09	.33314E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:04:30 NOV 26, 1995 CP= 1540.220
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 8
 TIME= 1.3131 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
543	-.48599E+08	-.24114E+09	-.43495E+09	.38635E+09	.33459E+09

MINIMUM VALUES

NODE	543	543	543	543	543
VALUE	-.48599E+08	-.24114E+09	-.43495E+09	.38635E+09	.33459E+09

MAXIMUM VALUES

NODE	543	543	543	543	543
VALUE	-.48599E+08	-.24114E+09	-.43495E+09	.38635E+09	.33459E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:05:23 NOV 26, 1995 CP= 1555.890
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 9
TIME= 1.3138 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.25934E+09	-.37636E+09	-.45469E+09	.19535E+09	.17028E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.25934E+09	-.37636E+09	-.45469E+09	.19535E+09	.17028E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.25934E+09	-.37636E+09	-.45469E+09	.19535E+09	.17028E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:06:20 NOV 26, 1995 CP= 1571.510
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 10
TIME= 1.3144 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.26702E+09	-.39862E+09	-.47799E+09	.21097E+09	.18456E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.26702E+09	-.39862E+09	-.47799E+09	.21097E+09	.18456E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.26702E+09	-.39862E+09	-.47799E+09	.21097E+09	.18456E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:07:15 NOV 26, 1995 CP= 1586.920
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 11
TIME= 1.3150 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.27960E+09	-.42462E+09	-.49859E+09	.21899E+09	.19295E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.27960E+09	-.42462E+09	-.49859E+09	.21899E+09	.19295E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.27960E+09	-.42462E+09	-.49859E+09	.21899E+09	.19295E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:08:02 NOV 26, 1995 CP= 1602.220
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 12
TIME= 1.3157 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.29633E+09	-.44301E+09	-.51704E+09	.22071E+09	.19456E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.29633E+09	-.44301E+09	-.51704E+09	.22071E+09	.19456E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.29633E+09	-.44301E+09	-.51704E+09	.22071E+09	.19456E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:08:49 NOV 26, 1995 CP= 1617.520
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 13
TIME= 1.3163 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.31066E+09	-.45559E+09	-.53679E+09	.22612E+09	.19841E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.31066E+09	-.45559E+09	-.53679E+09	.22612E+09	.19841E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.31066E+09	-.45559E+09	-.53679E+09	.22612E+09	.19841E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:09:36 NOV 26, 1995 CP= 1632.800
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 14
TIME= 1.3170 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.31911E+09	-.46179E+09	-.55562E+09	.23650E+09	.20627E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.31911E+09	-.46179E+09	-.55562E+09	.23650E+09	.20627E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.31911E+09	-.46179E+09	-.55562E+09	.23650E+09	.20627E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:10:23 NOV 26, 1995 CP= 1648.310
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 15
TIME= 1.3176 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.32552E+09	-.46606E+09	-.57069E+09	.24516E+09	.21307E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.32552E+09	-.46606E+09	-.57069E+09	.24516E+09	.21307E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.32552E+09	-.46606E+09	-.57069E+09	.24516E+09	.21307E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:11:23 NOV 26, 1995 CP= 1663.950
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 16
TIME= 1.3182 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.33413E+09	-.46986E+09	-.58088E+09	.24675E+09	.21405E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.33413E+09	-.46986E+09	-.58088E+09	.24675E+09	.21405E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.33413E+09	-.46986E+09	-.58088E+09	.24675E+09	.21405E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:12:19 NOV 26, 1995 CP= 1679.570
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 17
TIME= 1.3189 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.34411E+09	-.47666E+09	-.58928E+09	.24517E+09	.21256E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.34411E+09	-.47666E+09	-.58928E+09	.24517E+09	.21256E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.34411E+09	-.47666E+09	-.58928E+09	.24517E+09	.21256E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:13:08 NOV 26, 1995 CP= 1695.160
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 18
 TIME= 1.3195 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.34898E+09	-.49229E+09	-.59384E+09	.24485E+09	.21308E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.34898E+09	-.49229E+09	-.59384E+09	.24485E+09	.21308E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.34898E+09	-.49229E+09	-.59384E+09	.24485E+09	.21308E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:14:04 NOV 26, 1995 CP= 1711.180
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 19
 TIME= 1.3202 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.34417E+09	-.49689E+09	-.59259E+09	.24843E+09	.21702E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.34417E+09	-.49689E+09	-.59259E+09	.24843E+09	.21702E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.34417E+09	-.49689E+09	-.59259E+09	.24843E+09	.21702E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:14:59 NOV 26, 1995 CP= 1727.100
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 20
 TIME= 1.3205 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV

2842 -.33933E+09 -.49790E+09 -.58830E+09 .24896E+09 .21829E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842
VALUE	-.33933E+09	-.49790E+09	-.58830E+09	.24896E+09 .21829E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842
VALUE	-.33933E+09	-.49790E+09	-.58830E+09	.24896E+09 .21829E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:15:45 NOV 26, 1995 CP= 1742.800
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 21
 TIME= 1.3209 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.33323E+09	-.46841E+09	-.53765E+09	.20443E+09	.18008E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.33323E+09	-.46841E+09	-.53765E+09	.20443E+09	.18008E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.33323E+09	-.46841E+09	-.53765E+09	.20443E+09	.18008E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:16:31 NOV 26, 1995 CP= 1757.990
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 22
 TIME= 1.3213 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.32325E+09	-.44154E+09	-.50837E+09	.18512E+09	.16237E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.32325E+09	-.44154E+09	-.50837E+09	.18512E+09	.16237E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.32325E+09	-.44154E+09	-.50837E+09	.18512E+09	.16237E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:17:17 NOV 26, 1995 CP= 1773.270
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 23
TIME= 1.3217 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.31159E+09	-.43257E+09	-.49950E+09	.18791E+09	.16496E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.31159E+09	-.43257E+09	-.49950E+09	.18791E+09	.16496E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.31159E+09	-.43257E+09	-.49950E+09	.18791E+09	.16496E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:18:06 NOV 26, 1995 CP= 1788.610
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 24
TIME= 1.3223 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
2842	-.28922E+09	-.40080E+09	-.44261E+09	.15339E+09	.13734E+09

MINIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.28922E+09	-.40080E+09	-.44261E+09	.15339E+09	.13734E+09

MAXIMUM VALUES

NODE	2842	2842	2842	2842	2842
VALUE	-.28922E+09	-.40080E+09	-.44261E+09	.15339E+09	.13734E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:18:56 NOV 26, 1995 CP= 1804.200
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 25
TIME= 1.3230 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
347	-.39345E+08	-.17587E+09	-.37643E+09	.33708E+09	.29367E+09

MINIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.39345E+08	-.17587E+09	-.37643E+09	.33708E+09	.29367E+09

MAXIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.39345E+08	-.17587E+09	-.37643E+09	.33708E+09	.29367E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:19:52 NOV 26, 1995 CP= 1820.050
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 26
TIME= 1.3236 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
347	-.40022E+08	-.17172E+09	-.37331E+09	.33328E+09	.29074E+09

MINIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.40022E+08	-.17172E+09	-.37331E+09	.33328E+09	.29074E+09

MAXIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.40022E+08	-.17172E+09	-.37331E+09	.33328E+09	.29074E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:20:43 NOV 26, 1995 CP= 1835.690
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 27
TIME= 1.3242 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
347	-.40001E+08	-.16440E+09	-.37072E+09	.33072E+09	.28933E+09

MINIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.40001E+08	-.16440E+09	-.37072E+09	.33072E+09	.28933E+09

MAXIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.40001E+08	-.16440E+09	-.37072E+09	.33072E+09	.28933E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 20:21:35 NOV 26, 1995 CP= 1851.260
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 28
TIME= 1.3249 LOAD CASE= 0
SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
347	-.40138E+08	-.15027E+09	-.36210E+09	.32196E+09	.28343E+09

MINIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.40138E+08	-.15027E+09	-.36210E+09	.32196E+09	.28343E+09

MAXIMUM VALUES

NODE	347	347	347	347	347
VALUE	-.40138E+08	-.15027E+09	-.36210E+09	.32196E+09	.28343E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:22:30 NOV 26, 1995 CP= 1867.100
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 29
 TIME= 1.3255 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
415	.16143E+08	-.16795E+09	-.33853E+09	.35468E+09	.30723E+09

MINIMUM VALUES

NODE	415	415	415	415	415
VALUE	.16143E+08	-.16795E+09	-.33853E+09	.35468E+09	.30723E+09

MAXIMUM VALUES

NODE	415	415	415	415	415
VALUE	.16143E+08	-.16795E+09	-.33853E+09	.35468E+09	.30723E+09

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:23:21 NOV 26, 1995 CP= 1882.660
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 30
 TIME= 1.3262 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
523	-.14415E+09	-.17500E+09	-.38331E+09	.23916E+09	.22533E+09

MINIMUM VALUES

NODE	523	523	523	523	523
VALUE	-.14415E+09	-.17500E+09	-.38331E+09	.23916E+09	.22533E+09

MAXIMUM VALUES

NODE	523	523	523	523	523
VALUE	-.14415E+09	-.17500E+09	-.38331E+09	.23916E+09	.22533E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:24:08 NOV 26, 1995 CP= 1897.860
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 31
 TIME= 1.3268 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
453	-.89858E+08	-.20221E+09	-.43169E+09	.34183E+09	.30177E+09

MINIMUM VALUES

NODE	453	453	453	453	453
VALUE	-.89858E+08	-.20221E+09	-.43169E+09	.34183E+09	.30177E+09

MAXIMUM VALUES

NODE	453	453	453	453	453
VALUE	-.89858E+08	-.20221E+09	-.43169E+09	.34183E+09	.30177E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:24:56 NOV 26, 1995 CP= 1913.040
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 32
 TIME= 1.3274 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
523	-.14027E+09	-.23514E+09	-.46619E+09	.32591E+09	.29034E+09

MINIMUM VALUES

NODE	523	523	523	523	523
VALUE	-.14027E+09	-.23514E+09	-.46619E+09	.32591E+09	.29034E+09

MAXIMUM VALUES

NODE	523	523	523	523	523
VALUE	-.14027E+09	-.23514E+09	-.46619E+09	.32591E+09	.29034E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:25:42 NOV 26, 1995 CP= 1928.190
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 33
 TIME= 1.3281 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV
523	-.13731E+09	-.25842E+09	-.49074E+09	.35343E+09	.31109E+09

MINIMUM VALUES

NODE	523	523	523	523	523
VALUE	-.13731E+09	-.25842E+09	-.49074E+09	.35343E+09	.31109E+09

MAXIMUM VALUES

NODE	523	523	523	523	523
VALUE	-.13731E+09	-.25842E+09	-.49074E+09	.35343E+09	.31109E+09

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 20:26:29 NOV 26, 1995 CP= 1943.780
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

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

LOAD STEP= 3 SUBSTEP= 34
 TIME= 1.3287 LOAD CASE= 0
 SHELL DATA ARE AT TOP

NODE	S1	S2	S3	SINT	SEQV

523 -.13396E+09 -.27660E+09 -.50691E+09 .37296E+09 .32595E+09

MINIMUM VALUES

NODE	523	523	523	523
VALUE	-.13396E+09	-.27660E+09	-.50691E+09	.37296E+09 .32595E+09

MAXIMUM VALUES

NODE	523	523	523	523
VALUE	-.13396E+09	-.27660E+09	-.50691E+09	.37296E+09 .32595E+09


```
*****
|                                     |
|   W E L C O M E   T O   T H E   A N S Y S   P R O G R A M   |
|                                     |
|-----|-----|
*****
```

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

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

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ERRORS ENCOUNTERED IN EITHER THE DOCUMENTATION OR THE
RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```
ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON      TO START THE ANSYS MENU SYSTEM
ENTER HELP          FOR GENERAL ANSYS HELP INFORMATION
1 /config,nvpag,512
2 /units,si
3 /prep7
4 /title, 21 PWR Tube Rock Fall Accident Condition
5 /vcon,,0
6 /com, Define Parameters
7 ibir=0.6945 ! Inner Barrier Inner Radius (DIA = 1.389 m)
8 obir=0.7145 ! Outer Barrier Inner Radius (DIA = 1.429 m)
9 obsr=0.7645 ! Outer Barrier Skirt Radius (DIA = 1.529 m)
10 obor=0.8145 ! Outer Barrier Outer Radius (DIA = 1.629 m)
11 ts1=.0145
12 ts2=.0145
13 ts3=.01
14 ts4=.01
15 ts5=.019 ! basket structure thicknesses
16 ts124=ts1+ts2+ts4
17 ts23=ts2+ts3
18 ts234=ts2+ts3+ts4
```

```

19 ts14=ts1+ts4
20 ts34=ts3+ts4
21 b=3*ts1+5*(ts23)+8*ts4
22 tp1=(ts234)**2
23 tp2=(ts14)**2
24 stp=sqrt(b**2-34*(tp1+tp2-ibir**2))
25 x=(-1*b+stp)/17 ! calculated fuel assembly width
26 ang1=(180/3.14159)*asin((x+ts4-ts5)/(2*ibir))
27 ang2=(180/3.14159)*asin((x+ts4+ts5)/(2*ibir))
28 ang3=(180/3.14159)*asin((1.5*x+ts14)/ibir)
29 ang4=(180/3.14159)*acos((1.5*x+ts14)/ibir)
30 ang5=(180/3.14159)*acos((x+ts4+ts5)/(2*ibir))
31 ang6=(180/3.14159)*acos((x+ts4-ts5)/(2*ibir))
32 bsht=4.585 ! basket structure height
33 uilh=.025 ! upper inner lid height
34 ght=.03 ! gap height
35 uolh=.11 ! upper outer lid height
36 usht=.225 ! upper skirt height
37 lilh=.025 ! lower inner lid height
38 lolh=.11 ! lower outer lid height
39 lsht=.225 ! lower skirt height
40 elev1=bsht+uilh ! elevations of all planes to be dragged
41 elev2=elev1+ght
42 elev3=elev2+uolh
43 elev4=elev3+usht
44 elev5=-1*lilh
45 elev6=elev5-lolh
46 elev7=elev6-lsht
47 r1d=2 ! Vertical Divisions Region 1
48 r1sr=1 ! Spacing Ratio Region 1 (from bottom to upper keypoint)
49 r2d=1 ! Horizontal Divisions Region 2
50 r2sr=1 ! Spacing Ratio Region 2 (from left to right keypoint)
51 r3d=2 ! Refer to the figures to locate following regions
52 r3sr=1
53 r4d=2
54 r4sr=1
55 r5d=2
56 r5sr=1
57 r6d=1
58 r6sr=1
59 r7d=2
60 r7sr=1
61 r8d=2
62 r8sr=1
63 r9d=2
64 r9sr=1
65 r10d=2
66 r10sr=1
67 r11d=2
68 r11sr=1
69 r12d=1
70 r12sr=1
71 r13d=2
72 r13sr=1
73 r14d=2
74 r14sr=1
75 r15d=2
76 r15sr=1
77 r16d=2
78 r16sr=1
79 r17d=2
80 r17sr=1
81 r18d=2
82 r18sr=1
83 r19d=1
84 r19sr=1
85 r20d=2
86 r20sr=1
87 r21d=2
88 r21sr=1

```

```

89 r22d=2
90 r22sr=1
91 r23d=2
92 r23sr=1
93 r24d=2
94 r24sr=1
95 r25d=2
96 r25sr=1
97 r26d=1
98 r26sr=1
99 r27d=2
100 r27sr=1
101 r28d=2
102 r28sr=1
103 r29d=2
104 r29sr=1
105 r30d=2
106 r30sr=1
107 r31d=1
108 r31sr=1
109 r32d=2
110 r32sr=1
111 r33d=2
112 r33sr=1
113 lc1d=2      ! Divisions of lines in circle 1
114 lc1sr=1     ! Spacing Ratio of lines in circle 1
115 lc2d=3      ! Divisions of lines in circle 2
116 lc2sr=1     ! Spacing Ratio of lines in circle 2
117 lc3d=2      ! Divisions of lines in circle 3
118 lc3sr=1     ! Spacing Ratio of lines in circle 3
119
120 c1d=1       ! Divisions of circles in circles # 1
121 c1sr=1      ! Spacing Ratio of circles in circles # 1
122 c2d=2       ! Divisions of circles in circles # 2
123 c2sr=1      ! Spacing Ratio of circles in circles # 2
124 c3d=2       ! Divisions of circles in circles # 3
125 c3sr=1      ! Spacing Ratio of circles in circles # 3
126 c4d=2       ! Divisions of circles in circles # 4
127 c4sr=1      ! Spacing Ratio of circles in circles # 4
128 c5d=2       ! Divisions of circles in circles # 5
129 c5sr=1      ! Spacing Ratio of circles in circles # 5
130 c6d=2       ! Divisions of circles in circles # 6
131 c6sr=1      ! Spacing Ratio of circles in circles # 6
132 c7d=2       ! Divisions of circles in circles # 7
133 c7sr=1      ! Spacing Ratio of circles in circles # 7
134 c8d=2       ! Divisions of circles in circles # 8
135 c8sr=1      ! Spacing Ratio of circles in circles # 8
136 c9d=1       ! Divisions of circles in circles # 9
137 c9sr=1      ! Spacing Ratio of circles in circles # 9
138
139 btd=28      ! Divisions along the basket assembly
140 btsr=-.05   ! spacing Ratio along the basket assembly
141
142 rockrad=1.0 ! Radius of Rock
143 xrc=0.0     ! X Coordinate of Rock Center
144 yrc=9.705+rockrad-obor ! Y Coordinate of Rock Center
145 zrc=bsht/2  ! Z Coordinate of Rock Center
146
147 /com, Define Element Properties
148 et,1,solid45 ! 316L Stainless Steel
149 et,2,solid45 ! Alloy 825
150 et,3,solid45 ! A 516 Carbon Steel
151 et,4,solid45 ! Rock
152 et,5,contac49,,0,1,,,1 ! 3D Contact
153 r,5,1.5e8,,,1.298,15 ! Real Constant Set for Contact, kn=1.5E8,
154 /com, ratio of static to dynamic coeff. of friction fact=1.298, Area Tol.=15%
155 mp,ex,1,195e9 ! 316L Stainless Steel
156 mp,ex,2,206e9 ! Alloy 825
157 mp,ex,3,206e9 ! A 516 Carbon Steel
158 mp,ex,4,32.7e9 ! Rock

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159 mp,nuxy,1,0.298 ! 316L Stainless Steel
160 mp,nuxy,2,0.42 ! Alloy 825
161 mp,nuxy,3,0.3 ! A 516 Carbon Steel
162 mp,nuxy,4,0.22 ! Rock
163 mp,dens,1,30774.8 ! 316L Stainless Steel (Adjusted to provide proper mass)
164 mp,dens,2,8215.9 ! Alloy 825 (Adjusted to provide proper mass)
165 mp,dens,3,7876.6 ! A 516 Carbon Steel (Adjusted to provide proper mass)
166 mp,dens,4,2978.1 ! Rock (Adjusted to provide proper mass)
167 mp,mu,5,0.57 ! Coefficient of Friction (Steel on Steel Assumed)
168 ET,6,SHELL43
169 MP,EX,6,206E9
170 MP,NUXY,6,.3
171 MP,DENS,6,8131
172 tb,biso,1
173 tldata,,172e6,.776e9 ! 316L Stainless Steel
174 tb,biso,2
175 tldata,,338e6,.722e9 ! Alloy 825
176 tb,biso,3
177 tldata,,205e6,.6505e9 ! A 516 Carbon Steel
178
179 /com, Define keypoints in the basket assembly
180 csys,0
181 k,1,0,0
182 k,2,0,x/2
183 k,3,x/2,x/2
184 k,4,(x/2)+ts4,x/2
185 k,5,1.5*x+ts4,x/2
186 k,6,1.5*x+ts34,x/2
187 k,7,2.5*x+ts34,x/2
188 k,8,2.5*x+ts234,(x+ts4-ts5)/2
189 k,9,0,x/2+ts4
190 k,10,x/2,x/2+ts4
191 k,11,(x/2)+ts4,x/2+ts4
192 k,12,1.5*x+ts4,x/2+ts4
193 k,13,1.5*x+ts34,x/2+ts4
194 k,14,2.5*x+ts34,x/2+ts4
195 k,15,2.5*x+ts234,(x+ts4+ts5)/2
196 k,16,0,1.5*x+ts4
197 k,17,x/2,1.5*x+ts4
198 k,18,(x/2)+ts4,1.5*x+ts4
199 k,19,1.5*x+ts4,1.5*x+ts4
200 k,20,1.5*x+ts34,1.5*x+ts4
201 k,21,2.5*x+ts34,1.5*x+ts4
202 k,22,0,1.5*x+ts34
203 k,23,x/2,1.5*x+ts34
204 k,24,(x/2)+ts4,1.5*x+ts34
205 k,25,1.5*x+ts4,1.5*x+ts34
206 k,26,1.5*x+ts14,1.5*x+ts14
207 k,27,0,2.5*x+ts34
208 k,28,x/2,2.5*x+ts34
209 k,29,(x/2)+ts4,2.5*x+ts34
210 k,30,1.5*x+ts4,2.5*x+ts34
211 k,31,0,2.5*x+ts234
212 k,32,(x+ts4-ts5)/2,2.5*x+ts234
213 k,33,(x+ts4+ts5)/2,2.5*x+ts234
214 ksymm,y,2,33,1,0,1,0
215
216 csys,1
217 k,66,ibir,ang1
218 k,67,ibir,ang2
219 k,68,ibir,ang3
220 k,69,ibir,ang4
221 k,70,ibir,ang5
222 k,71,ibir,ang6
223 k,72,ibir,90
224 k,73,obir,ang1
225 k,74,obir,ang2
226 k,75,obir,ang3
227 k,76,obir,ang4
228 k,77,obir,ang5

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229 k,78,obir,ang6
230 k,79,obir,90
231 k,80,obsr,ang1
232 k,81,obsr,ang2
233 k,82,obsr,ang3
234 k,83,obsr,ang4
235 k,84,obsr,ang5
236 k,85,obsr,ang6
237 k,86,obsr,90
238 k,87,obor,ang1
239 k,88,obor,ang2
240 k,89,obor,ang3
241 k,90,obor,ang4
242 k,91,obor,ang5
243 k,92,obor,ang6
244 k,93,obor,90
245 ksymm,y,66,93,1,0,1,0
246
247 /com, Define default value of esize
248 esize,,1
249
250 /com, Line divisions and spacing ratios
251 /com, in the basket structure
252 csys,0
253 l,32,71
254 l,33,70 ! region 1
255 lesize,all,,,r1d,r1sr,1
256 lsel,none
257 l,31,32
258 l,27,28 ! region 2
259 lesize,all,,,r2d,r2sr,1
260 lsel,none
261 l,33,69
262 l,29,30 ! region 3
263 lesize,all,,,r3d,r3sr,1
264 lsel,none
265 l,23,28
266 l,24,29 ! region 4
267 lesize,all,,,r4d,r4sr,1
268 lsel,none
269 l,25,30
270 l,26,69 ! region 5
271 lesize,all,,,r5d,r5sr,1
272 lsel,none
273 l,22,23
274 l,16,17 ! region 6
275 lesize,all,,,r6d,r6sr,1
276 lsel,none
277 l,24,25
278 l,18,19 ! region 7
279 lesize,all,,,r7d,r7sr,1
280 lsel,none
281 l,26,68
282 l,20,21 ! region 8
283 lesize,all,,,r8d,r8sr,1
284 lsel,none
285 l,10,17
286 l,11,18 ! region 9
287 lesize,all,,,r9d,r9sr,1
288 lsel,none
289 l,12,19
290 l,13,20 ! region 10
291 lesize,all,,,r10d,r10sr,1
292 lsel,none
293 l,14,21
294 l,15,68 ! region 11
295 lesize,all,,,r11d,r11sr,1
296 lsel,none
297 l,9,10
298 l,2,3 ! region 12

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```
299 lesize,all,,,r12d,r12sr,1
300 lsel,none
301 l,11,12
302 l,4,5 ! region 13
303 lesize,all,,,r13d,r13sr,1
304 lsel,none
305 l,13,14
306 l,6,7 ! region 14
307 lesize,all,,,r14d,r14sr,1
308 lsel,none
309 l,15,67
310 l,8,66 ! region 15
311 lesize,all,,,r15d,r15sr,1
312 lsel,none
313 l,35,3
314 l,36,4 ! region 16
315 lesize,all,,,r16d,r16sr,1
316 lsel,none
317 l,37,5
318 l,38,6 ! region 17
319 lesize,all,,,r17d,r17sr,1
320 lsel,none
321 l,39,7
322 l,40,8 ! region 18
323 lesize,all,,,r18d,r18sr,1
324 lsel,none
325 l,34,35
326 l,41,42 ! region 19
327 lesize,all,,,r19d,r19sr,1
328 lsel,none
329 l,36,37
330 l,43,44 ! region 20
331 lesize,all,,,r20d,r20sr,1
332 lsel,none
333 l,38,39
334 l,45,46 ! region 21
335 lesize,all,,,r21d,r21sr,1
336 lsel,none
337 l,40,94
338 l,47,95 ! region 22
339 lesize,all,,,r22d,r22sr,1
340 lsel,none
341 l,49,42
342 l,50,43 ! region 23
343 lesize,all,,,r23d,r23sr,1
344 lsel,none
345 l,51,44
346 l,52,45 ! region 24
347 lesize,all,,,r24d,r24sr,1
348 lsel,none
349 l,53,46
350 l,96,47 ! region 25
351 lesize,all,,,r25d,r25sr,1
352 lsel,none
353 l,48,49
354 l,54,55 ! region 26
355 lesize,all,,,r26d,r26sr,1
356 lsel,none
357 l,50,51
358 l,56,57 ! region 27
359 lesize,all,,,r27d,r27sr,1
360 lsel,none
361 l,52,53
362 l,58,96 ! region 28
363 lesize,all,,,r28d,r28sr,1
364 lsel,none
365 l,60,55
366 l,61,56 ! region 29
367 lesize,all,,,r29d,r29sr,1
368 lsel,none
```

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369 l,62,57
370 l,97,58 ! region 30
371 lesize,all,,,r30d,r30sr,1
372 lsel,none
373 l,59,60
374 l,63,64 ! region 31
375 lesize,all,,,r31d,r31sr,1
376 lsel,none
377 l,61,62
378 l,65,97 ! region 32
379 lesize,all,,,r32d,r32sr,1
380 lsel,none
381 l,99,64
382 l,98,65 ! region 33
383 lesize,all,,,r33d,r33sr,1
384 lsel,none
385
386 /com, Define perpendicular lines to the circles
387 l,72,79
388 l,71,78
389 l,70,77
390 l,69,76
391 l,68,75
392 l,67,74
393 l,66,73
394 l,94,101
395 l,95,102
396 l,96,103
397 l,97,104
398 l,98,105
399 l,99,106
400 l,100,107 ! lines in circle 1
401 lesize,all,,,lc1d,lc1sr,1
402 lsel,none
403 l,79,86
404 l,78,85
405 l,77,84
406 l,76,83
407 l,75,82
408 l,74,81
409 l,73,80
410 l,101,108
411 l,102,109
412 l,103,110
413 l,104,111
414 l,105,112
415 l,106,113
416 l,107,114 ! lines in circle 2
417 lesize,all,,,lc2d,lc2sr,1
418 lsel,none
419 l,86,93
420 l,85,92
421 l,84,91
422 l,83,90
423 l,82,89
424 l,81,88
425 l,80,87
426 l,108,115
427 l,109,116
428 l,110,117
429 l,111,118
430 l,112,119
431 l,113,120
432 l,114,121 ! lines in circle 3
433 lesize,all,,,lc3d,lc3sr,1
434 lsel,none
435
436 /com, Define circles of inner and outer barriers
437 csys,1
438 l,100,99

```

```

439 l,107,106
440 l,114,113
441 l,121,120 ! circles # 1
442 lesize,all,,,c1d,c1sr,1
443 lsel,none
444 l,98,97
445 l,105,104
446 l,112,111
447 l,119,118 ! circles # 2
448 lesize,all,,,c2d,c2sr,1
449 lsel,none
450 l,97,96
451 l,104,103
452 l,111,110
453 l,118,117 ! circles # 3
454 lesize,all,,,c3d,c3sr,1
455 lsel,none
456 l,96,95
457 l,103,102
458 l,110,109
459 l,117,116 ! circles # 4
460 lesize,all,,,c4d,c4sr,1
461 lsel,none
462 l,94,66
463 l,101,73
464 l,108,80
465 l,115,87 ! circles # 5
466 lesize,all,,,c5d,c5sr,1
467 lsel,none
468 l,67,68
469 l,74,75
470 l,81,82
471 l,88,89 ! circles # 6
472 lesize,all,,,c6d,c6sr,1
473 lsel,none
474 l,68,69
475 l,75,76
476 l,82,83
477 l,89,90 ! circles # 7
478 lesize,all,,,c7d,c7sr,1
479 lsel,none
480 l,69,70
481 l,76,77
482 l,83,84
483 l,90,91 ! circles # 8
484 lesize,all,,,c8d,c8sr,1
485 lsel,none
486 l,71,72
487 l,78,79
488 l,85,86
489 l,92,93 ! circles # 9
490 lesize,all,,,c9d,c9sr,1
491 lsel,none
492
493 csys,0
494 k,122,0,0,bsht
495 k,123,0,0,elev1
496 k,124,0,0,elev2
497 k,125,0,0,elev3
498 k,126,0,0,elev4
499 k,127,0,0,elev5
500 k,128,0,0,elev6
501 k,129,0,0,elev7
502
503 l,1,122 ! define lines to drag areas (line#145)
504 l,122,123 ! (line#146)
505 l,123,124 ! (line#147)
506 l,124,125 ! (line#148)
507 l,125,126 ! (line#149)
508 l,1,127 ! (line#150)

```



```
509 l,127,128 ! (line#151)
510 l,128,129 ! (line#152)
511
512
513 /com, Define areas in the inner barrier
514 csys,1
515 a,107,106,99,100
516 a,106,105,98,99
517 a,105,104,97,98
518 a,104,103,96,97
519 a,103,102,95,96
520 a,102,101,94,95
521 a,101,73,66,94
522 a,73,74,67,66
523 a,74,75,68,67
524 a,75,76,69,68
525 a,76,77,70,69
526 a,77,78,71,70
527 a,78,79,72,71
528 TYPE,6
529 MAT,6
530 ESHAPE,2
531 AMESH,ALL
532
533 /COM,Extrude inner barrier in three steps
534 type,2 ! SOLID45
535 mat,2 ! Alloy 825
536 ESIZE,,3
537 VEXT,all,,,0,0,1.425
538
539 ASEL,S,loc,z,1.425
540 csys,12
541 asel,u,loc,x,0,.69
542 csys,11
543 TYPE,6
544 mat,6
545 AMESH,ALL
546 TYPE,2
547 MAT,2
548 ESIZE,,15
549 VEXT,ALL,,,0,0,1.735
550
551 ASEL,S,loc,z,3.16
552 csys,12
553 asel,u,loc,x,0,.69
554 csys,11
555 TYPE,6
556 mat,6
557 AMESH,ALL
558 TYPE,2
559 MAT,2
560 ESIZE,,3
561 VEXT,ALL,,,0,0,1.425
562 asel,none
563
564 /com, Define areas in the inner part of outer barrier
565 a,114,113,106,107
566 a,113,112,105,106
567 a,112,111,104,105
568 a,111,110,103,104
569 a,110,109,102,103
570 a,109,108,101,102
571 a,108,80,73,101
572 a,80,81,74,73
573 a,81,82,75,74
574 a,82,83,76,75
575 a,83,84,77,76
576 a,84,85,78,77
577 a,85,86,79,78
578 /com, Define areas in the outer part of outer barrier
```

```

579 a,121,120,113,114
580 a,120,119,112,113
581 a,119,118,111,112
582 a,118,117,110,111
583 a,117,116,109,110
584 a,116,115,108,109
585 a,115,87,80,108
586 a,87,88,81,80
587 a,88,89,82,81
588 a,89,90,83,82
589 a,90,91,84,83
590 a,91,92,85,84
591 a,92,93,86,85
592 TYPE,6
593 MAT,6
594 ESHAPE,2
595 AMESH,ALL
596
597 /COM,Extrude outer barrier in three steps
598 type,3 ! SOLID45
599 mat,3 ! Alloy 825
600 ESIZE,,3
601 VEXT,all,,,0,0,1.425
602
603 ASEL,S,loc,z,1.425
604 csys,1
605 asel,u,loc,x,0,.7145
606 TYPE,6
607 mat,6
608 AMESH,ALL
609 TYPE,3
610 MAT,3
611 ESIZE,,15
612 VEXT,ALL,,,0,0,1.735
613
614 ASEL,S,loc,z,3.16
615 csys,1
616 asel,u,loc,x,0,.7145
617 TYPE,6
618 mat,6
619 AMESH,ALL
620 TYPE,3
621 MAT,3
622 ESIZE,,3
623 VEXT,ALL,,,0,0,1.425
624 asel,none
625
626 /com, Generate Rock
627 vsel,none
628 asel,none
629 lsel,none
630 ksel,none
631 csys,0
632 n,10000,xrc,src,zrc
633 n,10001,xrc,src,zrc+1
634 n,10002,xrc+1,src,zrc
635 cs,11,2,10000,10001,10002
636 k,10000
637 k,10001,rockrad,,90
638 k,10002,rockrad,,0
639 k,10003,rockrad,, -90
640 l,10000,10001
641 l,10000,10002
642 l,10000,10003
643 lesize,all,,,6,0.5,0
644 l,10001,10002
645 lesize,all,,,6,1,0
646 l,10002,10003
647 lesize,all,,,6,0.25,0
648 lgen,3,all,,,90,,10

```

```
649 nummrg,kp
650 ! v,10002,10001,10012,10012,10000,10000,10000,10000
651 v,10002,10003,10012,10012,10000,10000,10000,10000
652 ! v,10001,10022,10012,10012,10000,10000,10000,10000
653 v,10003,10022,10012,10012,10000,10000,10000,10000
654 eshape,2
655 type,4
656 mat,4
657 vmesh,all
658
659 /com, Half Model is used to create the other half
660 /com, by symmetry along the x-axis
661 allsel
662 csys,0
663 vsymm,x,all,,0,0,0
664 nummrg,node
665 nummrg,kp
666
667 /com, Contact Elements Generation
668 type,5
669 real,5
670 mat,5
671 csys,11
672 nsel,s,loc,x,rockrad
673 nsel,r,loc,z,-60,-90
674 cm,surfa,node
675 csys,1
676 nsel,s,loc,z,(bsht/2)-.7,(bsht/2)+.7
677 nsel,r,loc,x,obor-0.001,obor+0.001
678 nsel,r,loc,y,60,120
679 cm,surfb,node
680 nsel,all
681 gcgen,surfa,surfb
682 csys,0
683 allsel
684
685 /com, Apply Constraints at Support Locations
686 csys,1
687 nsel,s,loc,z,-.001,.476
688 nsel,a,loc,z,4.1,bsht+.001
689 nsel,r,loc,x,obor-.02,obor+.02
690 nsel,r,loc,y,-45,-135
691 nrotate,all
692 d,all,ux,0
693 nsel,s,loc,z,0
694 nsel,r,loc,x,0.99*obor,1.01*obor
695 nsel,r,loc,y,-90
696 d,all,uz,0
697 nsel,all
698 csys,0
699 allsel
700 esel,u,mat,,6
701 save
702 fini
703
704 /sol
705 antype,trans
706 nlgeom,on
707 trnopt,full
708 acel,,9.81
709 kbc,1
710 time,1e-3
711 nsubst,3
712 outres,all,1
713 solve
714
715 timint,on
716 time,1.28
717 nsubst,10
718 outres,all,1
```

```

719 solve
720
721 timint,on
722 autots,on
723 time,1.31
724 nsubst,80,1000,50,on
725 outres,all,1
726 solve
727 fini
728
729 /exit
730 /eof

```

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

```

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

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,
ABBREVIATION= T0      /pnum,type,0,
ABBREVIATION= C1      /number,1,
ABBREVIATION= C0      /number,0,
ABBREVIATION= INP      /input,,inp,
ABBREVIATION= X3D      /show,3d,
ABBREVIATION= X11      /show,x11,
ABBREVIATION= VEC      /show,,,1,
ABBREVIATION= RAS      /show,,,0,

```

ABBREVIATION= ON /menu,on,
ABBREVIATION= OFF /menu,off,
ABBREVIATION= NVP /config,nvpag,512,
ABBREVIATION= QUIT /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

END start.ans

To start ANSYS menu:

type: x3d for console
x11 for X-term

type: on

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

SI UNITS SPECIFIED

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

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 10:47:31 NOV 01, 1995 CP=.550
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=

21 PWR Tube Rock Fall Accident Condition

VIEW CONE ANGLE FOR WINDOW 1 .00
Define Parameters

PARAMETER IBIR = .6945000
PARAMETER OBIR = .7145000
PARAMETER OBSR = .7645000
PARAMETER OBOR = .8145000
PARAMETER TS1 = .1450000E-01
PARAMETER TS2 = .1450000E-01
PARAMETER TS3 = .1000000E-01
PARAMETER TS4 = .1000000E-01
PARAMETER TS5 = .1900000E-01
PARAMETER TS124 = .3900000E-01
PARAMETER TS23 = .2450000E-01

PARAMETER TS234	=	.3450000E-01
PARAMETER TS14	=	.2450000E-01
PARAMETER TS34	=	.2000000E-01
PARAMETER B	=	.2460000
PARAMETER TP1	=	.1190250E-02
PARAMETER TP2	=	.6002500E-03
PARAMETER STP	=	4.049552
PARAMETER X	=	.2237383
PARAMETER ANG1	=	8.893561
PARAMETER ANG2	=	10.48378
PARAMETER ANG3	=	31.23261
PARAMETER ANG4	=	58.76747
PARAMETER ANG5	=	79.51629
PARAMETER ANG6	=	81.10652
PARAMETER BSHT	=	4.585000
PARAMETER UILH	=	.2500000E-01
PARAMETER GHT	=	.3000000E-01
PARAMETER UOLH	=	.1100000
PARAMETER USHT	=	.2250000
PARAMETER LILH	=	.2500000E-01
PARAMETER LOLH	=	.1100000
PARAMETER LSHT	=	.2250000
PARAMETER ELEV1	=	4.610000
PARAMETER ELEV2	=	4.640000
PARAMETER ELEV3	=	4.750000
PARAMETER ELEV4	=	4.975000
PARAMETER ELEV5	=	-.2500000E-01
PARAMETER ELEV6	=	-.1350000
PARAMETER ELEV7	=	-.3600000
PARAMETER R1D	=	2.000000
PARAMETER R1SR	=	1.000000
PARAMETER R2D	=	1.000000
PARAMETER R2SR	=	1.000000
PARAMETER R3D	=	2.000000
PARAMETER R3SR	=	1.000000

PARAMETER R4D	=	2.000000
PARAMETER R4SR	=	1.000000
PARAMETER R5D	=	2.000000
PARAMETER R5SR	=	1.000000
PARAMETER R6D	=	1.000000
PARAMETER R6SR	=	1.000000
PARAMETER R7D	=	2.000000
PARAMETER R7SR	=	1.000000
PARAMETER R8D	=	2.000000
PARAMETER R8SR	=	1.000000
PARAMETER R9D	=	2.000000
PARAMETER R9SR	=	1.000000
PARAMETER R10D	=	2.000000
PARAMETER R10SR	=	1.000000
PARAMETER R11D	=	2.000000
PARAMETER R11SR	=	1.000000
PARAMETER R12D	=	1.000000
PARAMETER R12SR	=	1.000000
PARAMETER R13D	=	2.000000
PARAMETER R13SR	=	1.000000
PARAMETER R14D	=	2.000000
PARAMETER R14SR	=	1.000000
PARAMETER R15D	=	2.000000
PARAMETER R15SR	=	1.000000
PARAMETER R16D	=	2.000000
PARAMETER R16SR	=	1.000000
PARAMETER R17D	=	2.000000
PARAMETER R17SR	=	1.000000
PARAMETER R18D	=	2.000000
PARAMETER R18SR	=	1.000000
PARAMETER R19D	=	1.000000
PARAMETER R19SR	=	1.000000
PARAMETER R20D	=	2.000000
PARAMETER R20SR	=	1.000000
PARAMETER R21D	=	2.000000

PARAMETER R21SR	=	1.000000
PARAMETER R22D	=	2.000000
PARAMETER R22SR	=	1.000000
PARAMETER R23D	=	2.000000
PARAMETER R23SR	=	1.000000
PARAMETER R24D	=	2.000000
PARAMETER R24SR	=	1.000000
PARAMETER R25D	=	2.000000
PARAMETER R25SR	=	1.000000
PARAMETER R26D	=	1.000000
PARAMETER R26SR	=	1.000000
PARAMETER R27D	=	2.000000
PARAMETER R27SR	=	1.000000
PARAMETER R28D	=	2.000000
PARAMETER R28SR	=	1.000000
PARAMETER R29D	=	2.000000
PARAMETER R29SR	=	1.000000
PARAMETER R30D	=	2.000000
PARAMETER R30SR	=	1.000000
PARAMETER R31D	=	1.000000
PARAMETER R31SR	=	1.000000
PARAMETER R32D	=	2.000000
PARAMETER R32SR	=	1.000000
PARAMETER R33D	=	2.000000
PARAMETER R33SR	=	1.000000
PARAMETER LC1D	=	2.000000
PARAMETER LC1SR	=	1.000000
PARAMETER LC2D	=	3.000000
PARAMETER LC2SR	=	1.000000
PARAMETER LC3D	=	2.000000
PARAMETER LC3SR	=	1.000000
PARAMETER C1D	=	1.000000
PARAMETER C1SR	=	1.000000
PARAMETER C2D	=	2.000000
PARAMETER C2SR	=	1.000000

PARAMETER C3D = 2.000000
 PARAMETER C3SR = 1.000000
 PARAMETER C4D = 2.000000
 PARAMETER C4SR = 1.000000
 PARAMETER C5D = 2.000000
 PARAMETER C5SR = 1.000000
 PARAMETER C6D = 2.000000
 PARAMETER C6SR = 1.000000
 PARAMETER C7D = 2.000000
 PARAMETER C7SR = 1.000000
 PARAMETER C8D = 2.000000
 PARAMETER C8SR = 1.000000
 PARAMETER C9D = 1.000000
 PARAMETER C9SR = 1.000000
 PARAMETER BT D = 28.00000
 PARAMETER BTSR = -.5000000E-01
 PARAMETER ROCKRAD = 1.000000
 PARAMETER XRC = .0000000E+00
 PARAMETER YRC = 9.890500
 PARAMETER ZRC = 2.292500

Define Element Properties

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

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

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

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

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

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

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

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

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

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

REAL CONSTANT SET 5 ITEMS 1 TO 6
.15000E+09 .00000E+00 .00000E+00 1.2980 15.000 .00000E+00
ratio of static to dynamic coeff. of friction fact=1.298, Area Tol.=15%

MATERIAL 1 EX = .1950000E+12

MATERIAL 2 EX = .2060000E+12

MATERIAL 3 EX = .2060000E+12

MATERIAL 4 EX = .3270000E+11

MATERIAL 1 NUXY = .2980000

MATERIAL 2 NUXY = .4200000

MATERIAL 3 NUXY = .3000000

MATERIAL 4 NUXY = .2200000

MATERIAL 1 DENS = 30774.80

MATERIAL 2 DENS = 8215.900

MATERIAL 3 DENS = 7876.600

MATERIAL 4 DENS = 2978.100

MATERIAL 5 MU = .5700000

ELEMENT TYPE 6 IS SHELL43 4-NODE STRUCTURAL SHELL
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

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

MATERIAL 6 EX = .2060000E+12

MATERIAL 6 NUXY = .3000000

MATERIAL 6 DENS = 8131.000

DEFINE DATA TABLE BISO FOR MATERIAL 1
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 1 AT TEMPERATURE= .00000E+00
LOC= 1 .17200E+09 .77600E+09

DEFINE DATA TABLE BISO FOR MATERIAL 2
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 2 AT TEMPERATURE= .00000E+00
LOC= 1 .33800E+09 .72200E+09

DEFINE DATA TABLE BISO FOR MATERIAL 3
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 3 AT TEMPERATURE= .00000E+00
LOC= 1 .20500E+09 .65050E+09
Define keypoints in the basket assembly

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT 1 X,Y,Z= .000000E+00 .000000E+00 .000000E+00 IN CSYS= 0

KEYPOINT 2 X,Y,Z= .000000E+00 .111869 .000000E+00 IN CSYS= 0

KEYPOINT	3	X,Y,Z=	.111869	.111869	.000000E+00	IN CSYS=	0
KEYPOINT	4	X,Y,Z=	.121869	.111869	.000000E+00	IN CSYS=	0
KEYPOINT	5	X,Y,Z=	.345607	.111869	.000000E+00	IN CSYS=	0
KEYPOINT	6	X,Y,Z=	.355607	.111869	.000000E+00	IN CSYS=	0
KEYPOINT	7	X,Y,Z=	.579346	.111869	.000000E+00	IN CSYS=	0
KEYPOINT	8	X,Y,Z=	.593846	.107369	.000000E+00	IN CSYS=	0
KEYPOINT	9	X,Y,Z=	.000000E+00	.121869	.000000E+00	IN CSYS=	0
KEYPOINT	10	X,Y,Z=	.111869	.121869	.000000E+00	IN CSYS=	0
KEYPOINT	11	X,Y,Z=	.121869	.121869	.000000E+00	IN CSYS=	0
KEYPOINT	12	X,Y,Z=	.345607	.121869	.000000E+00	IN CSYS=	0
KEYPOINT	13	X,Y,Z=	.355607	.121869	.000000E+00	IN CSYS=	0
KEYPOINT	14	X,Y,Z=	.579346	.121869	.000000E+00	IN CSYS=	0
KEYPOINT	15	X,Y,Z=	.593846	.126369	.000000E+00	IN CSYS=	0
KEYPOINT	16	X,Y,Z=	.000000E+00	.345607	.000000E+00	IN CSYS=	0
KEYPOINT	17	X,Y,Z=	.111869	.345607	.000000E+00	IN CSYS=	0
KEYPOINT	18	X,Y,Z=	.121869	.345607	.000000E+00	IN CSYS=	0
KEYPOINT	19	X,Y,Z=	.345607	.345607	.000000E+00	IN CSYS=	0
KEYPOINT	20	X,Y,Z=	.355607	.345607	.000000E+00	IN CSYS=	0
KEYPOINT	21	X,Y,Z=	.579346	.345607	.000000E+00	IN CSYS=	0
KEYPOINT	22	X,Y,Z=	.000000E+00	.355607	.000000E+00	IN CSYS=	0
KEYPOINT	23	X,Y,Z=	.111869	.355607	.000000E+00	IN CSYS=	0
KEYPOINT	24	X,Y,Z=	.121869	.355607	.000000E+00	IN CSYS=	0
KEYPOINT	25	X,Y,Z=	.345607	.355607	.000000E+00	IN CSYS=	0
KEYPOINT	26	X,Y,Z=	.360107	.360107	.000000E+00	IN CSYS=	0
KEYPOINT	27	X,Y,Z=	.000000E+00	.579346	.000000E+00	IN CSYS=	0
KEYPOINT	28	X,Y,Z=	.111869	.579346	.000000E+00	IN CSYS=	0
KEYPOINT	29	X,Y,Z=	.121869	.579346	.000000E+00	IN CSYS=	0
KEYPOINT	30	X,Y,Z=	.345607	.579346	.000000E+00	IN CSYS=	0
KEYPOINT	31	X,Y,Z=	.000000E+00	.593846	.000000E+00	IN CSYS=	0
KEYPOINT	32	X,Y,Z=	.107369	.593846	.000000E+00	IN CSYS=	0
KEYPOINT	33	X,Y,Z=	.126369	.593846	.000000E+00	IN CSYS=	0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y
DO NOT COPY NODE AND ELEMENTS
SET IS FROM 2 TO 33 IN STEPS OF 1

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

KEYPOINT	66	X,Y,Z=	.694500	8.89356	.000000E+00	IN CSYS=	1

			.686150	.107369	.000000E+00 IN CSYS= 0
KEYPOINT	67	X,Y,Z=	.694500	10.4838	.000000E+00 IN CSYS= 1
			.682906	.126369	.000000E+00 IN CSYS= 0
KEYPOINT	68	X,Y,Z=	.694500	31.2326	.000000E+00 IN CSYS= 1
			.593846	.360108	.000000E+00 IN CSYS= 0
KEYPOINT	69	X,Y,Z=	.694500	58.7675	.000000E+00 IN CSYS= 1
			.360107	.593846	.000000E+00 IN CSYS= 0
KEYPOINT	70	X,Y,Z=	.694500	79.5163	.000000E+00 IN CSYS= 1
			.126368	.682906	.000000E+00 IN CSYS= 0
KEYPOINT	71	X,Y,Z=	.694500	81.1065	.000000E+00 IN CSYS= 1
			.107368	.686150	.000000E+00 IN CSYS= 0
KEYPOINT	72	X,Y,Z=	.694500	90.0000	.000000E+00 IN CSYS= 1
			.270612E-11	.694500	.000000E+00 IN CSYS= 0
KEYPOINT	73	X,Y,Z=	.714500	8.89356	.000000E+00 IN CSYS= 1
			.705910	.110461	.000000E+00 IN CSYS= 0
KEYPOINT	74	X,Y,Z=	.714500	10.4838	.000000E+00 IN CSYS= 1
			.702572	.130008	.000000E+00 IN CSYS= 0
KEYPOINT	75	X,Y,Z=	.714500	31.2326	.000000E+00 IN CSYS= 1
			.610947	.370478	.000000E+00 IN CSYS= 0
KEYPOINT	76	X,Y,Z=	.714500	58.7675	.000000E+00 IN CSYS= 1
			.370477	.610948	.000000E+00 IN CSYS= 0
KEYPOINT	77	X,Y,Z=	.714500	79.5163	.000000E+00 IN CSYS= 1
			.130007	.702573	.000000E+00 IN CSYS= 0
KEYPOINT	78	X,Y,Z=	.714500	81.1065	.000000E+00 IN CSYS= 1
			.110460	.705910	.000000E+00 IN CSYS= 0
KEYPOINT	79	X,Y,Z=	.714500	90.0000	.000000E+00 IN CSYS= 1
			.278405E-11	.714500	.000000E+00 IN CSYS= 0
KEYPOINT	80	X,Y,Z=	.764500	8.89356	.000000E+00 IN CSYS= 1
			.755309	.118191	.000000E+00 IN CSYS= 0
KEYPOINT	81	X,Y,Z=	.764500	10.4838	.000000E+00 IN CSYS= 1
			.751738	.139106	.000000E+00 IN CSYS= 0
KEYPOINT	82	X,Y,Z=	.764500	31.2326	.000000E+00 IN CSYS= 1
			.653700	.396404	.000000E+00 IN CSYS= 0
KEYPOINT	83	X,Y,Z=	.764500	58.7675	.000000E+00 IN CSYS= 1
			.396403	.653701	.000000E+00 IN CSYS= 0

KEYPOINT	84	X,Y,Z=	.764500	79.5163	.000000E+00	IN CSYS= 1
			.139105	.751738	.000000E+00	IN CSYS= 0
KEYPOINT	85	X,Y,Z=	.764500	81.1065	.000000E+00	IN CSYS= 1
			.118190	.755309	.000000E+00	IN CSYS= 0
KEYPOINT	86	X,Y,Z=	.764500	90.0000	.000000E+00	IN CSYS= 1
			.297887E-11	.764500	.000000E+00	IN CSYS= 0
KEYPOINT	87	X,Y,Z=	.814500	8.89356	.000000E+00	IN CSYS= 1
			.804707	.125921	.000000E+00	IN CSYS= 0
KEYPOINT	88	X,Y,Z=	.814500	10.4838	.000000E+00	IN CSYS= 1
			.800903	.148204	.000000E+00	IN CSYS= 0
KEYPOINT	89	X,Y,Z=	.814500	31.2326	.000000E+00	IN CSYS= 1
			.696454	.422329	.000000E+00	IN CSYS= 0
KEYPOINT	90	X,Y,Z=	.814500	58.7675	.000000E+00	IN CSYS= 1
			.422328	.696455	.000000E+00	IN CSYS= 0
KEYPOINT	91	X,Y,Z=	.814500	79.5163	.000000E+00	IN CSYS= 1
			.148203	.800903	.000000E+00	IN CSYS= 0
KEYPOINT	92	X,Y,Z=	.814500	81.1065	.000000E+00	IN CSYS= 1
			.125920	.804708	.000000E+00	IN CSYS= 0
KEYPOINT	93	X,Y,Z=	.814500	90.0000	.000000E+00	IN CSYS= 1
			.317370E-11	.814500	.000000E+00	IN CSYS= 0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y
DO NOT COPY NODE AND ELEMENTS
SET IS FROM 66 TO 93 IN STEPS OF 1
Define default value of esize

DEFAULT ELEMENT DIVISIONS PER LINE = 1
Line divisions and spacing ratios
in the basket structure

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

LINE CONNECTS KEYPOINTS	32	71			
LINE NO.= 1 KP1=	32	TAN1=	.0000	-1.0000	.0000
KP2=	71	TAN2=	.0000	1.0000	.0000

LINE CONNECTS KEYPOINTS	33	70			
LINE NO.= 2 KP1=	33	TAN1=	.0000	-1.0000	.0000
KP2=	70	TAN2=	.0000	1.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 2 STEP 1

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

LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 3 KP1=	31	TAN1=	-1.0000	.0000	.0000

KP2= 32 TAN2= 1.0000 .0000 .0000
 LINE CONNECTS KEYPOINTS 27 28
 LINE NO.= 4 KP1= 27 TAN1= -1.0000 .0000 .0000
 KP2= 28 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 1, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 4 STEP 1

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

LINE CONNECTS KEYPOINTS 33 69
 LINE NO.= 5 KP1= 33 TAN1= -1.0000 .0000 .0000
 KP2= 69 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 29 30
 LINE NO.= 6 KP1= 29 TAN1= -1.0000 .0000 .0000
 KP2= 30 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 6 STEP 1

0 LINES (OF 6 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 23 28
 LINE NO.= 7 KP1= 23 TAN1= .0000 -1.0000 .0000
 KP2= 28 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 24 29
 LINE NO.= 8 KP1= 24 TAN1= .0000 -1.0000 .0000
 KP2= 29 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 8 STEP 1

0 LINES (OF 8 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 25 30
 LINE NO.= 9 KP1= 25 TAN1= .0000 -1.0000 .0000
 KP2= 30 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 26 69
 LINE NO.= 10 KP1= 26 TAN1= .0000 -1.0000 .0000
 KP2= 69 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 10 STEP 1

0 LINES (OF 10 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 22 23
 LINE NO.= 11 KP1= 22 TAN1= -1.0000 .0000 .0000
 KP2= 23 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 16 17
 LINE NO.= 12 KP1= 16 TAN1= -1.0000 .0000 .0000
 KP2= 17 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 1, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

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

0 LINES (OF 12 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 24 25
 LINE NO.= 13 KP1= 24 TAN1= -1.0000 .0000 .0000
 KP2= 25 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 18 19
 LINE NO.= 14 KP1= 18 TAN1= -1.0000 .0000 .0000
 KP2= 19 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 14 STEP 1

0 LINES (OF 14 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 26 68
 LINE NO.= 15 KP1= 26 TAN1= -1.0000 .0000 .0000
 KP2= 68 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 20 21
 LINE NO.= 16 KP1= 20 TAN1= -1.0000 .0000 .0000
 KP2= 21 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 16 STEP 1

0 LINES (OF 16 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 10 17
 LINE NO.= 17 KP1= 10 TAN1= .0000 -1.0000 .0000
 KP2= 17 TAN2= .0000 1.0000 .0000

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

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 18 STEP 1

0 LINES (OF 18 DEFINED) SELECTED BY LSEL COMMAND.

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

LINE CONNECTS KEYPOINTS 13 20
 LINE NO.= 20 KP1= 13 TAN1= .0000 -1.0000 .0000

KP2= 20 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 20 STEP 1

0 LINES (OF 20 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 14 21
LINE NO.= 21 KP1= 14 TAN1= .0000 -1.0000 .0000
KP2= 21 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 15 68
LINE NO.= 22 KP1= 15 TAN1= .0000 -1.0000 .0000
KP2= 68 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 22 STEP 1

0 LINES (OF 22 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 9 10
LINE NO.= 23 KP1= 9 TAN1= -1.0000 .0000 .0000
KP2= 10 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 2 3
LINE NO.= 24 KP1= 2 TAN1= -1.0000 .0000 .0000
KP2= 3 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 24 STEP 1

0 LINES (OF 24 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 11 12
LINE NO.= 25 KP1= 11 TAN1= -1.0000 .0000 .0000
KP2= 12 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 4 5
LINE NO.= 26 KP1= 4 TAN1= -1.0000 .0000 .0000
KP2= 5 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 26 STEP 1

0 LINES (OF 26 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 13 14
LINE NO.= 27 KP1= 13 TAN1= -1.0000 .0000 .0000
KP2= 14 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 6 7
LINE NO.= 28 KP1= 6 TAN1= -1.0000 .0000 .0000
KP2= 7 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 28 STEP 1

0 LINES (OF 28 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	15	67			
LINE NO.= 29 KP1=	15	TAN1=	-1.0000	.0000	.0000
KP2=	67	TAN2=	1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	8	66			
LINE NO.= 30 KP1=	8	TAN1=	-1.0000	.0000	.0000
KP2=	66	TAN2=	1.0000	.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 30 STEP 1

0 LINES (OF 30 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	35	3			
LINE NO.= 31 KP1=	35	TAN1=	.0000	-1.0000	.0000
KP2=	3	TAN2=	.0000	1.0000	.0000

LINE CONNECTS KEYPOINTS	36	4			
LINE NO.= 32 KP1=	36	TAN1=	.0000	-1.0000	.0000
KP2=	4	TAN2=	.0000	1.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 32 STEP 1

0 LINES (OF 32 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	37	5			
LINE NO.= 33 KP1=	37	TAN1=	.0000	-1.0000	.0000
KP2=	5	TAN2=	.0000	1.0000	.0000

LINE CONNECTS KEYPOINTS	38	6			
LINE NO.= 34 KP1=	38	TAN1=	.0000	-1.0000	.0000
KP2=	6	TAN2=	.0000	1.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 34 STEP 1

0 LINES (OF 34 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	39	7			
LINE NO.= 35 KP1=	39	TAN1=	.0000	-1.0000	.0000
KP2=	7	TAN2=	.0000	1.0000	.0000

LINE CONNECTS KEYPOINTS	40	8			
LINE NO.= 36 KP1=	40	TAN1=	.0000	-1.0000	.0000
KP2=	8	TAN2=	.0000	1.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000

(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 36 STEP 1

0 LINES (OF 36 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 34 35
LINE NO.= 37 KP1= 34 TAN1= -1.0000 .0000 .0000
KP2= 35 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 41 42
LINE NO.= 38 KP1= 41 TAN1= -1.0000 .0000 .0000
KP2= 42 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 38 STEP 1

0 LINES (OF 38 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 36 37
LINE NO.= 39 KP1= 36 TAN1= -1.0000 .0000 .0000
KP2= 37 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 43 44
LINE NO.= 40 KP1= 43 TAN1= -1.0000 .0000 .0000
KP2= 44 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 40 STEP 1

0 LINES (OF 40 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 38 39
LINE NO.= 41 KP1= 38 TAN1= -1.0000 .0000 .0000
KP2= 39 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 45 46
LINE NO.= 42 KP1= 45 TAN1= -1.0000 .0000 .0000
KP2= 46 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 42 STEP 1

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

LINE CONNECTS KEYPOINTS 40 94
LINE NO.= 43 KP1= 40 TAN1= -1.0000 .0000 .0000
KP2= 94 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 47 95
LINE NO.= 44 KP1= 47 TAN1= -1.0000 .0000 .0000
KP2= 95 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 44 STEP 1

0 LINES (OF 44 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 49 42
LINE NO.= 45 KP1= 49 TAN1= .0000 -1.0000 .0000
KP2= 42 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 50 43
LINE NO.= 46 KP1= 50 TAN1= .0000 -1.0000 .0000
KP2= 43 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 46 STEP 1

0 LINES (OF 46 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 51 44
LINE NO.= 47 KP1= 51 TAN1= .0000 -1.0000 .0000
KP2= 44 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 52 45
LINE NO.= 48 KP1= 52 TAN1= .0000 -1.0000 .0000
KP2= 45 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 48 STEP 1

0 LINES (OF 48 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 53 46
LINE NO.= 49 KP1= 53 TAN1= .0000 -1.0000 .0000
KP2= 46 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 96 47
LINE NO.= 50 KP1= 96 TAN1= .0000 -1.0000 .0000
KP2= 47 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 50 STEP 1

0 LINES (OF 50 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 48 49
LINE NO.= 51 KP1= 48 TAN1= -1.0000 .0000 .0000
KP2= 49 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 54 55
LINE NO.= 52 KP1= 54 TAN1= -1.0000 .0000 .0000
KP2= 55 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 52 STEP 1

0 LINES (OF 52 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 50 51
 LINE NO.= 53 KP1= 50 TAN1= -1.0000 .0000 .0000
 KP2= 51 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 56 57
 LINE NO.= 54 KP1= 56 TAN1= -1.0000 .0000 .0000
 KP2= 57 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 54 STEP 1

0 LINES (OF 54 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 52 53
 LINE NO.= 55 KP1= 52 TAN1= -1.0000 .0000 .0000
 KP2= 53 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 58 96
 LINE NO.= 56 KP1= 58 TAN1= -1.0000 .0000 .0000
 KP2= 96 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 56 STEP 1

0 LINES (OF 56 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 60 55
 LINE NO.= 57 KP1= 60 TAN1= .0000 -1.0000 .0000
 KP2= 55 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 61 56
 LINE NO.= 58 KP1= 61 TAN1= .0000 -1.0000 .0000
 KP2= 56 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 58 STEP 1

0 LINES (OF 58 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 62 57
 LINE NO.= 59 KP1= 62 TAN1= .0000 -1.0000 .0000
 KP2= 57 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 97 58
 LINE NO.= 60 KP1= 97 TAN1= .0000 -1.0000 .0000
 KP2= 58 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

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

0 LINES (OF 60 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 59 60
 LINE NO.= 61 KP1= 59 TAN1= -1.0000 .0000 .0000
 KP2= 60 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 63 64
 LINE NO.= 62 KP1= 63 TAN1= -1.0000 .0000 .0000
 KP2= 64 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 1, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 62 STEP 1

0 LINES (OF 62 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 61 62
 LINE NO.= 63 KP1= 61 TAN1= -1.0000 .0000 .0000
 KP2= 62 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 65 97
 LINE NO.= 64 KP1= 65 TAN1= -1.0000 .0000 .0000
 KP2= 97 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 64 STEP 1

0 LINES (OF 64 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 99 64
 LINE NO.= 65 KP1= 99 TAN1= .0000 -1.0000 .0000
 KP2= 64 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 98 65
 LINE NO.= 66 KP1= 98 TAN1= .0000 -1.0000 .0000
 KP2= 65 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 66 STEP 1

0 LINES (OF 66 DEFINED) SELECTED BY LSEL COMMAND.
 Define perpendicular lines to the circles

LINE CONNECTS KEYPOINTS 72 79
 LINE NO.= 67 KP1= 72 TAN1= .0000 -1.0000 .0000
 KP2= 79 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 71 78
 LINE NO.= 68 KP1= 71 TAN1= -.1546 -.9880 .0000
 KP2= 78 TAN2= .1546 .9880 .0000

LINE CONNECTS KEYPOINTS 70 77
 LINE NO.= 69 KP1= 70 TAN1= -.1820 -.9833 .0000
 KP2= 77 TAN2= .1820 .9833 .0000

LINE CONNECTS KEYPOINTS 69 76
 LINE NO.= 70 KP1= 69 TAN1= -.5185 -.8551 .0000
 KP2= 76 TAN2= .5185 .8551 .0000

LINE CONNECTS KEYPOINTS 68 75

LINE NO.=	71	KP1=	68	TAN1=	-.8551	-.5185	.0000
		KP2=	75	TAN2=	.8551	.5185	.0000
LINE CONNECTS KEYPOINTS 67 74							
LINE NO.=	72	KP1=	67	TAN1=	-.9833	-.1820	.0000
		KP2=	74	TAN2=	.9833	.1820	.0000
LINE CONNECTS KEYPOINTS 66 73							
LINE NO.=	73	KP1=	66	TAN1=	-.9880	-.1546	.0000
		KP2=	73	TAN2=	.9880	.1546	.0000
LINE CONNECTS KEYPOINTS 94 101							
LINE NO.=	74	KP1=	94	TAN1=	-.9880	.1546	.0000
		KP2=	101	TAN2=	.9880	-.1546	.0000
LINE CONNECTS KEYPOINTS 95 102							
LINE NO.=	75	KP1=	95	TAN1=	-.9833	.1820	.0000
		KP2=	102	TAN2=	.9833	-.1820	.0000
LINE CONNECTS KEYPOINTS 96 103							
LINE NO.=	76	KP1=	96	TAN1=	-.8551	.5185	.0000
		KP2=	103	TAN2=	.8551	-.5185	.0000
LINE CONNECTS KEYPOINTS 97 104							
LINE NO.=	77	KP1=	97	TAN1=	-.5185	.8551	.0000
		KP2=	104	TAN2=	.5185	-.8551	.0000
LINE CONNECTS KEYPOINTS 98 105							
LINE NO.=	78	KP1=	98	TAN1=	-.1820	.9833	.0000
		KP2=	105	TAN2=	.1820	-.9833	.0000
LINE CONNECTS KEYPOINTS 99 106							
LINE NO.=	79	KP1=	99	TAN1=	-.1546	.9880	.0000
		KP2=	106	TAN2=	.1546	-.9880	.0000
LINE CONNECTS KEYPOINTS 100 107							
LINE NO.=	80	KP1=	100	TAN1=	.0000	1.0000	.0000
		KP2=	107	TAN2=	.0000	-1.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 80 STEP 1

0 LINES (OF 80 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 79 86							
LINE NO.=	81	KP1=	79	TAN1=	.0000	-1.0000	.0000
		KP2=	86	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS 78 85							
LINE NO.=	82	KP1=	78	TAN1=	-.1546	-.9880	.0000
		KP2=	85	TAN2=	.1546	.9880	.0000
LINE CONNECTS KEYPOINTS 77 84							
LINE NO.=	83	KP1=	77	TAN1=	-.1820	-.9833	.0000
		KP2=	84	TAN2=	.1820	.9833	.0000
LINE CONNECTS KEYPOINTS 76 83							
LINE NO.=	84	KP1=	76	TAN1=	-.5185	-.8551	.0000
		KP2=	83	TAN2=	.5185	.8551	.0000
LINE CONNECTS KEYPOINTS 75 82							
LINE NO.=	85	KP1=	75	TAN1=	-.8551	-.5185	.0000
		KP2=	82	TAN2=	.8551	.5185	.0000
LINE CONNECTS KEYPOINTS 74 81							
LINE NO.=	86	KP1=	74	TAN1=	-.9833	-.1820	.0000

	KP2=	81	TAN2=	.9833	.1820	.0000
LINE CONNECTS KEYPOINTS		73	80			
LINE NO.=	87	KP1=	73	TAN1=	-.9880	-.1546
		KP2=	80	TAN2=	.9880	.1546
LINE CONNECTS KEYPOINTS		101	108			
LINE NO.=	88	KP1=	101	TAN1=	-.9880	.1546
		KP2=	108	TAN2=	.9880	-.1546
LINE CONNECTS KEYPOINTS		102	109			
LINE NO.=	89	KP1=	102	TAN1=	-.9833	.1820
		KP2=	109	TAN2=	.9833	-.1820
LINE CONNECTS KEYPOINTS		103	110			
LINE NO.=	90	KP1=	103	TAN1=	-.8551	.5185
		KP2=	110	TAN2=	.8551	-.5185
LINE CONNECTS KEYPOINTS		104	111			
LINE NO.=	91	KP1=	104	TAN1=	-.5185	.8551
		KP2=	111	TAN2=	.5185	-.8551
LINE CONNECTS KEYPOINTS		105	112			
LINE NO.=	92	KP1=	105	TAN1=	-.1820	.9833
		KP2=	112	TAN2=	.1820	-.9833
LINE CONNECTS KEYPOINTS		106	113			
LINE NO.=	93	KP1=	106	TAN1=	-.1546	.9880
		KP2=	113	TAN2=	.1546	-.9880
LINE CONNECTS KEYPOINTS		107	114			
LINE NO.=	94	KP1=	107	TAN1=	.0000	1.0000
		KP2=	114	TAN2=	.0000	-1.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 3, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 94 STEP 1

0 LINES (OF 94 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS		86	93			
LINE NO.=	95	KP1=	86	TAN1=	.0000	-1.0000
		KP2=	93	TAN2=	.0000	1.0000
LINE CONNECTS KEYPOINTS		85	92			
LINE NO.=	96	KP1=	85	TAN1=	-.1546	-.9880
		KP2=	92	TAN2=	.1546	.9880
LINE CONNECTS KEYPOINTS		84	91			
LINE NO.=	97	KP1=	84	TAN1=	-.1820	-.9833
		KP2=	91	TAN2=	.1820	.9833
LINE CONNECTS KEYPOINTS		83	90			
LINE NO.=	98	KP1=	83	TAN1=	-.5185	-.8551
		KP2=	90	TAN2=	.5185	.8551
LINE CONNECTS KEYPOINTS		82	89			
LINE NO.=	99	KP1=	82	TAN1=	-.8551	-.5185
		KP2=	89	TAN2=	.8551	.5185
LINE CONNECTS KEYPOINTS		81	88			
LINE NO.=	100	KP1=	81	TAN1=	-.9833	-.1820
		KP2=	88	TAN2=	.9833	.1820
LINE CONNECTS KEYPOINTS		80	87			
LINE NO.=	101	KP1=	80	TAN1=	-.9880	-.1546
		KP2=	87	TAN2=	.9880	.1546

LINE CONNECTS KEYPOINTS		108	115			
LINE NO.=	102	KP1=	108	TAN1=	-.9880	.1546 .0000
		KP2=	115	TAN2=	.9880	-.1546 .0000
LINE CONNECTS KEYPOINTS		109	116			
LINE NO.=	103	KP1=	109	TAN1=	-.9833	.1820 .0000
		KP2=	116	TAN2=	.9833	-.1820 .0000
LINE CONNECTS KEYPOINTS		110	117			
LINE NO.=	104	KP1=	110	TAN1=	-.8551	.5185 .0000
		KP2=	117	TAN2=	.8551	-.5185 .0000
LINE CONNECTS KEYPOINTS		111	118			
LINE NO.=	105	KP1=	111	TAN1=	-.5185	.8551 .0000
		KP2=	118	TAN2=	.5185	-.8551 .0000
LINE CONNECTS KEYPOINTS		112	119			
LINE NO.=	106	KP1=	112	TAN1=	-.1820	.9833 .0000
		KP2=	119	TAN2=	.1820	-.9833 .0000
LINE CONNECTS KEYPOINTS		113	120			
LINE NO.=	107	KP1=	113	TAN1=	-.1546	.9880 .0000
		KP2=	120	TAN2=	.1546	-.9880 .0000
LINE CONNECTS KEYPOINTS		114	121			
LINE NO.=	108	KP1=	114	TAN1=	.0000	1.0000 .0000
		KP2=	121	TAN2=	.0000	-1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 108 STEP 1

0 LINES (OF 108 DEFINED) SELECTED BY LSEL COMMAND.
 Define circles of inner and outer barriers

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

LINE CONNECTS KEYPOINTS		100	99			
LINE NO.=	109	KP1=	100	TAN1=	-1.0000	.0000 .0000
		KP2=	99	TAN2=	.9880	.1546 .0000
LINE CONNECTS KEYPOINTS		107	106			
LINE NO.=	110	KP1=	107	TAN1=	-1.0000	.0000 .0000
		KP2=	106	TAN2=	.9880	.1546 .0000
LINE CONNECTS KEYPOINTS		114	113			
LINE NO.=	111	KP1=	114	TAN1=	-1.0000	.0000 .0000
		KP2=	113	TAN2=	.9880	.1546 .0000
LINE CONNECTS KEYPOINTS		121	120			
LINE NO.=	112	KP1=	121	TAN1=	-1.0000	.0000 .0000
		KP2=	120	TAN2=	.9880	.1546 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 1, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 112 STEP 1

0 LINES (OF 112 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS		98	97			
LINE NO.=	113	KP1=	98	TAN1=	-.9833	-.1820 .0000
		KP2=	97	TAN2=	.8551	.5185 .0000

LINE CONNECTS KEYPOINTS 105 104
 LINE NO.= 114 KP1= 105 TAN1= -.9833 -.1820 .0000
 KP2= 104 TAN2= .8551 .5185 .0000

LINE CONNECTS KEYPOINTS 112 111
 LINE NO.= 115 KP1= 112 TAN1= -.9833 -.1820 .0000
 KP2= 111 TAN2= .8551 .5185 .0000

LINE CONNECTS KEYPOINTS 119 118
 LINE NO.= 116 KP1= 119 TAN1= -.9833 -.1820 .0000
 KP2= 118 TAN2= .8551 .5185 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 116 STEP 1

0 LINES (OF 116 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 97 96
 LINE NO.= 117 KP1= 97 TAN1= -.8551 -.5185 .0000
 KP2= 96 TAN2= .5185 .8551 .0000

LINE CONNECTS KEYPOINTS 104 103
 LINE NO.= 118 KP1= 104 TAN1= -.8551 -.5185 .0000
 KP2= 103 TAN2= .5185 .8551 .0000

LINE CONNECTS KEYPOINTS 111 110
 LINE NO.= 119 KP1= 111 TAN1= -.8551 -.5185 .0000
 KP2= 110 TAN2= .5185 .8551 .0000

LINE CONNECTS KEYPOINTS 118 117
 LINE NO.= 120 KP1= 118 TAN1= -.8551 -.5185 .0000
 KP2= 117 TAN2= .5185 .8551 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 120 STEP 1

0 LINES (OF 120 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 96 95
 LINE NO.= 121 KP1= 96 TAN1= -.5185 -.8551 .0000
 KP2= 95 TAN2= .1820 .9833 .0000

LINE CONNECTS KEYPOINTS 103 102
 LINE NO.= 122 KP1= 103 TAN1= -.5185 -.8551 .0000
 KP2= 102 TAN2= .1820 .9833 .0000

LINE CONNECTS KEYPOINTS 110 109
 LINE NO.= 123 KP1= 110 TAN1= -.5185 -.8551 .0000
 KP2= 109 TAN2= .1820 .9833 .0000

LINE CONNECTS KEYPOINTS 117 116
 LINE NO.= 124 KP1= 117 TAN1= -.5185 -.8551 .0000
 KP2= 116 TAN2= .1820 .9833 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 124 STEP 1

0 LINES (OF 124 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 94 66
 LINE NO.= 125 KP1= 94 TAN1= -.1546 -.9880 .0000
 KP2= 66 TAN2= -.1546 .9880 .0000

LINE CONNECTS KEYPOINTS 101 73
 LINE NO.= 126 KP1= 101 TAN1= -.1546 -.9880 .0000
 KP2= 73 TAN2= -.1546 .9880 .0000

LINE CONNECTS KEYPOINTS 108 80
 LINE NO.= 127 KP1= 108 TAN1= -.1546 -.9880 .0000
 KP2= 80 TAN2= -.1546 .9880 .0000

LINE CONNECTS KEYPOINTS 115 87
 LINE NO.= 128 KP1= 115 TAN1= -.1546 -.9880 .0000
 KP2= 87 TAN2= -.1546 .9880 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 128 STEP 1

0 LINES (OF 128 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 67 68
 LINE NO.= 129 KP1= 67 TAN1= .1820 -.9833 .0000
 KP2= 68 TAN2= -.5185 .8551 .0000

LINE CONNECTS KEYPOINTS 74 75
 LINE NO.= 130 KP1= 74 TAN1= .1820 -.9833 .0000
 KP2= 75 TAN2= -.5185 .8551 .0000

LINE CONNECTS KEYPOINTS 81 82
 LINE NO.= 131 KP1= 81 TAN1= .1820 -.9833 .0000
 KP2= 82 TAN2= -.5185 .8551 .0000

LINE CONNECTS KEYPOINTS 88 89
 LINE NO.= 132 KP1= 88 TAN1= .1820 -.9833 .0000
 KP2= 89 TAN2= -.5185 .8551 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 132 STEP 1

0 LINES (OF 132 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 68 69
 LINE NO.= 133 KP1= 68 TAN1= .5185 -.8551 .0000
 KP2= 69 TAN2= -.8551 .5185 .0000

LINE CONNECTS KEYPOINTS 75 76
 LINE NO.= 134 KP1= 75 TAN1= .5185 -.8551 .0000
 KP2= 76 TAN2= -.8551 .5185 .0000

LINE CONNECTS KEYPOINTS 82 83
 LINE NO.= 135 KP1= 82 TAN1= .5185 -.8551 .0000
 KP2= 83 TAN2= -.8551 .5185 .0000

LINE CONNECTS KEYPOINTS 89 90
 LINE NO.= 136 KP1= 89 TAN1= .5185 -.8551 .0000
 KP2= 90 TAN2= -.8551 .5185 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 136 STEP 1

0 LINES (OF 136 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	69	70			
LINE NO.= 137	KP1= 69	TAN1= .8551	-.5185	.0000	
	KP2= 70	TAN2= -.9833	.1820	.0000	

LINE CONNECTS KEYPOINTS	76	77			
LINE NO.= 138	KP1= 76	TAN1= .8551	-.5185	.0000	
	KP2= 77	TAN2= -.9833	.1820	.0000	

LINE CONNECTS KEYPOINTS	83	84			
LINE NO.= 139	KP1= 83	TAN1= .8551	-.5185	.0000	
	KP2= 84	TAN2= -.9833	.1820	.0000	

LINE CONNECTS KEYPOINTS	90	91			
LINE NO.= 140	KP1= 90	TAN1= .8551	-.5185	.0000	
	KP2= 91	TAN2= -.9833	.1820	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 140 STEP 1

0 LINES (OF 140 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	71	72			
LINE NO.= 141	KP1= 71	TAN1= .9880	-.1546	.0000	
	KP2= 72	TAN2= -1.0000	.0000	.0000	

LINE CONNECTS KEYPOINTS	78	79			
LINE NO.= 142	KP1= 78	TAN1= .9880	-.1546	.0000	
	KP2= 79	TAN2= -1.0000	.0000	.0000	

LINE CONNECTS KEYPOINTS	85	86			
LINE NO.= 143	KP1= 85	TAN1= .9880	-.1546	.0000	
	KP2= 86	TAN2= -1.0000	.0000	.0000	

LINE CONNECTS KEYPOINTS	92	93			
LINE NO.= 144	KP1= 92	TAN1= .9880	-.1546	.0000	
	KP2= 93	TAN2= -1.0000	.0000	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 144 STEP 1

0 LINES (OF 144 DEFINED) SELECTED BY LSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT	122	X,Y,Z=	.000000E+00	.000000E+00	4.58500	IN CSYS= 0
KEYPOINT	123	X,Y,Z=	.000000E+00	.000000E+00	4.61000	IN CSYS= 0
KEYPOINT	124	X,Y,Z=	.000000E+00	.000000E+00	4.64000	IN CSYS= 0
KEYPOINT	125	X,Y,Z=	.000000E+00	.000000E+00	4.75000	IN CSYS= 0
KEYPOINT	126	X,Y,Z=	.000000E+00	.000000E+00	4.97500	IN CSYS= 0
KEYPOINT	127	X,Y,Z=	.000000E+00	.000000E+00	-.250000E-01	IN CSYS= 0

KEYPOINT 128 X,Y,Z= .000000E+00 .000000E+00 -.135000 IN CSYS= 0

KEYPOINT 129 X,Y,Z= .000000E+00 .000000E+00 -.360000 IN CSYS= 0

LINE CONNECTS KEYPOINTS 1 122
 LINE NO.= 145 KP1= 1 TAN1= .0000 .0000 -1.0000
 KP2= 122 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 122 123
 LINE NO.= 146 KP1= 122 TAN1= .0000 .0000 -1.0000
 KP2= 123 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 123 124
 LINE NO.= 147 KP1= 123 TAN1= .0000 .0000 -1.0000
 KP2= 124 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 124 125
 LINE NO.= 148 KP1= 124 TAN1= .0000 .0000 -1.0000
 KP2= 125 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 125 126
 LINE NO.= 149 KP1= 125 TAN1= .0000 .0000 -1.0000
 KP2= 126 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 1 127
 LINE NO.= 150 KP1= 1 TAN1= .0000 .0000 1.0000
 KP2= 127 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 127 128
 LINE NO.= 151 KP1= 127 TAN1= .0000 .0000 1.0000
 KP2= 128 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 128 129
 LINE NO.= 152 KP1= 128 TAN1= .0000 .0000 1.0000
 KP2= 129 TAN2= .0000 .0000 -1.0000

Define areas in the inner barrier

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 107 106 99 100

*** WARNING *** CP= 1.960 TIME= 10:47:32
 Unselected line 110.

*** WARNING *** CP= 1.960 TIME= 10:47:32
 Unselected line 79.

*** WARNING *** CP= 1.960 TIME= 10:47:32
 Unselected line 109.

*** WARNING *** CP= 1.960 TIME= 10:47:32
 Unselected line 80.

AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 106 105 98 99

*** WARNING *** CP= 2.000 TIME= 10:47:32
 Unselected line 78.

*** WARNING *** CP= 2.010 TIME= 10:47:32
 Unselected line 79.

AREA NUMBER = 2

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 105 104 97 98

*** WARNING *** CP= 2.040 TIME= 10:47:33
Unselected line 114.

*** WARNING *** CP= 2.040 TIME= 10:47:33
Unselected line 77.

*** WARNING *** CP= 2.040 TIME= 10:47:33
Unselected line 113.

*** WARNING *** CP= 2.040 TIME= 10:47:33
Unselected line 78.

AREA NUMBER = 3

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 104 103 96 97

*** WARNING *** CP= 2.080 TIME= 10:47:33
Unselected line 118.

*** WARNING *** CP= 2.080 TIME= 10:47:33
Unselected line 76.

*** WARNING *** CP= 2.090 TIME= 10:47:33
Unselected line 117.

*** WARNING *** CP= 2.090 TIME= 10:47:33
Unselected line 77.

AREA NUMBER = 4

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 103 102 95 96

*** WARNING *** CP= 2.130 TIME= 10:47:33
Unselected line 122.

*** WARNING *** CP= 2.130 TIME= 10:47:33
Unselected line 75.

*** WARNING *** CP= 2.130 TIME= 10:47:33
Unselected line 121.

*** WARNING *** CP= 2.130 TIME= 10:47:33
Unselected line 76.

AREA NUMBER = 5

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 102 101 94 95

*** WARNING *** CP= 2.180 TIME= 10:47:33
Unselected line 74.

*** WARNING *** CP= 2.180 TIME= 10:47:33
Unselected line 75.

AREA NUMBER = 6

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 101 73 66 94

*** WARNING *** CP= 2.210 TIME= 10:47:33
Unselected line 126.

*** WARNING *** CP= 2.210 TIME= 10:47:33
Unselected line 73.

*** WARNING *** CP= 2.210 TIME= 10:47:33
Unselected line 125.

*** WARNING *** CP= 2.210 TIME= 10:47:33
Unselected line 74.

AREA NUMBER = 7

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 73 74 67 66

*** WARNING *** CP= 2.260 TIME= 10:47:33
Unselected line 72.

*** WARNING *** CP= 2.260 TIME= 10:47:33
Unselected line 73.

AREA NUMBER = 8

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 74 75 68 67

*** WARNING *** CP= 2.290 TIME= 10:47:33
Unselected line 130.

*** WARNING *** CP= 2.290 TIME= 10:47:33
Unselected line 71.

*** WARNING *** CP= 2.290 TIME= 10:47:33
Unselected line 129.

*** WARNING *** CP= 2.290 TIME= 10:47:33
Unselected line 72.

AREA NUMBER = 9

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 75 76 69 68

*** WARNING *** CP= 2.330 TIME= 10:47:33
Unselected line 134.

*** WARNING *** CP= 2.330 TIME= 10:47:33
Unselected line 70.

*** WARNING *** CP= 2.330 TIME= 10:47:33
Unselected line 133.

*** WARNING *** CP= 2.330 TIME= 10:47:33
Unselected line 71.

AREA NUMBER = 10

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 76 77 70 69

*** WARNING *** CP= 2.370 TIME= 10:47:33
Unselected line 138.

*** WARNING *** CP= 2.370 TIME= 10:47:33
Unselected line 69.

*** WARNING *** CP= 2.370 TIME= 10:47:33
Unselected line 137.

*** WARNING *** CP= 2.370 TIME= 10:47:33
Unselected line 70.

AREA NUMBER = 11

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 77 78 71 70

*** WARNING *** CP= 2.420 TIME= 10:47:33
Unselected line 68.

*** WARNING *** CP= 2.420 TIME= 10:47:33
Unselected line 69.

AREA NUMBER = 12

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 78 79 72 71

*** WARNING *** CP= 2.450 TIME= 10:47:33
Unselected line 142.

*** WARNING *** CP= 2.450 TIME= 10:47:33
Unselected line 67.

*** WARNING *** CP= 2.450 TIME= 10:47:33
Unselected line 141.

*** WARNING *** CP= 2.450 TIME= 10:47:33
Unselected line 68.

AREA NUMBER = 13

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 13
MAXIMUM NODE NUMBER = 63
MAXIMUM ELEMENT NUMBER = 40
Extrude inner barrier in three steps

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS
IN DIRECTION .0000000E+00, .0000000E+00, 1.425000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

*** WARNING *** CP= 3.190 TIME= 10:47:34
Meshing of volume 2 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 2 WITH EXCESSIVE ASPECT RATIO ***
47 48 49 50 51 52

*** WARNING *** CP= 3.720 TIME= 10:47:35
Meshing of volume 6 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 6 WITH EXCESSIVE ASPECT RATIO ***
89 90 91 92 93 94

*** WARNING *** CP= 3.980 TIME= 10:47:35
Meshing of volume 8 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 8 WITH EXCESSIVE ASPECT RATIO ***
 107 108 109 110 111 112

*** WARNING *** CP= 4.520 TIME= 10:47:35
 Meshing of volume 12 produced 6 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 12 WITH EXCESSIVE ASPECT RATIO ***
 149 150 151 152 153 154

MAXIMUM NODE NUMBER = 252
 MAXIMUM ELEMENT NUMBER = 160

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 1.4250 AND 1.4250
 KABS= 0. TOLERANCE= .712500E-02

13 AREAS (OF 66 DEFINED) SELECTED BY ASEL COMMAND.

*** WARNING *** CP= 4.650 TIME= 10:47:35
 Invalid coordinate system= 12.

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .69000
 KABS= 0. TOLERANCE= .000000E+00

13 AREAS (OF 66 DEFINED) SELECTED BY ASEL COMMAND.

*** WARNING *** CP= 4.650 TIME= 10:47:35
 Invalid coordinate system= 11.

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 13
 MAXIMUM NODE NUMBER = 252
 MAXIMUM ELEMENT NUMBER = 200

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

DEFAULT ELEMENT DIVISIONS PER LINE = 15

EXTRUDE ALL AREAS
 IN DIRECTION .0000000E+00, .0000000E+00, 1.735000
 SCALED .0000000E+00, .0000000E+00, .0000000E+00

MAXIMUM NODE NUMBER = 1197
 MAXIMUM ELEMENT NUMBER = 800

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 3.1600 AND 3.1600
 KABS= 0. TOLERANCE= .158000E-01

13 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

*** WARNING *** CP= 7.380 TIME= 10:47:38
 Invalid coordinate system= 12.

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .69000
 KABS= 0. TOLERANCE= .000000E+00

13 AREAS (OF 119 DEFINED) SELECTED BY ASEL COMMAND.

*** WARNING *** CP= 7.390 TIME= 10:47:38
 Invalid coordinate system= 11.

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHD = 13
MAXIMUM NODE NUMBER = 1197
MAXIMUM ELEMENT NUMBER = 840

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS
IN DIRECTION .0000000E+00, .0000000E+00, 1.425000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

*** WARNING *** CP= 7.840 TIME= 10:47:39
Meshing of volume 28 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 28 WITH EXCESSIVE ASPECT RATIO ***
847 848 849 850 851 852

*** WARNING *** CP= 8.370 TIME= 10:47:39
Meshing of volume 32 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 32 WITH EXCESSIVE ASPECT RATIO ***
889 890 891 892 893 894

*** WARNING *** CP= 8.640 TIME= 10:47:39
Meshing of volume 34 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 34 WITH EXCESSIVE ASPECT RATIO ***
907 908 909 910 911 912

*** WARNING *** CP= 9.170 TIME= 10:47:40
Meshing of volume 38 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 38 WITH EXCESSIVE ASPECT RATIO ***
949 950 951 952 953 954

MAXIMUM NODE NUMBER = 1386
MAXIMUM ELEMENT NUMBER = 960

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 172 STEP 1

0 AREAS (OF 172 DEFINED) SELECTED BY ASEL COMMAND.
Define areas in the inner part of outer barrier

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 114 113 106 107

*** WARNING *** CP= 9.300 TIME= 10:47:40
Unselected line 111.

*** WARNING *** CP= 9.300 TIME= 10:47:40
Unselected line 93.

*** WARNING *** CP= 9.300 TIME= 10:47:40
Unselected line 110.

*** WARNING *** CP= 9.300 TIME= 10:47:40
Unselected line 94.

AREA NUMBER = 173

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 113 112 105 106

*** WARNING *** CP= 9.340 TIME= 10:47:40
Unselected line 92.

*** WARNING *** CP= 9.340 TIME= 10:47:40
Unselected line 93.

AREA NUMBER = 174

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 112 111 104 105

*** WARNING *** CP= 9.360 TIME= 10:47:40
Unselected line 115.

*** WARNING *** CP= 9.370 TIME= 10:47:40
Unselected line 91.

*** WARNING *** CP= 9.370 TIME= 10:47:40
Unselected line 114.

*** WARNING *** CP= 9.370 TIME= 10:47:40
Unselected line 92.

AREA NUMBER = 175

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 111 110 103 104

*** WARNING *** CP= 9.400 TIME= 10:47:40
Unselected line 119.

*** WARNING *** CP= 9.400 TIME= 10:47:40
Unselected line 90.

*** WARNING *** CP= 9.400 TIME= 10:47:40
Unselected line 118.

*** WARNING *** CP= 9.400 TIME= 10:47:40
Unselected line 91.

AREA NUMBER = 176

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 110 109 102 103

*** WARNING *** CP= 9.420 TIME= 10:47:40
Unselected line 123.

*** WARNING *** CP= 9.430 TIME= 10:47:40
Unselected line 89.

*** WARNING *** CP= 9.430 TIME= 10:47:40
Unselected line 122.

*** WARNING *** CP= 9.430 TIME= 10:47:40
Unselected line 90.

AREA NUMBER = 177

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 109 108 101 102

*** WARNING *** CP= 9.460 TIME= 10:47:40
Unselected line 88.

*** WARNING *** CP= 9.460 TIME= 10:47:40
Unselected line 89.

AREA NUMBER = 178

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 108 80 73 101

*** WARNING *** CP= 9.490 TIME= 10:47:40
Unselected line 127.

*** WARNING *** CP= 9.490 TIME= 10:47:40
Unselected line 87.

*** WARNING *** CP= 9.490 TIME= 10:47:40
Unselected line 126.

*** WARNING *** CP= 9.490 TIME= 10:47:40
Unselected line 88.

AREA NUMBER = 179

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 80 81 74 73

*** WARNING *** CP= 9.530 TIME= 10:47:40
Unselected line 86.

*** WARNING *** CP= 9.530 TIME= 10:47:40
Unselected line 87.

AREA NUMBER = 180

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 81 82 75 74

*** WARNING *** CP= 9.560 TIME= 10:47:40
Unselected line 131.

*** WARNING *** CP= 9.560 TIME= 10:47:40
Unselected line 85.

*** WARNING *** CP= 9.560 TIME= 10:47:40
Unselected line 130.

*** WARNING *** CP= 9.560 TIME= 10:47:40
Unselected line 86.

AREA NUMBER = 181

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 82 83 76 75

*** WARNING *** CP= 9.580 TIME= 10:47:40
Unselected line 135.

*** WARNING *** CP= 9.590 TIME= 10:47:40
Unselected line 84.

*** WARNING *** CP= 9.590 TIME= 10:47:40
Unselected line 134.

*** WARNING *** CP= 9.590 TIME= 10:47:40
Unselected line 85.

AREA NUMBER = 182

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 83 84 77 76

*** WARNING *** CP= 9.610 TIME= 10:47:40
Unselected line 139.

*** WARNING *** CP= 9.610 TIME= 10:47:40
Unselected line 83.

*** WARNING *** CP= 9.620 TIME= 10:47:40
Unselected line 138.

*** WARNING *** CP= 9.620 TIME= 10:47:40
Unselected line 84.

AREA NUMBER = 183

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 84 85 78 77

*** WARNING *** CP= 9.650 TIME= 10:47:40
Unselected line 82.

*** WARNING *** CP= 9.650 TIME= 10:47:40
Unselected line 83.

AREA NUMBER = 184

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 85 86 79 78

*** WARNING *** CP= 9.680 TIME= 10:47:41
Unselected line 143.

*** WARNING *** CP= 9.680 TIME= 10:47:41
Unselected line 81.

*** WARNING *** CP= 9.680 TIME= 10:47:41
Unselected line 142.

*** WARNING *** CP= 9.680 TIME= 10:47:41
Unselected line 82.

AREA NUMBER = 185

Define areas in the outer part of outer barrier

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 121 120 113 114

*** WARNING *** CP= 9.710 TIME= 10:47:41
Unselected line 112.

*** WARNING *** CP= 9.710 TIME= 10:47:41
Unselected line 107.

*** WARNING *** CP= 9.710 TIME= 10:47:41
Unselected line 111.

*** WARNING *** CP= 9.710 TIME= 10:47:41
Unselected line 108.

AREA NUMBER = 186

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 120 119 112 113

*** WARNING *** CP= 9.750 TIME= 10:47:41

Unselected line 106.

*** WARNING *** CP= 9.750 TIME= 10:47:41
Unselected line 107.

AREA NUMBER = 187

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 119 118 111 112

*** WARNING *** CP= 9.770 TIME= 10:47:41
Unselected line 116.

*** WARNING *** CP= 9.780 TIME= 10:47:41
Unselected line 105.

*** WARNING *** CP= 9.780 TIME= 10:47:41
Unselected line 115.

*** WARNING *** CP= 9.780 TIME= 10:47:41
Unselected line 106.

AREA NUMBER = 188

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 118 117 110 111

*** WARNING *** CP= 9.800 TIME= 10:47:41
Unselected line 120.

*** WARNING *** CP= 9.810 TIME= 10:47:41
Unselected line 104.

*** WARNING *** CP= 9.810 TIME= 10:47:41
Unselected line 119.

*** WARNING *** CP= 9.810 TIME= 10:47:41
Unselected line 105.

AREA NUMBER = 189

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 117 116 109 110

*** WARNING *** CP= 9.830 TIME= 10:47:41
Unselected line 124.

*** WARNING *** CP= 9.830 TIME= 10:47:41
Unselected line 103.

*** WARNING *** CP= 9.840 TIME= 10:47:41
Unselected line 123.

*** WARNING *** CP= 9.840 TIME= 10:47:41
Unselected line 104.

AREA NUMBER = 190

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 116 115 108 109

*** WARNING *** CP= 9.870 TIME= 10:47:41
Unselected line 102.

*** WARNING *** CP= 9.870 TIME= 10:47:41
Unselected line 103.

AREA NUMBER = 191

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 115 87 80 108

*** WARNING *** CP= 9.900 TIME= 10:47:41
Unselected line 128.

*** WARNING *** CP= 9.900 TIME= 10:47:41
Unselected line 101.

*** WARNING *** CP= 9.900 TIME= 10:47:41
Unselected line 127.

*** WARNING *** CP= 9.900 TIME= 10:47:41
Unselected line 102.

AREA NUMBER = 192

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 87 88 81 80

*** WARNING *** CP= 9.940 TIME= 10:47:41
Unselected line 100.

*** WARNING *** CP= 9.940 TIME= 10:47:41
Unselected line 101.

AREA NUMBER = 193

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 88 89 82 81

*** WARNING *** CP= 9.970 TIME= 10:47:41
Unselected line 132.

*** WARNING *** CP= 9.970 TIME= 10:47:41
Unselected line 99.

*** WARNING *** CP= 9.970 TIME= 10:47:41
Unselected line 131.

*** WARNING *** CP= 9.970 TIME= 10:47:41
Unselected line 100.

AREA NUMBER = 194

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 89 90 83 82

*** WARNING *** CP= 10.000 TIME= 10:47:41
Unselected line 136.

*** WARNING *** CP= 10.000 TIME= 10:47:41
Unselected line 98.

*** WARNING *** CP= 10.000 TIME= 10:47:41
Unselected line 135.

*** WARNING *** CP= 10.000 TIME= 10:47:41
Unselected line 99.

AREA NUMBER = 195

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 90 91 84 83

*** WARNING *** CP= 10.030 TIME= 10:47:41
Unselected line 140.

*** WARNING *** CP= 10.030 TIME= 10:47:41
Unselected line 97.

*** WARNING *** CP= 10.030 TIME= 10:47:41
Unselected line 139.

*** WARNING *** CP= 10.030 TIME= 10:47:41
Unselected line 98.

AREA NUMBER = 196

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 91 92 85 84

*** WARNING *** CP= 10.060 TIME= 10:47:41
Unselected line 96.

*** WARNING *** CP= 10.060 TIME= 10:47:41
Unselected line 97.

AREA NUMBER = 197

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 92 93 86 85

*** WARNING *** CP= 10.090 TIME= 10:47:41
Unselected line 144.

*** WARNING *** CP= 10.090 TIME= 10:47:41
Unselected line 95.

*** WARNING *** CP= 10.090 TIME= 10:47:41
Unselected line 143.

*** WARNING *** CP= 10.090 TIME= 10:47:41
Unselected line 96.

AREA NUMBER = 198

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 26
MAXIMUM NODE NUMBER = 1491
MAXIMUM ELEMENT NUMBER = 1060
Extrude outer barrier in three steps

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS
IN DIRECTION .0000000E+00, .0000000E+00, 1.425000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

MAXIMUM NODE NUMBER = 1869
MAXIMUM ELEMENT NUMBER = 1360

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 1.4250 AND 1.4250
KABS= 0. TOLERANCE= .712500E-02

39 AREAS (OF 291 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .71450
KABS= 0. TOLERANCE= .000000E+00

26 AREAS (OF 291 DEFINED) SELECTED BY ASEL COMMAND.

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 26
MAXIMUM NODE NUMBER = 1869
MAXIMUM ELEMENT NUMBER = 1460

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

DEFAULT ELEMENT DIVISIONS PER LINE = 15

EXTRUDE ALL AREAS
IN DIRECTION .0000000E+00, .0000000E+00, 1.735000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

MAXIMUM NODE NUMBER = 3759
MAXIMUM ELEMENT NUMBER = 2960

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 3.1600 AND 3.1600
KABS= 0. TOLERANCE= .158000E-01

39 AREAS (OF 384 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .71450
KABS= 0. TOLERANCE= .000000E+00

26 AREAS (OF 384 DEFINED) SELECTED BY ASEL COMMAND.

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 26
MAXIMUM NODE NUMBER = 3759
MAXIMUM ELEMENT NUMBER = 3060

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS
IN DIRECTION .0000000E+00, .0000000E+00, 1.425000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

MAXIMUM NODE NUMBER = 4137
MAXIMUM ELEMENT NUMBER = 3360

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 477 STEP 1

0 AREAS (OF 477 DEFINED) SELECTED BY ASEL COMMAND.
Generate Rock

NONE SELECT FOR ITEM=VOLU COMPONENT=

IN RANGE 1 TO 117 STEP 1

0 VOLUMES (OF 117 DEFINED) SELECTED BY VSEL COMMAND.

NONE SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 477 STEP 1

0 AREAS (OF 477 DEFINED) SELECTED BY ASEL COMMAND.

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 699 STEP 1

0 LINES (OF 699 DEFINED) SELECTED BY LSEL COMMAND.

NONE SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 339 STEP 1

0 KEYPOINTS (OF 339 DEFINED) SELECTED BY KSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

NODE 10000 KCS= 0 X,Y,Z= .00000E+00 9.8905 2.2925

NODE 10001 KCS= 0 X,Y,Z= .00000E+00 9.8905 3.2925

NODE 10002 KCS= 0 X,Y,Z= 1.0000 9.8905 2.2925

COORDINATE SYSTEM 11 DEFINITION. TYPE= 2 (SPHERICAL)
ORIGIN NODE= 10000 XNODE= 10001 YNODE= 10002 PARAMETERS= 1.000 1.000
ORIENTATION= .00 .00 1.00 1.00 .00 .00 .00 1.00 .00
THXY,THYZ,THZX= -90.000 .000 -90.000

ACTIVE COORDINATE SYSTEM SET TO 11 (SPHERICAL)

KEYPOINT 10000 X,Y,Z= .000000E+00 .000000E+00 .000000E+00 IN CSYS= 11
.000000E+00 9.89050 2.29250 IN CSYS= 0

KEYPOINT 10001 X,Y,Z= 1.00000 .000000E+00 90.0000 IN CSYS= 11
.000000E+00 10.8905 2.29250 IN CSYS= 0

KEYPOINT 10002 X,Y,Z= 1.00000 .000000E+00 .000000E+00 IN CSYS= 11
.000000E+00 9.89050 3.29250 IN CSYS= 0

KEYPOINT 10003 X,Y,Z= 1.00000 .000000E+00 -90.0000 IN CSYS= 11
.000000E+00 8.89050 2.29250 IN CSYS= 0

LINE CONNECTS KEYPOINTS 10000 10001
LINE NO.= 700 KP1= 10000 TAN1= .0000 -1.0000 .0000
KP2= 10001 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 10000 10002
LINE NO.= 701 KP1= 10000 TAN1= .0000 .0000 -1.0000
KP2= 10002 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 10000 10003
LINE NO.= 702 KP1= 10000 TAN1= .0000 1.0000 .0000
KP2= 10003 TAN2= .0000 -1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = .500

LINE CONNECTS KEYPOINTS 10001 10002
LINE NO.= 703 KP1= 10001 TAN1= .0000 .0000 -1.0000
KP2= 10002 TAN2= .0000 -1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

```

    TO NDIV = 6, SPACING RATIO = 1.000

LINE CONNECTS KEYPOINTS 10002 10003
  LINE NO.= 704 KP1= 10002 TAN1= .0000 1.0000 .0000
              KP2= 10003 TAN2= .0000 .0000 -1.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
  TO NDIV = 6, SPACING RATIO = .250

GENERATE 3 TOTAL SETS OF LINES
  SET IS ALL SELECTED LINES
  DX,DY,DZ= .000E+00 90.0 .000E+00 CSYS= 11
  KEYPOINT INCREMENT = 10

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
KEYPOINT 10000 USED FOR KEYPOINT(S) 10010 10020
KEYPOINT 10001 USED FOR KEYPOINT(S) 10011 10021
KEYPOINT 10003 USED FOR KEYPOINT(S) 10013 10023
LINE 700 USED FOR LINE(S) 705 710
LINE 702 USED FOR LINE(S) 707 712

VOLUME CONNECTING KEYPOINTS 10002 10003 10012 10012 10000 10000 10000 10000
  (GENERATED LINES AND AREAS FITTED IN ACTIVE CSYS = 11)

  VOLUME NUMBER = 118

VOLUME CONNECTING KEYPOINTS 10003 10022 10012 10012 10000 10000 10000 10000
  (GENERATED LINES AND AREAS FITTED IN ACTIVE CSYS = 11)

  VOLUME NUMBER = 119

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

ELEMENT TYPE SET TO 4

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

NUMBER OF VOLUMES MESHED = 2
MAXIMUM NODE NUMBER = 10315
MAXIMUM ELEMENT NUMBER = 3576
  Half Model is used to create the other half
  by symmetry along the x-axis

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
  IN RANGE 1 TO 119 STEP 1

  119 VOLUMES (OF 119 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
  IN RANGE 1 TO 484 STEP 1

  484 AREAS (OF 484 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
  IN RANGE 1 TO 714 STEP 1

  712 LINES (OF 712 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
  IN RANGE 1 TO 10023 STEP 1

  345 KEYPOINTS (OF 345 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
  IN RANGE 1 TO 3576 STEP 1

```

3576 ELEMENTS (OF 3576 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10315 STEP 1

4453 NODES (OF 4453 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SYMMETRY TRANSFORMATION OF VOLUMES USING COMPONENT X
SET IS ALL SELECTED VOLUMES

MAXIMUM NODE NUMBER = 14765
MAXIMUM ELEMENT NUMBER = 7236

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 11042 USED FOR NODES 12867
NODE 11604 USED FOR NODES 14200
NODE 11045 USED FOR NODES 12870
NODE 11046 USED FOR NODES 12871
NODE 11047 USED FOR NODES 12872
NODE 11048 USED FOR NODES 12873
NODE 11049 USED FOR NODES 12874
NODE 10451 USED FOR NODES 11877
NODE 11043 USED FOR NODES 12868
NODE 11050 USED FOR NODES 12875
NODE 11044 USED FOR NODES 12869
NODE 11051 USED FOR NODES 12876
NODE 11612 USED FOR NODES 14214
NODE 11019 USED FOR NODES 12790
NODE 11038 USED FOR NODES 12863
NODE 11039 USED FOR NODES 12864
NODE 11040 USED FOR NODES 12865
NODE 10443 USED FOR NODES 11863
NODE 11041 USED FOR NODES 12866
NODE 10450 USED FOR NODES 11876
NODE 11611 USED FOR NODES 14213
NODE 11025 USED FOR NODES 12822
NODE 11024 USED FOR NODES 12821
NODE 10442 USED FOR NODES 11860
NODE 11609 USED FOR NODES 14207
NODE 10448 USED FOR NODES 11870
NODE 10449 USED FOR NODES 11871
NODE 11610 USED FOR NODES 14208
NODE 11027 USED FOR NODES 12824
NODE 11028 USED FOR NODES 12825
NODE 11029 USED FOR NODES 12826
NODE 11603 USED FOR NODES 14197
NODE 10989 USED FOR NODES 12756
NODE 11597 USED FOR NODES 14189
NODE 11598 USED FOR NODES 14190
NODE 11026 USED FOR NODES 12823
NODE 11030 USED FOR NODES 12827
NODE 11594 USED FOR NODES 14184
NODE 11031 USED FOR NODES 12828
NODE 11032 USED FOR NODES 12829
NODE 11033 USED FOR NODES 12830
NODE 11034 USED FOR NODES 12831
NODE 11035 USED FOR NODES 12832
NODE 11036 USED FOR NODES 12833
NODE 11018 USED FOR NODES 12787
NODE 10427 USED FOR NODES 11841
NODE 11037 USED FOR NODES 12834
NODE 10430 USED FOR NODES 11846
NODE 10431 USED FOR NODES 11847
NODE 10973 USED FOR NODES 12726
NODE 10976 USED FOR NODES 12743
NODE 10977 USED FOR NODES 12744
NODE 10978 USED FOR NODES 12745

NODE 10979	USED FOR NODES	12746
NODE 10980	USED FOR NODES	12747
NODE 10981	USED FOR NODES	12748
NODE 10982	USED FOR NODES	12749
NODE 10983	USED FOR NODES	12750
NODE 10984	USED FOR NODES	12751
NODE 10985	USED FOR NODES	12752
NODE 10986	USED FOR NODES	12753
NODE 10987	USED FOR NODES	12754
NODE 10988	USED FOR NODES	12755
NODE 11117	USED FOR NODES	12929
NODE 10900	USED FOR NODES	12652
NODE 10466	USED FOR NODES	11891
NODE 11114	USED FOR NODES	12926
NODE 10467	USED FOR NODES	11892
NODE 10895	USED FOR NODES	12647
NODE 11122	USED FOR NODES	12934
NODE 11116	USED FOR NODES	12928
NODE 10894	USED FOR NODES	12646
NODE 10892	USED FOR NODES	12644
NODE 11123	USED FOR NODES	12935
NODE 10406	USED FOR NODES	11815
NODE 11582	USED FOR NODES	14171
NODE 11108	USED FOR NODES	12906
NODE 10901	USED FOR NODES	12653
NODE 10890	USED FOR NODES	12642
NODE 10891	USED FOR NODES	12643
NODE 11121	USED FOR NODES	12933
NODE 10883	USED FOR NODES	12607
NODE 10463	USED FOR NODES	11886
NODE 11583	USED FOR NODES	14172
NODE 11112	USED FOR NODES	12924
NODE 10893	USED FOR NODES	12645
NODE 10412	USED FOR NODES	11825
NODE 10889	USED FOR NODES	12641
NODE 11111	USED FOR NODES	12923
NODE 11115	USED FOR NODES	12927
NODE 11113	USED FOR NODES	12925
NODE 11124	USED FOR NODES	12936
NODE 11624	USED FOR NODES	14225
NODE 11625	USED FOR NODES	14226
NODE 10896	USED FOR NODES	12648
NODE 10897	USED FOR NODES	12649
NODE 10898	USED FOR NODES	12650
NODE 10902	USED FOR NODES	12654
NODE 10899	USED FOR NODES	12651
NODE 10413	USED FOR NODES	11826
NODE 11118	USED FOR NODES	12930
NODE 11576	USED FOR NODES	14161
NODE 11119	USED FOR NODES	12931
NODE 11120	USED FOR NODES	12932
NODE 11621	USED FOR NODES	14220
NODE 10910	USED FOR NODES	12690
NODE 10911	USED FOR NODES	12691
NODE 10912	USED FOR NODES	12692
NODE 10913	USED FOR NODES	12693
NODE 10914	USED FOR NODES	12694
NODE 10915	USED FOR NODES	12695
NODE 10916	USED FOR NODES	12696
NODE 11577	USED FOR NODES	14164
NODE 10407	USED FOR NODES	11818
NODE 10414	USED FOR NODES	11831
NODE 10415	USED FOR NODES	11832
NODE 11584	USED FOR NODES	14177
NODE 11585	USED FOR NODES	14178
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NODE	1190	USED FOR NODES	11505		
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NODE	1210	USED FOR NODES	11527		
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NODE	257	USED FOR NODES	10572		
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NODE	359	USED FOR NODES	2021
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NODE	1029	USED FOR NODES	2917
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NODE	513	USED FOR NODES	2249
NODE	515	USED FOR NODES	2251
NODE	521	USED FOR NODES	2257
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NODE	516	USED FOR NODES	2252
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NODE	845	USED	FOR	NODES	2673
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NODE	849	USED	FOR	NODES	2677
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NODE	853	USED	FOR	NODES	2681
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NODE	883	USED	FOR	NODES	2739
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NODE	1326	USED	FOR	NODES	3935
NODE	195	USED	FOR	NODES	1664
NODE	872	USED	FOR	NODES	2728
NODE	182	USED	FOR	NODES	1653
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NODE	875	USED	FOR	NODES	2731
NODE	877	USED	FOR	NODES	2733
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NODE	885	USED	FOR	NODES	2741
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NODE	196	USED	FOR	NODES	1665
NODE	839	USED	FOR	NODES	2655
NODE	614	USED	FOR	NODES	2380
NODE	613	USED	FOR	NODES	2379
NODE	608	USED	FOR	NODES	2374
NODE	1271	USED	FOR	NODES	3862
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NODE	603	USED	FOR	NODES	2369
NODE	569	USED	FOR	NODES	2295
NODE	615	USED	FOR	NODES	2381
NODE	610	USED	FOR	NODES	2376
NODE	611	USED	FOR	NODES	2377
NODE	609	USED	FOR	NODES	2375
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NODE	142	USED	FOR	NODES	1593
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NODE	607	USED	FOR	NODES	2373
NODE	1262	USED	FOR	NODES	3849
NODE	128	USED	FOR	NODES	1581
NODE	602	USED	FOR	NODES	2368
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NODE	574	USED	FOR	NODES	2312
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NODE	581	USED	FOR	NODES	2319
NODE	586	USED	FOR	NODES	2324
NODE	797	USED	FOR	NODES	2609
NODE	587	USED	FOR	NODES	2325
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NODE	576	USED	FOR	NODES	2314
NODE	796	USED	FOR	NODES	2608
NODE	568	USED	FOR	NODES	2292
NODE	172	USED	FOR	NODES	1637
NODE	578	USED	FOR	NODES	2316
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NODE	658	USED	FOR	NODES	2411
NODE	1288	USED	FOR	NODES	3882
NODE	721	USED	FOR	NODES	2504
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NODE	703	USED FOR NODES	2472
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NODE	716	USED FOR NODES	2499
NODE	717	USED FOR NODES	2500
NODE	718	USED FOR NODES	2501
NODE	155	USED FOR NODES	1617
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NODE	750	USED FOR NODES	2561
NODE	169	USED FOR NODES	1629
NODE	737	USED FOR NODES	2548
NODE	1289	USED FOR NODES	3885
NODE	704	USED FOR NODES	2475
NODE	1298	USED FOR NODES	3898
NODE	1299	USED FOR NODES	3899
NODE	738	USED FOR NODES	2549
NODE	739	USED FOR NODES	2550
NODE	10002	USED FOR NODES	10010

*** WARNING *** CP= 54.180 TIME= 10:48:26
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	72	USED FOR KEYPOINT(S)	393
KEYPOINT	79	USED FOR KEYPOINT(S)	392
KEYPOINT	86	USED FOR KEYPOINT(S)	491
KEYPOINT	93	USED FOR KEYPOINT(S)	520
KEYPOINT	100	USED FOR KEYPOINT(S)	343
KEYPOINT	107	USED FOR KEYPOINT(S)	340
KEYPOINT	114	USED FOR KEYPOINT(S)	452
KEYPOINT	121	USED FOR KEYPOINT(S)	494
KEYPOINT	130	USED FOR KEYPOINT(S)	217
KEYPOINT	131	USED FOR KEYPOINT(S)	216
KEYPOINT	133	USED FOR KEYPOINT(S)	347
KEYPOINT	134	USED FOR KEYPOINT(S)	219
KEYPOINT	136	USED FOR KEYPOINT(S)	221
KEYPOINT	138	USED FOR KEYPOINT(S)	223
KEYPOINT	140	USED FOR KEYPOINT(S)	225
KEYPOINT	142	USED FOR KEYPOINT(S)	227
KEYPOINT	144	USED FOR KEYPOINT(S)	229
KEYPOINT	146	USED FOR KEYPOINT(S)	231

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KEYPOINT	148 USED FOR KEYPOINT(S)	233		
KEYPOINT	150 USED FOR KEYPOINT(S)	235		
KEYPOINT	152 USED FOR KEYPOINT(S)	237		
KEYPOINT	154 USED FOR KEYPOINT(S)	239		
KEYPOINT	156 USED FOR KEYPOINT(S)	241	394	493
KEYPOINT	157 USED FOR KEYPOINT(S)	395		
KEYPOINT	158 USED FOR KEYPOINT(S)	259	396	525
KEYPOINT	159 USED FOR KEYPOINT(S)	258		
KEYPOINT	161 USED FOR KEYPOINT(S)	399		
KEYPOINT	162 USED FOR KEYPOINT(S)	261		
KEYPOINT	164 USED FOR KEYPOINT(S)	263		
KEYPOINT	166 USED FOR KEYPOINT(S)	265		
KEYPOINT	168 USED FOR KEYPOINT(S)	267		
KEYPOINT	170 USED FOR KEYPOINT(S)	269		
KEYPOINT	172 USED FOR KEYPOINT(S)	271		
KEYPOINT	174 USED FOR KEYPOINT(S)	273		
KEYPOINT	176 USED FOR KEYPOINT(S)	275		
KEYPOINT	178 USED FOR KEYPOINT(S)	277		
KEYPOINT	180 USED FOR KEYPOINT(S)	279		
KEYPOINT	182 USED FOR KEYPOINT(S)	281		
KEYPOINT	184 USED FOR KEYPOINT(S)	283	422	549
KEYPOINT	185 USED FOR KEYPOINT(S)	423		
KEYPOINT	186 USED FOR KEYPOINT(S)	301	424	567
KEYPOINT	187 USED FOR KEYPOINT(S)	300		
KEYPOINT	189 USED FOR KEYPOINT(S)	427		
KEYPOINT	190 USED FOR KEYPOINT(S)	303		
KEYPOINT	192 USED FOR KEYPOINT(S)	305		
KEYPOINT	194 USED FOR KEYPOINT(S)	307		
KEYPOINT	196 USED FOR KEYPOINT(S)	309		
KEYPOINT	198 USED FOR KEYPOINT(S)	311		
KEYPOINT	200 USED FOR KEYPOINT(S)	313		
KEYPOINT	202 USED FOR KEYPOINT(S)	315		
KEYPOINT	204 USED FOR KEYPOINT(S)	317		
KEYPOINT	206 USED FOR KEYPOINT(S)	319		
KEYPOINT	208 USED FOR KEYPOINT(S)	321		
KEYPOINT	210 USED FOR KEYPOINT(S)	323		
KEYPOINT	212 USED FOR KEYPOINT(S)	325	450	591
KEYPOINT	213 USED FOR KEYPOINT(S)	451		
KEYPOINT	214 USED FOR KEYPOINT(S)	454		
KEYPOINT	240 USED FOR KEYPOINT(S)	492		
KEYPOINT	242 USED FOR KEYPOINT(S)	496		
KEYPOINT	255 USED FOR KEYPOINT(S)	521		
KEYPOINT	256 USED FOR KEYPOINT(S)	522		
KEYPOINT	282 USED FOR KEYPOINT(S)	548		
KEYPOINT	284 USED FOR KEYPOINT(S)	550		
KEYPOINT	297 USED FOR KEYPOINT(S)	563		
KEYPOINT	298 USED FOR KEYPOINT(S)	564		
KEYPOINT	324 USED FOR KEYPOINT(S)	590		
KEYPOINT	326 USED FOR KEYPOINT(S)	592		
KEYPOINT	339 USED FOR KEYPOINT(S)	605		
KEYPOINT	609 USED FOR KEYPOINT(S)	10000		
KEYPOINT	606 USED FOR KEYPOINT(S)	10002		
KEYPOINT	607 USED FOR KEYPOINT(S)	10003		
KEYPOINT	610 USED FOR KEYPOINT(S)	10022		
KEYPOINT	345 USED FOR KEYPOINT(S)	456		
KEYPOINT	350 USED FOR KEYPOINT(S)	460		
KEYPOINT	354 USED FOR KEYPOINT(S)	463		
KEYPOINT	358 USED FOR KEYPOINT(S)	466		
KEYPOINT	362 USED FOR KEYPOINT(S)	469		
KEYPOINT	366 USED FOR KEYPOINT(S)	472		
KEYPOINT	370 USED FOR KEYPOINT(S)	475		
KEYPOINT	374 USED FOR KEYPOINT(S)	478		
KEYPOINT	378 USED FOR KEYPOINT(S)	481		
KEYPOINT	382 USED FOR KEYPOINT(S)	484		
KEYPOINT	386 USED FOR KEYPOINT(S)	487		
KEYPOINT	390 USED FOR KEYPOINT(S)	490		
KEYPOINT	397 USED FOR KEYPOINT(S)	524		
KEYPOINT	400 USED FOR KEYPOINT(S)	527		
KEYPOINT	402 USED FOR KEYPOINT(S)	529		
KEYPOINT	404 USED FOR KEYPOINT(S)	531		

KEYPOINT	406 USED FOR KEYPOINT(S)	533	
KEYPOINT	408 USED FOR KEYPOINT(S)	535	
KEYPOINT	410 USED FOR KEYPOINT(S)	537	
KEYPOINT	412 USED FOR KEYPOINT(S)	539	
KEYPOINT	414 USED FOR KEYPOINT(S)	541	
KEYPOINT	416 USED FOR KEYPOINT(S)	543	
KEYPOINT	418 USED FOR KEYPOINT(S)	545	
KEYPOINT	420 USED FOR KEYPOINT(S)	547	
KEYPOINT	425 USED FOR KEYPOINT(S)	566	
KEYPOINT	428 USED FOR KEYPOINT(S)	569	
KEYPOINT	430 USED FOR KEYPOINT(S)	571	
KEYPOINT	432 USED FOR KEYPOINT(S)	573	
KEYPOINT	434 USED FOR KEYPOINT(S)	575	
KEYPOINT	436 USED FOR KEYPOINT(S)	577	
KEYPOINT	438 USED FOR KEYPOINT(S)	579	
KEYPOINT	440 USED FOR KEYPOINT(S)	581	
KEYPOINT	442 USED FOR KEYPOINT(S)	583	
KEYPOINT	444 USED FOR KEYPOINT(S)	585	
KEYPOINT	446 USED FOR KEYPOINT(S)	587	
KEYPOINT	448 USED FOR KEYPOINT(S)	589	
LINE	67 USED FOR LINE(S)	814	
LINE	80 USED FOR LINE(S)	716	
LINE	81 USED FOR LINE(S)	1046	
LINE	94 USED FOR LINE(S)	959	
LINE	95 USED FOR LINE(S)	1116	
LINE	108 USED FOR LINE(S)	1054	
LINE	161 USED FOR LINE(S)	375	
LINE	164 USED FOR LINE(S)	720	
LINE	165 USED FOR LINE(S)	380	722 967
LINE	166 USED FOR LINE(S)	379	
LINE	168 USED FOR LINE(S)	724	
LINE	169 USED FOR LINE(S)	383	
LINE	172 USED FOR LINE(S)	385	
LINE	174 USED FOR LINE(S)	388	
LINE	177 USED FOR LINE(S)	390	
LINE	179 USED FOR LINE(S)	393	
LINE	182 USED FOR LINE(S)	395	
LINE	184 USED FOR LINE(S)	398	
LINE	187 USED FOR LINE(S)	400	
LINE	189 USED FOR LINE(S)	403	
LINE	192 USED FOR LINE(S)	405	
LINE	194 USED FOR LINE(S)	408	
LINE	197 USED FOR LINE(S)	410	
LINE	199 USED FOR LINE(S)	413	
LINE	202 USED FOR LINE(S)	415	
LINE	204 USED FOR LINE(S)	418	
LINE	207 USED FOR LINE(S)	420	
LINE	209 USED FOR LINE(S)	423	
LINE	212 USED FOR LINE(S)	425	
LINE	214 USED FOR LINE(S)	428	
LINE	217 USED FOR LINE(S)	430	
LINE	219 USED FOR LINE(S)	433	
LINE	222 USED FOR LINE(S)	435	
LINE	224 USED FOR LINE(S)	438	
LINE	225 USED FOR LINE(S)	817	
LINE	227 USED FOR LINE(S)	440	819 1051
LINE	228 USED FOR LINE(S)	820	
LINE	229 USED FOR LINE(S)	484	
LINE	232 USED FOR LINE(S)	824	
LINE	233 USED FOR LINE(S)	489	826 1127
LINE	234 USED FOR LINE(S)	488	
LINE	236 USED FOR LINE(S)	828	
LINE	237 USED FOR LINE(S)	492	
LINE	240 USED FOR LINE(S)	494	
LINE	242 USED FOR LINE(S)	497	
LINE	245 USED FOR LINE(S)	499	
LINE	247 USED FOR LINE(S)	502	
LINE	250 USED FOR LINE(S)	504	
LINE	252 USED FOR LINE(S)	507	
LINE	255 USED FOR LINE(S)	509	

LINE	257 USED FOR LINE(S)	512	
LINE	260 USED FOR LINE(S)	514	
LINE	262 USED FOR LINE(S)	517	
LINE	265 USED FOR LINE(S)	519	
LINE	267 USED FOR LINE(S)	522	
LINE	270 USED FOR LINE(S)	524	
LINE	272 USED FOR LINE(S)	527	
LINE	275 USED FOR LINE(S)	529	
LINE	277 USED FOR LINE(S)	532	
LINE	280 USED FOR LINE(S)	534	
LINE	282 USED FOR LINE(S)	537	
LINE	285 USED FOR LINE(S)	539	
LINE	287 USED FOR LINE(S)	542	
LINE	290 USED FOR LINE(S)	544	
LINE	292 USED FOR LINE(S)	547	
LINE	293 USED FOR LINE(S)	885	
LINE	295 USED FOR LINE(S)	549	887 1187
LINE	296 USED FOR LINE(S)	888	
LINE	297 USED FOR LINE(S)	593	
LINE	300 USED FOR LINE(S)	892	
LINE	301 USED FOR LINE(S)	598	894 1236
LINE	302 USED FOR LINE(S)	597	
LINE	304 USED FOR LINE(S)	896	
LINE	305 USED FOR LINE(S)	601	
LINE	308 USED FOR LINE(S)	603	
LINE	310 USED FOR LINE(S)	606	
LINE	313 USED FOR LINE(S)	608	
LINE	315 USED FOR LINE(S)	611	
LINE	318 USED FOR LINE(S)	613	
LINE	320 USED FOR LINE(S)	616	
LINE	323 USED FOR LINE(S)	618	
LINE	325 USED FOR LINE(S)	621	
LINE	328 USED FOR LINE(S)	623	
LINE	330 USED FOR LINE(S)	626	
LINE	333 USED FOR LINE(S)	628	
LINE	335 USED FOR LINE(S)	631	
LINE	338 USED FOR LINE(S)	633	
LINE	340 USED FOR LINE(S)	636	
LINE	343 USED FOR LINE(S)	638	
LINE	345 USED FOR LINE(S)	641	
LINE	348 USED FOR LINE(S)	643	
LINE	350 USED FOR LINE(S)	646	
LINE	353 USED FOR LINE(S)	648	
LINE	355 USED FOR LINE(S)	651	
LINE	358 USED FOR LINE(S)	653	
LINE	360 USED FOR LINE(S)	656	
LINE	361 USED FOR LINE(S)	953	
LINE	363 USED FOR LINE(S)	658	955 1296
LINE	364 USED FOR LINE(S)	956	
LINE	376 USED FOR LINE(S)	963	
LINE	377 USED FOR LINE(S)	965	
LINE	437 USED FOR LINE(S)	1048	
LINE	439 USED FOR LINE(S)	1050	
LINE	443 USED FOR LINE(S)	1057	
LINE	444 USED FOR LINE(S)	1059	
LINE	480 USED FOR LINE(S)	1118	
LINE	481 USED FOR LINE(S)	1119	
LINE	485 USED FOR LINE(S)	1123	
LINE	486 USED FOR LINE(S)	1125	
LINE	546 USED FOR LINE(S)	1184	
LINE	548 USED FOR LINE(S)	1186	
LINE	552 USED FOR LINE(S)	1190	
LINE	553 USED FOR LINE(S)	1192	
LINE	589 USED FOR LINE(S)	1227	
LINE	590 USED FOR LINE(S)	1228	
LINE	594 USED FOR LINE(S)	1232	
LINE	595 USED FOR LINE(S)	1234	
LINE	655 USED FOR LINE(S)	1293	
LINE	657 USED FOR LINE(S)	1295	
LINE	661 USED FOR LINE(S)	1299	

LINE	662 USED FOR LINE(S)	1301
LINE	698 USED FOR LINE(S)	1336
LINE	699 USED FOR LINE(S)	1337
LINE	701 USED FOR LINE(S)	1342
LINE	702 USED FOR LINE(S)	1341
LINE	704 USED FOR LINE(S)	1338
LINE	711 USED FOR LINE(S)	1346
LINE	714 USED FOR LINE(S)	1344
LINE	717 USED FOR LINE(S)	962
LINE	721 USED FOR LINE(S)	966
LINE	728 USED FOR LINE(S)	972
LINE	731 USED FOR LINE(S)	974
LINE	736 USED FOR LINE(S)	979
LINE	739 USED FOR LINE(S)	981
LINE	744 USED FOR LINE(S)	986
LINE	747 USED FOR LINE(S)	988
LINE	752 USED FOR LINE(S)	993
LINE	755 USED FOR LINE(S)	995
LINE	760 USED FOR LINE(S)	1000
LINE	763 USED FOR LINE(S)	1002
LINE	768 USED FOR LINE(S)	1007
LINE	771 USED FOR LINE(S)	1009
LINE	776 USED FOR LINE(S)	1014
LINE	779 USED FOR LINE(S)	1016
LINE	784 USED FOR LINE(S)	1021
LINE	787 USED FOR LINE(S)	1023
LINE	792 USED FOR LINE(S)	1028
LINE	795 USED FOR LINE(S)	1030
LINE	800 USED FOR LINE(S)	1035
LINE	803 USED FOR LINE(S)	1037
LINE	808 USED FOR LINE(S)	1042
LINE	811 USED FOR LINE(S)	1044
LINE	816 USED FOR LINE(S)	1049
LINE	821 USED FOR LINE(S)	1122
LINE	825 USED FOR LINE(S)	1126
LINE	829 USED FOR LINE(S)	1130
LINE	832 USED FOR LINE(S)	1132
LINE	834 USED FOR LINE(S)	1135
LINE	837 USED FOR LINE(S)	1137
LINE	839 USED FOR LINE(S)	1140
LINE	842 USED FOR LINE(S)	1142
LINE	844 USED FOR LINE(S)	1145
LINE	847 USED FOR LINE(S)	1147
LINE	849 USED FOR LINE(S)	1150
LINE	852 USED FOR LINE(S)	1152
LINE	854 USED FOR LINE(S)	1155
LINE	857 USED FOR LINE(S)	1157
LINE	859 USED FOR LINE(S)	1160
LINE	862 USED FOR LINE(S)	1162
LINE	864 USED FOR LINE(S)	1165
LINE	867 USED FOR LINE(S)	1167
LINE	869 USED FOR LINE(S)	1170
LINE	872 USED FOR LINE(S)	1172
LINE	874 USED FOR LINE(S)	1175
LINE	877 USED FOR LINE(S)	1177
LINE	879 USED FOR LINE(S)	1180
LINE	882 USED FOR LINE(S)	1182
LINE	884 USED FOR LINE(S)	1185
LINE	889 USED FOR LINE(S)	1231
LINE	893 USED FOR LINE(S)	1235
LINE	897 USED FOR LINE(S)	1239
LINE	900 USED FOR LINE(S)	1241
LINE	902 USED FOR LINE(S)	1244
LINE	905 USED FOR LINE(S)	1246
LINE	907 USED FOR LINE(S)	1249
LINE	910 USED FOR LINE(S)	1251
LINE	912 USED FOR LINE(S)	1254
LINE	915 USED FOR LINE(S)	1256
LINE	917 USED FOR LINE(S)	1259
LINE	920 USED FOR LINE(S)	1261

LINE	922	USED FOR LINE(S)	1264
LINE	925	USED FOR LINE(S)	1266
LINE	927	USED FOR LINE(S)	1269
LINE	930	USED FOR LINE(S)	1271
LINE	932	USED FOR LINE(S)	1274
LINE	935	USED FOR LINE(S)	1276
LINE	937	USED FOR LINE(S)	1279
LINE	940	USED FOR LINE(S)	1281
LINE	942	USED FOR LINE(S)	1284
LINE	945	USED FOR LINE(S)	1286
LINE	947	USED FOR LINE(S)	1289
LINE	950	USED FOR LINE(S)	1291
LINE	952	USED FOR LINE(S)	1294
AREA	15	USED FOR AREA(S)	202
AREA	18	USED FOR AREA(S)	490
AREA	20	USED FOR AREA(S)	207
AREA	24	USED FOR AREA(S)	211
AREA	28	USED FOR AREA(S)	215
AREA	32	USED FOR AREA(S)	219
AREA	36	USED FOR AREA(S)	223
AREA	40	USED FOR AREA(S)	227
AREA	44	USED FOR AREA(S)	231
AREA	48	USED FOR AREA(S)	235
AREA	52	USED FOR AREA(S)	239
AREA	56	USED FOR AREA(S)	243
AREA	60	USED FOR AREA(S)	247
AREA	64	USED FOR AREA(S)	251
AREA	65	USED FOR AREA(S)	549
AREA	68	USED FOR AREA(S)	295
AREA	71	USED FOR AREA(S)	555
AREA	73	USED FOR AREA(S)	300
AREA	77	USED FOR AREA(S)	304
AREA	81	USED FOR AREA(S)	308
AREA	85	USED FOR AREA(S)	312
AREA	89	USED FOR AREA(S)	316
AREA	93	USED FOR AREA(S)	320
AREA	97	USED FOR AREA(S)	324
AREA	101	USED FOR AREA(S)	328
AREA	105	USED FOR AREA(S)	332
AREA	109	USED FOR AREA(S)	336
AREA	113	USED FOR AREA(S)	340
AREA	117	USED FOR AREA(S)	344
AREA	118	USED FOR AREA(S)	602
AREA	121	USED FOR AREA(S)	388
AREA	124	USED FOR AREA(S)	608
AREA	126	USED FOR AREA(S)	393
AREA	130	USED FOR AREA(S)	397
AREA	134	USED FOR AREA(S)	401
AREA	138	USED FOR AREA(S)	405
AREA	142	USED FOR AREA(S)	409
AREA	146	USED FOR AREA(S)	413
AREA	150	USED FOR AREA(S)	417
AREA	154	USED FOR AREA(S)	421
AREA	158	USED FOR AREA(S)	425
AREA	162	USED FOR AREA(S)	429
AREA	166	USED FOR AREA(S)	433
AREA	170	USED FOR AREA(S)	437
AREA	171	USED FOR AREA(S)	655
AREA	203	USED FOR AREA(S)	662
AREA	250	USED FOR AREA(S)	721
AREA	255	USED FOR AREA(S)	727
AREA	291	USED FOR AREA(S)	775
AREA	296	USED FOR AREA(S)	780
AREA	343	USED FOR AREA(S)	827
AREA	348	USED FOR AREA(S)	832
AREA	384	USED FOR AREA(S)	868
AREA	389	USED FOR AREA(S)	873
AREA	436	USED FOR AREA(S)	920
AREA	441	USED FOR AREA(S)	925
AREA	477	USED FOR AREA(S)	961

AREA 479 USED FOR AREA(S) 963
 AREA 483 USED FOR AREA(S) 967
 AREA 487 USED FOR AREA(S) 661
 AREA 493 USED FOR AREA(S) 667
 AREA 498 USED FOR AREA(S) 672
 AREA 503 USED FOR AREA(S) 677
 AREA 508 USED FOR AREA(S) 682
 AREA 513 USED FOR AREA(S) 687
 AREA 518 USED FOR AREA(S) 692
 AREA 523 USED FOR AREA(S) 697
 AREA 528 USED FOR AREA(S) 702
 AREA 533 USED FOR AREA(S) 707
 AREA 538 USED FOR AREA(S) 712
 AREA 543 USED FOR AREA(S) 717
 AREA 548 USED FOR AREA(S) 722
 AREA 552 USED FOR AREA(S) 779
 AREA 557 USED FOR AREA(S) 784
 AREA 561 USED FOR AREA(S) 788
 AREA 565 USED FOR AREA(S) 792
 AREA 569 USED FOR AREA(S) 796
 AREA 573 USED FOR AREA(S) 800
 AREA 577 USED FOR AREA(S) 804
 AREA 581 USED FOR AREA(S) 808
 AREA 585 USED FOR AREA(S) 812
 AREA 589 USED FOR AREA(S) 816
 AREA 593 USED FOR AREA(S) 820
 AREA 597 USED FOR AREA(S) 824
 AREA 601 USED FOR AREA(S) 828
 AREA 605 USED FOR AREA(S) 872
 AREA 610 USED FOR AREA(S) 877
 AREA 614 USED FOR AREA(S) 881
 AREA 618 USED FOR AREA(S) 885
 AREA 622 USED FOR AREA(S) 889
 AREA 626 USED FOR AREA(S) 893
 AREA 630 USED FOR AREA(S) 897
 AREA 634 USED FOR AREA(S) 901
 AREA 638 USED FOR AREA(S) 905
 AREA 642 USED FOR AREA(S) 909
 AREA 646 USED FOR AREA(S) 913
 AREA 650 USED FOR AREA(S) 917
 AREA 654 USED FOR AREA(S) 921

Contact Elements Generation

ELEMENT TYPE SET TO 5

REAL CONSTANT NUMBER= 5

MATERIAL NUMBER SET TO 5

ACTIVE COORDINATE SYSTEM SET TO 11 (SPHERICAL)

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN 1.0000 AND 1.0000
 KABS= 0. TOLERANCE= .500000E-02

121 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN -90.000 AND -60.000
 KABS= 0. TOLERANCE= .000000E+00

25 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFA ENTITY=NODE

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 1.5925 AND 2.9925
 KABS= 0. TOLERANCE= .000000E+00

4353 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .81350 AND .81550
KABS= 0. TOLERANCE= .000000E+00

480 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 60.000 AND 120.00
KABS= 0. TOLERANCE= .000000E+00

84 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFB ENTITY=NODE

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

GENERATE ELEMENTS BETWEEN CONTACT (SURFA) AND TARGET (SURFB) SURFACES.
TARGET SURFACE OF PLATE OR BEAM ELEMENTS IS TOP.
ELEMENT TYPE TO BE GENERATED = CONTAC49.

NUMBER OF CONTACT ELEMENTS GENERATED = 1650

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 238 STEP 1

238 VOLUMES (OF 238 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 968 STEP 1

870 AREAS (OF 870 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 1346 STEP 1

1131 LINES (OF 1131 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10023 STEP 1

496 KEYPOINTS (OF 496 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8886 STEP 1

8886 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.
Apply Constraints at Support Locations

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN -.10000E-02 AND .47600
KABS= 0. TOLERANCE= .000000E+00

640 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 4.1000 AND 4.5860
KABS= 0. TOLERANCE= .000000E+00

1280 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .79450 AND .83450
KABS= 0. TOLERANCE= .000000E+00

160 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -135.00 AND -45.000
KABS= 0. TOLERANCE= .000000E+00

44 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

IN COORDINATE SYSTEM 1, ROTATE ALL SELECTED NODES.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 14765 BY 1
REAL= .000000000E+00 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND .00000E+00
KABS= 0. TOLERANCE= .100000E-05

320 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .80636 AND .82265
KABS= 0. TOLERANCE= .000000E+00

40 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -90.000 AND -90.000
KABS= 0. TOLERANCE= .450000

1 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 14765 BY 1
REAL= .000000000E+00 IMAG= .000000000E+00

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 238 STEP 1

238 VOLUMES (OF 238 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 968 STEP 1

870 AREAS (OF 870 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 1346 STEP 1

1131 LINES (OF 1131 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10023 STEP 1

496 KEYPOINTS (OF 496 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 8886 STEP 1

8886 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 14765 STEP 1

7599 NODES (OF 7599 DEFINED) SELECTED BY NSEL COMMAND.

UNSELECT FOR ITEM=MAT COMPONENT=
IN RANGE 6 TO 6 STEP 1

7962 ELEMENTS (OF 8886 DEFINED) SELECTED BY ESEL COMMAND.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= exwobt.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 72.100

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS

*** NOTE *** CP= 72.110 TIME= 10:48:44
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

ACEL= .00000E+00 9.8100 .00000E+00

STEP BOUNDARY CONDITION KEY= 1

TIME= .10000E-02

USE 3 SUBSTEP(S) THIS LOAD STEP FOR ALL DOFS

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 73.970 TIME= 10:48:46
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 10:48:46 NOV 01, 1995 CP= 73.970
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY. 3-D
DEGREES OF FREEDOM. UX UY UZ ROTX ROTY ROTZ
ANALYSIS TYPE TRANSIENT
SOLUTION METHOD. FULL
NONLINEAR GEOMETRIC EFFECTS ON
PLASTIC MATERIAL PROPERTIES INCLUDED. YES
NEWTON-RAPHSON OPTION PROGRAM CHOSEN

*** WARNING *** CP= 73.980 TIME= 10:48:46
Out of the 8886 defined elements, only 7962 elements are selected.

*** NOTE *** CP= 76.510 TIME= 10:48:50
The step data was checked and warning messages were found.

Please review output or errors file (exwobt.err) for these warning messages.

*** NOTE *** CP= 76.510 TIME= 10:48:50
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

```

LOAD STEP NUMBER. . . . . 1
TIME AT END OF THE LOAD STEP. . . . . .10000E-02
NUMBER OF SUBSTEPS. . . . . 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . YES
TRANSIENT (INERTIA) EFFECTS
  STRUCTURAL DOFS. . . . . ON
TRANSIENT INTEGRATION PARAMETERS
  ALPHA. . . . . .25251
  DELTA. . . . . .50500
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
INERTIA LOADS
  ACEL . . . . . .00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE . . . . .YES, FOR ELEMENTS WITH
  ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS
  ITEM FREQUENCY COMPONENT
  ALL ALL

```

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 26553.

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = .25350E-12	IXX = .7260E+06	IXX = .4637E+06
YC = 2.1505	IYY = .1834E+06	IYY = .4384E+05
ZC = 2.2925	IZZ = .5566E+06	IZZ = .4338E+06
	IXY = -.6666E-07	IXY = -.5218E-07
	IYZ = -.1309E+06	IYZ = .3862E-03
	IZX = -.1059E-07	IZX = .4841E-08

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
2	3314.08
3	17239.1
4	5999.99

Range of element maximum matrix coefficients in global coordinates
Maximum= 2.781920361E+11 at element 55.
Minimum= 1.126190685E+09 at element 7139.

*** ELEMENT MATRIX FORMULATION TIMES				
TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	1680	SOLID45	18.810	.011
3	4200	SOLID45	46.500	.011
4	432	SOLID45	4.530	.010
5	1650	CONTAC49	1.950	.001

Time at end of element matrix formulation CP= 160.43.
 FORCE CONVERGENCE VALUE = 4320. CRITERION= 4.320
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

Estimated number of active DOF= 22752.
 Maximum wavefront= 1535.

Time at end of matrix triangularization CP= 682.8.
 Equation solver maximum pivot= 9.362836258E+11 at node 1205 UY.
 Equation solver minimum pivot= 2.015770141E+09 at node 14544 UY.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2982E-06
 FORCE CONVERGENCE VALUE = .3408E-01 CRITERION= 4.865 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 797.150 TIME= 11:05:31
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** NOTE *** CP= 852.170 TIME= 11:07:27
 Page file used.

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	1680	SOLID45	15.530	.009
3	4200	SOLID45	38.630	.009
4	432	SOLID45	3.310	.008
5	1650	CONTAC49	1.650	.001

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	1680	SOLID45	.660	.000
3	4200	SOLID45	1.450	.000
4	432	SOLID45	.190	.000
5	1650	CONTAC49	.250	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 1
 *** TIME = .333333E-03 TIME INC = .333333E-03
 *** RESPONSE FREQ = 185.1 PERIOD= .5402E-02 PTS/CYC = 16.

FORCE CONVERGENCE VALUE = .1605E+05 CRITERION= 16.95
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1154E-05
 FORCE CONVERGENCE VALUE = .4796 CRITERION= 14.17 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 1602.380 TIME= 11:30:46
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 1 SUBSTEP 2 COMPLETED. CUM ITER = 2
 *** TIME = .666667E-03 TIME INC = .333333E-03
 *** RESPONSE FREQ = 154.2 PERIOD= .6485E-02 PTS/CYC = 19.

FORCE CONVERGENCE VALUE = .3040E+05 CRITERION= 33.96
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2185E-05
 FORCE CONVERGENCE VALUE = 1.766 CRITERION= 27.53 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 2426.340 TIME= 11:56:51
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 1 SUBSTEP 3 COMPLETED. CUM ITER = 3
 *** TIME = .100000E-02 TIME INC = .333333E-03

*** RESPONSE FREQ = 125.8 PERIOD= .7947E-02 PTS/CYC = 24.

*** PROBLEM STATISTICS
ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 22752
R.M.S. WAVEFRONT SIZE = 1118.7

*** ANSYS BINARY FILE STATISTICS
BUFFER SIZE USED= 4096
34.953 MB WRITTEN ON ELEMENT MATRIX FILE: exwobt.emat
50.422 MB WRITTEN ON ELEMENT SAVED DATA FILE: exwobt.esav
188.156 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: exwobt.tri
49.188 MB WRITTEN ON RESULTS FILE: exwobt.rst

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= 1.2800

USE 10 SUBSTEP(S) THIS LOAD STEP FOR ALL DOFS

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 2511.590 TIME= 12:00:13
Out of the 8886 defined elements, only 7962 elements are selected.

*** NOTE *** CP= 2514.190 TIME= 12:00:16
The step data was checked and warning messages were found.
Please review output or errors file (exwobt.err) for these warning
messages.

*** NOTE *** CP= 2514.190 TIME= 12:00:16
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFS.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 12:00:16 NOV 01, 1995 CP= 2514.190
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
TIME AT END OF THE LOAD STEP. 1.2800
NUMBER OF SUBSTEPS. 10
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS YES
TRANSIENT (INERTIA) EFFECTS
STRUCTURAL DOFS. ON
TRANSIENT INTEGRATION PARAMETERS
ALPHA. 25251
DELTA. 50500
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

FORCE CONVERGENCE VALUE = 7004. CRITERION= 28.41
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8129E-01
 FORCE CONVERGENCE VALUE = 379.2 CRITERION= 142.9
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 3265.490 TIME= 12:23:12
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2726E-08
 FORCE CONVERGENCE VALUE = .3184E-03 CRITERION= 142.9 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 3892.090 TIME= 12:40:42
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 5
 *** TIME = .128900 TIME INC = .127900
 *** RESPONSE FREQ = .6016E+01 PERIOD= 16.62 PTS/CYC = .13E+03
 FORCE CONVERGENCE VALUE = .1732E+05 CRITERION= 143.8
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2418
 FORCE CONVERGENCE VALUE = 383.8 CRITERION= 26.30
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 4728.750 TIME= 13:07:01
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1456E-08
 FORCE CONVERGENCE VALUE = .6755E-04 CRITERION= 26.33 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 5353.370 TIME= 13:24:29
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 2 SUBSTEP 2 COMPLETED. CUM ITER = 7
 *** TIME = .256800 TIME INC = .127900
 *** RESPONSE FREQ = .2040E-01 PERIOD= 49.02 PTS/CYC = .38E+03
 FORCE CONVERGENCE VALUE = .2829E+05 CRITERION= 38.65
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4022
 FORCE CONVERGENCE VALUE = 388.2 CRITERION= 143.9
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 6190.330 TIME= 13:50:46
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8766E-08
 FORCE CONVERGENCE VALUE = .1379E-02 CRITERION= 143.9 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 6816.650 TIME= 14:08:15
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 2 SUBSTEP 3 COMPLETED. CUM ITER = 9
 *** TIME = .384700 TIME INC = .127900
 *** RESPONSE FREQ = .1234E-01 PERIOD= 81.03 PTS/CYC = .63E+03

FORCE CONVERGENCE VALUE = .3936E+05 CRITERION= 149.1

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5627
 FORCE CONVERGENCE VALUE = 390.0 CRITERION= 25.50
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 7654.050 TIME= 14:34:30
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4573E-08
 FORCE CONVERGENCE VALUE = .1482E-03 CRITERION= 25.53 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 8280.390 TIME= 14:52:00
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 2 SUBSTEP 4 COMPLETED. CUM ITER = 11
 *** TIME = .512600 TIME INC = .127900
 *** RESPONSE FREQ = .8862E-02 PERIOD= 112.8 PTS/CYC = .88E+03
 FORCE CONVERGENCE VALUE = .5048E+05 CRITERION= 56.57
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7232
 FORCE CONVERGENCE VALUE = 391.7 CRITERION= 144.4
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 9117.280 TIME= 15:18:18
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2546E-07
 FORCE CONVERGENCE VALUE = .4347E-02 CRITERION= 144.4 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 9744.280 TIME= 15:35:49
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 2 SUBSTEP 5 COMPLETED. CUM ITER = 13
 *** TIME = .640500 TIME INC = .127900
 *** RESPONSE FREQ = .6915E-02 PERIOD= 144.6 PTS/CYC = .11E+04
 FORCE CONVERGENCE VALUE = .6161E+05 CRITERION= 156.9
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8837
 FORCE CONVERGENCE VALUE = 391.0 CRITERION= 25.10
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 10582.040 TIME= 16:02:10
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1329E-07
 FORCE CONVERGENCE VALUE = .4242E-03 CRITERION= 25.12 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 11206.710 TIME= 16:19:38
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 2 SUBSTEP 6 COMPLETED. CUM ITER = 15
 *** TIME = .768400 TIME INC = .127900
 *** RESPONSE FREQ = .5665E-02 PERIOD= 176.5 PTS/CYC = .14E+04
 FORCE CONVERGENCE VALUE = .7275E+05 CRITERION= 76.97
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.044
 FORCE CONVERGENCE VALUE = 390.3 CRITERION= 144.5
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 12043.370 TIME= 16:45:56

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7448E-07
 FORCE CONVERGENCE VALUE = .1360E-01 CRITERION= 144.5 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 12669.540 TIME= 17:03:26

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 7 COMPLETED. CUM ITER = 17

*** TIME = .896300 TIME INC = .127900

*** RESPONSE FREQ = .4791E-02 PERIOD= 208.7 PTS/CYC = .16E+04

FORCE CONVERGENCE VALUE = .8389E+05 CRITERION= 167.0

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.205

FORCE CONVERGENCE VALUE = 388.1 CRITERION= 25.10

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 13505.390 TIME= 17:29:41

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3903E-07

FORCE CONVERGENCE VALUE = .1621E-02 CRITERION= 25.12 <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 14130.420 TIME= 17:47:09

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 8 COMPLETED. CUM ITER = 19

*** TIME = 1.02420 TIME INC = .127900

*** RESPONSE FREQ = .4143E-02 PERIOD= 241.4 PTS/CYC = .19E+04

FORCE CONVERGENCE VALUE = .9504E+05 CRITERION= 98.31

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.365

FORCE CONVERGENCE VALUE = 387.8 CRITERION= 144.1

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 14964.530 TIME= 18:13:26

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2205E-06

FORCE CONVERGENCE VALUE = .5225E-01 CRITERION= 144.1 <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 15591.170 TIME= 18:30:55

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 9 COMPLETED. CUM ITER = 21

*** TIME = 1.15210 TIME INC = .127900

*** RESPONSE FREQ = .3641E-02 PERIOD= 274.7 PTS/CYC = .21E+04

FORCE CONVERGENCE VALUE = .1062E+06 CRITERION= 178.9

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.526

FORCE CONVERGENCE VALUE = 393.7 CRITERION= 25.51
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 16427.690 TIME= 18:57:08
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1162E-06
FORCE CONVERGENCE VALUE = .1042E-01 CRITERION= 25.53 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 17053.400 TIME= 19:14:36
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 2 SUBSTEP 10 COMPLETED. CUM ITER = 23
*** TIME = 1.28000 TIME INC = .127900
*** RESPONSE FREQ = .3240E-02 PERIOD= 308.7 PTS/CYC = .24E+04

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

TIME= 1.3100

USE 80 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE 1000 SUBSTEPS AS A MAXIMUM
USE 50 SUBSTEPS AS A MINIMUM
USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 17140.580 TIME= 19:18:00
Out of the 8886 defined elements, only 7962 elements are selected.

*** NOTE *** CP= 17143.140 TIME= 19:18:04
The step data was checked and warning messages were found.
Please review output or errors file (exwobt.err) for these warning
messages.

*** NOTE *** CP= 17143.140 TIME= 19:18:04
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 19:18:04 NOV 01, 1995 CP= 17143.150
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

21 PWR Tube Rock Fall Accident Condition

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 1.3100
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 80
MAXIMUM NUMBER OF SUBSTEPS 1000
MINIMUM NUMBER OF SUBSTEPS 50
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS YES
TRANSIENT (INERTIA) EFFECTS

```

STRUCTURAL DOFS. . . . . ON
TRANSIENT INTEGRATION PARAMETERS
ALPHA. . . . . .25251
DELTA. . . . . .50500
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
INERTIA LOADS
ACEL . . . . .X Y Z
.00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE . . . . .YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

```

```

FORCE CONVERGENCE VALUE = .2381E+08 CRITERION= .2381E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7535E-02
FORCE CONVERGENCE VALUE = 4.655 CRITERION= 43.04 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

```

*** WARNING *** CP= 17894.420 TIME= 19:40:58
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

```

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 24
*** TIME = 1.28060 TIME INC = .600000E-03
*** RESPONSE FREQ = .1068 PERIOD= 9.365 PTS/CYC = .16E+05
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

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FORCE CONVERGENCE VALUE = .2383E+08 CRITERION= .2383E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7538E-02
FORCE CONVERGENCE VALUE = 15.85 CRITERION= 65.19 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

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*** WARNING *** CP= 18733.150 TIME= 20:07:13
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 25
*** TIME = 1.28120 TIME INC = .600000E-03
*** RESPONSE FREQ = .1508 PERIOD= 6.630 PTS/CYC = .11E+05
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

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FORCE CONVERGENCE VALUE = .2384E+08 CRITERION= .2384E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7542E-02
FORCE CONVERGENCE VALUE = 23.93 CRITERION= 94.59 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

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*** WARNING *** CP= 19571.940 TIME= 20:33:29
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 26
*** TIME = 1.28180 TIME INC = .600000E-03
*** RESPONSE FREQ = .1579 PERIOD= 6.333 PTS/CYC = .11E+05
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

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FORCE CONVERGENCE VALUE = .2385E+08 CRITERION= .2385E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7545E-02
FORCE CONVERGENCE VALUE = 23.38 CRITERION= 126.5 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

```

*** WARNING *** CP= 20411.600 TIME= 20:59:43
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 27
*** TIME = 1.28240 TIME INC = .600000E-03
*** RESPONSE FREQ = .1471 PERIOD= 6.799 PTS/CYC = .11E+05
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2386E+08 CRITERION= .2386E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7549E-02
FORCE CONVERGENCE VALUE = 15.38 CRITERION= 144.6 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 21251.360 TIME= 21:25:57
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 28
*** TIME = 1.28300 TIME INC = .600000E-03
*** RESPONSE FREQ = .1138 PERIOD= 8.787 PTS/CYC = .15E+05
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2387E+08 CRITERION= .2387E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7553E-02
FORCE CONVERGENCE VALUE = .1281E+07 CRITERION= 143.2
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 22090.950 TIME= 21:52:11
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3767E-03
FORCE CONVERGENCE VALUE = 2601. CRITERION= 158.5
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 22720.440 TIME= 22:09:42
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6654E-07
FORCE CONVERGENCE VALUE = .3037 CRITERION= 158.5 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 23348.740 TIME= 22:27:13
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 23424.620 TIME= 22:29:52
Contact node 10004 is in contact with more than one target. Check your
results carefully.
*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 31
*** TIME = 1.28360 TIME INC = .600000E-03
*** RESPONSE FREQ = 33.53 PERIOD= .2983E-01 PTS/CYC = 50.
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2373E+08 CRITERION= .2377E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7491E-02
FORCE CONVERGENCE VALUE = .1805E+07 CRITERION= 250.1
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 24193.930 TIME= 22:53:31
The calculated reference MOMENT CONVERGENCE VALUE = 0 is

less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3404E-03
FORCE CONVERGENCE VALUE = .1531E+06 CRITERION= 320.0
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 24822.560 TIME= 23:11:01

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3635E-05
FORCE CONVERGENCE VALUE = 942.9 CRITERION= 319.9
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 25450.770 TIME= 23:28:32

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1760E-07
FORCE CONVERGENCE VALUE = 1.161 CRITERION= 319.9 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 26078.920 TIME= 23:46:03

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** WARNING *** CP= 26155.090 TIME= 23:48:42

Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 26155.120 TIME= 23:48:42

Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 26155.170 TIME= 23:48:42

Contact node 10009 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 35

*** TIME = 1.28420 TIME INC = .600000E-03

*** MAX PLASTIC STRAIN STEP = .2831E-03 CRITERION = .5000E-01

*** RESPONSE FREQ = 54.62 PERIOD= .1831E-01 PTS/CYC = 31.

*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2293E+08 CRITERION= .2313E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7217E-02

FORCE CONVERGENCE VALUE = .2851E+07 CRITERION= 756.0

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 26923.620 TIME= 00:12:21

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3160E-03

FORCE CONVERGENCE VALUE = .7227E+06 CRITERION= 745.0

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 27551.960 TIME= 00:29:51

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1336E-03

FORCE CONVERGENCE VALUE = .1717E+06 CRITERION= 741.8

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 28181.060 TIME= 00:47:23

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2511E-04
FORCE CONVERGENCE VALUE = .1957E+05 CRITERION= 741.3
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 28809.940 TIME= 01:04:54

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1667E-05
FORCE CONVERGENCE VALUE = 1195. CRITERION= 741.2
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 29438.710 TIME= 01:22:24

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4994E-07
FORCE CONVERGENCE VALUE = 12.80 CRITERION= 741.2 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 30067.300 TIME= 01:39:55

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6

*** WARNING *** CP= 30143.480 TIME= 01:42:34

Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 30143.500 TIME= 01:42:34

Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 30143.550 TIME= 01:42:34

Contact node 10009 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 41

*** TIME = 1.28480 TIME INC = .600000E-03

*** MAX PLASTIC STRAIN STEP = .8290E-02 CRITERION = .5000E-01

*** RESPONSE FREQ = 56.12 PERIOD= .1782E-01 PTS/CYC = 30.

*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2127E+08 CRITERION= .2170E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6686E-02
FORCE CONVERGENCE VALUE = .5084E+07 CRITERION= 1664.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 30912.600 TIME= 02:06:16

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8689E-03
FORCE CONVERGENCE VALUE = .1021E+07 CRITERION= 1640.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 31540.970 TIME= 02:23:48

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2255E-03
FORCE CONVERGENCE VALUE = .2274E+06 CRITERION= 1635.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 32169.790 TIME= 02:41:19

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2136E-04
FORCE CONVERGENCE VALUE = .3478E+05 CRITERION= 1635.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 32798.360 TIME= 02:58:50
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1838E-05
FORCE CONVERGENCE VALUE = 1777. CRITERION= 1634.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 33428.280 TIME= 03:16:21
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8413E-07
FORCE CONVERGENCE VALUE = 21.56 CRITERION= 1634. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 34057.320 TIME= 03:33:52
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6

*** WARNING *** CP= 34133.460 TIME= 03:36:31
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 34133.490 TIME= 03:36:31
Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 34133.550 TIME= 03:36:31
Contact node 10009 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 9 COMPLETED. CUM ITER = 47
*** TIME = 1.28540 TIME INC = .600000E-03
*** MAX PLASTIC STRAIN STEP = .1618E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 43.36 PERIOD= .2306E-01 PTS/CYC = 38.
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .1902E+08 CRITERION= .1964E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5969E-02
FORCE CONVERGENCE VALUE = .5769E+07 CRITERION= 3356.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 34902.210 TIME= 04:00:12
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7500E-03
FORCE CONVERGENCE VALUE = .9439E+06 CRITERION= 3327.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 35531.740 TIME= 04:17:42
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7640E-04
FORCE CONVERGENCE VALUE = .3915E+05 CRITERION= 3325.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 36160.990 TIME= 04:35:14
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3489E-05

FORCE CONVERGENCE VALUE = 1672. CRITERION= 3324. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 36791.100 TIME= 04:52:45
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** WARNING *** CP= 36867.360 TIME= 04:55:24
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 36867.380 TIME= 04:55:24
Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 36867.430 TIME= 04:55:24
Contact node 10009 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 10 COMPLETED. CUM ITER = 51
*** TIME = 1.28600 TIME INC = .600000E-03
*** MAX PLASTIC STRAIN STEP = .2228E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 35.82 PERIOD= .2792E-01 PTS/CYC = 47.
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .1661E+08 CRITERION= .1752E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.6314E-02
FORCE CONVERGENCE VALUE = .5688E+07 CRITERION= 6007.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 37636.630 TIME= 05:19:05
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.3296E-03
FORCE CONVERGENCE VALUE = .4534E+06 CRITERION= 6000.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 38265.790 TIME= 05:36:37
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.3912E-04
FORCE CONVERGENCE VALUE = .1841E+05 CRITERION= 5999.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 38895.900 TIME= 05:54:09
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 4 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.6143E-06
FORCE CONVERGENCE VALUE = 72.19 CRITERION= 5999. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 39525.290 TIME= 06:11:40
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** WARNING *** CP= 39601.080 TIME= 06:14:20
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 39601.110 TIME= 06:14:20
Contact node 10004 is in contact with more than one target. Check your
results carefully.

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*** WARNING ***                      CP= 39601.160  TIME= 06:14:20
Contact node 10009 is in contact with more than one target. Check your
results carefully.
*** LOAD STEP 3 SUBSTEP 11 COMPLETED. CUM ITER = 55
*** TIME = 1.28660 TIME INC = .600000E-03
*** MAX PLASTIC STRAIN STEP = .1694E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 37.48 PERIOD= .2668E-01 PTS/CYC = 44.
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .1417E+08 CRITERION= .1594E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4752E-02
FORCE CONVERGENCE VALUE = .3111E+07 CRITERION= 9339.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***                      CP= 40371.170  TIME= 06:38:02
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8710E-04
FORCE CONVERGENCE VALUE = .1827E+06 CRITERION= 9354.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***                      CP= 41000.620  TIME= 06:55:33
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6446E-05
FORCE CONVERGENCE VALUE = 1589. CRITERION= 9354. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***                      CP= 41631.120  TIME= 07:13:05
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING ***                      CP= 41707.600  TIME= 07:15:44
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING ***                      CP= 41707.630  TIME= 07:15:44
Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING ***                      CP= 41707.690  TIME= 07:15:44
Contact node 10009 is in contact with more than one target. Check your
results carefully.
*** LOAD STEP 3 SUBSTEP 12 COMPLETED. CUM ITER = 58
*** TIME = 1.28720 TIME INC = .600000E-03
*** MAX PLASTIC STRAIN STEP = .1041E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 40.17 PERIOD= .2489E-01 PTS/CYC = 41.
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .1156E+08 CRITERION= .1537E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3792E-02
FORCE CONVERGENCE VALUE = .2069E+07 CRITERION= .1258E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***                      CP= 42478.370  TIME= 07:39:26
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6970E-04
FORCE CONVERGENCE VALUE = .5486E+05 CRITERION= .1260E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***                      CP= 43109.640  TIME= 07:56:59
The calculated reference MOMENT CONVERGENCE VALUE = 0 is

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less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.6709E-05
FORCE CONVERGENCE VALUE = 533.5 CRITERION= .1260E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 43740.610 TIME= 08:14:40
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 43817.530 TIME= 08:17:25
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 43817.560 TIME= 08:17:25
Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 43817.610 TIME= 08:17:25
Contact node 10009 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 13 COMPLETED. CUM ITER = 61
*** TIME = 1.28780 TIME INC = .600000E-03
*** MAX PLASTIC STRAIN STEP = .9224E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 40.22 PERIOD= .2486E-01 PTS/CYC = 41.
*** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .8777E+07 CRITERION= .1575E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.3323E-02
FORCE CONVERGENCE VALUE = .2086E+07 CRITERION= .1497E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 44588.790 TIME= 08:41:13
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.6789E-04
FORCE CONVERGENCE VALUE = .6147E+05 CRITERION= .1480E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 45218.830 TIME= 08:58:45
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.4780E-05
FORCE CONVERGENCE VALUE = 198.1 CRITERION= .1478E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 45848.380 TIME= 09:16:18
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 45924.540 TIME= 09:18:57
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 45924.570 TIME= 09:18:57
Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 45924.620 TIME= 09:18:57
Contact node 10009 is in contact with more than one target. Check your
results carefully.
*** LOAD STEP 3 SUBSTEP 14 COMPLETED. CUM ITER = 64
*** TIME = 1.28840 TIME INC = .600000E-03

*** MAX PLASTIC STRAIN STEP = .7987E-02 CRITERION = .5000E-01
 *** RESPONSE FREQ = 38.52 PERIOD= .2596E-01 PTS/CYC = 43.
 *** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .5996E+07 CRITERION= .1621E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.2390E-02
 CONTAC49: 2 CONTACT ELEMENTS HAVE TRANSFERRED CONTACT FORCES
 FORCE CONVERGENCE VALUE = .3500E+07 CRITERION= .1573E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 46695.120 TIME= 09:42:43
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.1002E-02
 FORCE CONVERGENCE VALUE = .7800E+06 CRITERION= .1563E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 47328.390 TIME= 10:00:24
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.1541E-03
 FORCE CONVERGENCE VALUE = .8745E+05 CRITERION= .1563E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 47966.790 TIME= 10:19:10
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 4 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.2192E-04
 FORCE CONVERGENCE VALUE = .1492E+05 CRITERION= .1563E+05 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 48610.770 TIME= 10:38:20
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** WARNING *** CP= 48687.030 TIME= 10:41:01
 Contact node 14465 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 48687.680 TIME= 10:41:04
 Contact node 10183 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 48687.730 TIME= 10:41:04
 Contact node 10004 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 48687.740 TIME= 10:41:04
 Contact node 10015 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 48687.780 TIME= 10:41:04
 Contact node 10009 is in contact with more than one target. Check your
 results carefully.

*** LOAD STEP 3 SUBSTEP 15 COMPLETED. CUM ITER = 68
 *** TIME = 1.28900 TIME INC = .600000E-03
 *** MAX PLASTIC STRAIN STEP = .1782E-01 CRITERION = .5000E-01
 *** RESPONSE FREQ = 77.12 PERIOD= .1297E-01 PTS/CYC = 22.
 *** AUTO STEP TIME: NEXT TIME INC = .60000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3147E+07 CRITERION= .1607E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.3143E-02
 FORCE CONVERGENCE VALUE = .3224E+07 CRITERION= .1526E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 49473.150 TIME= 11:09:35

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000

FORCE CONVERGENCE VALUE = .3147E+07 CRITERION= .1607E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9294E-03

FORCE CONVERGENCE VALUE = .8395E+07 CRITERION= .1514E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 50240.360 TIME= 11:33:45

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4383E-03

FORCE CONVERGENCE VALUE = .5582E+07 CRITERION= .1510E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 50871.990 TIME= 11:51:21

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3822E-03

FORCE CONVERGENCE VALUE = .3799E+07 CRITERION= .1507E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 51504.050 TIME= 12:08:55

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500

EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3304E-03

FORCE CONVERGENCE VALUE = .2720E+07 CRITERION= .1505E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 52135.180 TIME= 12:26:30

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01

EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4608E-03

FORCE CONVERGENCE VALUE = .1555E+07 CRITERION= .1504E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 52766.770 TIME= 12:44:05

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01

EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4764E-03

FORCE CONVERGENCE VALUE = .6665E+06 CRITERION= .1503E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 53398.990 TIME= 13:01:40

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00

EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2622E-03

FORCE CONVERGENCE VALUE = .1539E+06 CRITERION= .1502E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING ***

CP= 54037.280 TIME= 13:19:51

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6579E-04

FORCE CONVERGENCE VALUE = .1252E+05 CRITERION= .1502E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 54689.910 TIME= 13:39:39
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9

*** WARNING *** CP= 54765.810 TIME= 13:42:18
Contact node 14465 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 54766.370 TIME= 13:42:19
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 54766.400 TIME= 13:42:19
Contact node 10004 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 54766.430 TIME= 13:42:19
Contact node 10015 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 54766.460 TIME= 13:42:19
Contact node 10009 is in contact with more than one target. Check your
results carefully.
*** LOAD STEP 3 SUBSTEP 16 COMPLETED. CUM ITER = 77
*** TIME = 1.28960 TIME INC = .600000E-03
*** MAX PLASTIC STRAIN STEP = .9290E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 137.9 PERIOD= .7254E-02 PTS/CYC = 12.
*** AUTO TIME STEP: NEXT TIME INC = .36270E-03 DECREASED (FACTOR = .6045)

FORCE CONVERGENCE VALUE = .2590E+07 CRITERION= .1527E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5325E-03
FORCE CONVERGENCE VALUE = .3736E+06 CRITERION= .1393E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 55536.950 TIME= 14:06:01
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9323E-05
FORCE CONVERGENCE VALUE = .2405E+05 CRITERION= .1391E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 56179.270 TIME= 14:25:07
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6117E-06
FORCE CONVERGENCE VALUE = 58.07 CRITERION= .1391E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 56835.230 TIME= 14:45:12
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 56911.610 TIME= 14:48:05
Contact node 14465 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 56912.200 TIME= 14:48:06
Contact node 10183 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 56912.230 TIME= 14:48:06
Contact node 10004 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 56912.260 TIME= 14:48:06
Contact node 10015 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 56912.290 TIME= 14:48:06
Contact node 10009 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 17 COMPLETED. CUM ITER = 80
*** TIME = 1.28996 TIME INC = .362705E-03
*** MAX PLASTIC STRAIN STEP = .1314E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 176.7 PERIOD= .5659E-02 PTS/CYC = 16.
*** AUTO STEP TIME: NEXT TIME INC = .36270E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3067E+07 CRITERION= .1415E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1086E-02
FORCE CONVERGENCE VALUE = .1304E+08 CRITERION= .1241E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 57696.920 TIME= 15:14:07
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.

* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .3067E+07 CRITERION= .1415E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6744E-03
FORCE CONVERGENCE VALUE = .1325E+06 CRITERION= .1240E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 58473.020 TIME= 15:37:48
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1013E-05
FORCE CONVERGENCE VALUE = .1922E+05 CRITERION= .1241E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 59108.760 TIME= 15:56:08
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1606E-06
FORCE CONVERGENCE VALUE = 8678. CRITERION= .1241E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 59762.920 TIME= 16:16:36
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** WARNING *** CP= 59838.320 TIME= 16:19:14
Contact node 14465 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 59838.870 TIME= 16:19:16
Contact node 10183 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 59838.900 TIME= 16:19:16
Contact node 10004 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 59838.920 TIME= 16:19:16
Contact node 10015 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 59838.950 TIME= 16:19:16
Contact node 10009 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 18 COMPLETED. CUM ITER = 84
*** TIME = 1.29033 TIME INC = .362705E-03
*** MAX PLASTIC STRAIN STEP = .5754E-04 CRITERION = .5000E-01
*** RESPONSE FREQ = 182.3 PERIOD= .5485E-02 PTS/CYC = 15.
*** AUTO STEP TIME: NEXT TIME INC = .36270E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .5113E+07 CRITERION= .1317E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= .6524E-03
FORCE CONVERGENCE VALUE = .5668E+06 CRITERION= .1061E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 60630.500 TIME= 16:44:39
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 2 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.1027E-04

*** ERROR *** CP= 61159.820 TIME= 17:00:03
Run terminated at user request from the ABT file.

*** WARNING *** CP= 61159.820 TIME= 17:00:03
The unconverged solution (identified as time 1.31 substep 999999) is output for analysis debug purposes. Results should not be used for any other purpose.

RESTART INFORMATION

REASON FOR TERMINATION. NONLINEAR KEYWORD ON THE ABT FILE
FILES NEEDED FOR RESTARTING exwobt.esav
exwobt.emat
exwobt.db
TIME OF LAST SOLUTION 1.2903
TIME AT START OF THE LOAD STEP 1.2800
TIME AT END OF THE LOAD STEP 1.3100

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= exwobt.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 279
NUMBER OF ERROR MESSAGES ENCOUNTERED= 1

***** PROBLEM TERMINATED BY INDICATED ERROR(S) OR BY END OF INPUT DATA *****

*** PAGE FILE USED ***
NUMBER OF R/W OPERATIONS= 40370
MAXIMUM RECORD NUMBER = 577
RECORD SIZE (I*4 WORDS) = 16384
PAGE FILE SIZE (MB) = 36.063

-----*
| ANSYS RUN COMPLETED |

```

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REV. 5.0 A                                HP 9000/7XX

CP TIME      (sec) =      61257.880      TIME = 17:03:47
ELAPSED TIME (sec) =     108979.000      DATE  = 11/02/95
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W E L C O M E   T O   T H E   A N S Y S   P R O G R A M
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***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME           = stat2dbt
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

```

```

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

```

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RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON      TO START THE ANSYS MENU SYSTEM
ENTER HELP          FOR GENERAL ANSYS HELP INFORMATION
1 /config,nvpag,512
2 /units,si
3 /prep7
4 /title, Static 2-D 21 PWR Tube Analysis
5 /vcon,,0
6 /com, Define Parameters
7 ibir=0.6945      ! Inner Barrier Inner Radius (DIA = 1.389 m)
8 obir=0.7145      ! Outer Barrier Inner Radius (DIA = 1.429 m)
9 obsr=0.7645      ! Outer Barrier Skirt Radius (DIA = 1.529 m)

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```

10 obor=0.8145      ! Outer Barrier Outer Radius (DIA = 1.629 m)
11 ts1=.0145
12 ts2=.0145
13 ts3=.01
14 ts4=.01
15 ts5=.019         ! basket structure thicknesses
16 ts124=ts1+ts2+ts4
17 ts23=ts2+ts3
18 ts234=ts2+ts3+ts4
19 ts14=ts1+ts4
20 ts34=ts3+ts4
21 b=3*ts1+5*(ts23)+8*ts4
22 tp1=(ts234)**2
23 tp2=(ts14)**2
24 stp=sqrt(b**2-34*(tp1+tp2-ibir**2))
25 x=(-1*b+stp)/17 ! calculated fuel assembly width
26 ang1=(180/3.14159)*asin((x+ts4-ts5)/(2*ibir))
27 ang2=(180/3.14159)*asin((x+ts4+ts5)/(2*ibir))
28 ang3=(180/3.14159)*asin((1.5*x+ts14)/ibir)
29 ang4=(180/3.14159)*acos((1.5*x+ts14)/ibir)
30 ang5=(180/3.14159)*acos((x+ts4+ts5)/(2*ibir))
31 ang6=(180/3.14159)*acos((x+ts4-ts5)/(2*ibir))
32 bsht=4.585       ! basket structure height
33 uilh=.025        ! upper inner lid height
34 ght=.03          ! gap height
35 uolh=.11         ! upper outer lid height
36 usht=.225        ! upper skirt height
37 lilh=.025        ! lower inner lid height
38 lolh=.11         ! lower outer lid height
39 lsht=.225        ! lower skirt height
40 elev1=bsht+uilh ! elevations of all planes to be dragged
41 elev2=elev1+ght
42 elev3=elev2+uolh
43 elev4=elev3+usht
44 elev5=-1*lilh
45 elev6=elev5-lolh
46 elev7=elev6-lsht
47 r1d=8            ! Vertical Divisions Region 1
48 r1sr=1           ! Spacing Ratio Region 1 (from bottom to upper keypoint)
49 r2d=8            ! Horizontal Divisions Region 2
50 r2sr=1           ! Spacing Ratio Region 2 (from left to right keypoint)
51 r3d=16           ! Refer to the figures to locate following regions
52 r3sr=1
53 r4d=16
54 r4sr=1
55 r5d=16
56 r5sr=1
57 r6d=8
58 r6sr=1
59 r7d=16
60 r7sr=1
61 r8d=16
62 r8sr=1
63 r9d=16
64 r9sr=1
65 r10d=16
66 r10sr=1
67 r11d=16
68 r11sr=1
69 r12d=8
70 r12sr=1
71 r13d=16
72 r13sr=1
73 r14d=16
74 r14sr=1
75 r15d=16
76 r15sr=1
77 r16d=16
78 r16sr=1
79 r17d=16

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80 r17sr=1
81 r18d=16
82 r18sr=1
83 r19d=8
84 r19sr=1
85 r20d=16
86 r20sr=1
87 r21d=16
88 r21sr=1
89 r22d=16
90 r22sr=1
91 r23d=16
92 r23sr=1
93 r24d=16
94 r24sr=1
95 r25d=16
96 r25sr=1
97 r26d=8
98 r26sr=1
99 r27d=16
100 r27sr=1
101 r28d=16
102 r28sr=1
103 r29d=16
104 r29sr=1
105 r30d=16
106 r30sr=1
107 r31d=16
108 r31sr=1
109 r32d=16
110 r32sr=1
111 r33d=16
112 r33sr=1
113 lc1d=1      ! Divisions of lines in circle 1
114 lc1sr=1    ! Spacing Ratio of lines in circle 1
115 lc2d=1      ! Divisions of lines in circle 2
116 lc2sr=1    ! Spacing Ratio of lines in circle 2
117 lc3d=1      ! Divisions of lines in circle 3
118 lc3sr=1    ! Spacing Ratio of lines in circle 3
119
120 c1d=2      ! Divisions of circles in circles # 1
121 c1sr=1     ! Spacing Ratio of circles in circles # 1
122 c2d=4      ! Divisions of circles in circles # 2
123 c2sr=1     ! Spacing Ratio of circles in circles # 2
124 c3d=6      ! Divisions of circles in circles # 3
125 c3sr=1     ! Spacing Ratio of circles in circles # 3
126 c4d=4      ! Divisions of circles in circles # 4
127 c4sr=1     ! Spacing Ratio of circles in circles # 4
128 c5d=4      ! Divisions of circles in circles # 5
129 c5sr=1     ! Spacing Ratio of circles in circles # 5
130 c6d=4      ! Divisions of circles in circles # 6
131 c6sr=1     ! Spacing Ratio of circles in circles # 6
132 c7d=6      ! Divisions of circles in circles # 7
133 c7sr=1     ! Spacing Ratio of circles in circles # 7
134 c8d=4      ! Divisions of circles in circles # 8
135 c8sr=1     ! Spacing Ratio of circles in circles # 8
136 c9d=2      ! Divisions of circles in circles # 9
137 c9sr=1     ! Spacing Ratio of circles in circles # 9
138
139 btd=28      ! Divisions along the basket assembly
140 btsr=-.05   ! spacing Ratio along the basket assembly
141
142 rockrad=1.0  ! Radius of Rock
143 xrc=0.0      ! X Coordinate of Rock Center
144 yrc=9.705+rockrad-obor ! Y Coordinate of Rock Center
145 zrc=bsht/2   ! Z Coordinate of Rock Center
146
147 /com, Define Element Properties
148 et,1,plane42 ! 316L Stainless Steel
149 et,2,plane42 ! Alloy 825

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150 et,3,plane42 ! A 516 Carbon Steel
151
152 mp,ex,1,195e9 ! 316L Stainless Steel
153 mp,ex,2,206e9 ! Alloy 825
154 mp,ex,3,206e9 ! A 516 Carbon Steel
155
156 mp,nuxy,1,0.298 ! 316L Stainless Steel
157 mp,nuxy,2,0.42 ! Alloy 825
158 mp,nuxy,3,0.3 ! A 516 Carbon Steel
159
160 mp,dens,1,30774.8 ! 316L Stainless Steel (Adjusted to provide proper mass)
161 mp,dens,2,8215.9 ! Alloy 825 (Adjusted to provide proper mass)
162 mp,dens,3,7876.6 ! A 516 Carbon Steel (Adjusted to provide proper mass)
163
164 tb,biso,1
165 tbddata,,172e6,.776e9 ! 316L Stainless Steel
166 tb,biso,2
167 tbddata,,338e6,.722e9 ! Alloy 825
168 tb,biso,3
169 tbddata,,205e6,.6505e9 ! A 516 Carbon Steel
170
171 /com, Define keypoints in the basket assembly
172 csys,0
173 k,1,0,0
174 k,2,0,x/2
175 k,3,x/2,x/2
176 k,4,(x/2)+ts4,x/2
177 k,5,1.5*x+ts4,x/2
178 k,6,1.5*x+ts34,x/2
179 k,7,2.5*x+ts34,x/2
180 k,8,2.5*x+ts234,(x+ts4-ts5)/2
181 k,9,0,x/2+ts4
182 k,10,x/2,x/2+ts4
183 k,11,(x/2)+ts4,x/2+ts4
184 k,12,1.5*x+ts4,x/2+ts4
185 k,13,1.5*x+ts34,x/2+ts4
186 k,14,2.5*x+ts34,x/2+ts4
187 k,15,2.5*x+ts234,(x+ts4+ts5)/2
188 k,16,0,1.5*x+ts4
189 k,17,x/2,1.5*x+ts4
190 k,18,(x/2)+ts4,1.5*x+ts4
191 k,19,1.5*x+ts4,1.5*x+ts4
192 k,20,1.5*x+ts34,1.5*x+ts4
193 k,21,2.5*x+ts34,1.5*x+ts4
194 k,22,0,1.5*x+ts34
195 k,23,x/2,1.5*x+ts34
196 k,24,(x/2)+ts4,1.5*x+ts34
197 k,25,1.5*x+ts4,1.5*x+ts34
198 k,26,1.5*x+ts14,1.5*x+ts14
199 k,27,0,2.5*x+ts34
200 k,28,x/2,2.5*x+ts34
201 k,29,(x/2)+ts4,2.5*x+ts34
202 k,30,1.5*x+ts4,2.5*x+ts34
203 k,31,0,2.5*x+ts234
204 k,32,(x+ts4-ts5)/2,2.5*x+ts234
205 k,33,(x+ts4+ts5)/2,2.5*x+ts234
206 ksymm,y,2,33,1,0,1,0
207
208 csys,1
209 k,66,ibir,ang1
210 k,67,ibir,ang2
211 k,68,ibir,ang3
212 k,69,ibir,ang4
213 k,70,ibir,ang5
214 k,71,ibir,ang6
215 k,72,ibir,90
216 k,73,obir,ang1
217 k,74,obir,ang2
218 k,75,obir,ang3
219 k,76,obir,ang4

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220 k,77,obir,ang5
221 k,78,obir,ang6
222 k,79,obir,90
223 k,80,obsr,ang1
224 k,81,obsr,ang2
225 k,82,obsr,ang3
226 k,83,obsr,ang4
227 k,84,obsr,ang5
228 k,85,obsr,ang6
229 k,86,obsr,90
230 k,87,obor,ang1
231 k,88,obor,ang2
232 k,89,obor,ang3
233 k,90,obor,ang4
234 k,91,obor,ang5
235 k,92,obor,ang6
236 k,93,obor,90
237 ksymm,y,66,93,1,0,1,0
238
239 /com, Define default value of esize
240 esize,,3
241
242 /com, Line divisions and spacing ratios
243 /com, in the basket structure
244 csys,0
245 l,32,71
246 l,33,70 ! region 1
247 lesize,all,,,r1d,r1sr,1
248 lsel,none
249 l,31,32
250 l,27,28 ! region 2
251 lesize,all,,,r2d,r2sr,1
252 lsel,none
253 l,33,69
254 l,29,30 ! region 3
255 lesize,all,,,r3d,r3sr,1
256 lsel,none
257 l,23,28
258 l,24,29 ! region 4
259 lesize,all,,,r4d,r4sr,1
260 lsel,none
261 l,25,30
262 l,26,69 ! region 5
263 lesize,all,,,r5d,r5sr,1
264 lsel,none
265 l,22,23
266 l,16,17 ! region 6
267 lesize,all,,,r6d,r6sr,1
268 lsel,none
269 l,24,25
270 l,18,19 ! region 7
271 lesize,all,,,r7d,r7sr,1
272 lsel,none
273 l,26,68
274 l,20,21 ! region 8
275 lesize,all,,,r8d,r8sr,1
276 lsel,none
277 l,10,17
278 l,11,18 ! region 9
279 lesize,all,,,r9d,r9sr,1
280 lsel,none
281 l,12,19
282 l,13,20 ! region 10
283 lesize,all,,,r10d,r10sr,1
284 lsel,none
285 l,14,21
286 l,15,68 ! region 11
287 lesize,all,,,r11d,r11sr,1
288 lsel,none
289 l,9,10
```

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290 l,2,3      ! region 12
291 lesize,all,,,r12d,r12sr,1
292 lsel,none
293 l,11,12
294 l,4,5      ! region 13
295 lesize,all,,,r13d,r13sr,1
296 lsel,none
297 l,13,14
298 l,6,7      ! region 14
299 lesize,all,,,r14d,r14sr,1
300 lsel,none
301 l,15,67
302 l,8,66     ! region 15
303 lesize,all,,,r15d,r15sr,1
304 lsel,none
305 l,35,3
306 l,36,4     ! region 16
307 lesize,all,,,r16d,r16sr,1
308 lsel,none
309 l,37,5
310 l,38,6     ! region 17
311 lesize,all,,,r17d,r17sr,1
312 lsel,none
313 l,39,7
314 l,40,8     ! region 18
315 lesize,all,,,r18d,r18sr,1
316 lsel,none
317 l,34,35
318 l,41,42    ! region 19
319 lesize,all,,,r19d,r19sr,1
320 lsel,none
321 l,36,37
322 l,43,44    ! region 20
323 lesize,all,,,r20d,r20sr,1
324 lsel,none
325 l,38,39
326 l,45,46    ! region 21
327 lesize,all,,,r21d,r21sr,1
328 lsel,none
329 l,40,94
330 l,47,95    ! region 22
331 lesize,all,,,r22d,r22sr,1
332 lsel,none
333 l,49,42
334 l,50,43    ! region 23
335 lesize,all,,,r23d,r23sr,1
336 lsel,none
337 l,51,44
338 l,52,45    ! region 24
339 lesize,all,,,r24d,r24sr,1
340 lsel,none
341 l,53,46
342 l,96,47    ! region 25
343 lesize,all,,,r25d,r25sr,1
344 lsel,none
345 l,48,49
346 l,54,55    ! region 26
347 lesize,all,,,r26d,r26sr,1
348 lsel,none
349 l,50,51
350 l,56,57    ! region 27
351 lesize,all,,,r27d,r27sr,1
352 lsel,none
353 l,52,53
354 l,58,96    ! region 28
355 lesize,all,,,r28d,r28sr,1
356 lsel,none
357 l,60,55
358 l,61,56    ! region 29
359 lesize,all,,,r29d,r29sr,1

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```
360 lsel,none
361 l,62,57
362 l,97,58 ! region 30
363 lesize,all,,,r30d,r30sr,1
364 lsel,none
365 l,59,60
366 l,63,64 ! region 31
367 lesize,all,,,r31d,r31sr,1
368 lsel,none
369 l,61,62
370 l,65,97 ! region 32
371 lesize,all,,,r32d,r32sr,1
372 lsel,none
373 l,99,64
374 l,98,65 ! region 33
375 lesize,all,,,r33d,r33sr,1
376 lsel,none
377
378 /com, Define perpendicular lines to the circles
379 l,72,79
380 l,71,78
381 l,70,77
382 l,69,76
383 l,68,75
384 l,67,74
385 l,66,73
386 l,94,101
387 l,95,102
388 l,96,103
389 l,97,104
390 l,98,105
391 l,99,106
392 l,100,107 ! lines in circle 1
393 lesize,all,,,lc1d,lc1sr,1
394 lsel,none
395 l,79,86
396 l,78,85
397 l,77,84
398 l,76,83
399 l,75,82
400 l,74,81
401 l,73,80
402 l,101,108
403 l,102,109
404 l,103,110
405 l,104,111
406 l,105,112
407 l,106,113
408 l,107,114 ! lines in circle 2
409 lesize,all,,,lc2d,lc2sr,1
410 lsel,none
411 l,86,93
412 l,85,92
413 l,84,91
414 l,83,90
415 l,82,89
416 l,81,88
417 l,80,87
418 l,108,115
419 l,109,116
420 l,110,117
421 l,111,118
422 l,112,119
423 l,113,120
424 l,114,121 ! lines in circle 3
425 lesize,all,,,lc3d,lc3sr,1
426 lsel,none
427
428 /com, Define circles of inner and outer barriers
429 csys,1
```



```

430 l,100,99
431 l,107,106
432 l,114,113
433 l,121,120 ! circles # 1
434 lesize,all,,,c1d,c1sr,1
435 lsel,none
436 l,98,97
437 l,105,104
438 l,112,111
439 l,119,118 ! circles # 2
440 lesize,all,,,c2d,c2sr,1
441 lsel,none
442 l,97,96
443 l,104,103
444 l,111,110
445 l,118,117 ! circles # 3
446 lesize,all,,,c3d,c3sr,1
447 lsel,none
448 l,96,95
449 l,103,102
450 l,110,109
451 l,117,116 ! circles # 4
452 lesize,all,,,c4d,c4sr,1
453 lsel,none
454 l,94,66
455 l,101,73
456 l,108,80
457 l,115,87 ! circles # 5
458 lesize,all,,,c5d,c5sr,1
459 lsel,none
460 l,67,68
461 l,74,75
462 l,81,82
463 l,88,89 ! circles # 6
464 lesize,all,,,c6d,c6sr,1
465 lsel,none
466 l,68,69
467 l,75,76
468 l,82,83
469 l,89,90 ! circles # 7
470 lesize,all,,,c7d,c7sr,1
471 lsel,none
472 l,69,70
473 l,76,77
474 l,83,84
475 l,90,91 ! circles # 8
476 lesize,all,,,c8d,c8sr,1
477 lsel,none
478 l,71,72
479 l,78,79
480 l,85,86
481 l,92,93 ! circles # 9
482 lesize,all,,,c9d,c9sr,1
483 lsel,none
484
485 csys,0
486 k,122,0,0,bsht
487 k,123,0,0,elev1
488 k,124,0,0,elev2
489 k,125,0,0,elev3
490 k,126,0,0,elev4
491 k,127,0,0,elev5
492 k,128,0,0,elev6
493 k,129,0,0,elev7
494
495 l,1,122 ! define lines to drag areas (line#145)
496 l,122,123 ! (line#146)
497 l,123,124 ! (line#147)
498 l,124,125 ! (line#148)
499 l,125,126 ! (line#149)

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500 l,1,127      ! (line#150)
501 l,127,128    ! (line#151)
502 l,128,129    ! (line#152)
503
504 /com, Define areas in basket structure
505 lsel,all
506 a,32,33,70,71
507 a,27,28,32,31
508 a,28,29,33,32
509 a,29,30,69,33
510 a,23,24,29,28
511 a,25,26,69,30
512 a,16,17,23,22
513 a,17,18,24,23
514 a,18,19,25,24
515 a,19,20,26,25
516 a,20,21,68,26
517 a,10,11,18,17
518 a,12,13,20,19
519 a,14,15,68,21
520 a,2,3,10,9
521 a,3,4,11,10
522 a,4,5,12,11
523 a,5,6,13,12
524 a,6,7,14,13
525 a,7,8,15,14
526 a,8,66,67,15
527 a,35,36,4,3
528 a,37,38,6,5
529 a,39,40,8,7
530 a,41,42,35,34
531 a,42,43,36,35
532 a,43,44,37,36
533 a,44,45,38,37
534 a,45,46,39,38
535 a,46,47,40,39
536 a,47,95,94,40
537 a,49,50,43,42
538 a,51,52,45,44
539 a,53,96,47,46
540 a,54,55,49,48
541 a,55,56,50,49
542 a,56,57,51,50
543 a,57,58,52,51
544 a,58,96,53,52
545 a,60,61,56,55
546 a,62,97,58,57
547 a,63,64,60,59
548 a,64,65,61,60
549 a,65,97,62,61
550 a,99,98,65,64
551 TYPE,1
552 MAT,1
553 ESHAPE,2
554 AMESH,ALL
555
556 /com, Half Model is used to create the other half
557 /com, by symmetry along the x-axis
558 allsel
559 csys,0
560 nsym,x,10000,all
561 esym,,10000,all,
562 nummrg,node
563 nummrg,kp
564
565 /com, Apply Constraints at Support Locations
566 csys,1
567 nsel,r,loc,x,obor-.02,obor+.02
568 nsel,r,loc,y,-85,-95
569 nrotate,all

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570 d,all,ux,0,,,,,uy
571 csys,0
572 allsel
573 save
574 fini
575
576 /sol
577 antype,static
578 nlgeom,on
579
580 !divide by 100
581 d,13,ux,-.32607E-02/100
582 d,5,ux,-.33570E-02/100
583 d,97,ux,-.34621E-02/100
584 d,405,ux,-.49094E-02/100
585 d,849,ux,-.46009E-02/100
586 d,833,ux,-.45374E-02/100
587 d,1293,ux,-.35274E-02/100
588 d,1277,ux,-.34199E-02/100
589 d,1470,ux,-.19663E-02/100
590 d,1774,ux,-.55881E-03/100
591 d,1974,ux,-.11310E-03/100
592 d,1973,ux,-.93290E-04/100
593 d,11973,ux,.78297E-04/100
594 d,11974,ux,.98178E-04/100
595 d,11774,ux,.54580E-03/100
596 d,11470,ux,.19584E-02/100
597 d,11277,ux,.34170E-02/100
598 d,11293,ux,.35249E-02/100
599 d,10833,ux,.45396E-02/100
600 d,10849,ux,.46035E-02/100
601 d,10405,ux,.49171E-02/100
602 d,10097,ux,.34750E-02/100
603 d,10005,ux,.33718E-02/100
604 d,10013,ux,.32755E-02/100
605
606 d,13,uy,-.27388E-01/100
607 d,5,uy,-.24648E-01/100
608 d,97,uy,-.80905E-02/100
609 d,405,uy,-.31877E-02/100
610 d,849,uy,-.29243E-02/100
611 d,833,uy,-.29161E-02/100
612 d,1293,uy,-.27636E-02/100
613 d,1277,uy,-.27363E-02/100
614 d,1470,uy,-.21302E-02/100
615 d,1774,uy,-.88376E-03/100
616 d,1974,uy,-.20581E-03/100
617 d,1973,uy,-.17867E-03/100
618 d,11973,uy,-.18101E-03/100
619 d,11974,uy,-.20856E-03/100
620 d,11774,uy,-.89160E-03/100
621 d,11470,uy,-.21432E-02/100
622 d,11277,uy,-.27512E-02/100
623 d,11293,uy,-.27786E-02/100
624 d,10833,uy,-.29311E-02/100
625 d,10849,uy,-.29392E-02/100
626 d,10405,uy,-.32007E-02/100
627 d,10097,uy,-.80979E-02/100
628 d,10005,uy,-.24649E-01/100
629 d,10013,uy,-.27389E-01/100
630
631 acel,,9.81
632 outres,all,1
633 solve
634
635 !divide by 20
636 d,13,ux,-.32607E-02/20
637 d,5,ux,-.33570E-02/20
638 d,97,ux,-.34621E-02/20
639 d,405,ux,-.49094E-02/20

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640 d,849,ux,-.46009E-02/20
641 d,833,ux,-.45374E-02/20
642 d,1293,ux,-.35274E-02/20
643 d,1277,ux,-.34199E-02/20
644 d,1470,ux,-.19663E-02/20
645 d,1774,ux,-.55881E-03/20
646 d,1974,ux,-.11310E-03/20
647 d,1973,ux,-.93290E-04/20
648 d,11973,ux,-.78297E-04/20
649 d,11974,ux,-.98178E-04/20
650 d,11774,ux,-.54580E-03/20
651 d,11470,ux,-.19584E-02/20
652 d,11277,ux,-.34170E-02/20
653 d,11293,ux,-.35249E-02/20
654 d,10833,ux,-.45396E-02/20
655 d,10849,ux,-.46035E-02/20
656 d,10405,ux,-.49171E-02/20
657 d,10097,ux,-.34750E-02/20
658 d,10005,ux,-.33718E-02/20
659 d,10013,ux,-.32755E-02/20
660
661 d,13,uy,-.27388E-01/20
662 d,5,uy,-.24648E-01/20
663 d,97,uy,-.80905E-02/20
664 d,405,uy,-.31877E-02/20
665 d,849,uy,-.29243E-02/20
666 d,833,uy,-.29161E-02/20
667 d,1293,uy,-.27636E-02/20
668 d,1277,uy,-.27363E-02/20
669 d,1470,uy,-.21302E-02/20
670 d,1774,uy,-.88376E-03/20
671 d,1974,uy,-.20581E-03/20
672 d,1973,uy,-.17867E-03/20
673 d,11973,uy,-.18101E-03/20
674 d,11974,uy,-.20856E-03/20
675 d,11774,uy,-.89160E-03/20
676 d,11470,uy,-.21432E-02/20
677 d,11277,uy,-.27512E-02/20
678 d,11293,uy,-.27786E-02/20
679 d,10833,uy,-.29311E-02/20
680 d,10849,uy,-.29392E-02/20
681 d,10405,uy,-.32007E-02/20
682 d,10097,uy,-.80979E-02/20
683 d,10005,uy,-.24649E-01/20
684 d,10013,uy,-.27389E-01/20
685
686 acel,,9.81
687 autots,on
688 nsubst,4,1000,3
689 outres,all,1
690 solve
691
692 ldivide by 10
693 d,13,ux,-.32607E-02/10
694 d,5,ux,-.33570E-02/10
695 d,97,ux,-.34621E-02/10
696 d,405,ux,-.49094E-02/10
697 d,849,ux,-.46009E-02/10
698 d,833,ux,-.45374E-02/10
699 d,1293,ux,-.35274E-02/10
700 d,1277,ux,-.34199E-02/10
701 d,1470,ux,-.19663E-02/10
702 d,1774,ux,-.55881E-03/10
703 d,1974,ux,-.11310E-03/10
704 d,1973,ux,-.93290E-04/10
705 d,11973,ux,-.78297E-04/10
706 d,11974,ux,-.98178E-04/10
707 d,11774,ux,-.54580E-03/10
708 d,11470,ux,-.19584E-02/10
709 d,11277,ux,-.34170E-02/10

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710 d,11293,ux,.35249E-02/10
711 d,10833,ux,.45396E-02/10
712 d,10849,ux,.46035E-02/10
713 d,10405,ux,.49171E-02/10
714 d,10097,ux,.34750E-02/10
715 d,10005,ux,.33718E-02/10
716 d,10013,ux,.32755E-02/10
717
718 d,13,uy,-.27388E-01/10
719 d,5,uy,-.24648E-01/10
720 d,97,uy,-.80905E-02/10
721 d,405,uy,-.31877E-02/10
722 d,849,uy,-.29243E-02/10
723 d,833,uy,-.29161E-02/10
724 d,1293,uy,-.27636E-02/10
725 d,1277,uy,-.27363E-02/10
726 d,1470,uy,-.21302E-02/10
727 d,1774,uy,-.88376E-03/10
728 d,1974,uy,-.20581E-03/10
729 d,1973,uy,-.17867E-03/10
730 d,11973,uy,-.18101E-03/10
731 d,11974,uy,-.20856E-03/10
732 d,11774,uy,-.89160E-03/10
733 d,11470,uy,-.21432E-02/10
734 d,11277,uy,-.27512E-02/10
735 d,11293,uy,-.27786E-02/10
736 d,10833,uy,-.29311E-02/10
737 d,10849,uy,-.29392E-02/10
738 d,10405,uy,-.32007E-02/10
739 d,10097,uy,-.80979E-02/10
740 d,10005,uy,-.24649E-01/10
741 d,10013,uy,-.27389E-01/10
742
743 acel,,9.81
744 autots,on
745 nsubst,4,1000,3
746 outres,all,1
747 solve
748
749 ldivide by 5
750 d,13,ux,-.32607E-02/5
751 d,5,ux,-.33570E-02/5
752 d,97,ux,-.34621E-02/5
753 d,405,ux,-.49094E-02/5
754 d,849,ux,-.46009E-02/5
755 d,833,ux,-.45374E-02/5
756 d,1293,ux,-.35274E-02/5
757 d,1277,ux,-.34199E-02/5
758 d,1470,ux,-.19663E-02/5
759 d,1774,ux,-.55881E-03/5
760 d,1974,ux,-.11310E-03/5
761 d,1973,ux,-.93290E-04/5
762 d,11973,ux,-.78297E-04/5
763 d,11974,ux,-.98178E-04/5
764 d,11774,ux,-.54580E-03/5
765 d,11470,ux,-.19584E-02/5
766 d,11277,ux,-.34170E-02/5
767 d,11293,ux,-.35249E-02/5
768 d,10833,ux,-.45396E-02/5
769 d,10849,ux,-.46035E-02/5
770 d,10405,ux,.49171E-02/5
771 d,10097,ux,.34750E-02/5
772 d,10005,ux,.33718E-02/5
773 d,10013,ux,.32755E-02/5
774
775 d,13,uy,-.27388E-01/5
776 d,5,uy,-.24648E-01/5
777 d,97,uy,-.80905E-02/5
778 d,405,uy,-.31877E-02/5
779 d,849,uy,-.29243E-02/5

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780 d,833,uy,-.29161E-02/5
781 d,1293,uy,-.27636E-02/5
782 d,1277,uy,-.27363E-02/5
783 d,1470,uy,-.21302E-02/5
784 d,1774,uy,-.88376E-03/5
785 d,1974,uy,-.20581E-03/5
786 d,1973,uy,-.17867E-03/5
787 d,11973,uy,-.18101E-03/5
788 d,11974,uy,-.20856E-03/5
789 d,11774,uy,-.89160E-03/5
790 d,11470,uy,-.21432E-02/5
791 d,11277,uy,-.27512E-02/5
792 d,11293,uy,-.27786E-02/5
793 d,10833,uy,-.29311E-02/5
794 d,10849,uy,-.29392E-02/5
795 d,10405,uy,-.32007E-02/5
796 d,10097,uy,-.80979E-02/5
797 d,10005,uy,-.24649E-01/5
798 d,10013,uy,-.27389E-01/5
799
800 acel,,9.81
801 autots,on
802 nsubst,4,2000,3
803 outres,all,1
804 solve
805
806 !divide by 2
807 d,13,ux,-.32607E-02/2
808 d,5,ux,-.33570E-02/2
809 d,97,ux,-.34621E-02/2
810 d,405,ux,-.49094E-02/2
811 d,849,ux,-.46009E-02/2
812 d,833,ux,-.45374E-02/2
813 d,1293,ux,-.35274E-02/2
814 d,1277,ux,-.34199E-02/2
815 d,1470,ux,-.19663E-02/2
816 d,1774,ux,-.55881E-03/2
817 d,1974,ux,-.11310E-03/2
818 d,1973,ux,-.93290E-04/2
819 d,11973,ux,.78297E-04/2
820 d,11974,ux,.98178E-04/2
821 d,11774,ux,.54580E-03/2
822 d,11470,ux,.19584E-02/2
823 d,11277,ux,.34170E-02/2
824 d,11293,ux,.35249E-02/2
825 d,10833,ux,.45396E-02/2
826 d,10849,ux,.46035E-02/2
827 d,10405,ux,.49171E-02/2
828 d,10097,ux,.34750E-02/2
829 d,10005,ux,.33718E-02/2
830 d,10013,ux,.32755E-02/2
831
832 d,13,uy,-.27388E-01/2
833 d,5,uy,-.24648E-01/2
834 d,97,uy,-.80905E-02/2
835 d,405,uy,-.31877E-02/2
836 d,849,uy,-.29243E-02/2
837 d,833,uy,-.29161E-02/2
838 d,1293,uy,-.27636E-02/2
839 d,1277,uy,-.27363E-02/2
840 d,1470,uy,-.21302E-02/2
841 d,1774,uy,-.88376E-03/2
842 d,1974,uy,-.20581E-03/2
843 d,1973,uy,-.17867E-03/2
844 d,11973,uy,-.18101E-03/2
845 d,11974,uy,-.20856E-03/2
846 d,11774,uy,-.89160E-03/2
847 d,11470,uy,-.21432E-02/2
848 d,11277,uy,-.27512E-02/2
849 d,11293,uy,-.27786E-02/2

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850 d,10833,uy,-.29311E-02/2
851 d,10849,uy,-.29392E-02/2
852 d,10405,uy,-.32007E-02/2
853 d,10097,uy,-.80979E-02/2
854 d,10005,uy,-.24649E-01/2
855 d,10013,uy,-.27389E-01/2
856
857 acel,,9.81
858 autots,on
859 nsubst,4,2000,3
860 outres,all,1
861 solve
862
863 !original displacements
864 d,13,ux,-.32607E-02
865 d,5,ux,-.33570E-02
866 d,97,ux,-.34621E-02
867 d,405,ux,-.49094E-02
868 d,849,ux,-.46009E-02
869 d,833,ux,-.45374E-02
870 d,1293,ux,-.35274E-02
871 d,1277,ux,-.34199E-02
872 d,1470,ux,-.19663E-02
873 d,1774,ux,-.55881E-03
874 d,1974,ux,-.11310E-03
875 d,1973,ux,-.93290E-04
876 d,11973,ux,.78297E-04
877 d,11974,ux,.98178E-04
878 d,11774,ux,.54580E-03
879 d,11470,ux,.19584E-02
880 d,11277,ux,.34170E-02
881 d,11293,ux,.35249E-02
882 d,10833,ux,.45396E-02
883 d,10849,ux,.46035E-02
884 d,10405,ux,.49171E-02
885 d,10097,ux,.34750E-02
886 d,10005,ux,.33718E-02
887 d,10013,ux,.32755E-02
888
889 d,13,uy,-.27388E-01
890 d,5,uy,-.24648E-01
891 d,97,uy,-.80905E-02
892 d,405,uy,-.31877E-02
893 d,849,uy,-.29243E-02
894 d,833,uy,-.29161E-02
895 d,1293,uy,-.27636E-02
896 d,1277,uy,-.27363E-02
897 d,1470,uy,-.21302E-02
898 d,1774,uy,-.88376E-03
899 d,1974,uy,-.20581E-03
900 d,1973,uy,-.17867E-03
901 d,11973,uy,-.18101E-03
902 d,11974,uy,-.20856E-03
903 d,11774,uy,-.89160E-03
904 d,11470,uy,-.21432E-02
905 d,11277,uy,-.27512E-02
906 d,11293,uy,-.27786E-02
907 d,10833,uy,-.29311E-02
908 d,10849,uy,-.29392E-02
909 d,10405,uy,-.32007E-02
910 d,10097,uy,-.80979E-02
911 d,10005,uy,-.24649E-01
912 d,10013,uy,-.27389E-01
913
914 acel,,9.81
915 autots,on
916 nsubst,4,3000,3
917 outres,all,1
918 solve
919 fini

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920
921 /exit
922 /eof

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

/INPUT FILE= /ansys50a/docu/start.ans LINE= 0

ANSYS STARTUP FILE start.ans

ABBREVIATION= K1 /pnum,kp ,1,
ABBREVIATION= K0 /pnum,kp ,0,
ABBREVIATION= L1 /pnum,line,1,
ABBREVIATION= L0 /pnum,line,0,
ABBREVIATION= A1 /pnum,area,1,
ABBREVIATION= A0 /pnum,area,0,
ABBREVIATION= V1 /pnum,volu,1,
ABBREVIATION= V0 /pnum,volu,0,
ABBREVIATION= N1 /pnum,node,1,
ABBREVIATION= N0 /pnum,node,0,
ABBREVIATION= E1 /pnum,elem,1,
ABBREVIATION= E0 /pnum,elem,0,
ABBREVIATION= M1 /pnum,mat ,1,
ABBREVIATION= M0 /pnum,mat ,0,
ABBREVIATION= R1 /pnum,real,1,
ABBREVIATION= R0 /pnum,real,0,
ABBREVIATION= T1 /pnum,type,1,
ABBREVIATION= T0 /pnum,type,0,
ABBREVIATION= C1 /number,1,
ABBREVIATION= C0 /number,0,
ABBREVIATION= INP /input,,inp,
ABBREVIATION= X3D /show,3d,
ABBREVIATION= X11 /show,x11,
ABBREVIATION= VEC /show,,,1,
ABBREVIATION= RAS /show,,,0,
ABBREVIATION= ON /menu,on,
ABBREVIATION= OFF /menu,off,
ABBREVIATION= NVP /config,nvpag,512,
ABBREVIATION= QUIT /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

END start.ans

To start ANSYS menu:

type: x3d for console
x11 for X-term

type: on

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

SI UNITS SPECIFIED

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

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:05:48 JUL 24, 1995 CP= .510
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=

Static 2-D 21 PWR Tube Analysis

VIEW CONE ANGLE FOR WINDOW 1 .00
Define Parameters

PARAMETER IBIR = .6945000
PARAMETER OBIR = .7145000
PARAMETER OBSR = .7645000
PARAMETER OBOR = .8145000
PARAMETER TS1 = .1450000E-01
PARAMETER TS2 = .1450000E-01
PARAMETER TS3 = .1000000E-01
PARAMETER TS4 = .1000000E-01
PARAMETER TS5 = .1900000E-01
PARAMETER TS124 = .3900000E-01
PARAMETER TS23 = .2450000E-01
PARAMETER TS234 = .3450000E-01
PARAMETER TS14 = .2450000E-01
PARAMETER TS34 = .2000000E-01
PARAMETER B = .2460000

PARAMETER TP1	=	.1190250E-02
PARAMETER TP2	=	.6002500E-03
PARAMETER STP	=	4.049552
PARAMETER X	=	.2237383
PARAMETER ANG1	=	8.893561
PARAMETER ANG2	=	10.48378
PARAMETER ANG3	=	31.23261
PARAMETER ANG4	=	58.76747
PARAMETER ANG5	=	79.51629
PARAMETER ANG6	=	81.10652
PARAMETER BSHT	=	4.585000
PARAMETER UILH	=	.2500000E-01
PARAMETER GHT	=	.3000000E-01
PARAMETER UOLH	=	.1100000
PARAMETER USHT	=	.2250000
PARAMETER LILH	=	.2500000E-01
PARAMETER LOLH	=	.1100000
PARAMETER LSHT	=	.2250000
PARAMETER ELEV1	=	4.610000
PARAMETER ELEV2	=	4.640000
PARAMETER ELEV3	=	4.750000
PARAMETER ELEV4	=	4.975000
PARAMETER ELEV5	=	-.2500000E-01
PARAMETER ELEV6	=	-.1350000
PARAMETER ELEV7	=	-.3600000
PARAMETER R1D	=	8.000000
PARAMETER R1SR	=	1.000000
PARAMETER R2D	=	8.000000
PARAMETER R2SR	=	1.000000
PARAMETER R3D	=	16.00000
PARAMETER R3SR	=	1.000000
PARAMETER R4D	=	16.00000
PARAMETER R4SR	=	1.000000
PARAMETER R5D	=	16.00000
PARAMETER R5SR	=	1.000000

PARAMETER R6D	=	8.000000
PARAMETER R6SR	=	1.000000
PARAMETER R7D	=	16.00000
PARAMETER R7SR	=	1.000000
PARAMETER R8D	=	16.00000
PARAMETER R8SR	=	1.000000
PARAMETER R9D	=	16.00000
PARAMETER R9SR	=	1.000000
PARAMETER R10D	=	16.00000
PARAMETER R10SR	=	1.000000
PARAMETER R11D	=	16.00000
PARAMETER R11SR	=	1.000000
PARAMETER R12D	=	8.000000
PARAMETER R12SR	=	1.000000
PARAMETER R13D	=	16.00000
PARAMETER R13SR	=	1.000000
PARAMETER R14D	=	16.00000
PARAMETER R14SR	=	1.000000
PARAMETER R15D	=	16.00000
PARAMETER R15SR	=	1.000000
PARAMETER R16D	=	16.00000
PARAMETER R16SR	=	1.000000
PARAMETER R17D	=	16.00000
PARAMETER R17SR	=	1.000000
PARAMETER R18D	=	16.00000
PARAMETER R18SR	=	1.000000
PARAMETER R19D	=	8.000000
PARAMETER R19SR	=	1.000000
PARAMETER R20D	=	16.00000
PARAMETER R20SR	=	1.000000
PARAMETER R21D	=	16.00000
PARAMETER R21SR	=	1.000000
PARAMETER R22D	=	16.00000
PARAMETER R22SR	=	1.000000
PARAMETER R23D	=	16.00000

PARAMETER R23SR	=	1.000000
PARAMETER R24D	=	16.00000
PARAMETER R24SR	=	1.000000
PARAMETER R25D	=	16.00000
PARAMETER R25SR	=	1.000000
PARAMETER R26D	=	8.000000
PARAMETER R26SR	=	1.000000
PARAMETER R27D	=	16.00000
PARAMETER R27SR	=	1.000000
PARAMETER R28D	=	16.00000
PARAMETER R28SR	=	1.000000
PARAMETER R29D	=	16.00000
PARAMETER R29SR	=	1.000000
PARAMETER R30D	=	16.00000
PARAMETER R30SR	=	1.000000
PARAMETER R31D	=	16.00000
PARAMETER R31SR	=	1.000000
PARAMETER R32D	=	16.00000
PARAMETER R32SR	=	1.000000
PARAMETER R33D	=	16.00000
PARAMETER R33SR	=	1.000000
PARAMETER LC1D	=	1.000000
PARAMETER LC1SR	=	1.000000
PARAMETER LC2D	=	1.000000
PARAMETER LC2SR	=	1.000000
PARAMETER LC3D	=	1.000000
PARAMETER LC3SR	=	1.000000
PARAMETER C1D	=	2.000000
PARAMETER C1SR	=	1.000000
PARAMETER C2D	=	4.000000
PARAMETER C2SR	=	1.000000
PARAMETER C3D	=	6.000000
PARAMETER C3SR	=	1.000000
PARAMETER C4D	=	4.000000
PARAMETER C4SR	=	1.000000

PARAMETER C5D = 4.000000
 PARAMETER C5SR = 1.000000
 PARAMETER C6D = 4.000000
 PARAMETER C6SR = 1.000000
 PARAMETER C7D = 6.000000
 PARAMETER C7SR = 1.000000
 PARAMETER C8D = 4.000000
 PARAMETER C8SR = 1.000000
 PARAMETER C9D = 2.000000
 PARAMETER C9SR = 1.000000
 PARAMETER BTD = 28.00000
 PARAMETER BTSR = -.5000000E-01
 PARAMETER ROCKRAD = 1.000000
 PARAMETER XRC = .0000000E+00
 PARAMETER YRC = 9.890500
 PARAMETER ZRC = 2.292500

Define Element Properties

ELEMENT TYPE 1 IS PLANE42 2-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS PLANE42 2-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY
 TWO-DIMENSIONAL MODEL

ELEMENT TYPE 3 IS PLANE42 2-D STRUCTURAL SOLID
 KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY
 TWO-DIMENSIONAL MODEL

MATERIAL 1 EX = .1950000E+12
 MATERIAL 2 EX = .2060000E+12
 MATERIAL 3 EX = .2060000E+12
 MATERIAL 1 NUXY = .2980000
 MATERIAL 2 NUXY = .4200000
 MATERIAL 3 NUXY = .3000000
 MATERIAL 1 DENS = 30774.80
 MATERIAL 2 DENS = 8215.900
 MATERIAL 3 DENS = 7876.600

DEFINE DATA TABLE BISO FOR MATERIAL 1

WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 1 AT TEMPERATURE= .00000E+00
LOC= 1 .17200E+09 .77600E+09

DEFINE DATA TABLE BISO FOR MATERIAL 2
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 2 AT TEMPERATURE= .00000E+00
LOC= 1 .33800E+09 .72200E+09

DEFINE DATA TABLE BISO FOR MATERIAL 3
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 3 AT TEMPERATURE= .00000E+00
LOC= 1 .20500E+09 .65050E+09
Define keypoints in the basket assembly

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT	1	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	.111869	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	.111869	.111869	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	.121869	.111869	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.345607	.111869	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	.355607	.111869	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	.579346	.111869	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.593846	.107369	.000000E+00	IN CSYS= 0
KEYPOINT	9	X,Y,Z=	.000000E+00	.121869	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	.111869	.121869	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.121869	.121869	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	.345607	.121869	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	.355607	.121869	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.579346	.121869	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	.593846	.126369	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	.000000E+00	.345607	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	.111869	.345607	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	.121869	.345607	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.345607	.345607	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	.355607	.345607	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	.579346	.345607	.000000E+00	IN CSYS= 0
KEYPOINT	22	X,Y,Z=	.000000E+00	.355607	.000000E+00	IN CSYS= 0
KEYPOINT	23	X,Y,Z=	.111869	.355607	.000000E+00	IN CSYS= 0
KEYPOINT	24	X,Y,Z=	.121869	.355607	.000000E+00	IN CSYS= 0
KEYPOINT	25	X,Y,Z=	.345607	.355607	.000000E+00	IN CSYS= 0

KEYPOINT	26	X,Y,Z=	.360107	.360107	.000000E+00	IN CSYS= 0
KEYPOINT	27	X,Y,Z=	.000000E+00	.579346	.000000E+00	IN CSYS= 0
KEYPOINT	28	X,Y,Z=	.111869	.579346	.000000E+00	IN CSYS= 0
KEYPOINT	29	X,Y,Z=	.121869	.579346	.000000E+00	IN CSYS= 0
KEYPOINT	30	X,Y,Z=	.345607	.579346	.000000E+00	IN CSYS= 0
KEYPOINT	31	X,Y,Z=	.000000E+00	.593846	.000000E+00	IN CSYS= 0
KEYPOINT	32	X,Y,Z=	.107369	.593846	.000000E+00	IN CSYS= 0
KEYPOINT	33	X,Y,Z=	.126369	.593846	.000000E+00	IN CSYS= 0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y
DO NOT COPY NODE AND ELEMENTS
SET IS FROM 2 TO 33 IN STEPS OF 1

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

KEYPOINT	66	X,Y,Z=	.694500	8.89356	.000000E+00	IN CSYS= 1
			.686150	.107369	.000000E+00	IN CSYS= 0
KEYPOINT	67	X,Y,Z=	.694500	10.4838	.000000E+00	IN CSYS= 1
			.682906	.126369	.000000E+00	IN CSYS= 0
KEYPOINT	68	X,Y,Z=	.694500	31.2326	.000000E+00	IN CSYS= 1
			.593846	.360108	.000000E+00	IN CSYS= 0
KEYPOINT	69	X,Y,Z=	.694500	58.7675	.000000E+00	IN CSYS= 1
			.360107	.593846	.000000E+00	IN CSYS= 0
KEYPOINT	70	X,Y,Z=	.694500	79.5163	.000000E+00	IN CSYS= 1
			.126368	.682906	.000000E+00	IN CSYS= 0
KEYPOINT	71	X,Y,Z=	.694500	81.1065	.000000E+00	IN CSYS= 1
			.107368	.686150	.000000E+00	IN CSYS= 0
KEYPOINT	72	X,Y,Z=	.694500	90.0000	.000000E+00	IN CSYS= 1
			.270612E-11	.694500	.000000E+00	IN CSYS= 0
KEYPOINT	73	X,Y,Z=	.714500	8.89356	.000000E+00	IN CSYS= 1
			.705910	.110461	.000000E+00	IN CSYS= 0
KEYPOINT	74	X,Y,Z=	.714500	10.4838	.000000E+00	IN CSYS= 1
			.702572	.130008	.000000E+00	IN CSYS= 0
KEYPOINT	75	X,Y,Z=	.714500	31.2326	.000000E+00	IN CSYS= 1
			.610947	.370478	.000000E+00	IN CSYS= 0
KEYPOINT	76	X,Y,Z=	.714500	58.7675	.000000E+00	IN CSYS= 1
			.370477	.610948	.000000E+00	IN CSYS= 0
KEYPOINT	77	X,Y,Z=	.714500	79.5163	.000000E+00	IN CSYS= 1
			.130007	.702573	.000000E+00	IN CSYS= 0

KEYPOINT	78	X,Y,Z=	.714500	81.1065	.000000E+00	IN CSYS= 1
			.110460	.705910	.000000E+00	IN CSYS= 0
KEYPOINT	79	X,Y,Z=	.714500	90.0000	.000000E+00	IN CSYS= 1
			.278405E-11	.714500	.000000E+00	IN CSYS= 0
KEYPOINT	80	X,Y,Z=	.764500	8.89356	.000000E+00	IN CSYS= 1
			.755309	.118191	.000000E+00	IN CSYS= 0
KEYPOINT	81	X,Y,Z=	.764500	10.4838	.000000E+00	IN CSYS= 1
			.751738	.139106	.000000E+00	IN CSYS= 0
KEYPOINT	82	X,Y,Z=	.764500	31.2326	.000000E+00	IN CSYS= 1
			.653700	.396404	.000000E+00	IN CSYS= 0
KEYPOINT	83	X,Y,Z=	.764500	58.7675	.000000E+00	IN CSYS= 1
			.396403	.653701	.000000E+00	IN CSYS= 0
KEYPOINT	84	X,Y,Z=	.764500	79.5163	.000000E+00	IN CSYS= 1
			.139105	.751738	.000000E+00	IN CSYS= 0
KEYPOINT	85	X,Y,Z=	.764500	81.1065	.000000E+00	IN CSYS= 1
			.118190	.755309	.000000E+00	IN CSYS= 0
KEYPOINT	86	X,Y,Z=	.764500	90.0000	.000000E+00	IN CSYS= 1
			.297887E-11	.764500	.000000E+00	IN CSYS= 0
KEYPOINT	87	X,Y,Z=	.814500	8.89356	.000000E+00	IN CSYS= 1
			.804707	.125921	.000000E+00	IN CSYS= 0
KEYPOINT	88	X,Y,Z=	.814500	10.4838	.000000E+00	IN CSYS= 1
			.800903	.148204	.000000E+00	IN CSYS= 0
KEYPOINT	89	X,Y,Z=	.814500	31.2326	.000000E+00	IN CSYS= 1
			.696454	.422329	.000000E+00	IN CSYS= 0
KEYPOINT	90	X,Y,Z=	.814500	58.7675	.000000E+00	IN CSYS= 1
			.422328	.696455	.000000E+00	IN CSYS= 0
KEYPOINT	91	X,Y,Z=	.814500	79.5163	.000000E+00	IN CSYS= 1
			.148203	.800903	.000000E+00	IN CSYS= 0
KEYPOINT	92	X,Y,Z=	.814500	81.1065	.000000E+00	IN CSYS= 1
			.125920	.804708	.000000E+00	IN CSYS= 0
KEYPOINT	93	X,Y,Z=	.814500	90.0000	.000000E+00	IN CSYS= 1
			.317370E-11	.814500	.000000E+00	IN CSYS= 0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y
DO NOT COPY NODE AND ELEMENTS
SET IS FROM 66 TO 93 IN STEPS OF 1
Define default value of esize

DEFAULT ELEMENT DIVISIONS PER LINE = 3

Line divisions and spacing ratios
in the basket structure

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

LINE CONNECTS KEYPOINTS 32 71
LINE NO.= 1 KP1= 32 TAN1= .0000 -1.0000 .0000
KP2= 71 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 33 70
LINE NO.= 2 KP1= 33 TAN1= .0000 -1.0000 .0000
KP2= 70 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 8, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 2 STEP 1

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

LINE CONNECTS KEYPOINTS 31 32
LINE NO.= 3 KP1= 31 TAN1= -1.0000 .0000 .0000
KP2= 32 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 27 28
LINE NO.= 4 KP1= 27 TAN1= -1.0000 .0000 .0000
KP2= 28 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 8, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 4 STEP 1

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

LINE CONNECTS KEYPOINTS 33 69
LINE NO.= 5 KP1= 33 TAN1= -1.0000 .0000 .0000
KP2= 69 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 29 30
LINE NO.= 6 KP1= 29 TAN1= -1.0000 .0000 .0000
KP2= 30 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 16, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 6 STEP 1

0 LINES (OF 6 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 23 28
LINE NO.= 7 KP1= 23 TAN1= .0000 -1.0000 .0000
KP2= 28 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 24 29
LINE NO.= 8 KP1= 24 TAN1= .0000 -1.0000 .0000
KP2= 29 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 16, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 8 STEP 1

0 LINES (OF 8 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 25 30
 LINE NO.= 9 KP1= 25 TAN1= .0000 -1.0000 .0000
 KP2= 30 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 26 69
 LINE NO.= 10 KP1= 26 TAN1= .0000 -1.0000 .0000
 KP2= 69 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 10 STEP 1

0 LINES (OF 10 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 22 23
 LINE NO.= 11 KP1= 22 TAN1= -1.0000 .0000 .0000
 KP2= 23 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 16 17
 LINE NO.= 12 KP1= 16 TAN1= -1.0000 .0000 .0000
 KP2= 17 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 8, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

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

0 LINES (OF 12 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 24 25
 LINE NO.= 13 KP1= 24 TAN1= -1.0000 .0000 .0000
 KP2= 25 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 18 19
 LINE NO.= 14 KP1= 18 TAN1= -1.0000 .0000 .0000
 KP2= 19 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 14 STEP 1

0 LINES (OF 14 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 26 68
 LINE NO.= 15 KP1= 26 TAN1= -1.0000 .0000 .0000
 KP2= 68 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 20 21
 LINE NO.= 16 KP1= 20 TAN1= -1.0000 .0000 .0000
 KP2= 21 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 16 STEP 1

0 LINES (OF 16 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 10 17
 LINE NO.= 17 KP1= 10 TAN1= .0000 -1.0000 .0000
 KP2= 17 TAN2= .0000 1.0000 .0000

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

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 18 STEP 1

0 LINES (OF 18 DEFINED) SELECTED BY LSEL COMMAND.

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

LINE CONNECTS KEYPOINTS 13 20
 LINE NO.= 20 KP1= 13 TAN1= .0000 -1.0000 .0000
 KP2= 20 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 20 STEP 1

0 LINES (OF 20 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 14 21
 LINE NO.= 21 KP1= 14 TAN1= .0000 -1.0000 .0000
 KP2= 21 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 15 68
 LINE NO.= 22 KP1= 15 TAN1= .0000 -1.0000 .0000
 KP2= 68 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 22 STEP 1

0 LINES (OF 22 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 9 10
 LINE NO.= 23 KP1= 9 TAN1= -1.0000 .0000 .0000
 KP2= 10 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 2 3
 LINE NO.= 24 KP1= 2 TAN1= -1.0000 .0000 .0000
 KP2= 3 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 8, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 24 STEP 1

0 LINES (OF 24 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 11 12

LINE NO.= 25 KP1= 11 TAN1= -1.0000 .0000 .0000
 KP2= 12 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 4 5
 LINE NO.= 26 KP1= 4 TAN1= -1.0000 .0000 .0000
 KP2= 5 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 26 STEP 1

0 LINES (OF 26 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 13 14
 LINE NO.= 27 KP1= 13 TAN1= -1.0000 .0000 .0000
 KP2= 14 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 6 7
 LINE NO.= 28 KP1= 6 TAN1= -1.0000 .0000 .0000
 KP2= 7 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 28 STEP 1

0 LINES (OF 28 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 15 67
 LINE NO.= 29 KP1= 15 TAN1= -1.0000 .0000 .0000
 KP2= 67 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 8 66
 LINE NO.= 30 KP1= 8 TAN1= -1.0000 .0000 .0000
 KP2= 66 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 30 STEP 1

0 LINES (OF 30 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 35 3
 LINE NO.= 31 KP1= 35 TAN1= .0000 -1.0000 .0000
 KP2= 3 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 36 4
 LINE NO.= 32 KP1= 36 TAN1= .0000 -1.0000 .0000
 KP2= 4 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 32 STEP 1

0 LINES (OF 32 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 37 5
 LINE NO.= 33 KP1= 37 TAN1= .0000 -1.0000 .0000
 KP2= 5 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 38 6
 LINE NO.= 34 KP1= 38 TAN1= .0000 -1.0000 .0000
 KP2= 6 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 34 STEP 1

0 LINES (OF 34 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 39 7
 LINE NO.= 35 KP1= 39 TAN1= .0000 -1.0000 .0000
 KP2= 7 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 40 8
 LINE NO.= 36 KP1= 40 TAN1= .0000 -1.0000 .0000
 KP2= 8 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 36 STEP 1

0 LINES (OF 36 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 34 35
 LINE NO.= 37 KP1= 34 TAN1= -1.0000 .0000 .0000
 KP2= 35 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 41 42
 LINE NO.= 38 KP1= 41 TAN1= -1.0000 .0000 .0000
 KP2= 42 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 8, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 38 STEP 1

0 LINES (OF 38 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 36 37
 LINE NO.= 39 KP1= 36 TAN1= -1.0000 .0000 .0000
 KP2= 37 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 43 44
 LINE NO.= 40 KP1= 43 TAN1= -1.0000 .0000 .0000
 KP2= 44 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 40 STEP 1

0 LINES (OF 40 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 38 39
 LINE NO.= 41 KP1= 38 TAN1= -1.0000 .0000 .0000
 KP2= 39 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 45 46

LINE NO.= 42 KP1= 45 TAN1= -1.0000 .0000 .0000
 KP2= 46 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 42 STEP 1

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

LINE CONNECTS KEYPOINTS 40 94
 LINE NO.= 43 KP1= 40 TAN1= -1.0000 .0000 .0000
 KP2= 94 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 47 95
 LINE NO.= 44 KP1= 47 TAN1= -1.0000 .0000 .0000
 KP2= 95 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 44 STEP 1

0 LINES (OF 44 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 49 42
 LINE NO.= 45 KP1= 49 TAN1= .0000 -1.0000 .0000
 KP2= 42 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 50 43
 LINE NO.= 46 KP1= 50 TAN1= .0000 -1.0000 .0000
 KP2= 43 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 46 STEP 1

0 LINES (OF 46 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 51 44
 LINE NO.= 47 KP1= 51 TAN1= .0000 -1.0000 .0000
 KP2= 44 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 52 45
 LINE NO.= 48 KP1= 52 TAN1= .0000 -1.0000 .0000
 KP2= 45 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 48 STEP 1

0 LINES (OF 48 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 53 46
 LINE NO.= 49 KP1= 53 TAN1= .0000 -1.0000 .0000
 KP2= 46 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 96 47
 LINE NO.= 50 KP1= 96 TAN1= .0000 -1.0000 .0000
 KP2= 47 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 50 STEP 1

0 LINES (OF 50 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	48	49			
LINE NO.= 51 KP1=	48	TAN1=	-1.0000	.0000	.0000
KP2= 49	TAN2=	1.0000	.0000	.0000	

LINE CONNECTS KEYPOINTS	54	55			
LINE NO.= 52 KP1=	54	TAN1=	-1.0000	.0000	.0000
KP2= 55	TAN2=	1.0000	.0000	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 8, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 52 STEP 1

0 LINES (OF 52 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	50	51			
LINE NO.= 53 KP1=	50	TAN1=	-1.0000	.0000	.0000
KP2= 51	TAN2=	1.0000	.0000	.0000	

LINE CONNECTS KEYPOINTS	56	57			
LINE NO.= 54 KP1=	56	TAN1=	-1.0000	.0000	.0000
KP2= 57	TAN2=	1.0000	.0000	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 54 STEP 1

0 LINES (OF 54 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	52	53			
LINE NO.= 55 KP1=	52	TAN1=	-1.0000	.0000	.0000
KP2= 53	TAN2=	1.0000	.0000	.0000	

LINE CONNECTS KEYPOINTS	58	96			
LINE NO.= 56 KP1=	58	TAN1=	-1.0000	.0000	.0000
KP2= 96	TAN2=	1.0000	.0000	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 16, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 56 STEP 1

0 LINES (OF 56 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	60	55			
LINE NO.= 57 KP1=	60	TAN1=	.0000	-1.0000	.0000
KP2= 55	TAN2=	.0000	1.0000	.0000	

LINE CONNECTS KEYPOINTS	61	56			
LINE NO.= 58 KP1=	61	TAN1=	.0000	-1.0000	.0000
KP2= 56	TAN2=	.0000	1.0000	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 16, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 58 STEP 1

0 LINES (OF 58 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 62 57
LINE NO.= 59 KP1= 62 TAN1= .0000 -1.0000 .0000
KP2= 57 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 97 58
LINE NO.= 60 KP1= 97 TAN1= .0000 -1.0000 .0000
KP2= 58 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 16, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

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

0 LINES (OF 60 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 59 60
LINE NO.= 61 KP1= 59 TAN1= -1.0000 .0000 .0000
KP2= 60 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 63 64
LINE NO.= 62 KP1= 63 TAN1= -1.0000 .0000 .0000
KP2= 64 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 16, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 62 STEP 1

0 LINES (OF 62 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 61 62
LINE NO.= 63 KP1= 61 TAN1= -1.0000 .0000 .0000
KP2= 62 TAN2= 1.0000 .0000 .0000

LINE CONNECTS KEYPOINTS 65 97
LINE NO.= 64 KP1= 65 TAN1= -1.0000 .0000 .0000
KP2= 97 TAN2= 1.0000 .0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 16, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 64 STEP 1

0 LINES (OF 64 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 99 64
LINE NO.= 65 KP1= 99 TAN1= .0000 -1.0000 .0000
KP2= 64 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 98 65
LINE NO.= 66 KP1= 98 TAN1= .0000 -1.0000 .0000
KP2= 65 TAN2= .0000 1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 16, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 66 STEP 1

0 LINES (OF 66 DEFINED) SELECTED BY LSEL COMMAND.
Define perpendicular lines to the circles

LINE CONNECTS KEYPOINTS	72	79			
LINE NO.= 67 KP1=	72	TAN1=	.0000	-1.0000	.0000
KP2=	79	TAN2=	.0000	1.0000	.0000
LINE CONNECTS KEYPOINTS	71	78			
LINE NO.= 68 KP1=	71	TAN1=	-.1546	-.9880	.0000
KP2=	78	TAN2=	.1546	.9880	.0000
LINE CONNECTS KEYPOINTS	70	77			
LINE NO.= 69 KP1=	70	TAN1=	-.1820	-.9833	.0000
KP2=	77	TAN2=	.1820	.9833	.0000
LINE CONNECTS KEYPOINTS	69	76			
LINE NO.= 70 KP1=	69	TAN1=	-.5185	-.8551	.0000
KP2=	76	TAN2=	.5185	.8551	.0000
LINE CONNECTS KEYPOINTS	68	75			
LINE NO.= 71 KP1=	68	TAN1=	-.8551	-.5185	.0000
KP2=	75	TAN2=	.8551	.5185	.0000
LINE CONNECTS KEYPOINTS	67	74			
LINE NO.= 72 KP1=	67	TAN1=	-.9833	-.1820	.0000
KP2=	74	TAN2=	.9833	.1820	.0000
LINE CONNECTS KEYPOINTS	66	73			
LINE NO.= 73 KP1=	66	TAN1=	-.9880	-.1546	.0000
KP2=	73	TAN2=	.9880	.1546	.0000
LINE CONNECTS KEYPOINTS	94	101			
LINE NO.= 74 KP1=	94	TAN1=	-.9880	.1546	.0000
KP2=	101	TAN2=	.9880	-.1546	.0000
LINE CONNECTS KEYPOINTS	95	102			
LINE NO.= 75 KP1=	95	TAN1=	-.9833	.1820	.0000
KP2=	102	TAN2=	.9833	-.1820	.0000
LINE CONNECTS KEYPOINTS	96	103			
LINE NO.= 76 KP1=	96	TAN1=	-.8551	.5185	.0000
KP2=	103	TAN2=	.8551	-.5185	.0000
LINE CONNECTS KEYPOINTS	97	104			
LINE NO.= 77 KP1=	97	TAN1=	-.5185	.8551	.0000
KP2=	104	TAN2=	.5185	-.8551	.0000
LINE CONNECTS KEYPOINTS	98	105			
LINE NO.= 78 KP1=	98	TAN1=	-.1820	.9833	.0000
KP2=	105	TAN2=	.1820	-.9833	.0000
LINE CONNECTS KEYPOINTS	99	106			
LINE NO.= 79 KP1=	99	TAN1=	-.1546	.9880	.0000
KP2=	106	TAN2=	.1546	-.9880	.0000
LINE CONNECTS KEYPOINTS	100	107			
LINE NO.= 80 KP1=	100	TAN1=	.0000	1.0000	.0000
KP2=	107	TAN2=	.0000	-1.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 1, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 80 STEP 1

0 LINES (OF 80 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	79	86			
LINE NO.= 81 KP1=	79	TAN1=	.0000	-1.0000	.0000
KP2= 86	TAN2=	.0000	1.0000	.0000	
LINE CONNECTS KEYPOINTS	78	85			
LINE NO.= 82 KP1=	78	TAN1=	-.1546	-.9880	.0000
KP2= 85	TAN2=	.1546	.9880	.0000	
LINE CONNECTS KEYPOINTS	77	84			
LINE NO.= 83 KP1=	77	TAN1=	-.1820	-.9833	.0000
KP2= 84	TAN2=	.1820	.9833	.0000	
LINE CONNECTS KEYPOINTS	76	83			
LINE NO.= 84 KP1=	76	TAN1=	-.5185	-.8551	.0000
KP2= 83	TAN2=	.5185	.8551	.0000	
LINE CONNECTS KEYPOINTS	75	82			
LINE NO.= 85 KP1=	75	TAN1=	-.8551	-.5185	.0000
KP2= 82	TAN2=	.8551	.5185	.0000	
LINE CONNECTS KEYPOINTS	74	81			
LINE NO.= 86 KP1=	74	TAN1=	-.9833	-.1820	.0000
KP2= 81	TAN2=	.9833	.1820	.0000	
LINE CONNECTS KEYPOINTS	73	80			
LINE NO.= 87 KP1=	73	TAN1=	-.9880	-.1546	.0000
KP2= 80	TAN2=	.9880	.1546	.0000	
LINE CONNECTS KEYPOINTS	101	108			
LINE NO.= 88 KP1=	101	TAN1=	-.9880	.1546	.0000
KP2= 108	TAN2=	.9880	-.1546	.0000	
LINE CONNECTS KEYPOINTS	102	109			
LINE NO.= 89 KP1=	102	TAN1=	-.9833	.1820	.0000
KP2= 109	TAN2=	.9833	-.1820	.0000	
LINE CONNECTS KEYPOINTS	103	110			
LINE NO.= 90 KP1=	103	TAN1=	-.8551	.5185	.0000
KP2= 110	TAN2=	.8551	-.5185	.0000	
LINE CONNECTS KEYPOINTS	104	111			
LINE NO.= 91 KP1=	104	TAN1=	-.5185	.8551	.0000
KP2= 111	TAN2=	.5185	-.8551	.0000	
LINE CONNECTS KEYPOINTS	105	112			
LINE NO.= 92 KP1=	105	TAN1=	-.1820	.9833	.0000
KP2= 112	TAN2=	.1820	-.9833	.0000	
LINE CONNECTS KEYPOINTS	106	113			
LINE NO.= 93 KP1=	106	TAN1=	-.1546	.9880	.0000
KP2= 113	TAN2=	.1546	-.9880	.0000	
LINE CONNECTS KEYPOINTS	107	114			
LINE NO.= 94 KP1=	107	TAN1=	.0000	1.0000	.0000
KP2= 114	TAN2=	.0000	-1.0000	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 1, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 94 STEP 1

0 LINES (OF 94 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	86	93			
LINE NO.= 95 KP1=	86	TAN1=	.0000	-1.0000	.0000
KP2= 93	TAN2=	.0000	1.0000	.0000	

LINE CONNECTS KEYPOINTS	85	92			
LINE NO.= 96 KP1=	85	TAN1=	-.1546	-.9880	.0000
KP2=	92	TAN2=	.1546	.9880	.0000
LINE CONNECTS KEYPOINTS	84	91			
LINE NO.= 97 KP1=	84	TAN1=	-.1820	-.9833	.0000
KP2=	91	TAN2=	.1820	.9833	.0000
LINE CONNECTS KEYPOINTS	83	90			
LINE NO.= 98 KP1=	83	TAN1=	-.5185	-.8551	.0000
KP2=	90	TAN2=	.5185	.8551	.0000
LINE CONNECTS KEYPOINTS	82	89			
LINE NO.= 99 KP1=	82	TAN1=	-.8551	-.5185	.0000
KP2=	89	TAN2=	.8551	.5185	.0000
LINE CONNECTS KEYPOINTS	81	88			
LINE NO.= 100 KP1=	81	TAN1=	-.9833	-.1820	.0000
KP2=	88	TAN2=	.9833	.1820	.0000
LINE CONNECTS KEYPOINTS	80	87			
LINE NO.= 101 KP1=	80	TAN1=	-.9880	-.1546	.0000
KP2=	87	TAN2=	.9880	.1546	.0000
LINE CONNECTS KEYPOINTS	108	115			
LINE NO.= 102 KP1=	108	TAN1=	-.9880	.1546	.0000
KP2=	115	TAN2=	.9880	-.1546	.0000
LINE CONNECTS KEYPOINTS	109	116			
LINE NO.= 103 KP1=	109	TAN1=	-.9833	.1820	.0000
KP2=	116	TAN2=	.9833	-.1820	.0000
LINE CONNECTS KEYPOINTS	110	117			
LINE NO.= 104 KP1=	110	TAN1=	-.8551	.5185	.0000
KP2=	117	TAN2=	.8551	-.5185	.0000
LINE CONNECTS KEYPOINTS	111	118			
LINE NO.= 105 KP1=	111	TAN1=	-.5185	.8551	.0000
KP2=	118	TAN2=	.5185	-.8551	.0000
LINE CONNECTS KEYPOINTS	112	119			
LINE NO.= 106 KP1=	112	TAN1=	-.1820	.9833	.0000
KP2=	119	TAN2=	.1820	-.9833	.0000
LINE CONNECTS KEYPOINTS	113	120			
LINE NO.= 107 KP1=	113	TAN1=	-.1546	.9880	.0000
KP2=	120	TAN2=	.1546	-.9880	.0000
LINE CONNECTS KEYPOINTS	114	121			
LINE NO.= 108 KP1=	114	TAN1=	.0000	1.0000	.0000
KP2=	121	TAN2=	.0000	-1.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 1, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 108 STEP 1

0 LINES (OF 108 DEFINED) SELECTED BY LSEL COMMAND.
 Define circles of inner and outer barriers

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

LINE CONNECTS KEYPOINTS	100	99			
LINE NO.= 109 KP1=	100	TAN1=	-1.0000	.0000	.0000
KP2=	99	TAN2=	.9880	.1546	.0000

LINE CONNECTS KEYPOINTS 107 106

LINE NO.= 110 KP1= 107 TAN1= -1.0000 .0000 .0000
 KP2= 106 TAN2= .9880 .1546 .0000

LINE CONNECTS KEYPOINTS 114 113
 LINE NO.= 111 KP1= 114 TAN1= -1.0000 .0000 .0000
 KP2= 113 TAN2= .9880 .1546 .0000

LINE CONNECTS KEYPOINTS 121 120
 LINE NO.= 112 KP1= 121 TAN1= -1.0000 .0000 .0000
 KP2= 120 TAN2= .9880 .1546 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 112 STEP 1

0 LINES (OF 112 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 98 97
 LINE NO.= 113 KP1= 98 TAN1= -.9833 -.1820 .0000
 KP2= 97 TAN2= .8551 .5185 .0000

LINE CONNECTS KEYPOINTS 105 104
 LINE NO.= 114 KP1= 105 TAN1= -.9833 -.1820 .0000
 KP2= 104 TAN2= .8551 .5185 .0000

LINE CONNECTS KEYPOINTS 112 111
 LINE NO.= 115 KP1= 112 TAN1= -.9833 -.1820 .0000
 KP2= 111 TAN2= .8551 .5185 .0000

LINE CONNECTS KEYPOINTS 119 118
 LINE NO.= 116 KP1= 119 TAN1= -.9833 -.1820 .0000
 KP2= 118 TAN2= .8551 .5185 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 4, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 116 STEP 1

0 LINES (OF 116 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 97 96
 LINE NO.= 117 KP1= 97 TAN1= -.8551 -.5185 .0000
 KP2= 96 TAN2= .5185 .8551 .0000

LINE CONNECTS KEYPOINTS 104 103
 LINE NO.= 118 KP1= 104 TAN1= -.8551 -.5185 .0000
 KP2= 103 TAN2= .5185 .8551 .0000

LINE CONNECTS KEYPOINTS 111 110
 LINE NO.= 119 KP1= 111 TAN1= -.8551 -.5185 .0000
 KP2= 110 TAN2= .5185 .8551 .0000

LINE CONNECTS KEYPOINTS 118 117
 LINE NO.= 120 KP1= 118 TAN1= -.8551 -.5185 .0000
 KP2= 117 TAN2= .5185 .8551 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 6, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 120 STEP 1

0 LINES (OF 120 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 96 95
 LINE NO.= 121 KP1= 96 TAN1= -.5185 -.8551 .0000
 KP2= 95 TAN2= .1820 .9833 .0000

LINE CONNECTS KEYPOINTS 103 102
 LINE NO.= 122 KP1= 103 TAN1= -.5185 -.8551 .0000
 KP2= 102 TAN2= .1820 .9833 .0000

LINE CONNECTS KEYPOINTS 110 109
 LINE NO.= 123 KP1= 110 TAN1= -.5185 -.8551 .0000
 KP2= 109 TAN2= .1820 .9833 .0000

LINE CONNECTS KEYPOINTS 117 116
 LINE NO.= 124 KP1= 117 TAN1= -.5185 -.8551 .0000
 KP2= 116 TAN2= .1820 .9833 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 4, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 124 STEP 1

0 LINES (OF 124 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 94 66
 LINE NO.= 125 KP1= 94 TAN1= -.1546 -.9880 .0000
 KP2= 66 TAN2= -.1546 .9880 .0000

LINE CONNECTS KEYPOINTS 101 73
 LINE NO.= 126 KP1= 101 TAN1= -.1546 -.9880 .0000
 KP2= 73 TAN2= -.1546 .9880 .0000

LINE CONNECTS KEYPOINTS 108 80
 LINE NO.= 127 KP1= 108 TAN1= -.1546 -.9880 .0000
 KP2= 80 TAN2= -.1546 .9880 .0000

LINE CONNECTS KEYPOINTS 115 87
 LINE NO.= 128 KP1= 115 TAN1= -.1546 -.9880 .0000
 KP2= 87 TAN2= -.1546 .9880 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 4, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 128 STEP 1

0 LINES (OF 128 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 67 68
 LINE NO.= 129 KP1= 67 TAN1= .1820 -.9833 .0000
 KP2= 68 TAN2= -.5185 .8551 .0000

LINE CONNECTS KEYPOINTS 74 75
 LINE NO.= 130 KP1= 74 TAN1= .1820 -.9833 .0000
 KP2= 75 TAN2= -.5185 .8551 .0000

LINE CONNECTS KEYPOINTS 81 82
 LINE NO.= 131 KP1= 81 TAN1= .1820 -.9833 .0000
 KP2= 82 TAN2= -.5185 .8551 .0000

LINE CONNECTS KEYPOINTS 88 89
 LINE NO.= 132 KP1= 88 TAN1= .1820 -.9833 .0000
 KP2= 89 TAN2= -.5185 .8551 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 4, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 132 STEP 1

0 LINES (OF 132 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	68	69			
LINE NO.= 133 KP1=	68	TAN1=	.5185	-.8551	.0000
KP2=	69	TAN2=	-.8551	.5185	.0000

LINE CONNECTS KEYPOINTS	75	76			
LINE NO.= 134 KP1=	75	TAN1=	.5185	-.8551	.0000
KP2=	76	TAN2=	-.8551	.5185	.0000

LINE CONNECTS KEYPOINTS	82	83			
LINE NO.= 135 KP1=	82	TAN1=	.5185	-.8551	.0000
KP2=	83	TAN2=	-.8551	.5185	.0000

LINE CONNECTS KEYPOINTS	89	90			
LINE NO.= 136 KP1=	89	TAN1=	.5185	-.8551	.0000
KP2=	90	TAN2=	-.8551	.5185	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 6, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 136 STEP 1

0 LINES (OF 136 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	69	70			
LINE NO.= 137 KP1=	69	TAN1=	.8551	-.5185	.0000
KP2=	70	TAN2=	-.9833	.1820	.0000

LINE CONNECTS KEYPOINTS	76	77			
LINE NO.= 138 KP1=	76	TAN1=	.8551	-.5185	.0000
KP2=	77	TAN2=	-.9833	.1820	.0000

LINE CONNECTS KEYPOINTS	83	84			
LINE NO.= 139 KP1=	83	TAN1=	.8551	-.5185	.0000
KP2=	84	TAN2=	-.9833	.1820	.0000

LINE CONNECTS KEYPOINTS	90	91			
LINE NO.= 140 KP1=	90	TAN1=	.8551	-.5185	.0000
KP2=	91	TAN2=	-.9833	.1820	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 4, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 140 STEP 1

0 LINES (OF 140 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	71	72			
LINE NO.= 141 KP1=	71	TAN1=	.9880	-.1546	.0000
KP2=	72	TAN2=	-1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	78	79			
LINE NO.= 142 KP1=	78	TAN1=	.9880	-.1546	.0000
KP2=	79	TAN2=	-1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	85	86			
LINE NO.= 143 KP1=	85	TAN1=	.9880	-.1546	.0000
KP2=	86	TAN2=	-1.0000	.0000	.0000

LINE CONNECTS KEYPOINTS	92	93			
LINE NO.= 144 KP1=	92	TAN1=	.9880	-.1546	.0000
KP2=	93	TAN2=	-1.0000	.0000	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 144 STEP 1

0 LINES (OF 144 DEFINED) SELECTED BY LSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

KEYPOINT	122	X,Y,Z=	.000000E+00	.000000E+00	4.58500	IN CSYS= 0
KEYPOINT	123	X,Y,Z=	.000000E+00	.000000E+00	4.61000	IN CSYS= 0
KEYPOINT	124	X,Y,Z=	.000000E+00	.000000E+00	4.64000	IN CSYS= 0
KEYPOINT	125	X,Y,Z=	.000000E+00	.000000E+00	4.75000	IN CSYS= 0
KEYPOINT	126	X,Y,Z=	.000000E+00	.000000E+00	4.97500	IN CSYS= 0
KEYPOINT	127	X,Y,Z=	.000000E+00	.000000E+00	-.250000E-01	IN CSYS= 0
KEYPOINT	128	X,Y,Z=	.000000E+00	.000000E+00	-.135000	IN CSYS= 0
KEYPOINT	129	X,Y,Z=	.000000E+00	.000000E+00	-.360000	IN CSYS= 0

LINE CONNECTS KEYPOINTS 1 122
 LINE NO.= 145 KP1= 1 TAN1= .0000 .0000 -1.0000
 KP2= 122 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 122 123
 LINE NO.= 146 KP1= 122 TAN1= .0000 .0000 -1.0000
 KP2= 123 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 123 124
 LINE NO.= 147 KP1= 123 TAN1= .0000 .0000 -1.0000
 KP2= 124 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 124 125
 LINE NO.= 148 KP1= 124 TAN1= .0000 .0000 -1.0000
 KP2= 125 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 125 126
 LINE NO.= 149 KP1= 125 TAN1= .0000 .0000 -1.0000
 KP2= 126 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 1 127
 LINE NO.= 150 KP1= 1 TAN1= .0000 .0000 1.0000
 KP2= 127 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 127 128
 LINE NO.= 151 KP1= 127 TAN1= .0000 .0000 1.0000
 KP2= 128 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS 128 129
 LINE NO.= 152 KP1= 128 TAN1= .0000 .0000 1.0000
 KP2= 129 TAN2= .0000 .0000 -1.0000

Define areas in basket structure

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 152 STEP 1

152 LINES (OF 152 DEFINED) SELECTED BY LSEL COMMAND.

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 32 33 70 71

AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 27 28 32 31

AREA NUMBER = 2

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 28 29 33 32

AREA NUMBER = 3

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 29 30 69 33

AREA NUMBER = 4

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 23 24 29 28

AREA NUMBER = 5

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 25 26 69 30

AREA NUMBER = 6

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 16 17 23 22

AREA NUMBER = 7

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 17 18 24 23

AREA NUMBER = 8

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 18 19 25 24

AREA NUMBER = 9

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 19 20 26 25

AREA NUMBER = 10

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 20 21 68 26

AREA NUMBER = 11

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 10 11 18 17

AREA NUMBER = 12

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 12 13 20 19

AREA NUMBER = 13

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 14 15 68 21

AREA NUMBER = 14

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 2 3 10 9

AREA NUMBER = 15

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 3 4 11 10

AREA NUMBER = 16

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 4 5 12 11

AREA NUMBER = 17

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 5 6 13 12

AREA NUMBER = 18

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 6 7 14 13

AREA NUMBER = 19

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 7 8 15 14

AREA NUMBER = 20

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 8 66 67 15

AREA NUMBER = 21

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 35 36 4 3

AREA NUMBER = 22

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 37 38 6 5

AREA NUMBER = 23

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 39 40 8 7

AREA NUMBER = 24

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 41 42 35 34

AREA NUMBER = 25

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 42 43 36 35

AREA NUMBER = 26

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 43 44 37 36

AREA NUMBER = 27

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 44 45 38 37

AREA NUMBER = 28

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 45 46 39 38

AREA NUMBER = 29

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 46 47 40 39

AREA NUMBER = 30

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 47 95 94 40

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 49 50 43 42

AREA NUMBER = 32

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 51 52 45 44

AREA NUMBER = 33

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 53 96 47 46

AREA NUMBER = 34

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 54 55 49 48

AREA NUMBER = 35

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 55 56 50 49

AREA NUMBER = 36

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 56 57 51 50

AREA NUMBER = 37

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 57 58 52 51

AREA NUMBER = 38

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 58 96 53 52

AREA NUMBER = 39

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 60 61 56 55

AREA NUMBER = 40

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 62 97 58 57

AREA NUMBER = 41

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 63 64 60 59

AREA NUMBER = 42

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 64 65 61 60

AREA NUMBER = 43

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 65 97 62 61

AREA NUMBER = 44

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 99 98 65 64

AREA NUMBER = 45

ELEMENT TYPE SET TO 1

MATERIAL NUMBER SET TO 1

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 45
MAXIMUM NODE NUMBER = 2036
MAXIMUM ELEMENT NUMBER = 1548
Half Model is used to create the other half
by symmetry along the x-axis

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

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

0 VOLUMES (OF 0 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 45 STEP 1

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

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 214 STEP 1

214 LINES (OF 214 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 129 STEP 1

129 KEYPOINTS (OF 129 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 1548 STEP 1

1548 ELEMENTS (OF 1548 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 2036 STEP 1

2036 NODES (OF 2036 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SYMMETRY TRANSFORMATION USING COMPONENT X NODE INCREMENT= 10000
SET IS ALL SELECTED NODES FROM 1 TO 2036 BY 1

REFLECT SELECTED ELEMENTS IN THE RANGE 1 TO 1548 IN STEPS OF 1
WITH NODE INCREMENT OF 10000
MAXIMUM ELEMENT NUMBER= 3096

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03
NODE 1872 USED FOR NODES 11872
NODE 1873 USED FOR NODES 11873

NODE 57 USED FOR NODES 10057
 NODE 1089 USED FOR NODES 11089
 NODE 1856 USED FOR NODES 11856
 NODE 1100 USED FOR NODES 11100
 NODE 273 USED FOR NODES 10273
 NODE 37 USED FOR NODES 10037
 NODE 1108 USED FOR NODES 11108
 NODE 1109 USED FOR NODES 11109
 NODE 284 USED FOR NODES 10284
 NODE 1837 USED FOR NODES 11837
 NODE 292 USED FOR NODES 10292
 NODE 293 USED FOR NODES 10293
 NODE 1533 USED FOR NODES 11533
 NODE 645 USED FOR NODES 10645
 NODE 56 USED FOR NODES 10056
 NODE 656 USED FOR NODES 10656
 NODE 664 USED FOR NODES 10664
 NODE 665 USED FOR NODES 10665
 NODE 48 USED FOR NODES 10048
 NODE 1552 USED FOR NODES 11552
 NODE 1544 USED FOR NODES 11544
 NODE 1553 USED FOR NODES 11553

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
 Apply Constraints at Support Locations

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .79450 AND .83450
 KABS= 0. TOLERANCE= .000000E+00

0 NODES (OF 4048 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -95.000 AND -85.000
 KABS= 0. TOLERANCE= .000000E+00

0 NODES (OF 4048 DEFINED) SELECTED BY NSEL COMMAND.

IN COORDINATE SYSTEM 1, ROTATE ALL SELECTED NODES.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 12036 BY 1
 REAL= .000000000E+00 IMAG= .000000000E+00
 ADDITIONAL DOFS= UY

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

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

0 VOLUMES (OF 0 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 45 STEP 1

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

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 214 STEP 1

214 LINES (OF 214 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 129 STEP 1

129 KEYPOINTS (OF 129 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 3096 STEP 1

3096 ELEMENTS (OF 3096 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 12036 STEP 1

4048 NODES (OF 4048 DEFINED) SELECTED BY NSEL COMMAND.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= stat2dbt.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 11.290

***** ANSYS SOLUTION ROUTINE *****

PERFORM A STATIC ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS

SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-3.260700000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-3.357000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-3.462100000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-4.909400000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-4.600900000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-4.537400000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-3.527400000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-3.419900000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-1.966300000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-5.588100000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-1.131000000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-9.329000000E-07	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL= 7.829700000E-07	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL= 9.817800000E-07	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL= 5.458000000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11470 TO	11470 BY	1

REAL= 1.958400000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11277 TO	11277 BY	1
REAL= 3.417000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11293 TO	11293 BY	1
REAL= 3.524900000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10833 TO	10833 BY	1
REAL= 4.539600000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10849 TO	10849 BY	1
REAL= 4.603500000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10405 TO	10405 BY	1
REAL= 4.917100000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10097 TO	10097 BY	1
REAL= 3.475000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10005 TO	10005 BY	1
REAL= 3.371800000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10013 TO	10013 BY	1
REAL= 3.275500000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-2.738800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-2.464800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-8.090500000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-3.187700000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-2.924300000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-2.916100000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-2.763600000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-2.736300000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-2.130200000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-8.837600000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-2.058100000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-1.786700000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL=-1.810100000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL=-2.085600000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL=-8.916000000E-06	IMAG= .000000000E+00			

```

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   11470 TO   11470 BY   1
REAL=-2.143200000E-05   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   11277 TO   11277 BY   1
REAL=-2.751200000E-05   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   11293 TO   11293 BY   1
REAL=-2.778600000E-05   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10833 TO   10833 BY   1
REAL=-2.931100000E-05   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10849 TO   10849 BY   1
REAL=-2.939200000E-05   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10405 TO   10405 BY   1
REAL=-3.200700000E-05   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10097 TO   10097 BY   1
REAL=-8.097900000E-05   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10005 TO   10005 BY   1
REAL=-2.464900000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10013 TO   10013 BY   1
REAL=-2.738900000E-04   IMAG= .000000000E+00

```

ACEL= .00000E+00 9.8100 .00000E+00

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES .

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 12.220 TIME= 21:06:00
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:06:00 JUL 24, 1995 CP= 12.220
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 21 PWR Tube Analysis

SOLUTION OPTIONS

```

PROBLEM DIMENSIONALITY. . . . .2-D
DEGREES OF FREEDOM. . . . . UX UY
ANALYSIS TYPE . . . . .STATIC (STEADY-STATE)
NONLINEAR GEOMETRIC EFFECTS . . . . .ON
PLASTIC MATERIAL PROPERTIES INCLUDED. . . . .YES
NEWTON-RAPHSON OPTION . . . . .PROGRAM CHOSEN

```

*** NOTE *** CP= 12.720 TIME= 21:06:01
Present time 0 is less than or equal to the previous time.
Time will default to 1.

*** NOTE *** CP= 12.750 TIME= 21:06:01
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

LOAD STEP OPTIONS

```

LOAD STEP NUMBER. . . . .1
TIME AT END OF THE LOAD STEP. . . . .1.0000
NUMBER OF SUBSTEPS. . . . .1

```

MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
 CONVERGENCE CONTROLS. USE DEFAULTS
 INERTIA LOADS
 X Y Z
 ACEL 0.00000E+00 9.8100 .00000E+00
 COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
 ACTIVE MAT. NONLINEARITIES
 PRINT OUTPUT CONTROLS NO PRINTOUT
 DATABASE OUTPUT CONTROLS
 ITEM FREQUENCY COMPONENT
 ALL ALL

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 4758.6

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.11591E-15	IXX = 635.4	IXX = 635.4
YC = .94554E-12	IYY = 635.4	IYY = 635.4
ZC = .00000E+00	IZZ = 1271.	IZZ = 1271.
	IXY = -.4927E-14	IXY = -.4927E-14
	IYZ = .0000E+00	IYZ = .0000E+00
	IZX = .0000E+00	IZX = .0000E+00

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE MASS
 1 4758.56

Range of element maximum matrix coefficients in global coordinates
 Maximum= 3.014977968E+11 at element 201.
 Minimum= 8.853000342E+10 at element 2064.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	3096	PLANE42	9.890	.003

Time at end of element matrix formulation CP= 25.47.
 FORCE CONVERGENCE VALUE = .5807E+08 CRITERION= .5807E+05

Estimated number of active DOF= 8048.
 Maximum wavefront= 112.

Time at end of matrix triangularization CP= 30.69.
 Equation solver maximum pivot= 7.003896902E+11 at node 777 UY.
 Equation solver minimum pivot= 3.314046477E+09 at node 1942 UY.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2739E-03
 FORCE CONVERGENCE VALUE = .1484E+05 CRITERION= 1111.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7041E-06
 FORCE CONVERGENCE VALUE = 2.917 CRITERION= 1112. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	3096	PLANE42	13.350	.004

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP

1 3096 PLANE42 .640 .000
 *** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 2
 *** TIME = 1.00000 TIME INC = 1.00000

*** PROBLEM STATISTICS
 ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 8048
 R.M.S. WAVEFRONT SIZE = 70.1

*** ANSYS BINARY FILE STATISTICS
 BUFFER SIZE USED= 4096
 2.578 MB WRITTEN ON ELEMENT MATRIX FILE: stat2dbt.emat
 9.969 MB WRITTEN ON ELEMENT SAVED DATA FILE: stat2dbt.esav
 4.594 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: stat2dbt.tri
 4.047 MB WRITTEN ON RESULTS FILE: stat2dbt.rst

SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-1.630350000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-1.678500000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-1.731050000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-2.454700000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-2.300450000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-2.268700000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-1.763700000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-1.709950000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-9.831500000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-2.794050000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-5.655000000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-4.664500000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL= 3.914850000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL= 4.908900000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL= 2.729000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11470 TO	11470 BY	1
REAL= 9.792000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11277 TO	11277 BY	1
REAL= 1.708500000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11293 TO	11293 BY	1

REAL= 1.762450000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10833 TO	10833 BY	1
REAL= 2.269800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10849 TO	10849 BY	1
REAL= 2.301750000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10405 TO	10405 BY	1
REAL= 2.458550000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10097 TO	10097 BY	1
REAL= 1.737500000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10005 TO	10005 BY	1
REAL= 1.685900000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10013 TO	10013 BY	1
REAL= 1.637750000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-1.369400000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-1.232400000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-4.045250000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-1.593850000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-1.462150000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-1.458050000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-1.381800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-1.368150000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-1.065100000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-4.418800000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-1.029050000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-8.933500000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL=-9.050500000E-06	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL=-1.042800000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL=-4.458000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11470 TO	11470 BY	1
REAL=-1.071600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11277 TO	11277 BY	1
REAL=-1.375600000E-04	IMAG= .000000000E+00			

```

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   11293 TO   11293 BY   1
REAL=-1.389300000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10833 TO   10833 BY   1
REAL=-1.465550000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10849 TO   10849 BY   1
REAL=-1.469600000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10405 TO   10405 BY   1
REAL=-1.600350000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10097 TO   10097 BY   1
REAL=-4.048950000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10005 TO   10005 BY   1
REAL=-1.232450000E-03   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10013 TO   10013 BY   1
REAL=-1.369450000E-03   IMAG= .000000000E+00

ACEL= .00000E+00  9.8100 .00000E+00

```

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

```

USE      4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
  USE    1000 SUBSTEPS AS A MAXIMUM
  USE      3 SUBSTEPS AS A MINIMUM

```

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

```

*** NOTE ***                      CP= 86.470 TIME= 21:07:20
Present time 0 is less than or equal to the previous time.
Time will default to 2.

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*** NOTE ***                      CP= 86.500 TIME= 21:07:20
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

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1

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303      VERSION=HP 9000/7XX 21:07:20 JUL 24, 1995 CP= 86.500
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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Static 2-D 21 PWR Tube Analysis

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 2
TIME AT END OF THE LOAD STEP. . . . . 2.0000
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 4
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 1000
  MINIMUM NUMBER OF SUBSTEPS . . . . . 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TERMINATE ANALYSIS IF NOT CONVERGED . . . . . YES (EXIT)
CONVERGENCE CONTROLS. . . . . USE DEFAULTS
INERTIA LOADS      X      Y      Z
  ACEL . . . . . .00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE . . . . . YES, FOR ELEMENTS WITH
  ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS . . . . . NO PRINTOUT
DATABASE OUTPUT CONTROLS

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ITEM	FREQUENCY	COMPONENT
ALL	ALL	

FORCE CONVERGENCE VALUE = .5810E+08 CRITERION= .5811E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2739E-03
 FORCE CONVERGENCE VALUE = .1573E+06 CRITERION= 2068.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1092E-04
 FORCE CONVERGENCE VALUE = .1037E+06 CRITERION= 2103.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1704E-05
 FORCE CONVERGENCE VALUE = 6570. CRITERION= 2110.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1740E-06
 FORCE CONVERGENCE VALUE = 26.78 CRITERION= 2111. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 6
 *** TIME = 1.25000 TIME INC = .250000
 *** MAX PLASTIC STRAIN STEP = .1272E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .25000 UNCHANGED

FORCE CONVERGENCE VALUE = .5515E+08 CRITERION= .5519E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2739E-03
 FORCE CONVERGENCE VALUE = .5284E+06 CRITERION= 2775.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7563E-05
 FORCE CONVERGENCE VALUE = .1839E+06 CRITERION= 2740.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1760E-05
 FORCE CONVERGENCE VALUE = .1111E+05 CRITERION= 2750.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1909E-06
 FORCE CONVERGENCE VALUE = 13.87 CRITERION= 2751. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 2 SUBSTEP 2 COMPLETED. CUM ITER = 10
 *** TIME = 1.50000 TIME INC = .250000
 *** MAX PLASTIC STRAIN STEP = .4536E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .33333 INCREASED (FACTOR = 1.3333)

FORCE CONVERGENCE VALUE = .7293E+08 CRITERION= .7299E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3652E-03
 FORCE CONVERGENCE VALUE = .4664E+06 CRITERION= 3492.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5612E-04
 FORCE CONVERGENCE VALUE = .5942E+06 CRITERION= 3521.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4857E+06 CRITERION= 3473.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1113E-04
 FORCE CONVERGENCE VALUE = .2803E+06 CRITERION= 3507.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1227E-04
 FORCE CONVERGENCE VALUE = .2423E+06 CRITERION= 3526.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1214E-04
 FORCE CONVERGENCE VALUE = .2414E+06 CRITERION= 3536.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1624E-04
 FORCE CONVERGENCE VALUE = .1641E+06 CRITERION= 3541.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2207E-04
 FORCE CONVERGENCE VALUE = .1017E+06 CRITERION= 3527.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2225E-04
 FORCE CONVERGENCE VALUE = .2992E+05 CRITERION= 3544.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1111E-04
 FORCE CONVERGENCE VALUE = 5608. CRITERION= 3543.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7094E-06
 FORCE CONVERGENCE VALUE = 357.7 CRITERION= 3543. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
 *** LOAD STEP 2 SUBSTEP 3 COMPLETED. CUM ITER = 20
 *** TIME = 1.83333 TIME INC = .333333
 *** MAX PLASTIC STRAIN STEP = .2137E-01 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .16667 DECREASED (FACTOR = .5000)

FORCE CONVERGENCE VALUE = .3633E+08 CRITERION= .3651E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1826E-03
 FORCE CONVERGENCE VALUE = .2973E+06 CRITERION= 3880.

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1316E-04
FORCE CONVERGENCE VALUE = .7190E+05 CRITERION= 3898.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3585E-05
FORCE CONVERGENCE VALUE = .1574E+05 CRITERION= 3897.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9166E-06
FORCE CONVERGENCE VALUE = 314.4 CRITERION= 3897. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 2 SUBSTEP 4 COMPLETED. CUM ITER = 24
*** TIME = 2.00000 TIME INC = .166667
*** MAX PLASTIC STRAIN STEP = .1609E-01 CRITERION = .5000E-01

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 13 TO 13 BY 1
REAL=-3.260700000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 5 TO 5 BY 1
REAL=-3.357000000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 97 TO 97 BY 1
REAL=-3.462100000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 405 TO 405 BY 1
REAL=-4.909400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 849 TO 849 BY 1
REAL=-4.600900000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 833 TO 833 BY 1
REAL=-4.537400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1293 TO 1293 BY 1
REAL=-3.527400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1277 TO 1277 BY 1
REAL=-3.419900000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1470 TO 1470 BY 1
REAL=-1.966300000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1774 TO 1774 BY 1
REAL=-5.588100000E-05 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1974 TO 1974 BY 1
REAL=-1.131000000E-05 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1973 TO 1973 BY 1
REAL=-9.329000000E-06 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 11973 TO 11973 BY 1
REAL= 7.829700000E-06 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 11974 TO 11974 BY 1
REAL= 9.817800000E-06 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 11774 TO 11774 BY 1
REAL= 5.458000000E-05 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 11470 TO 11470 BY 1
REAL= 1.958400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 11277 TO 11277 BY 1
REAL= 3.417000000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 11293 TO 11293 BY 1
REAL= 3.524900000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 10833 TO 10833 BY 1
REAL= 4.539600000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 10849 TO 10849 BY 1
REAL= 4.603500000E-04 IMAG= .000000000E+00

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SPECIFIED CONSTRAINT UX REAL= 4.917100000E-04	FOR SELECTED NODES IMAG= .000000000E+00	10405 TO	10405 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.475000000E-04	FOR SELECTED NODES IMAG= .000000000E+00	10097 TO	10097 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.371800000E-04	FOR SELECTED NODES IMAG= .000000000E+00	10005 TO	10005 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.275500000E-04	FOR SELECTED NODES IMAG= .000000000E+00	10013 TO	10013 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.738800000E-03	FOR SELECTED NODES IMAG= .000000000E+00	13 TO	13 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.464800000E-03	FOR SELECTED NODES IMAG= .000000000E+00	5 TO	5 BY	1
SPECIFIED CONSTRAINT UY REAL=-8.090500000E-04	FOR SELECTED NODES IMAG= .000000000E+00	97 TO	97 BY	1
SPECIFIED CONSTRAINT UY REAL=-3.187700000E-04	FOR SELECTED NODES IMAG= .000000000E+00	405 TO	405 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.924300000E-04	FOR SELECTED NODES IMAG= .000000000E+00	849 TO	849 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.916100000E-04	FOR SELECTED NODES IMAG= .000000000E+00	833 TO	833 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.763600000E-04	FOR SELECTED NODES IMAG= .000000000E+00	1293 TO	1293 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.736300000E-04	FOR SELECTED NODES IMAG= .000000000E+00	1277 TO	1277 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.130200000E-04	FOR SELECTED NODES IMAG= .000000000E+00	1470 TO	1470 BY	1
SPECIFIED CONSTRAINT UY REAL=-8.837600000E-05	FOR SELECTED NODES IMAG= .000000000E+00	1774 TO	1774 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.058100000E-05	FOR SELECTED NODES IMAG= .000000000E+00	1974 TO	1974 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.786700000E-05	FOR SELECTED NODES IMAG= .000000000E+00	1973 TO	1973 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.810100000E-05	FOR SELECTED NODES IMAG= .000000000E+00	11973 TO	11973 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.085600000E-05	FOR SELECTED NODES IMAG= .000000000E+00	11974 TO	11974 BY	1
SPECIFIED CONSTRAINT UY REAL=-8.916000000E-05	FOR SELECTED NODES IMAG= .000000000E+00	11774 TO	11774 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.143200000E-04	FOR SELECTED NODES IMAG= .000000000E+00	11470 TO	11470 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.751200000E-04	FOR SELECTED NODES IMAG= .000000000E+00	11277 TO	11277 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.778600000E-04	FOR SELECTED NODES IMAG= .000000000E+00	11293 TO	11293 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.931100000E-04	FOR SELECTED NODES IMAG= .000000000E+00	10833 TO	10833 BY	1

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SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10849 TO   10849 BY   1
REAL=-2.939200000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10405 TO   10405 BY   1
REAL=-3.200700000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10097 TO   10097 BY   1
REAL=-8.097900000E-04   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10005 TO   10005 BY   1
REAL=-2.464900000E-03   IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY   FOR SELECTED NODES   10013 TO   10013 BY   1
REAL=-2.738900000E-03   IMAG= .000000000E+00

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ACEL= .00000E+00 9.8100 .00000E+00

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

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USE      4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
  USE    1000 SUBSTEPS AS A MAXIMUM
  USE      3 SUBSTEPS AS A MINIMUM

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WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

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*** NOTE ***                      CP= 693.760   TIME= 21:18:58
Present time 0 is less than or equal to the previous time.
Time will default to 3.

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*** NOTE ***                      CP= 693.800   TIME= 21:18:58
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

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***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303      VERSION=HP 9000/7XX   21:18:58 JUL 24, 1995 CP= 693.800
FOR SUPPORT CALL ROBERT BAHNEY   PHONE (702) 794-5337 FAX (702) 794-1844

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Static 2-D 21 PWR Tube Analysis

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 3
TIME AT END OF THE LOAD STEP. . . . . 3.0000
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 4
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 1000
  MINIMUM NUMBER OF SUBSTEPS . . . . . 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TERMINATE ANALYSIS IF NOT CONVERGED . . . . .YES (EXIT)
CONVERGENCE CONTROLS. . . . .USE DEFAULTS
INERTIA LOADS      X      Y      Z
  ACEL . . . . . .00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE . . . . .YES, FOR ELEMENTS WITH
  ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS . . . . .NO PRINTOUT
DATABASE OUTPUT CONTROLS
  ITEM      FREQUENCY      COMPONENT
  ALL      ALL

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FORCE CONVERGENCE VALUE = .6470E+08 CRITERION= .6482E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3646E-03
FORCE CONVERGENCE VALUE = .7920E+06 CRITERION= 4325.

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1907E-03
FORCE CONVERGENCE VALUE = .4752E+07 CRITERION= 4400.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .5784E+06 CRITERION= 4324.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2536E-04
FORCE CONVERGENCE VALUE = .5518E+06 CRITERION= 4381.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1549E-04
FORCE CONVERGENCE VALUE = .3854E+06 CRITERION= 4398.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1267E-04
FORCE CONVERGENCE VALUE = .2906E+06 CRITERION= 4410.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1062E-04
FORCE CONVERGENCE VALUE = .2510E+06 CRITERION= 4416.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1691E-04
FORCE CONVERGENCE VALUE = .1565E+06 CRITERION= 4426.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2867E-04
FORCE CONVERGENCE VALUE = .1042E+06 CRITERION= 4433.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6330E-04
FORCE CONVERGENCE VALUE = .1054E+06 CRITERION= 4433.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .8445E+05 CRITERION= 4434.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9764E-05
FORCE CONVERGENCE VALUE = .7883E+05 CRITERION= 4433.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8022E-05
FORCE CONVERGENCE VALUE = .7823E+05 CRITERION= 4433.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7584E-05
FORCE CONVERGENCE VALUE = .7646E+05 CRITERION= 4433.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7458E-05
FORCE CONVERGENCE VALUE = .8384E+05 CRITERION= 4432.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .7646E+05 CRITERION= 4433.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 1 NOT COMPLETED. CUM ITER = 38
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .12500

FORCE CONVERGENCE VALUE = .3235E+08 CRITERION= .3258E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1824E-03
FORCE CONVERGENCE VALUE = .2839E+06 CRITERION= 4135.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2303E-04
FORCE CONVERGENCE VALUE = .7376E+05 CRITERION= 4177.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1013E-04
FORCE CONVERGENCE VALUE = .2412E+05 CRITERION= 4187.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4714E-05
FORCE CONVERGENCE VALUE = .1646E+05 CRITERION= 4187.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2303E-05
FORCE CONVERGENCE VALUE = 307.9 CRITERION= 4187. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 43
*** TIME = 2.12500 TIME INC = .125000
*** MAX PLASTIC STRAIN STEP = .1161E-01 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .12500 UNCHANGED

FORCE CONVERGENCE VALUE = .2634E+08 CRITERION= .2667E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2062E-03
FORCE CONVERGENCE VALUE = .2729E+06 CRITERION= 4431.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5079E-04
FORCE CONVERGENCE VALUE = .2604E+06 CRITERION= 4434.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6975E-04
FORCE CONVERGENCE VALUE = .8644E+06 CRITERION= 4431.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2299E+06 CRITERION= 4434.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1853E-04
FORCE CONVERGENCE VALUE = .8673E+05 CRITERION= 4434.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7143E-05
FORCE CONVERGENCE VALUE = .7046E+05 CRITERION= 4434.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500

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EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5366E-05
FORCE CONVERGENCE VALUE = .7618E+05 CRITERION= 4434.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .7046E+05 CRITERION= 4434.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5366E-05
FORCE CONVERGENCE VALUE = .6096E+05 CRITERION= 4434.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4569E-05
FORCE CONVERGENCE VALUE = .5822E+05 CRITERION= 4433.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4140E-05
FORCE CONVERGENCE VALUE = .6900E+05 CRITERION= 4433.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .5822E+05 CRITERION= 4433.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 2 NOT COMPLETED. CUM ITER = 53
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .62500E-01

FORCE CONVERGENCE VALUE = .1317E+08 CRITERION= .1382E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1035E-03
FORCE CONVERGENCE VALUE = .1052E+06 CRITERION= 4313.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1394E-04
FORCE CONVERGENCE VALUE = .4309E+05 CRITERION= 4313.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1819E-04
FORCE CONVERGENCE VALUE = .3420E+05 CRITERION= 4313.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1862E-04
FORCE CONVERGENCE VALUE = .1645E+05 CRITERION= 4312.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2168E-04
FORCE CONVERGENCE VALUE = .3138E+06 CRITERION= 4311.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1443E+05 CRITERION= 4312.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4702E-05
FORCE CONVERGENCE VALUE = .2099E+05 CRITERION= 4312.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2737E-05
FORCE CONVERGENCE VALUE = .1963E+05 CRITERION= 4312.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2068E-05
FORCE CONVERGENCE VALUE = .1806E+05 CRITERION= 4312.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1733E-05
FORCE CONVERGENCE VALUE = .1780E+05 CRITERION= 4312.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3195E-05
FORCE CONVERGENCE VALUE = .1648E+05 CRITERION= 4312.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6039E-05
FORCE CONVERGENCE VALUE = .1944E+05 CRITERION= 4311.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1303E+05 CRITERION= 4312.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1580E-05
FORCE CONVERGENCE VALUE = .1414E+05 CRITERION= 4312.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1272E-05
FORCE CONVERGENCE VALUE = .1357E+05 CRITERION= 4312.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1139E-05
FORCE CONVERGENCE VALUE = .1305E+05 CRITERION= 4312.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 41 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 2 NOT COMPLETED. CUM ITER = 68
*** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .31250E-01

FORCE CONVERGENCE VALUE = .6586E+07 CRITERION= 7804.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5218E-04
FORCE CONVERGENCE VALUE = .3932E+05 CRITERION= 4251.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7555E-05
FORCE CONVERGENCE VALUE = .1112E+05 CRITERION= 4251.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4987E-05
FORCE CONVERGENCE VALUE = 3263. CRITERION= 4251. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 71
*** TIME = 2.15625 TIME INC = .312500E-01
*** MAX PLASTIC STRAIN STEP = .2085E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .31250E-01 UNCHANGED

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FORCE CONVERGENCE VALUE = .6533E+07 CRITERION= 7794.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5281E-04
FORCE CONVERGENCE VALUE = .4243E+05 CRITERION= 4314.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2313E-04
FORCE CONVERGENCE VALUE = .1846E+06 CRITERION= 4312.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .3040E+05 CRITERION= 4313.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6365E-05
FORCE CONVERGENCE VALUE = .3332E+05 CRITERION= 4315.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2905E-05
FORCE CONVERGENCE VALUE = .2736E+05 CRITERION= 4315.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2089E-05
FORCE CONVERGENCE VALUE = .2331E+05 CRITERION= 4315.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1709E-05
FORCE CONVERGENCE VALUE = .2314E+05 CRITERION= 4314.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3361E-05
FORCE CONVERGENCE VALUE = .1904E+05 CRITERION= 4314.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5451E-05
FORCE CONVERGENCE VALUE = .1419E+05 CRITERION= 4314.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9503E-05
FORCE CONVERGENCE VALUE = .1021E+06 CRITERION= 4313.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9784. CRITERION= 4314.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1673E-05
FORCE CONVERGENCE VALUE = .1343E+05 CRITERION= 4314.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1117E-05
FORCE CONVERGENCE VALUE = .1327E+05 CRITERION= 4313.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9296E-06
FORCE CONVERGENCE VALUE = .1293E+05 CRITERION= 4313.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8422E-06
FORCE CONVERGENCE VALUE = .1467E+05 CRITERION= 4313.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1293E+05 CRITERION= 4313.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 3 NOT COMPLETED. CUM ITER = 85
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .15625E-01

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FORCE CONVERGENCE VALUE = .3267E+07 CRITERION= 5361.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2726E-04
FORCE CONVERGENCE VALUE = .1716E+05 CRITERION= 4282.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1106E-04
FORCE CONVERGENCE VALUE = .8458E+05 CRITERION= 4282.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1269E+05 CRITERION= 4282.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3877E-05
FORCE CONVERGENCE VALUE = .1733E+05 CRITERION= 4283.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1704E-05
FORCE CONVERGENCE VALUE = .1464E+05 CRITERION= 4283.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1095E-05
FORCE CONVERGENCE VALUE = .1243E+05 CRITERION= 4283.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8557E-06
FORCE CONVERGENCE VALUE = .1222E+05 CRITERION= 4283.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1570E-05
FORCE CONVERGENCE VALUE = .1047E+05 CRITERION= 4282.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2912E-05
FORCE CONVERGENCE VALUE = 8742. CRITERION= 4282.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4235E-05
FORCE CONVERGENCE VALUE = .4117E+05 CRITERION= 4282.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 6251. CRITERION= 4282.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8412E-06

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FORCE CONVERGENCE VALUE = 6563. CRITERION= 4282.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5303E-06
FORCE CONVERGENCE VALUE = 6250. CRITERION= 4282.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4278E-06
FORCE CONVERGENCE VALUE = 5929. CRITERION= 4282.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3758E-06
FORCE CONVERGENCE VALUE = 6447. CRITERION= 4282.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 5929. CRITERION= 4282.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3758E-06
FORCE CONVERGENCE VALUE = 5652. CRITERION= 4282.
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3418E-06
FORCE CONVERGENCE VALUE = 5407. CRITERION= 4282.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3164E-06
FORCE CONVERGENCE VALUE = 5968. CRITERION= 4282.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 5407. CRITERION= 4282.
EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3164E-06
FORCE CONVERGENCE VALUE = 5183. CRITERION= 4282.
EQUIL ITER 18 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2959E-06
FORCE CONVERGENCE VALUE = 4976. CRITERION= 4282.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 19 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2786E-06
FORCE CONVERGENCE VALUE = 5534. CRITERION= 4282.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 4976. CRITERION= 4282.
EQUIL ITER 20 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2786E-06
FORCE CONVERGENCE VALUE = 4783. CRITERION= 4282.
EQUIL ITER 21 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2635E-06
FORCE CONVERGENCE VALUE = 4602. CRITERION= 4282.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 22 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2501E-06
FORCE CONVERGENCE VALUE = 5136. CRITERION= 4282.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 4602. CRITERION= 4282.
EQUIL ITER 23 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2501E-06
FORCE CONVERGENCE VALUE = 4431. CRITERION= 4282.
EQUIL ITER 24 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2380E-06
FORCE CONVERGENCE VALUE = 4269. CRITERION= 4282. <<< CONVERGED
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 24
*** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 109
*** TIME = 2.17188 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .9809E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .78125E-02 DECREASED (FACTOR = .5000)

FORCE CONVERGENCE VALUE = .1628E+07 CRITERION= 4581.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1353E-04
FORCE CONVERGENCE VALUE = 7469. CRITERION= 4297.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5159E-05
FORCE CONVERGENCE VALUE = 1137. CRITERION= 4296. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 111
*** TIME = 2.17969 TIME INC = .781250E-02
*** MAX PLASTIC STRAIN STEP = .1752E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .78125E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .1626E+07 CRITERION= 4594.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1516E-04
FORCE CONVERGENCE VALUE = 6766. CRITERION= 4312.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6478E-05
FORCE CONVERGENCE VALUE = 1255. CRITERION= 4311. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 113
*** TIME = 2.18750 TIME INC = .781250E-02
*** MAX PLASTIC STRAIN STEP = .3160E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .15625E-01 INCREASED (FACTOR = 2.0000)

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FORCE CONVERGENCE VALUE = .3247E+07 CRITERION= 5397.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2879E-04
 FORCE CONVERGENCE VALUE = .1311E+05 CRITERION= 4342.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1201E-04
 FORCE CONVERGENCE VALUE = 4747. CRITERION= 4341.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1181E-04
 FORCE CONVERGENCE VALUE = 3187. CRITERION= 4341. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 116
 *** TIME = 2.20313 TIME INC = .156250E-01
 *** MAX PLASTIC STRAIN STEP = .5093E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3240E+07 CRITERION= 5416.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3011E-04
 FORCE CONVERGENCE VALUE = .1591E+05 CRITERION= 4371.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2295E-04
 FORCE CONVERGENCE VALUE = .1150E+05 CRITERION= 4369.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2638E-04
 FORCE CONVERGENCE VALUE = .1353E+06 CRITERION= 4364.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1028E+05 CRITERION= 4369.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6282E-05
 FORCE CONVERGENCE VALUE = .2737E+05 CRITERION= 4369.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3820E-05
 FORCE CONVERGENCE VALUE = .2639E+05 CRITERION= 4369.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2978E-05
 FORCE CONVERGENCE VALUE = .2467E+05 CRITERION= 4369.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2559E-05
 FORCE CONVERGENCE VALUE = .2473E+05 CRITERION= 4369.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .2467E+05 CRITERION= 4369.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 3 SUBSTEP 7 NOT COMPLETED. CUM ITER = 124
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .78125E-02

FORCE CONVERGENCE VALUE = .1620E+07 CRITERION= 4633.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1736E-04
 FORCE CONVERGENCE VALUE = 9262. CRITERION= 4356.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1521E-04
 FORCE CONVERGENCE VALUE = .1827E+05 CRITERION= 4354.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 6881. CRITERION= 4355.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4534E-05
 FORCE CONVERGENCE VALUE = .2146E+05 CRITERION= 4356.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2654E-05
 FORCE CONVERGENCE VALUE = .2030E+05 CRITERION= 4356.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2017E-05
 FORCE CONVERGENCE VALUE = .1867E+05 CRITERION= 4356.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1701E-05
 FORCE CONVERGENCE VALUE = .1905E+05 CRITERION= 4356.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1867E+05 CRITERION= 4356.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 3 SUBSTEP 7 NOT COMPLETED. CUM ITER = 131
 *** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .39063E-02

FORCE CONVERGENCE VALUE = .8099E+06 CRITERION= 4415.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1348E-04
 FORCE CONVERGENCE VALUE = .1166E+05 CRITERION= 4348.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1165E-04
 FORCE CONVERGENCE VALUE = .3255E+05 CRITERION= 4330.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1084E+05 CRITERION= 4348.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3684E-05
 FORCE CONVERGENCE VALUE = .1574E+05 CRITERION= 4348.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2062E-05
 FORCE CONVERGENCE VALUE = .1543E+05 CRITERION= 4348.

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EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1524E-05
FORCE CONVERGENCE VALUE = .1430E+05 CRITERION= 4348.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1270E-05
FORCE CONVERGENCE VALUE = .1450E+05 CRITERION= 4348.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1430E+05 CRITERION= 4348.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 7 NOT COMPLETED. CUM ITER = 138
*** BEGIN BISECTION NUMBER 3 NEW TIME INCREMENT= .19531E-02

FORCE CONVERGENCE VALUE = .4050E+06 CRITERION= 4359.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1186E-04
FORCE CONVERGENCE VALUE = .2314E+05 CRITERION= 4343.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8616E-05
FORCE CONVERGENCE VALUE = .1510E+06 CRITERION= 4270.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2234E+05 CRITERION= 4343.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3316E-05
FORCE CONVERGENCE VALUE = .1167E+05 CRITERION= 4344.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1665E-05
FORCE CONVERGENCE VALUE = .1172E+05 CRITERION= 4344.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1155E-05
FORCE CONVERGENCE VALUE = .1067E+05 CRITERION= 4344.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9297E-06
FORCE CONVERGENCE VALUE = 9744. CRITERION= 4344.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8018E-06
FORCE CONVERGENCE VALUE = 9756. CRITERION= 4344.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9744. CRITERION= 4344.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8018E-06
FORCE CONVERGENCE VALUE = 8963. CRITERION= 4344.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7131E-06
FORCE CONVERGENCE VALUE = 8315. CRITERION= 4343.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6444E-06
FORCE CONVERGENCE VALUE = 8562. CRITERION= 4343.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 8315. CRITERION= 4343.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6444E-06
FORCE CONVERGENCE VALUE = 7747. CRITERION= 4343.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5879E-06
FORCE CONVERGENCE VALUE = 7255. CRITERION= 4343.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5402E-06
FORCE CONVERGENCE VALUE = 7680. CRITERION= 4343.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 7255. CRITERION= 4343.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5402E-06
FORCE CONVERGENCE VALUE = 6824. CRITERION= 4343.
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4986E-06
FORCE CONVERGENCE VALUE = 6406. CRITERION= 4343.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4621E-06
FORCE CONVERGENCE VALUE = 6907. CRITERION= 4343.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 6406. CRITERION= 4343.
EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4621E-06
FORCE CONVERGENCE VALUE = 6026. CRITERION= 4343.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 26 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 7 NOT COMPLETED. CUM ITER = 156
*** BEGIN BISECTION NUMBER 4 NEW TIME INCREMENT= .10000E-02

FORCE CONVERGENCE VALUE = .2074E+06 CRITERION= 4345.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1107E-04
FORCE CONVERGENCE VALUE = .4701E+05 CRITERION= 4325.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4841E-05
FORCE CONVERGENCE VALUE = 2905. CRITERION= 4341. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

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*** LOAD STEP      3  SUBSTEP      7  COMPLETED.    CUM ITER =   158
*** TIME = 2.20413      TIME INC = .100000E-02
*** MAX PLASTIC STRAIN STEP = .8849E-04  CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .10000E-02  UNCHANGED

    FORCE CONVERGENCE VALUE = .2554E+06  CRITERION= 4348.
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5569E-05
    FORCE CONVERGENCE VALUE = 2217.      CRITERION= 4342.    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      8  COMPLETED.    CUM ITER =   159
*** TIME = 2.20512      TIME INC = .100000E-02
*** MAX PLASTIC STRAIN STEP = .2763E-04  CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .20000E-02  INCREASED (FACTOR = 2.0000)

    FORCE CONVERGENCE VALUE = .4909E+06  CRITERION= 4370.
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8149E-05
    FORCE CONVERGENCE VALUE = 2698.      CRITERION= 4346.    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP      3  SUBSTEP      9  COMPLETED.    CUM ITER =   160
*** TIME = 2.20712      TIME INC = .200000E-02
*** MAX PLASTIC STRAIN STEP = .4615E-04  CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .40000E-02  INCREASED (FACTOR = 2.0000)

    FORCE CONVERGENCE VALUE = .9853E+06  CRITERION= 4457.
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1422E-04
    FORCE CONVERGENCE VALUE = 6860.      CRITERION= 4354.
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9966E-05
    FORCE CONVERGENCE VALUE = .1560E+05  CRITERION= 4352.
    * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
    FORCE CONVERGENCE VALUE = 5544.      CRITERION= 4354.
    EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3621E-05
    FORCE CONVERGENCE VALUE = .1660E+05  CRITERION= 4354.
    EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2084E-05
    FORCE CONVERGENCE VALUE = .1589E+05  CRITERION= 4354.
    EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1577E-05
    FORCE CONVERGENCE VALUE = .1445E+05  CRITERION= 4354.
    RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
    EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1319E-05
    FORCE CONVERGENCE VALUE = .1415E+05  CRITERION= 4354.
    RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
    EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2466E-05
    FORCE CONVERGENCE VALUE = .1063E+05  CRITERION= 4353.
    RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
    EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3651E-05
    FORCE CONVERGENCE VALUE = 7109.      CRITERION= 4352.
    RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
    EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3725E-05
    FORCE CONVERGENCE VALUE = 1580.      CRITERION= 4352.    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP      3  SUBSTEP     10  COMPLETED.    CUM ITER =   169
*** TIME = 2.21112      TIME INC = .400000E-02
*** MAX PLASTIC STRAIN STEP = .1483E-03  CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .40000E-02  UNCHANGED

    FORCE CONVERGENCE VALUE = .9852E+06  CRITERION= 4462.
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1224E-04
    FORCE CONVERGENCE VALUE = 4596.      CRITERION= 4359.
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8754E-05
    FORCE CONVERGENCE VALUE = 1476.      CRITERION= 4358.    <<< CONVERGED
    >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP      3  SUBSTEP     11  COMPLETED.    CUM ITER =   171
*** TIME = 2.21512      TIME INC = .400000E-02
*** MAX PLASTIC STRAIN STEP = .1517E-03  CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .80000E-02  INCREASED (FACTOR = 2.0000)

    FORCE CONVERGENCE VALUE = .1970E+07  CRITERION= 4783.
    EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2682E-04
    FORCE CONVERGENCE VALUE = .1347E+05  CRITERION= 4374.
    EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2315E-04
    FORCE CONVERGENCE VALUE = .1673E+05  CRITERION= 4365.

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* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9774. CRITERION= 4373.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6968E-05
FORCE CONVERGENCE VALUE = .2980E+05 CRITERION= 4373.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4257E-05
FORCE CONVERGENCE VALUE = .2798E+05 CRITERION= 4373.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3263E-05
FORCE CONVERGENCE VALUE = .2517E+05 CRITERION= 4373.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2723E-05
FORCE CONVERGENCE VALUE = .2476E+05 CRITERION= 4372.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5026E-05
FORCE CONVERGENCE VALUE = .1898E+05 CRITERION= 4371.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8614E-05
FORCE CONVERGENCE VALUE = .1046E+05 CRITERION= 4370.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1275E-04
FORCE CONVERGENCE VALUE = 6908. CRITERION= 4368.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1681E-04
FORCE CONVERGENCE VALUE = .3368E+05 CRITERION= 4367.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 5820. CRITERION= 4368.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3050E-05
FORCE CONVERGENCE VALUE = .1119E+05 CRITERION= 4368.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1878E-05
FORCE CONVERGENCE VALUE = .1069E+05 CRITERION= 4368.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1491E-05
FORCE CONVERGENCE VALUE = .1007E+05 CRITERION= 4368.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1292E-05
FORCE CONVERGENCE VALUE = .1065E+05 CRITERION= 4367.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1007E+05 CRITERION= 4368.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 12 NOT COMPLETED. CUM ITER = 186
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .40000E-02

FORCE CONVERGENCE VALUE = .9849E+06 CRITERION= 4468.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1634E-04
FORCE CONVERGENCE VALUE = 5567. CRITERION= 4366.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1152E-04
FORCE CONVERGENCE VALUE = .1564E+05 CRITERION= 4364.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 4208. CRITERION= 4366.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4197E-05
FORCE CONVERGENCE VALUE = .1767E+05 CRITERION= 4366.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2460E-05
FORCE CONVERGENCE VALUE = .1660E+05 CRITERION= 4365.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1843E-05
FORCE CONVERGENCE VALUE = .1485E+05 CRITERION= 4365.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1508E-05
FORCE CONVERGENCE VALUE = .1420E+05 CRITERION= 4365.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2709E-05
FORCE CONVERGENCE VALUE = .1035E+05 CRITERION= 4364.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4148E-05
FORCE CONVERGENCE VALUE = 5734. CRITERION= 4363.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5481E-05
FORCE CONVERGENCE VALUE = 4160. CRITERION= 4363. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 3 SUBSTEP 12 COMPLETED. CUM ITER = 195
*** TIME = 2.21912 TIME INC = .400000E-02
*** MAX PLASTIC STRAIN STEP = .2233E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .40000E-02 UNCHANGED

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FORCE CONVERGENCE VALUE = .9848E+06 CRITERION= 4472.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2114E-04
 FORCE CONVERGENCE VALUE = 2355. CRITERION= 4370. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 13 COMPLETED. CUM ITER = 196
 *** TIME = 2.22312 TIME INC = .400000E-02
 *** MAX PLASTIC STRAIN STEP = .1638E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .80000E-02 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .1969E+07 CRITERION= 4793.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4780E-04
 FORCE CONVERGENCE VALUE = 7272. CRITERION= 4383.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4293E-04
 FORCE CONVERGENCE VALUE = .6828E+05 CRITERION= 4379.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 6749. CRITERION= 4383.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1128E-04
 FORCE CONVERGENCE VALUE = .3928E+05 CRITERION= 4383.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6820E-05
 FORCE CONVERGENCE VALUE = .3718E+05 CRITERION= 4382.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5283E-05
 FORCE CONVERGENCE VALUE = .3367E+05 CRITERION= 4382.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4467E-05
 FORCE CONVERGENCE VALUE = .3300E+05 CRITERION= 4381.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8365E-05
 FORCE CONVERGENCE VALUE = .2557E+05 CRITERION= 4380.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1474E-04
 FORCE CONVERGENCE VALUE = .1612E+05 CRITERION= 4377.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2037E-04
 FORCE CONVERGENCE VALUE = .1464E+05 CRITERION= 4375.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2143E-04
 FORCE CONVERGENCE VALUE = .2870E+05 CRITERION= 4372.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1251E+05 CRITERION= 4375.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4857E-05
 FORCE CONVERGENCE VALUE = .1751E+05 CRITERION= 4375.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3109E-05
 FORCE CONVERGENCE VALUE = .1630E+05 CRITERION= 4374.
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2519E-05
 FORCE CONVERGENCE VALUE = .1533E+05 CRITERION= 4374.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2219E-05
 FORCE CONVERGENCE VALUE = .1570E+05 CRITERION= 4374.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1533E+05 CRITERION= 4374.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 3 SUBSTEP 14 NOT COMPLETED. CUM ITER = 211
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .40000E-02

FORCE CONVERGENCE VALUE = .9845E+06 CRITERION= 4479.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3308E-04
 FORCE CONVERGENCE VALUE = 8268. CRITERION= 4376.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2605E-04
 FORCE CONVERGENCE VALUE = .3068E+05 CRITERION= 4372.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 8231. CRITERION= 4375.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7475E-05
 FORCE CONVERGENCE VALUE = .2646E+05 CRITERION= 4375.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4402E-05
 FORCE CONVERGENCE VALUE = .2491E+05 CRITERION= 4375.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3331E-05
 FORCE CONVERGENCE VALUE = .2243E+05 CRITERION= 4374.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2781E-05
 FORCE CONVERGENCE VALUE = .2227E+05 CRITERION= 4374.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01

EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5345E-05
 FORCE CONVERGENCE VALUE = .1765E+05 CRITERION= 4373.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9586E-05
 FORCE CONVERGENCE VALUE = .1123E+05 CRITERION= 4372.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1307E-04
 FORCE CONVERGENCE VALUE = .1067E+05 CRITERION= 4369.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1292E-04
 FORCE CONVERGENCE VALUE = 9434. CRITERION= 4367.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8767E-05
 FORCE CONVERGENCE VALUE = 5130. CRITERION= 4366.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6234E-05
 FORCE CONVERGENCE VALUE = 668.0 CRITERION= 4365. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 12
 *** LOAD STEP 3 SUBSTEP 14 COMPLETED. CUM ITER = 223
 *** TIME = 2.22712 TIME INC = .400000E-02
 *** MAX PLASTIC STRAIN STEP = .6270E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .40000E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .1062E+07 CRITERION= 4492.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2375E-04
 FORCE CONVERGENCE VALUE = 6355. CRITERION= 4374.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1706E-04
 FORCE CONVERGENCE VALUE = 5280. CRITERION= 4371.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1286E-04
 FORCE CONVERGENCE VALUE = 6492. CRITERION= 4368.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 3891. CRITERION= 4371.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3961E-05
 FORCE CONVERGENCE VALUE = .1391E+05 CRITERION= 4371.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2346E-05
 FORCE CONVERGENCE VALUE = .1305E+05 CRITERION= 4371.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1798E-05
 FORCE CONVERGENCE VALUE = .1189E+05 CRITERION= 4371.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1518E-05
 FORCE CONVERGENCE VALUE = .1158E+05 CRITERION= 4371.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3011E-05
 FORCE CONVERGENCE VALUE = 9191. CRITERION= 4370.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5452E-05
 FORCE CONVERGENCE VALUE = 6992. CRITERION= 4367.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6928E-05
 FORCE CONVERGENCE VALUE = 4415. CRITERION= 4367.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6886E-05
 FORCE CONVERGENCE VALUE = 3305. CRITERION= 4366. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 11
 *** LOAD STEP 3 SUBSTEP 15 COMPLETED. CUM ITER = 234
 *** TIME = 2.23112 TIME INC = .400000E-02
 *** MAX PLASTIC STRAIN STEP = .4155E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .40000E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .1062E+07 CRITERION= 4493.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2642E-04
 FORCE CONVERGENCE VALUE = 5610. CRITERION= 4374.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1961E-04
 FORCE CONVERGENCE VALUE = 5479. CRITERION= 4371.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1445E-04
 FORCE CONVERGENCE VALUE = 3797. CRITERION= 4368. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 3 SUBSTEP 16 COMPLETED. CUM ITER = 237
 *** TIME = 2.23512 TIME INC = .400000E-02
 *** MAX PLASTIC STRAIN STEP = .3600E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .80000E-02 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2122E+07 CRITERION= 4857.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5368E-04

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FORCE CONVERGENCE VALUE = .2313E+05 CRITERION= 4381.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4104E-04
FORCE CONVERGENCE VALUE = .2801E+05 CRITERION= 4378.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1423E+05 CRITERION= 4384.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1188E-04
FORCE CONVERGENCE VALUE = .4305E+05 CRITERION= 4384.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7326E-05
FORCE CONVERGENCE VALUE = .4008E+05 CRITERION= 4383.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5771E-05
FORCE CONVERGENCE VALUE = .3666E+05 CRITERION= 4382.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4943E-05
FORCE CONVERGENCE VALUE = .3652E+05 CRITERION= 4381.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9393E-05
FORCE CONVERGENCE VALUE = .2974E+05 CRITERION= 4379.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1690E-04
FORCE CONVERGENCE VALUE = .1976E+05 CRITERION= 4376.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2208E-04
FORCE CONVERGENCE VALUE = .1458E+05 CRITERION= 4373.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2397E-04
FORCE CONVERGENCE VALUE = .3755E+05 CRITERION= 4369.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1294E+05 CRITERION= 4371.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5610E-05
FORCE CONVERGENCE VALUE = .1911E+05 CRITERION= 4372.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3624E-05
FORCE CONVERGENCE VALUE = .1795E+05 CRITERION= 4372.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2926E-05
FORCE CONVERGENCE VALUE = .1672E+05 CRITERION= 4372.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2561E-05
FORCE CONVERGENCE VALUE = .1681E+05 CRITERION= 4371.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1672E+05 CRITERION= 4372.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 3 SUBSTEP 17 NOT COMPLETED. CUM ITER = 252
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .40000E-02

FORCE CONVERGENCE VALUE = .1060E+07 CRITERION= 4495.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3211E-04
FORCE CONVERGENCE VALUE = .1068E+05 CRITERION= 4376.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2520E-04
FORCE CONVERGENCE VALUE = 4898. CRITERION= 4372.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1897E-04
FORCE CONVERGENCE VALUE = 3149. CRITERION= 4369. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 3 SUBSTEP 17 COMPLETED. CUM ITER = 255
*** TIME = 2.23912 TIME INC = .400000E-02
*** MAX PLASTIC STRAIN STEP = .4233E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .40000E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .1061E+07 CRITERION= 4496.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3590E-04
FORCE CONVERGENCE VALUE = 6447. CRITERION= 4375.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2680E-04
FORCE CONVERGENCE VALUE = 6206. CRITERION= 4371.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1985E-04
FORCE CONVERGENCE VALUE = 5504. CRITERION= 4367.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1446E-04
FORCE CONVERGENCE VALUE = 488.5 CRITERION= 4366. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 3 SUBSTEP 18 COMPLETED. CUM ITER = 259
*** TIME = 2.24312 TIME INC = .400000E-02
*** MAX PLASTIC STRAIN STEP = .5172E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .40000E-02 UNCHANGED

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FORCE CONVERGENCE VALUE = .1061E+07 CRITERION= 4493.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3257E-04
FORCE CONVERGENCE VALUE = 4543. CRITERION= 4373.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2353E-04
FORCE CONVERGENCE VALUE = 2159. CRITERION= 4369. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 3 SUBSTEP 19 COMPLETED. CUM ITER = 261
*** TIME = 2.24712 TIME INC = .400000E-02
*** MAX PLASTIC STRAIN STEP = .3218E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .80000E-02 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2041E+07 CRITERION= 4823.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6068E-04
FORCE CONVERGENCE VALUE = .1204E+05 CRITERION= 4382.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4217E-04
FORCE CONVERGENCE VALUE = .1132E+05 CRITERION= 4378.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3074E-04
FORCE CONVERGENCE VALUE = 6839. CRITERION= 4373.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2170E-04
FORCE CONVERGENCE VALUE = 3749. CRITERION= 4369. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 3 SUBSTEP 20 COMPLETED. CUM ITER = 265
*** TIME = 2.25512 TIME INC = .800000E-02
*** MAX PLASTIC STRAIN STEP = .8476E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .80000E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .2120E+07 CRITERION= 4856.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5869E-04
FORCE CONVERGENCE VALUE = .1711E+05 CRITERION= 4383.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4008E-04
FORCE CONVERGENCE VALUE = .1047E+05 CRITERION= 4377.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2732E-04
FORCE CONVERGENCE VALUE = 1864. CRITERION= 4374. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 3 SUBSTEP 21 COMPLETED. CUM ITER = 268
*** TIME = 2.26312 TIME INC = .800000E-02
*** MAX PLASTIC STRAIN STEP = .6953E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .16000E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .3983E+07 CRITERION= 5916.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1020E-03
FORCE CONVERGENCE VALUE = .2482E+05 CRITERION= 4400.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6931E-04
FORCE CONVERGENCE VALUE = .1778E+05 CRITERION= 4392.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4606E-04
FORCE CONVERGENCE VALUE = 5868. CRITERION= 4385.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3052E-04
FORCE CONVERGENCE VALUE = 4403. CRITERION= 4382.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2004E-04
FORCE CONVERGENCE VALUE = 691.4 CRITERION= 4379. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 3 SUBSTEP 22 COMPLETED. CUM ITER = 273
*** TIME = 2.27912 TIME INC = .160000E-01
*** MAX PLASTIC STRAIN STEP = .1500E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .16000E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3985E+07 CRITERION= 5921.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9694E-04
FORCE CONVERGENCE VALUE = .2428E+05 CRITERION= 4406.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6087E-04
FORCE CONVERGENCE VALUE = 7210. CRITERION= 4399.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3861E-04
FORCE CONVERGENCE VALUE = 5161. CRITERION= 4394.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2403E-04
FORCE CONVERGENCE VALUE = 1456. CRITERION= 4391. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 3 SUBSTEP 23 COMPLETED. CUM ITER = 277
*** TIME = 2.29512 TIME INC = .160000E-01
*** MAX PLASTIC STRAIN STEP = .1241E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .32000E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .7970E+07 CRITERION= 9099.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1806E-03
FORCE CONVERGENCE VALUE = .6803E+05 CRITERION= 4439.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1048E-03
FORCE CONVERGENCE VALUE = .2078E+05 CRITERION= 4432.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6232E-04
FORCE CONVERGENCE VALUE = .1391E+05 CRITERION= 4424.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3625E-04
FORCE CONVERGENCE VALUE = 2722. CRITERION= 4420. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 3 SUBSTEP 24 COMPLETED. CUM ITER = 281
*** TIME = 2.32712 TIME INC = .320000E-01
*** MAX PLASTIC STRAIN STEP = .2154E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .64000E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .1569E+08 CRITERION= .1630E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3399E-03
FORCE CONVERGENCE VALUE = .2057E+06 CRITERION= 4516.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1804E-03
FORCE CONVERGENCE VALUE = .5563E+05 CRITERION= 4504.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9380E-04
FORCE CONVERGENCE VALUE = .1877E+05 CRITERION= 4492.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4851E-04
FORCE CONVERGENCE VALUE = 3543. CRITERION= 4487. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 3 SUBSTEP 25 COMPLETED. CUM ITER = 285
*** TIME = 2.39112 TIME INC = .640000E-01
*** MAX PLASTIC STRAIN STEP = .3519E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .12800 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2958E+08 CRITERION= .2992E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6374E-03
FORCE CONVERGENCE VALUE = .6530E+06 CRITERION= 4662.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2751E-03
FORCE CONVERGENCE VALUE = .1290E+06 CRITERION= 4651.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1147E-03
FORCE CONVERGENCE VALUE = .2222E+05 CRITERION= 4637.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4934E-04
FORCE CONVERGENCE VALUE = 3809. CRITERION= 4632. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 3 SUBSTEP 26 COMPLETED. CUM ITER = 289
*** TIME = 2.51913 TIME INC = .128000
*** MAX PLASTIC STRAIN STEP = .5520E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .25600 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .5874E+08 CRITERION= .5893E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1165E-02
FORCE CONVERGENCE VALUE = .2104E+07 CRITERION= 4884.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3647E-03
FORCE CONVERGENCE VALUE = .2194E+07 CRITERION= 5002.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2084E+07 CRITERION= 4886.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2297E-03
FORCE CONVERGENCE VALUE = .3786E+06 CRITERION= 4905.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1423E-03
FORCE CONVERGENCE VALUE = .4392E+06 CRITERION= 4898.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1270E-03
FORCE CONVERGENCE VALUE = .4321E+06 CRITERION= 4895.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1180E-03
FORCE CONVERGENCE VALUE = .4466E+06 CRITERION= 4893.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1164E-03
FORCE CONVERGENCE VALUE = .4445E+06 CRITERION= 4891.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1129E-03
FORCE CONVERGENCE VALUE = .4303E+06 CRITERION= 4887.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1105E-03
FORCE CONVERGENCE VALUE = .4787E+06 CRITERION= 4883.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .4303E+06 CRITERION= 4887.

>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 3 SUBSTEP 27 NOT COMPLETED. CUM ITER = 299
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .12800

FORCE CONVERGENCE VALUE = .2937E+08 CRITERION= .2973E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5928E-03
 FORCE CONVERGENCE VALUE = .5844E+06 CRITERION= 4792.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2102E-03
 FORCE CONVERGENCE VALUE = .1182E+06 CRITERION= 4786.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1428E-03
 FORCE CONVERGENCE VALUE = .2002E+06 CRITERION= 4775.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1012E+06 CRITERION= 4779.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5685E-04
 FORCE CONVERGENCE VALUE = .1576E+06 CRITERION= 4778.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3639E-04
 FORCE CONVERGENCE VALUE = .1481E+06 CRITERION= 4776.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2839E-04
 FORCE CONVERGENCE VALUE = .1329E+06 CRITERION= 4774.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2459E-04
 FORCE CONVERGENCE VALUE = .1442E+06 CRITERION= 4773.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1329E+06 CRITERION= 4774.

>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 3 SUBSTEP 27 NOT COMPLETED. CUM ITER = 307
 *** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .64000E-01

FORCE CONVERGENCE VALUE = .1469E+08 CRITERION= .1540E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3069E-03
 FORCE CONVERGENCE VALUE = .1563E+06 CRITERION= 4723.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1154E-03
 FORCE CONVERGENCE VALUE = .2078E+05 CRITERION= 4711.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4509E-04
 FORCE CONVERGENCE VALUE = .1381E+05 CRITERION= 4706.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2252E-04
 FORCE CONVERGENCE VALUE = 8727. CRITERION= 4703.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1419E-04
 FORCE CONVERGENCE VALUE = 5761. CRITERION= 4702.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7234E-05
 FORCE CONVERGENCE VALUE = 2132. CRITERION= 4701. <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 3 SUBSTEP 27 COMPLETED. CUM ITER = 313
 *** TIME = 2.58313 TIME INC = .640000E-01
 *** MAX PLASTIC STRAIN STEP = .2541E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1463E+08 CRITERION= .1536E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2920E-03
 FORCE CONVERGENCE VALUE = .1469E+06 CRITERION= 4768.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1466E-03
 FORCE CONVERGENCE VALUE = .2413E+06 CRITERION= 4774.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1438E+06 CRITERION= 4770.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5765E-04
 FORCE CONVERGENCE VALUE = .1730E+06 CRITERION= 4774.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3539E-04
 FORCE CONVERGENCE VALUE = .1521E+06 CRITERION= 4773.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2717E-04
 FORCE CONVERGENCE VALUE = .1323E+06 CRITERION= 4771.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2306E-04
 FORCE CONVERGENCE VALUE = .1299E+06 CRITERION= 4770.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3550E-04
 FORCE CONVERGENCE VALUE = .7429E+05 CRITERION= 4769.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4302E-04
 FORCE CONVERGENCE VALUE = .4783E+05 CRITERION= 4767.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00

EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4077E-04
 FORCE CONVERGENCE VALUE = .3577E+05 CRITERION= 4763.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3343E-04
 FORCE CONVERGENCE VALUE = 3980. CRITERION= 4760. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
 *** LOAD STEP 3 SUBSTEP 28 COMPLETED. CUM ITER = 323
 *** TIME = 2.64713 TIME INC = .640000E-01
 *** MAX PLASTIC STRAIN STEP = .3081E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .640000E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1444E+08 CRITERION= .1521E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3354E-03
 FORCE CONVERGENCE VALUE = .1832E+06 CRITERION= 4826.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4979E-03
 FORCE CONVERGENCE VALUE = .2222E+07 CRITERION= 4824.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1800E+06 CRITERION= 4827.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5485E-04
 FORCE CONVERGENCE VALUE = .1267E+06 CRITERION= 4832.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4745E-04
 FORCE CONVERGENCE VALUE = .2113E+06 CRITERION= 4828.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3929E-04
 FORCE CONVERGENCE VALUE = .2097E+06 CRITERION= 4826.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3532E-04
 FORCE CONVERGENCE VALUE = .1700E+06 CRITERION= 4824.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2913E-04
 FORCE CONVERGENCE VALUE = .1262E+06 CRITERION= 4822.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3829E-04
 FORCE CONVERGENCE VALUE = .8777E+05 CRITERION= 4820.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4479E-04
 FORCE CONVERGENCE VALUE = .6057E+05 CRITERION= 4816.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3542E-04
 FORCE CONVERGENCE VALUE = .3727E+05 CRITERION= 4811.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2433E-04
 FORCE CONVERGENCE VALUE = 6300. CRITERION= 4808.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1102E-04
 FORCE CONVERGENCE VALUE = 336.4 CRITERION= 4807. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 12
 *** LOAD STEP 3 SUBSTEP 29 COMPLETED. CUM ITER = 335
 *** TIME = 2.71113 TIME INC = .640000E-01
 *** MAX PLASTIC STRAIN STEP = .3864E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .640000E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1445E+08 CRITERION= .1523E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3521E-03
 FORCE CONVERGENCE VALUE = .1866E+06 CRITERION= 4881.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1486E-03
 FORCE CONVERGENCE VALUE = .4617E+05 CRITERION= 4871.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6313E-04
 FORCE CONVERGENCE VALUE = .1511E+05 CRITERION= 4863.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2661E-04
 FORCE CONVERGENCE VALUE = 4914. CRITERION= 4858.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1466E-04
 FORCE CONVERGENCE VALUE = 2195. CRITERION= 4857. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 3 SUBSTEP 30 COMPLETED. CUM ITER = 340
 *** TIME = 2.77513 TIME INC = .640000E-01
 *** MAX PLASTIC STRAIN STEP = .3111E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .960000E-01 INCREASED (FACTOR = 1.5000)

FORCE CONVERGENCE VALUE = .2212E+08 CRITERION= .2264E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5098E-03
 FORCE CONVERGENCE VALUE = .3982E+06 CRITERION= 4946.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1822E-03
 FORCE CONVERGENCE VALUE = .6173E+05 CRITERION= 4935.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6410E-04

FORCE CONVERGENCE VALUE = .1034E+05 CRITERION= 4932.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2722E-04
 FORCE CONVERGENCE VALUE = 3487. CRITERION= 4926. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 3 SUBSTEP 31 COMPLETED. CUM ITER = 344
 *** TIME = 2.87113 TIME INC = .960000E-01
 *** MAX PLASTIC STRAIN STEP = .3656E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .12887 INCREASED (FACTOR = 1.3424)

FORCE CONVERGENCE VALUE = .3088E+08 CRITERION= .3127E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6462E-03
 FORCE CONVERGENCE VALUE = .6292E+06 CRITERION= 5040.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1871E-03
 FORCE CONVERGENCE VALUE = .6605E+05 CRITERION= 5024.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5851E-04
 FORCE CONVERGENCE VALUE = 6412. CRITERION= 5020.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2746E-04
 FORCE CONVERGENCE VALUE = 1757. CRITERION= 5015. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 3 SUBSTEP 32 COMPLETED. CUM ITER = 348
 *** TIME = 3.00000 TIME INC = .128875
 *** MAX PLASTIC STRAIN STEP = .4135E-02 CRITERION = .5000E-01

SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-6.521400000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-6.714000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-6.924200000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-9.818800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-9.201800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-9.074800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-7.054800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-6.839800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-3.932600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-1.117620000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-2.262000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-1.865800000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL= 1.565940000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL= 1.963560000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL= 1.091600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11470 TO	11470 BY	1
REAL= 3.916800000E-04	IMAG= .000000000E+00			

SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11277 TO	11277 BY	1
REAL= 6.834000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11293 TO	11293 BY	1
REAL= 7.049800000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10833 TO	10833 BY	1
REAL= 9.079200000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10849 TO	10849 BY	1
REAL= 9.207000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10405 TO	10405 BY	1
REAL= 9.834200000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10097 TO	10097 BY	1
REAL= 6.950000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10005 TO	10005 BY	1
REAL= 6.743600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	10013 TO	10013 BY	1
REAL= 6.551000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-5.477600000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-4.929600000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-1.618100000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-6.375400000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-5.848600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-5.832200000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-5.527200000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-5.472600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-4.260400000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-1.767520000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-4.116200000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-3.573400000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL=-3.620200000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL=-4.171200000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL=-1.783200000E-04	IMAG= .000000000E+00			

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 11470 TO 11470 BY 1
 REAL=-4.286400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 11277 TO 11277 BY 1
 REAL=-5.502400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 11293 TO 11293 BY 1
 REAL=-5.557200000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 10833 TO 10833 BY 1
 REAL=-5.862200000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 10849 TO 10849 BY 1
 REAL=-5.878400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 10405 TO 10405 BY 1
 REAL=-6.401400000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 10097 TO 10097 BY 1
 REAL=-1.619580000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 10005 TO 10005 BY 1
 REAL=-4.929800000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 10013 TO 10013 BY 1
 REAL=-5.477800000E-03 IMAG= .000000000E+00

ACEL= .00000E+00 9.8100 .00000E+00

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

USE 4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
 FOR AUTOMATIC TIME STEPPING;
 USE 2000 SUBSTEPS AS A MAXIMUM
 USE 3 SUBSTEPS AS A MINIMUM

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
 FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 9199.830 TIME= 23:54:40
 Present time 0 is less than or equal to the previous time.
 Time will default to 4.

*** NOTE *** CP= 9199.860 TIME= 23:54:40
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 23:54:40 JUL 24, 1995 CP= 9199.860
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 21 PWR Tube Analysis

LOAD STEP OPTIONS

LOAD STEP NUMBER. 4
 TIME AT END OF THE LOAD STEP. 4.0000
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 4
 MAXIMUM NUMBER OF SUBSTEPS 2000
 MINIMUM NUMBER OF SUBSTEPS 3
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
 CONVERGENCE CONTROLS. USE DEFAULTS
 INERTIA LOADS X Y Z

ACEL 00000E+00 9.8100 .00000E+00
 COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
 ACTIVE MAT. NONLINEARITIES
 PRINT OUTPUT CONTROLS NO PRINTOUT
 DATABASE OUTPUT CONTROLS
 ITEM FREQUENCY COMPONENT
 ALL ALL

FORCE CONVERGENCE VALUE = .1195E+09 CRITERION= .1196E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2317E-02
 FORCE CONVERGENCE VALUE = .7560E+07 CRITERION= 5350.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2211E-02
 FORCE CONVERGENCE VALUE = .6239E+07 CRITERION= 5054.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7360E-02
 FORCE CONVERGENCE VALUE = .1861E+08 CRITERION= 4944.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .5534E+07 CRITERION= 5012.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5625E-03
 FORCE CONVERGENCE VALUE = .2866E+07 CRITERION= 5280.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1006E-03
 FORCE CONVERGENCE VALUE = .8905E+06 CRITERION= 5224.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5567E-04
 FORCE CONVERGENCE VALUE = .5489E+06 CRITERION= 5230.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6885E-04
 FORCE CONVERGENCE VALUE = .5237E+06 CRITERION= 5234.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1031E-03
 FORCE CONVERGENCE VALUE = .6870E+06 CRITERION= 5237.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4718E+06 CRITERION= 5233.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6715E-04
 FORCE CONVERGENCE VALUE = .3260E+06 CRITERION= 5235.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6441E-04
 FORCE CONVERGENCE VALUE = .2741E+06 CRITERION= 5236.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6133E-04
 FORCE CONVERGENCE VALUE = .2378E+06 CRITERION= 5238.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 30 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 1 NOT COMPLETED. CUM ITER = 360
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .12500

FORCE CONVERGENCE VALUE = .5976E+08 CRITERION= .5997E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1161E-02
 FORCE CONVERGENCE VALUE = .1976E+07 CRITERION= 5209.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2380E-03
 FORCE CONVERGENCE VALUE = .3959E+06 CRITERION= 5167.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2584E-03
 FORCE CONVERGENCE VALUE = .1766E+06 CRITERION= 5167.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1205E-03
 FORCE CONVERGENCE VALUE = .4243E+05 CRITERION= 5149.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1192E-03
 FORCE CONVERGENCE VALUE = .4966E+05 CRITERION= 5138.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .3166E+05 CRITERION= 5149.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3635E-04
 FORCE CONVERGENCE VALUE = .7884E+05 CRITERION= 5146.
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2322E-04
 FORCE CONVERGENCE VALUE = .7371E+05 CRITERION= 5144.
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1860E-04
 FORCE CONVERGENCE VALUE = .6640E+05 CRITERION= 5142.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1604E-04
 FORCE CONVERGENCE VALUE = .6104E+05 CRITERION= 5141.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 1 NOT COMPLETED. CUM ITER = 370
 *** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .62500E-01

FORCE CONVERGENCE VALUE = .2988E+08 CRITERION= .3030E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5828E-03
 FORCE CONVERGENCE VALUE = .5269E+06 CRITERION= 5115.

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1393E-03
FORCE CONVERGENCE VALUE = .5153E+05 CRITERION= 5096.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8900E-04
FORCE CONVERGENCE VALUE = .2573E+05 CRITERION= 5093.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5710E-04
FORCE CONVERGENCE VALUE = .3150E+05 CRITERION= 5086.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2299E+05 CRITERION= 5093.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1869E-04
FORCE CONVERGENCE VALUE = .5526E+05 CRITERION= 5090.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1124E-04
FORCE CONVERGENCE VALUE = .5010E+05 CRITERION= 5089.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8602E-05
FORCE CONVERGENCE VALUE = .4360E+05 CRITERION= 5088.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7220E-05
FORCE CONVERGENCE VALUE = .3889E+05 CRITERION= 5087.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 4 SUBSTEP 1 NOT COMPLETED. CUM ITER = 379
*** BEGIN BISECTION NUMBER 3 NEW TIME INCREMENT= .31250E-01

FORCE CONVERGENCE VALUE = .1494E+08 CRITERION= .1576E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2939E-03
FORCE CONVERGENCE VALUE = .1392E+06 CRITERION= 5068.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7710E-04
FORCE CONVERGENCE VALUE = .2811E+05 CRITERION= 5058.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3104E-04
FORCE CONVERGENCE VALUE = 2997. CRITERION= 5053. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 382
*** TIME = 3.03125 TIME INC = .312500E-01
*** MAX PLASTIC STRAIN STEP = .1761E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .31250E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1492E+08 CRITERION= .1575E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2857E-03
FORCE CONVERGENCE VALUE = .1376E+06 CRITERION= 5103.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9626E-04
FORCE CONVERGENCE VALUE = .6092E+05 CRITERION= 5094.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5062E-04
FORCE CONVERGENCE VALUE = 8075. CRITERION= 5086.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3098E-04
FORCE CONVERGENCE VALUE = .1877E+05 CRITERION= 5081.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 6486. CRITERION= 5086.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1176E-04
FORCE CONVERGENCE VALUE = .3569E+05 CRITERION= 5085.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6869E-05
FORCE CONVERGENCE VALUE = .3250E+05 CRITERION= 5084.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5259E-05
FORCE CONVERGENCE VALUE = .2842E+05 CRITERION= 5083.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4374E-05
FORCE CONVERGENCE VALUE = .2620E+05 CRITERION= 5083.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7399E-05
FORCE CONVERGENCE VALUE = .2001E+05 CRITERION= 5082.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1191E-04
FORCE CONVERGENCE VALUE = .1401E+05 CRITERION= 5081.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1454E-04
FORCE CONVERGENCE VALUE = .2915E+05 CRITERION= 5071.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1083E+05 CRITERION= 5080.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3796E-05
FORCE CONVERGENCE VALUE = .1564E+05 CRITERION= 5080.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2615E-05
FORCE CONVERGENCE VALUE = .1523E+05 CRITERION= 5080.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2228E-05
FORCE CONVERGENCE VALUE = .1452E+05 CRITERION= 5080.

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RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2002E-05
FORCE CONVERGENCE VALUE = .1524E+05 CRITERION= 5080.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1452E+05 CRITERION= 5080.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 4 SUBSTEP 2 NOT COMPLETED. CUM ITER = 398
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .15625E-01

FORCE CONVERGENCE VALUE = .7461E+07 CRITERION= 9012.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1460E-03
FORCE CONVERGENCE VALUE = .3740E+05 CRITERION= 5078.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4863E-04
FORCE CONVERGENCE VALUE = .1883E+05 CRITERION= 5072.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2618E-04
FORCE CONVERGENCE VALUE = 2364. CRITERION= 5068. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 401
*** TIME = 3.04688 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .8371E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .7458E+07 CRITERION= 9017.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1417E-03
FORCE CONVERGENCE VALUE = .3682E+05 CRITERION= 5092.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5053E-04
FORCE CONVERGENCE VALUE = .3638E+05 CRITERION= 5086.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2844E-04
FORCE CONVERGENCE VALUE = .1105E+05 CRITERION= 5079.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1677E-04
FORCE CONVERGENCE VALUE = 2830. CRITERION= 5079. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 405
*** TIME = 3.06250 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .8913E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .7445E+07 CRITERION= 9013.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1391E-03
FORCE CONVERGENCE VALUE = .4308E+05 CRITERION= 5105.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4573E-04
FORCE CONVERGENCE VALUE = .3453E+05 CRITERION= 5089.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2550E-04
FORCE CONVERGENCE VALUE = .1733E+05 CRITERION= 5093.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1565E-04
FORCE CONVERGENCE VALUE = 6129. CRITERION= 5090.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9920E-05
FORCE CONVERGENCE VALUE = 7014. CRITERION= 5087.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 4996. CRITERION= 5090.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3952E-05
FORCE CONVERGENCE VALUE = .1147E+05 CRITERION= 5090.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2240E-05
FORCE CONVERGENCE VALUE = .1063E+05 CRITERION= 5089.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1715E-05
FORCE CONVERGENCE VALUE = 9500. CRITERION= 5089.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1432E-05
FORCE CONVERGENCE VALUE = 9090. CRITERION= 5089.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2547E-05
FORCE CONVERGENCE VALUE = 7208. CRITERION= 5089.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3615E-05
FORCE CONVERGENCE VALUE = 4242. CRITERION= 5088. <<< CONVERGED
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 11
*** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 416
*** TIME = 3.07813 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .8644E-03 CRITERION = .5000E-01

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*** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .7550E+07 CRITERION= 9104.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1371E-03
 FORCE CONVERGENCE VALUE = .4629E+05 CRITERION= 5113.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4163E-04
 FORCE CONVERGENCE VALUE = .2185E+05 CRITERION= 5107.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2288E-04
 FORCE CONVERGENCE VALUE = 4312. CRITERION= 5103. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 4 SUBSTEP 5 COMPLETED. CUM ITER = 419
 *** TIME = 3.09375 TIME INC = .156250E-01
 *** MAX PLASTIC STRAIN STEP = .7494E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31250E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .1487E+08 CRITERION= .1572E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2728E-03
 FORCE CONVERGENCE VALUE = .1297E+06 CRITERION= 5155.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7953E-04
 FORCE CONVERGENCE VALUE = .1465E+06 CRITERION= 5139.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1212E+06 CRITERION= 5154.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3745E-04
 FORCE CONVERGENCE VALUE = .1339E+06 CRITERION= 5150.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2071E-04
 FORCE CONVERGENCE VALUE = .1075E+06 CRITERION= 5146.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1494E-04
 FORCE CONVERGENCE VALUE = .8390E+05 CRITERION= 5143.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1181E-04
 FORCE CONVERGENCE VALUE = .7182E+05 CRITERION= 5141.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1817E-04
 FORCE CONVERGENCE VALUE = .4740E+05 CRITERION= 5137.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2578E-04
 FORCE CONVERGENCE VALUE = .2968E+05 CRITERION= 5132.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2666E-04
 FORCE CONVERGENCE VALUE = .2600E+05 CRITERION= 5123.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1997E-04
 FORCE CONVERGENCE VALUE = 3559. CRITERION= 5126. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
 *** LOAD STEP 4 SUBSTEP 6 COMPLETED. CUM ITER = 429
 *** TIME = 3.12500 TIME INC = .312500E-01
 *** MAX PLASTIC STRAIN STEP = .1490E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31250E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1507E+08 CRITERION= .1592E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2641E-03
 FORCE CONVERGENCE VALUE = .1258E+06 CRITERION= 5174.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7620E-04
 FORCE CONVERGENCE VALUE = .3019E+05 CRITERION= 5153.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4230E-04
 FORCE CONVERGENCE VALUE = 6007. CRITERION= 5153.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2507E-04
 FORCE CONVERGENCE VALUE = 1576. CRITERION= 5150. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 4 SUBSTEP 7 COMPLETED. CUM ITER = 433
 *** TIME = 3.15625 TIME INC = .312500E-01
 *** MAX PLASTIC STRAIN STEP = .1552E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .62500E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .3012E+08 CRITERION= .3056E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5149E-03
 FORCE CONVERGENCE VALUE = .4113E+06 CRITERION= 5226.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1377E-03
 FORCE CONVERGENCE VALUE = .9552E+05 CRITERION= 5197.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7694E-04
 FORCE CONVERGENCE VALUE = 6969. CRITERION= 5198.

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EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4323E-04
FORCE CONVERGENCE VALUE = .1235E+05 CRITERION= 5192.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 6968. CRITERION= 5198.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1928E-04
FORCE CONVERGENCE VALUE = .4266E+05 CRITERION= 5196.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1054E-04
FORCE CONVERGENCE VALUE = .3825E+05 CRITERION= 5194.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7717E-05
FORCE CONVERGENCE VALUE = .3338E+05 CRITERION= 5193.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6233E-05
FORCE CONVERGENCE VALUE = .3070E+05 CRITERION= 5193.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9239E-05
FORCE CONVERGENCE VALUE = .2374E+05 CRITERION= 5192.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1302E-04
FORCE CONVERGENCE VALUE = .2302E+05 CRITERION= 5190.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1226E-04
FORCE CONVERGENCE VALUE = 5322. CRITERION= 5189.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8752E-05
FORCE CONVERGENCE VALUE = 2649. CRITERION= 5188. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 12
*** LOAD STEP 4 SUBSTEP 8 COMPLETED. CUM ITER = 445
*** TIME = 3.21875 TIME INC = .625000E-01
*** MAX PLASTIC STRAIN STEP = .2788E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .62500E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3000E+08 CRITERION= .3044E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4967E-03
FORCE CONVERGENCE VALUE = .3779E+06 CRITERION= 5263.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1380E-03
FORCE CONVERGENCE VALUE = .3327E+05 CRITERION= 5241.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6817E-04
FORCE CONVERGENCE VALUE = .2925E+05 CRITERION= 5231.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3436E-04
FORCE CONVERGENCE VALUE = 5287. CRITERION= 5226.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1774E-04
FORCE CONVERGENCE VALUE = 1523. CRITERION= 5224. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 4 SUBSTEP 9 COMPLETED. CUM ITER = 450
*** TIME = 3.28125 TIME INC = .625000E-01
*** MAX PLASTIC STRAIN STEP = .2664E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .93750E-01 INCREASED (FACTOR = 1.5000)

FORCE CONVERGENCE VALUE = .4502E+08 CRITERION= .4532E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7110E-03
FORCE CONVERGENCE VALUE = .7553E+06 CRITERION= 5333.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9430E-03
FORCE CONVERGENCE VALUE = .3966E+07 CRITERION= 5300.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .7441E+06 CRITERION= 5331.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8978E-04
FORCE CONVERGENCE VALUE = .1781E+06 CRITERION= 5321.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6349E-04
FORCE CONVERGENCE VALUE = .2198E+06 CRITERION= 5308.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4548E-04
FORCE CONVERGENCE VALUE = .1756E+06 CRITERION= 5302.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3537E-04
FORCE CONVERGENCE VALUE = .1448E+06 CRITERION= 5297.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2876E-04
FORCE CONVERGENCE VALUE = .1331E+06 CRITERION= 5294.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4152E-04
FORCE CONVERGENCE VALUE = .1078E+06 CRITERION= 5290.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6642E-04

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FORCE CONVERGENCE VALUE = .1107E+06 CRITERION= 5285.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .9111E+05 CRITERION= 5290.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 28 EXCEEDS MAX OF 25
*** LOAD STEP 4 SUBSTEP 10 NOT COMPLETED. CUM ITER = 460
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .46875E-01

FORCE CONVERGENCE VALUE = .2251E+08 CRITERION= .2311E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3558E-03
FORCE CONVERGENCE VALUE = .2002E+06 CRITERION= 5279.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1400E-03
FORCE CONVERGENCE VALUE = .1129E+06 CRITERION= 5260.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8056E-04
FORCE CONVERGENCE VALUE = .5354E+05 CRITERION= 5252.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4594E-04
FORCE CONVERGENCE VALUE = .3545E+05 CRITERION= 5247.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2459E-04
FORCE CONVERGENCE VALUE = 4863. CRITERION= 5245. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 4 SUBSTEP 10 COMPLETED. CUM ITER = 465
*** TIME = 3.32813 TIME INC = .468750E-01
*** MAX PLASTIC STRAIN STEP = .2148E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .46875E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .2293E+08 CRITERION= .2352E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3487E-03
FORCE CONVERGENCE VALUE = .1980E+06 CRITERION= 5299.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1217E-03
FORCE CONVERGENCE VALUE = .2789E+05 CRITERION= 5280.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6019E-04
FORCE CONVERGENCE VALUE = .3060E+05 CRITERION= 5275.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2468E+05 CRITERION= 5281.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2346E-04
FORCE CONVERGENCE VALUE = .5367E+05 CRITERION= 5278.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1278E-04
FORCE CONVERGENCE VALUE = .4731E+05 CRITERION= 5276.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9404E-05
FORCE CONVERGENCE VALUE = .4010E+05 CRITERION= 5275.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7493E-05
FORCE CONVERGENCE VALUE = .3709E+05 CRITERION= 5274.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1117E-04
FORCE CONVERGENCE VALUE = .2813E+05 CRITERION= 5274.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1536E-04
FORCE CONVERGENCE VALUE = .1787E+05 CRITERION= 5272.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1501E-04
FORCE CONVERGENCE VALUE = .1071E+05 CRITERION= 5271.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1095E-04
FORCE CONVERGENCE VALUE = 1577. CRITERION= 5270. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 11
*** LOAD STEP 4 SUBSTEP 11 COMPLETED. CUM ITER = 476
*** TIME = 3.37500 TIME INC = .468750E-01
*** MAX PLASTIC STRAIN STEP = .2159E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .46875E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .2293E+08 CRITERION= .2353E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3390E-03
FORCE CONVERGENCE VALUE = .1908E+06 CRITERION= 5323.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1033E-03
FORCE CONVERGENCE VALUE = .4573E+05 CRITERION= 5309.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4420E-04
FORCE CONVERGENCE VALUE = 6448. CRITERION= 5303.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2016E-04
FORCE CONVERGENCE VALUE = 2834. CRITERION= 5301. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 4 SUBSTEP 12 COMPLETED. CUM ITER = 480

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*** TIME = 3.42188 TIME INC = .468750E-01
 *** MAX PLASTIC STRAIN STEP = .1891E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .93750E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .4588E+08 CRITERION= .4619E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6619E-03
 FORCE CONVERGENCE VALUE = .6765E+06 CRITERION= 5397.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2887E-03
 FORCE CONVERGENCE VALUE = .1537E+07 CRITERION= 5374.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .6648E+06 CRITERION= 5393.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8166E-04
 FORCE CONVERGENCE VALUE = .1636E+06 CRITERION= 5389.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5832E-04
 FORCE CONVERGENCE VALUE = .2171E+06 CRITERION= 5380.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4299E-04
 FORCE CONVERGENCE VALUE = .1815E+06 CRITERION= 5377.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3451E-04
 FORCE CONVERGENCE VALUE = .1552E+06 CRITERION= 5374.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2863E-04
 FORCE CONVERGENCE VALUE = .1479E+06 CRITERION= 5371.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4343E-04
 FORCE CONVERGENCE VALUE = .1253E+06 CRITERION= 5369.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6113E-04
 FORCE CONVERGENCE VALUE = .1184E+06 CRITERION= 5366.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5306E-04
 FORCE CONVERGENCE VALUE = .1428E+06 CRITERION= 5362.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 13 NOT COMPLETED. CUM ITER = 491
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .46875E-01

FORCE CONVERGENCE VALUE = .2294E+08 CRITERION= .2355E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3310E-03
 FORCE CONVERGENCE VALUE = .1829E+06 CRITERION= 5351.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1340E-03
 FORCE CONVERGENCE VALUE = .2407E+06 CRITERION= 5339.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1778E+06 CRITERION= 5351.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4600E-04
 FORCE CONVERGENCE VALUE = .1397E+06 CRITERION= 5345.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2507E-04
 FORCE CONVERGENCE VALUE = .1166E+06 CRITERION= 5342.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1910E-04
 FORCE CONVERGENCE VALUE = .1035E+06 CRITERION= 5340.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3076E-04
 FORCE CONVERGENCE VALUE = .7626E+05 CRITERION= 5338.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4324E-04
 FORCE CONVERGENCE VALUE = .6184E+05 CRITERION= 5335.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4050E-04
 FORCE CONVERGENCE VALUE = .5597E+05 CRITERION= 5332.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2631E-04
 FORCE CONVERGENCE VALUE = .6370E+05 CRITERION= 5330.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4848E+05 CRITERION= 5331.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7894E-05
 FORCE CONVERGENCE VALUE = .2456E+05 CRITERION= 5331.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4556E-05
 FORCE CONVERGENCE VALUE = .1915E+05 CRITERION= 5330.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3463E-05
 FORCE CONVERGENCE VALUE = .1716E+05 CRITERION= 5330.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01


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EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5231E-05
FORCE CONVERGENCE VALUE = .1399E+05 CRITERION= 5330.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6442E-05
FORCE CONVERGENCE VALUE = .1114E+05 CRITERION= 5329.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3861E-05
FORCE CONVERGENCE VALUE = 5799. CRITERION= 5329.
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2145E-05
FORCE CONVERGENCE VALUE = 549.3 CRITERION= 5329. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 16
*** LOAD STEP 4 SUBSTEP 13 COMPLETED. CUM ITER = 507
*** TIME = 3.46875 TIME INC = .468750E-01
*** MAX PLASTIC STRAIN STEP = .1877E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .46875E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .2294E+08 CRITERION= .2355E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3303E-03
FORCE CONVERGENCE VALUE = .1884E+06 CRITERION= 5376.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9546E-04
FORCE CONVERGENCE VALUE = .1551E+06 CRITERION= 5364.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3532E-04
FORCE CONVERGENCE VALUE = .4278E+05 CRITERION= 5361.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1269E-04
FORCE CONVERGENCE VALUE = 6842. CRITERION= 5360.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4977E-05
FORCE CONVERGENCE VALUE = 238.2 CRITERION= 5359. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 4 SUBSTEP 14 COMPLETED. CUM ITER = 512
*** TIME = 3.51563 TIME INC = .468750E-01
*** MAX PLASTIC STRAIN STEP = .1846E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .70313E-01 INCREASED (FACTOR = 1.5000)

FORCE CONVERGENCE VALUE = .3439E+08 CRITERION= .3480E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4972E-03
FORCE CONVERGENCE VALUE = .3892E+06 CRITERION= 5425.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1166E-03
FORCE CONVERGENCE VALUE = .1239E+06 CRITERION= 5411.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4162E-04
FORCE CONVERGENCE VALUE = .1017E+05 CRITERION= 5406.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1641E-04
FORCE CONVERGENCE VALUE = 9284. CRITERION= 5405.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6875E-05
FORCE CONVERGENCE VALUE = 2401. CRITERION= 5404. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 4 SUBSTEP 15 COMPLETED. CUM ITER = 517
*** TIME = 3.58594 TIME INC = .703125E-01
*** MAX PLASTIC STRAIN STEP = .2713E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .10547 INCREASED (FACTOR = 1.5000)

FORCE CONVERGENCE VALUE = .5157E+08 CRITERION= .5185E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7424E-03
FORCE CONVERGENCE VALUE = .8238E+06 CRITERION= 5502.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1502E-03
FORCE CONVERGENCE VALUE = .5407E+05 CRITERION= 5483.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4612E-04
FORCE CONVERGENCE VALUE = 7428. CRITERION= 5474.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2059E-04
FORCE CONVERGENCE VALUE = 9080. CRITERION= 5472.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 7130. CRITERION= 5474.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8609E-05
FORCE CONVERGENCE VALUE = .2607E+05 CRITERION= 5473.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4680E-05
FORCE CONVERGENCE VALUE = .2268E+05 CRITERION= 5472.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3291E-05
FORCE CONVERGENCE VALUE = .1919E+05 CRITERION= 5472.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2565E-05
FORCE CONVERGENCE VALUE = .1757E+05 CRITERION= 5472.

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RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3702E-05
FORCE CONVERGENCE VALUE = .1305E+05 CRITERION= 5472.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5398E-05
FORCE CONVERGENCE VALUE = 8132. CRITERION= 5471.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6465E-05
FORCE CONVERGENCE VALUE = 3276. CRITERION= 5471. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 11
*** LOAD STEP 4 SUBSTEP 16 COMPLETED. CUM ITER = 528
*** TIME = 3.69141 TIME INC = .105469
*** MAX PLASTIC STRAIN STEP = .3892E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .10547 UNCHANGED

FORCE CONVERGENCE VALUE = .5368E+08 CRITERION= .5396E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7102E-03
FORCE CONVERGENCE VALUE = .7557E+06 CRITERION= 5563.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1177E-03
FORCE CONVERGENCE VALUE = .5599E+05 CRITERION= 5534.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3721E-04
FORCE CONVERGENCE VALUE = .2880E+05 CRITERION= 5528.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2423E-04
FORCE CONVERGENCE VALUE = .7736E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2301E+05 CRITERION= 5528.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1004E-04
FORCE CONVERGENCE VALUE = .3018E+05 CRITERION= 5528.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5516E-05
FORCE CONVERGENCE VALUE = .2664E+05 CRITERION= 5527.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3884E-05
FORCE CONVERGENCE VALUE = .2310E+05 CRITERION= 5527.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3037E-05
FORCE CONVERGENCE VALUE = .2276E+05 CRITERION= 5527.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4313E-05
FORCE CONVERGENCE VALUE = .1805E+05 CRITERION= 5527.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6291E-05
FORCE CONVERGENCE VALUE = .1202E+05 CRITERION= 5526.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8156E-05
FORCE CONVERGENCE VALUE = .3184E+05 CRITERION= 5525.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 8755. CRITERION= 5526.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2163E-05
FORCE CONVERGENCE VALUE = .1097E+05 CRITERION= 5526.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1480E-05
FORCE CONVERGENCE VALUE = .1064E+05 CRITERION= 5526.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1225E-05
FORCE CONVERGENCE VALUE = .1022E+05 CRITERION= 5526.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1082E-05
FORCE CONVERGENCE VALUE = .1135E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1022E+05 CRITERION= 5526.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 4 SUBSTEP 17 NOT COMPLETED. CUM ITER = 544
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .52734E-01

FORCE CONVERGENCE VALUE = .2684E+08 CRITERION= .2739E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3549E-03
FORCE CONVERGENCE VALUE = .1954E+06 CRITERION= 5518.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6442E-04
FORCE CONVERGENCE VALUE = .2420E+05 CRITERION= 5502.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1927E-04
FORCE CONVERGENCE VALUE = .1060E+05 CRITERION= 5499.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1212E-04
FORCE CONVERGENCE VALUE = 2455. CRITERION= 5498. <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 4 SUBSTEP 17 COMPLETED. CUM ITER = 548
*** TIME = 3.74414 TIME INC = .527344E-01
*** MAX PLASTIC STRAIN STEP = .1894E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .52734E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .2686E+08 CRITERION= .2742E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3474E-03
FORCE CONVERGENCE VALUE = .1896E+06 CRITERION= 5545.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5762E-04
FORCE CONVERGENCE VALUE = .2003E+05 CRITERION= 5530.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2077E-04
FORCE CONVERGENCE VALUE = .1427E+06 CRITERION= 5527.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1255E+05 CRITERION= 5529.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8206E-05
FORCE CONVERGENCE VALUE = .3330E+05 CRITERION= 5528.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4488E-05
FORCE CONVERGENCE VALUE = .2850E+05 CRITERION= 5528.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3150E-05
FORCE CONVERGENCE VALUE = .2426E+05 CRITERION= 5528.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2462E-05
FORCE CONVERGENCE VALUE = .2380E+05 CRITERION= 5527.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3907E-05
FORCE CONVERGENCE VALUE = .1870E+05 CRITERION= 5527.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5718E-05
FORCE CONVERGENCE VALUE = .2623E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1466E+05 CRITERION= 5527.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1814E-05
FORCE CONVERGENCE VALUE = .1488E+05 CRITERION= 5527.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1400E-05
FORCE CONVERGENCE VALUE = .1374E+05 CRITERION= 5527.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1205E-05
FORCE CONVERGENCE VALUE = .1269E+05 CRITERION= 5526.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1076E-05
FORCE CONVERGENCE VALUE = .1365E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1269E+05 CRITERION= 5526.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1076E-05
FORCE CONVERGENCE VALUE = .1179E+05 CRITERION= 5526.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 29 EXCEEDS MAX OF 25
*** LOAD STEP 4 SUBSTEP 18 NOT COMPLETED. CUM ITER = 563
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .26367E-01

FORCE CONVERGENCE VALUE = .1343E+08 CRITERION= .1451E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1735E-03
FORCE CONVERGENCE VALUE = .4985E+05 CRITERION= 5522.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3051E-04
FORCE CONVERGENCE VALUE = 4246. CRITERION= 5513. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 18 COMPLETED. CUM ITER = 565
*** TIME = 3.77051 TIME INC = .263672E-01
*** MAX PLASTIC STRAIN STEP = .9502E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .26367E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1344E+08 CRITERION= .1453E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1733E-03
FORCE CONVERGENCE VALUE = .4991E+05 CRITERION= 5536.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3161E-04
FORCE CONVERGENCE VALUE = .2902E+05 CRITERION= 5528.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1362E-04
FORCE CONVERGENCE VALUE = .2192E+06 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1765E+05 CRITERION= 5528.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5442E-05

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FORCE CONVERGENCE VALUE = .2411E+05 CRITERION= 5527.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2888E-05
FORCE CONVERGENCE VALUE = .2065E+05 CRITERION= 5527.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2002E-05
FORCE CONVERGENCE VALUE = .1774E+05 CRITERION= 5526.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1555E-05
FORCE CONVERGENCE VALUE = .1826E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1774E+05 CRITERION= 5526.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1555E-05
FORCE CONVERGENCE VALUE = .1563E+05 CRITERION= 5526.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1277E-05
FORCE CONVERGENCE VALUE = .1387E+05 CRITERION= 5526.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1089E-05
FORCE CONVERGENCE VALUE = .1469E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1387E+05 CRITERION= 5526.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1089E-05
FORCE CONVERGENCE VALUE = .1245E+05 CRITERION= 5526.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9662E-06
FORCE CONVERGENCE VALUE = .1128E+05 CRITERION= 5526.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8580E-06
FORCE CONVERGENCE VALUE = .1225E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1128E+05 CRITERION= 5526.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8580E-06
FORCE CONVERGENCE VALUE = .1030E+05 CRITERION= 5526.
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7689E-06
FORCE CONVERGENCE VALUE = 9522. CRITERION= 5526.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6959E-06
FORCE CONVERGENCE VALUE = .1036E+05 CRITERION= 5526.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9522. CRITERION= 5526.
EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6959E-06
FORCE CONVERGENCE VALUE = 8692. CRITERION= 5526.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 26 EXCEEDS MAX OF 25
*** LOAD STEP 4 SUBSTEP 19 NOT COMPLETED. CUM ITER = 583
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .13184E-01

FORCE CONVERGENCE VALUE = .6720E+07 CRITERION= 8692.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8756E-04
FORCE CONVERGENCE VALUE = .1348E+05 CRITERION= 5524.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1750E-04
FORCE CONVERGENCE VALUE = .3414E+05 CRITERION= 5519.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1298E+05 CRITERION= 5524.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8322E-05
FORCE CONVERGENCE VALUE = .3243E+05 CRITERION= 5522.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3717E-05
FORCE CONVERGENCE VALUE = .2553E+05 CRITERION= 5522.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2516E-05
FORCE CONVERGENCE VALUE = .2047E+05 CRITERION= 5521.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1870E-05
FORCE CONVERGENCE VALUE = .1890E+05 CRITERION= 5521.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3040E-05
FORCE CONVERGENCE VALUE = .1362E+05 CRITERION= 5520.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4105E-05
FORCE CONVERGENCE VALUE = 9768. CRITERION= 5520.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5317E-05
FORCE CONVERGENCE VALUE = 2855. CRITERION= 5518. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 4 SUBSTEP 19 COMPLETED. CUM ITER = 592

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*** TIME = 3.78369 TIME INC = .131836E-01
 *** MAX PLASTIC STRAIN STEP = .4551E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .13184E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .6721E+07 CRITERION= 8696.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8731E-04
 FORCE CONVERGENCE VALUE = .1624E+05 CRITERION= 5530.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1476E-04
 FORCE CONVERGENCE VALUE = .1891E+05 CRITERION= 5526.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1432E+05 CRITERION= 5530.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7128E-05
 FORCE CONVERGENCE VALUE = .2901E+05 CRITERION= 5529.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3108E-05
 FORCE CONVERGENCE VALUE = .2229E+05 CRITERION= 5528.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2075E-05
 FORCE CONVERGENCE VALUE = .1748E+05 CRITERION= 5528.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1524E-05
 FORCE CONVERGENCE VALUE = .1609E+05 CRITERION= 5527.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2437E-05
 FORCE CONVERGENCE VALUE = .1082E+05 CRITERION= 5527.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3298E-05
 FORCE CONVERGENCE VALUE = 6316. CRITERION= 5526.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5080E-05
 FORCE CONVERGENCE VALUE = 3441. CRITERION= 5525. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9

*** LOAD STEP 4 SUBSTEP 20 COMPLETED. CUM ITER = 601
 *** TIME = 3.79688 TIME INC = .131836E-01
 *** MAX PLASTIC STRAIN STEP = .4622E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .13184E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .6723E+07 CRITERION= 8702.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8699E-04
 FORCE CONVERGENCE VALUE = .4655E+05 CRITERION= 5537.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1464E-04
 FORCE CONVERGENCE VALUE = 6047. CRITERION= 5532.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9306E-05
 FORCE CONVERGENCE VALUE = 4756. CRITERION= 5531. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 4 SUBSTEP 21 COMPLETED. CUM ITER = 604
 *** TIME = 3.81006 TIME INC = .131836E-01
 *** MAX PLASTIC STRAIN STEP = .4557E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .26367E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .1345E+08 CRITERION= .1454E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1726E-03
 FORCE CONVERGENCE VALUE = .5256E+05 CRITERION= 5554.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2800E-04
 FORCE CONVERGENCE VALUE = 4322. CRITERION= 5546. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 4 SUBSTEP 22 COMPLETED. CUM ITER = 606
 *** TIME = 3.83643 TIME INC = .263672E-01
 *** MAX PLASTIC STRAIN STEP = .9222E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .52734E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2691E+08 CRITERION= .2747E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3433E-03
 FORCE CONVERGENCE VALUE = .1868E+06 CRITERION= 5591.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5618E-04
 FORCE CONVERGENCE VALUE = .3804E+05 CRITERION= 5573.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4295E-04
 FORCE CONVERGENCE VALUE = 7653. CRITERION= 5571.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3589E-04
 FORCE CONVERGENCE VALUE = .1728E+06 CRITERION= 5530.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 6184. CRITERION= 5571.

EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1061E-04
 FORCE CONVERGENCE VALUE = .2356E+05 CRITERION= 5571.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5859E-05
 FORCE CONVERGENCE VALUE = .2110E+05 CRITERION= 5571.
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4212E-05
 FORCE CONVERGENCE VALUE = .1828E+05 CRITERION= 5570.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3363E-05
 FORCE CONVERGENCE VALUE = .1764E+05 CRITERION= 5570.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5502E-05
 FORCE CONVERGENCE VALUE = .1412E+05 CRITERION= 5570.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1036E-04
 FORCE CONVERGENCE VALUE = .2110E+05 CRITERION= 5566.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1187E+05 CRITERION= 5570.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2743E-05
 FORCE CONVERGENCE VALUE = .1275E+05 CRITERION= 5570.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2232E-05
 FORCE CONVERGENCE VALUE = .1225E+05 CRITERION= 5570.
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1991E-05
 FORCE CONVERGENCE VALUE = .1177E+05 CRITERION= 5570.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1832E-05
 FORCE CONVERGENCE VALUE = .1282E+05 CRITERION= 5570.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1177E+05 CRITERION= 5570.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 23 NOT COMPLETED. CUM ITER = 621
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .26367E-01

FORCE CONVERGENCE VALUE = .1345E+08 CRITERION= .1455E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1723E-03
 FORCE CONVERGENCE VALUE = .5089E+05 CRITERION= 5568.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3366E-04
 FORCE CONVERGENCE VALUE = .1968E+05 CRITERION= 5559.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2549E-04
 FORCE CONVERGENCE VALUE = .8267E+05 CRITERION= 5538.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1617E+05 CRITERION= 5559.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8396E-05
 FORCE CONVERGENCE VALUE = .2282E+05 CRITERION= 5559.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4473E-05
 FORCE CONVERGENCE VALUE = .1993E+05 CRITERION= 5558.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3146E-05
 FORCE CONVERGENCE VALUE = .1692E+05 CRITERION= 5558.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2467E-05
 FORCE CONVERGENCE VALUE = .1602E+05 CRITERION= 5558.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4186E-05
 FORCE CONVERGENCE VALUE = .1199E+05 CRITERION= 5558.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7269E-05
 FORCE CONVERGENCE VALUE = 7140. CRITERION= 5557.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9575E-05
 FORCE CONVERGENCE VALUE = .6944E+05 CRITERION= 5542.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 7275. CRITERION= 5557.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2103E-05
 FORCE CONVERGENCE VALUE = 8023. CRITERION= 5557.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1382E-05
 FORCE CONVERGENCE VALUE = 7604. CRITERION= 5557.
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1120E-05
 FORCE CONVERGENCE VALUE = 7063. CRITERION= 5557.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9721E-06
 FORCE CONVERGENCE VALUE = 7306. CRITERION= 5557.

* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 7063. CRITERION= 5557.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 28 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 23 NOT COMPLETED. CUM ITER = 636
 *** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .13184E-01

FORCE CONVERGENCE VALUE = .6727E+07 CRITERION= 8718.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8677E-04
 FORCE CONVERGENCE VALUE = .1561E+05 CRITERION= 5557.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2255E-04
 FORCE CONVERGENCE VALUE = .5901E+05 CRITERION= 5538.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1410E+05 CRITERION= 5557.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7649E-05
 FORCE CONVERGENCE VALUE = .3257E+05 CRITERION= 5555.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3672E-05
 FORCE CONVERGENCE VALUE = .2611E+05 CRITERION= 5554.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2617E-05
 FORCE CONVERGENCE VALUE = .2114E+05 CRITERION= 5554.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2068E-05
 FORCE CONVERGENCE VALUE = .1981E+05 CRITERION= 5554.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3786E-05
 FORCE CONVERGENCE VALUE = .1428E+05 CRITERION= 5553.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6809E-05
 FORCE CONVERGENCE VALUE = 7977. CRITERION= 5552.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1032E-04
 FORCE CONVERGENCE VALUE = .7553E+05 CRITERION= 5532.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 6406. CRITERION= 5552.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1878E-05
 FORCE CONVERGENCE VALUE = 8307. CRITERION= 5552.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1218E-05
 FORCE CONVERGENCE VALUE = 7951. CRITERION= 5552.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9900E-06
 FORCE CONVERGENCE VALUE = 7480. CRITERION= 5552.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8677E-06
 FORCE CONVERGENCE VALUE = 8109. CRITERION= 5552.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 7480. CRITERION= 5552.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 23 NOT COMPLETED. CUM ITER = 650
 *** BEGIN BISECTION NUMBER 3 NEW TIME INCREMENT= .65918E-02

FORCE CONVERGENCE VALUE = .3364E+07 CRITERION= 6486.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4402E-04
 FORCE CONVERGENCE VALUE = .1513E+05 CRITERION= 5549.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1528E-04
 FORCE CONVERGENCE VALUE = .1227E+06 CRITERION= 5521.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1410E+05 CRITERION= 5549.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5104E-05
 FORCE CONVERGENCE VALUE = .2015E+05 CRITERION= 5550.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2760E-05
 FORCE CONVERGENCE VALUE = .1683E+05 CRITERION= 5549.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1936E-05
 FORCE CONVERGENCE VALUE = .1387E+05 CRITERION= 5549.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1512E-05
 FORCE CONVERGENCE VALUE = .1296E+05 CRITERION= 5549.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2701E-05
 FORCE CONVERGENCE VALUE = 9150. CRITERION= 5549.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4313E-05
 FORCE CONVERGENCE VALUE = .1045E+05 CRITERION= 5546.

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* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 7423. CRITERION= 5548.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1131E-05
FORCE CONVERGENCE VALUE = 7762. CRITERION= 5548.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8697E-06
FORCE CONVERGENCE VALUE = 7186. CRITERION= 5548.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7498E-06
FORCE CONVERGENCE VALUE = 6654. CRITERION= 5548.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6700E-06
FORCE CONVERGENCE VALUE = 7095. CRITERION= 5548.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 6654. CRITERION= 5548.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6700E-06
FORCE CONVERGENCE VALUE = 6181. CRITERION= 5548.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6096E-06
FORCE CONVERGENCE VALUE = 5752. CRITERION= 5548.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5602E-06
FORCE CONVERGENCE VALUE = 6188. CRITERION= 5548.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 5752. CRITERION= 5548.
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5602E-06
FORCE CONVERGENCE VALUE = 5354. CRITERION= 5548. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 16
*** LOAD STEP 4 SUBSTEP 23 COMPLETED. CUM ITER = 666
*** TIME = 3.84302 TIME INC = .659180E-02
*** MAX PLASTIC STRAIN STEP = .2218E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .65918E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .3371E+07 CRITERION= 6492.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4260E-04
FORCE CONVERGENCE VALUE = .9901E+05 CRITERION= 5531.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7138E-05
FORCE CONVERGENCE VALUE = 4803. CRITERION= 5549. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 4 SUBSTEP 24 COMPLETED. CUM ITER = 668
*** TIME = 3.84961 TIME INC = .659180E-02
*** MAX PLASTIC STRAIN STEP = .2187E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .13184E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .6756E+07 CRITERION= 8743.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8527E-04
FORCE CONVERGENCE VALUE = .1671E+05 CRITERION= 5561.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1392E-04
FORCE CONVERGENCE VALUE = 6975. CRITERION= 5556.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7709E-05
FORCE CONVERGENCE VALUE = 2901. CRITERION= 5556. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 25 COMPLETED. CUM ITER = 671
*** TIME = 3.86279 TIME INC = .131836E-01
*** MAX PLASTIC STRAIN STEP = .4505E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .13184E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .6751E+07 CRITERION= 8743.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8510E-04
FORCE CONVERGENCE VALUE = .1377E+05 CRITERION= 5567.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1400E-04
FORCE CONVERGENCE VALUE = 7563. CRITERION= 5562.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7742E-05
FORCE CONVERGENCE VALUE = 1965. CRITERION= 5562. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 26 COMPLETED. CUM ITER = 674
*** TIME = 3.87598 TIME INC = .131836E-01
*** MAX PLASTIC STRAIN STEP = .4494E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .26367E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .1351E+08 CRITERION= .1461E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1694E-03
FORCE CONVERGENCE VALUE = .5465E+05 CRITERION= 5584.

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4533E-04
FORCE CONVERGENCE VALUE = .3179E+06 CRITERION= 5486.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .5088E+05 CRITERION= 5584.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1289E-04
FORCE CONVERGENCE VALUE = .5776E+05 CRITERION= 5581.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6743E-05
FORCE CONVERGENCE VALUE = .4561E+05 CRITERION= 5580.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4967E-05
FORCE CONVERGENCE VALUE = .3695E+05 CRITERION= 5580.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4058E-05
FORCE CONVERGENCE VALUE = .3580E+05 CRITERION= 5579.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7610E-05
FORCE CONVERGENCE VALUE = .2702E+05 CRITERION= 5576.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1218E-04
FORCE CONVERGENCE VALUE = .1362E+05 CRITERION= 5575.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1265E-04
FORCE CONVERGENCE VALUE = 5129. CRITERION= 5574. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 4 SUBSTEP 27 COMPLETED. CUM ITER = 683
*** TIME = 3.90234 TIME INC = .263672E-01
*** MAX PLASTIC STRAIN STEP = .8909E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .26367E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1351E+08 CRITERION= .1462E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1679E-03
FORCE CONVERGENCE VALUE = .4850E+05 CRITERION= 5595.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3676E-04
FORCE CONVERGENCE VALUE = .1146E+06 CRITERION= 5585.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .4668E+05 CRITERION= 5596.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1321E-04
FORCE CONVERGENCE VALUE = .5618E+05 CRITERION= 5593.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7518E-05
FORCE CONVERGENCE VALUE = .4473E+05 CRITERION= 5592.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5458E-05
FORCE CONVERGENCE VALUE = .3648E+05 CRITERION= 5591.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4386E-05
FORCE CONVERGENCE VALUE = .3500E+05 CRITERION= 5590.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7733E-05
FORCE CONVERGENCE VALUE = .2792E+05 CRITERION= 5588.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1256E-04
FORCE CONVERGENCE VALUE = .1448E+05 CRITERION= 5586.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1373E-04
FORCE CONVERGENCE VALUE = 8501. CRITERION= 5585.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1089E-04
FORCE CONVERGENCE VALUE = 3297. CRITERION= 5584. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
*** LOAD STEP 4 SUBSTEP 28 COMPLETED. CUM ITER = 693
*** TIME = 3.92871 TIME INC = .263672E-01
*** MAX PLASTIC STRAIN STEP = .8775E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .26367E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1353E+08 CRITERION= .1464E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1660E-03
FORCE CONVERGENCE VALUE = .5074E+05 CRITERION= 5606.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3729E-04
FORCE CONVERGENCE VALUE = .2442E+05 CRITERION= 5593.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2277E-04
FORCE CONVERGENCE VALUE = 4816. CRITERION= 5595. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 4 SUBSTEP 29 COMPLETED. CUM ITER = 696

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*** TIME = 3.95508 TIME INC = .263672E-01
 *** MAX PLASTIC STRAIN STEP = .8670E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .44922E-01 INCREASED (FACTOR = 1.7037)

FORCE CONVERGENCE VALUE = .2306E+08 CRITERION= .2373E+05
 EQUIL ITER 1 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= .2809E-03
 FORCE CONVERGENCE VALUE = .1281E+06 CRITERION= 5630.
 EQUIL ITER 2 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.7665E-04
 FORCE CONVERGENCE VALUE = .8424E+05 CRITERION= 5608.
 EQUIL ITER 3 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.4902E-04
 FORCE CONVERGENCE VALUE = .4348E+05 CRITERION= 5611.
 EQUIL ITER 4 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.2658E-04
 FORCE CONVERGENCE VALUE = .1093E+05 CRITERION= 5610.
 EQUIL ITER 5 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.1389E-04
 FORCE CONVERGENCE VALUE = 2274. CRITERION= 5608. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** LOAD STEP 4 SUBSTEP 30 COMPLETED. CUM ITER = 701
 *** TIME = 4.00000 TIME INC = .449219E-01
 *** MAX PLASTIC STRAIN STEP = .1557E-02 CRITERION = .5000E-01

SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-1.630350000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-1.678500000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-1.731050000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-2.454700000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-2.300450000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-2.268700000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-1.763700000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-1.709950000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-9.831500000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-2.794050000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-5.655000000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-4.664500000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL= 3.914850000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL= 4.908900000E-05	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL= 2.729000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11470 TO	11470 BY	1
REAL= 9.792000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	11277 TO	11277 BY	1
REAL= 1.708500000E-03	IMAG= .000000000E+00			

SPECIFIED CONSTRAINT UX FOR SELECTED NODES REAL= 1.762450000E-03 IMAG= .000000000E+00	11293 TO 11293 BY	1
SPECIFIED CONSTRAINT UX FOR SELECTED NODES REAL= 2.269800000E-03 IMAG= .000000000E+00	10833 TO 10833 BY	1
SPECIFIED CONSTRAINT UX FOR SELECTED NODES REAL= 2.301750000E-03 IMAG= .000000000E+00	10849 TO 10849 BY	1
SPECIFIED CONSTRAINT UX FOR SELECTED NODES REAL= 2.458550000E-03 IMAG= .000000000E+00	10405 TO 10405 BY	1
SPECIFIED CONSTRAINT UX FOR SELECTED NODES REAL= 1.737500000E-03 IMAG= .000000000E+00	10097 TO 10097 BY	1
SPECIFIED CONSTRAINT UX FOR SELECTED NODES REAL= 1.685900000E-03 IMAG= .000000000E+00	10005 TO 10005 BY	1
SPECIFIED CONSTRAINT UX FOR SELECTED NODES REAL= 1.637750000E-03 IMAG= .000000000E+00	10013 TO 10013 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.369400000E-02 IMAG= .000000000E+00	13 TO 13 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.232400000E-02 IMAG= .000000000E+00	5 TO 5 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-4.045250000E-03 IMAG= .000000000E+00	97 TO 97 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.593850000E-03 IMAG= .000000000E+00	405 TO 405 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.462150000E-03 IMAG= .000000000E+00	849 TO 849 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.458050000E-03 IMAG= .000000000E+00	833 TO 833 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.381800000E-03 IMAG= .000000000E+00	1293 TO 1293 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.368150000E-03 IMAG= .000000000E+00	1277 TO 1277 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.065100000E-03 IMAG= .000000000E+00	1470 TO 1470 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-4.418800000E-04 IMAG= .000000000E+00	1774 TO 1774 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.029050000E-04 IMAG= .000000000E+00	1974 TO 1974 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-8.933500000E-05 IMAG= .000000000E+00	1973 TO 1973 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-9.050500000E-05 IMAG= .000000000E+00	11973 TO 11973 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.042800000E-04 IMAG= .000000000E+00	11974 TO 11974 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-4.458000000E-04 IMAG= .000000000E+00	11774 TO 11774 BY	1
SPECIFIED CONSTRAINT UY FOR SELECTED NODES REAL=-1.071600000E-03 IMAG= .000000000E+00	11470 TO 11470 BY	1

SPECIFIED CONSTRAINT UY REAL=-1.375600000E-03	FOR SELECTED NODES IMAG= .000000000E+00	11277 TO	11277 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.389300000E-03	FOR SELECTED NODES IMAG= .000000000E+00	11293 TO	11293 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.465550000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10833 TO	10833 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.469600000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10849 TO	10849 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.600350000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10405 TO	10405 BY	1
SPECIFIED CONSTRAINT UY REAL=-4.048950000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10097 TO	10097 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.232450000E-02	FOR SELECTED NODES IMAG= .000000000E+00	10005 TO	10005 BY	1
SPECIFIED CONSTRAINT UY REAL=-1.369450000E-02	FOR SELECTED NODES IMAG= .000000000E+00	10013 TO	10013 BY	1
ACEL= .00000E+00	9.8100 .00000E+00			

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

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USE      4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:
USE      2000 SUBSTEPS AS A MAXIMUM
USE       3 SUBSTEPS AS A MINIMUM

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WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

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*** NOTE ***                                CP= 18215.050  TIME= 02:38:36
Present time 0 is less than or equal to the previous time.
Time will default to 5.

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*** NOTE ***                               CP= 18215.090   TIME= 02:38:36
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.
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1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 02:38:36 JUL 25, 1995 CP= 18215.090
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 21 PWR Tube Analysis

LOAD STEP OPTIONS

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LOAD STEP NUMBER. . . . . 5
TIME AT END OF THE LOAD STEP. . . . . 5.0000
AUTOMATIC TIME STEPPING . . . . . ON
  INITIAL NUMBER OF SUBSTEPS . . . . . 4
  MAXIMUM NUMBER OF SUBSTEPS . . . . . 2000
  MINIMUM NUMBER OF SUBSTEPS . . . . . 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . . 25
STEP CHANGE BOUNDARY CONDITIONS . . . . . NO
TERMINATE ANALYSIS IF NOT CONVERGED . . . . . YES (EXIT)
CONVERGENCE CONTROLS. . . . . USE DEFAULTS
INERTIA LOADS
  ACCEL . . . . . X Y Z
  . . . . . .00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE . . . . . YES, FOR ELEMENTS WITH
  ACTIVE MAT. NONLINEARITIES

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PRINT OUTPUT CONTROLS NO PRINTOUT
 DATABASE OUTPUT CONTROLS

ITEM FREQUENCY COMPONENT
 ALL ALL

FORCE CONVERGENCE VALUE = .3876E+09 CRITERION= .3877E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4651E-02
 FORCE CONVERGENCE VALUE = .1910E+08 CRITERION= 6062.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1615E-01
 FORCE CONVERGENCE VALUE = .3371E+08 CRITERION= 5797.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1799E+08 CRITERION= 6049.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3682E-03
 FORCE CONVERGENCE VALUE = .6822E+07 CRITERION= 5998.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2326E-03
 FORCE CONVERGENCE VALUE = .1129E+07 CRITERION= 5941.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1428E-03
 FORCE CONVERGENCE VALUE = .6460E+06 CRITERION= 5899.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1147E-03
 FORCE CONVERGENCE VALUE = .6461E+06 CRITERION= 5876.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .6460E+06 CRITERION= 5899.
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1147E-03
 FORCE CONVERGENCE VALUE = .5663E+06 CRITERION= 5877.
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9822E-04
 FORCE CONVERGENCE VALUE = .4986E+06 CRITERION= 5862.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9265E-04
 FORCE CONVERGENCE VALUE = .4602E+06 CRITERION= 5851.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9095E-04
 FORCE CONVERGENCE VALUE = .4637E+06 CRITERION= 5843.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4602E+06 CRITERION= 5851.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 5 SUBSTEP 1 NOT COMPLETED. CUM ITER = 712
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .12500

FORCE CONVERGENCE VALUE = .1938E+09 CRITERION= .1939E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2325E-02
 FORCE CONVERGENCE VALUE = .7934E+07 CRITERION= 5857.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4583E-03
 FORCE CONVERGENCE VALUE = .1397E+08 CRITERION= 5686.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .7724E+07 CRITERION= 5860.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2066E-03
 FORCE CONVERGENCE VALUE = .6684E+06 CRITERION= 5811.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1358E-03
 FORCE CONVERGENCE VALUE = .3843E+06 CRITERION= 5780.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1035E-03
 FORCE CONVERGENCE VALUE = .3046E+06 CRITERION= 5760.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7070E-04
 FORCE CONVERGENCE VALUE = .2726E+06 CRITERION= 5749.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6310E-04
 FORCE CONVERGENCE VALUE = .2111E+06 CRITERION= 5737.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6230E-04
 FORCE CONVERGENCE VALUE = .1713E+06 CRITERION= 5726.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8747E-04
 FORCE CONVERGENCE VALUE = .9667E+06 CRITERION= 5712.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1206E+06 CRITERION= 5723.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2481E-04
 FORCE CONVERGENCE VALUE = .1306E+06 CRITERION= 5723.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1679E-04
 FORCE CONVERGENCE VALUE = .1259E+06 CRITERION= 5720.

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EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1533E-04
FORCE CONVERGENCE VALUE = .1105E+06 CRITERION= 5718.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 49 EXCEEDS MAX OF 25
*** LOAD STEP 5 SUBSTEP 1 NOT COMPLETED. CUM ITER = 725
*** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .62500E-01

FORCE CONVERGENCE VALUE = .9690E+08 CRITERION= .9707E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1163E-02
FORCE CONVERGENCE VALUE = .2055E+07 CRITERION= 5737.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2506E-03
FORCE CONVERGENCE VALUE = .3758E+06 CRITERION= 5651.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1212E-03
FORCE CONVERGENCE VALUE = .2431E+06 CRITERION= 5664.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4938E-04
FORCE CONVERGENCE VALUE = .1920E+06 CRITERION= 5662.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2937E-04
FORCE CONVERGENCE VALUE = .5683E+05 CRITERION= 5660.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2150E-04
FORCE CONVERGENCE VALUE = 6473. CRITERION= 5659.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1565E-04
FORCE CONVERGENCE VALUE = 5311. CRITERION= 5658. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 7
*** LOAD STEP 5 SUBSTEP 1 COMPLETED. CUM ITER = 732
*** TIME = 4.06250 TIME INC = .625000E-01
*** MAX PLASTIC STRAIN STEP = .5683E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .62500E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .9571E+08 CRITERION= .9588E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1090E-02
FORCE CONVERGENCE VALUE = .1826E+07 CRITERION= 5769.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1905E-03
FORCE CONVERGENCE VALUE = .3915E+06 CRITERION= 5719.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1147E-03
FORCE CONVERGENCE VALUE = .6241E+05 CRITERION= 5705.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1122E-03
FORCE CONVERGENCE VALUE = .3289E+05 CRITERION= 5706.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9586E-04
FORCE CONVERGENCE VALUE = .7456E+06 CRITERION= 5329.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2982E+05 CRITERION= 5706.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3027E-04
FORCE CONVERGENCE VALUE = .7139E+05 CRITERION= 5704.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1824E-04
FORCE CONVERGENCE VALUE = .6359E+05 CRITERION= 5703.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1379E-04
FORCE CONVERGENCE VALUE = .5559E+05 CRITERION= 5703.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1139E-04
FORCE CONVERGENCE VALUE = .5479E+05 CRITERION= 5703.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1638E-04
FORCE CONVERGENCE VALUE = .4601E+05 CRITERION= 5703.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2675E-04
FORCE CONVERGENCE VALUE = .4563E+05 CRITERION= 5698.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3698E-04
FORCE CONVERGENCE VALUE = .8465E+05 CRITERION= 5647.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 5 SUBSTEP 2 NOT COMPLETED. CUM ITER = 745
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .31250E-01

FORCE CONVERGENCE VALUE = .4786E+08 CRITERION= .4819E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5451E-03
FORCE CONVERGENCE VALUE = .4746E+06 CRITERION= 5716.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1027E-03
FORCE CONVERGENCE VALUE = .7852E+05 CRITERION= 5678.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5336E-04
FORCE CONVERGENCE VALUE = .3349E+05 CRITERION= 5685.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4538E-04

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FORCE CONVERGENCE VALUE = .2012E+05 CRITERION= 5682.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3786E-04
FORCE CONVERGENCE VALUE = .2053E+05 CRITERION= 5679.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1183E+05 CRITERION= 5682.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1159E-04
FORCE CONVERGENCE VALUE = .3650E+05 CRITERION= 5681.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6735E-05
FORCE CONVERGENCE VALUE = .3173E+05 CRITERION= 5681.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4951E-05
FORCE CONVERGENCE VALUE = .2713E+05 CRITERION= 5681.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3983E-05
FORCE CONVERGENCE VALUE = .2568E+05 CRITERION= 5681.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6109E-05
FORCE CONVERGENCE VALUE = .1989E+05 CRITERION= 5681.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1055E-04
FORCE CONVERGENCE VALUE = .1381E+05 CRITERION= 5681.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1746E-04
FORCE CONVERGENCE VALUE = .4243E+05 CRITERION= 5670.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1174E+05 CRITERION= 5680.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3540E-05
FORCE CONVERGENCE VALUE = .1564E+05 CRITERION= 5680.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2529E-05
FORCE CONVERGENCE VALUE = .1496E+05 CRITERION= 5680.
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2133E-05
FORCE CONVERGENCE VALUE = .1426E+05 CRITERION= 5680.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1900E-05
FORCE CONVERGENCE VALUE = .1482E+05 CRITERION= 5680.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1426E+05 CRITERION= 5680.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 5 SUBSTEP 2 NOT COMPLETED. CUM ITER = 762
*** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .15625E-01

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FORCE CONVERGENCE VALUE = .2393E+08 CRITERION= .2459E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2724E-03
FORCE CONVERGENCE VALUE = .1248E+06 CRITERION= 5688.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5193E-04
FORCE CONVERGENCE VALUE = .1553E+05 CRITERION= 5674.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2527E-04
FORCE CONVERGENCE VALUE = 7709. CRITERION= 5671.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2055E-04
FORCE CONVERGENCE VALUE = .1192E+05 CRITERION= 5670.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 6317. CRITERION= 5671.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6218E-05
FORCE CONVERGENCE VALUE = .2446E+05 CRITERION= 5671.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3554E-05
FORCE CONVERGENCE VALUE = .2144E+05 CRITERION= 5670.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2591E-05
FORCE CONVERGENCE VALUE = .1827E+05 CRITERION= 5670.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2067E-05
FORCE CONVERGENCE VALUE = .1729E+05 CRITERION= 5670.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3466E-05
FORCE CONVERGENCE VALUE = .1322E+05 CRITERION= 5670.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6051E-05
FORCE CONVERGENCE VALUE = 8249. CRITERION= 5670.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9899E-05
FORCE CONVERGENCE VALUE = 4910. CRITERION= 5669. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 11

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*** LOAD STEP      5  SUBSTEP      2  COMPLETED.  CUM ITER =   773
*** TIME = 4.07813      TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .1240E-02  CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .15625E-01  UNCHANGED

  FORCE CONVERGENCE VALUE = .2397E+08  CRITERION= .2463E+05
EQUIL ITER  1 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .2687E-03
  FORCE CONVERGENCE VALUE = .1243E+06  CRITERION= 5698.
EQUIL ITER  2 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.4887E-04
  FORCE CONVERGENCE VALUE = .2292E+05  CRITERION= 5685.
EQUIL ITER  3 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .3602E-04
  FORCE CONVERGENCE VALUE = .1524E+06  CRITERION= 5596.
  * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
  FORCE CONVERGENCE VALUE = .1467E+05  CRITERION= 5685.
EQUIL ITER  4 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.1082E-04
  FORCE CONVERGENCE VALUE = .4334E+05  CRITERION= 5683.
EQUIL ITER  5 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.6178E-05
  FORCE CONVERGENCE VALUE = .3751E+05  CRITERION= 5683.
EQUIL ITER  6 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.4472E-05
  FORCE CONVERGENCE VALUE = .3148E+05  CRITERION= 5683.
  RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER  7 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.3565E-05
  FORCE CONVERGENCE VALUE = .2942E+05  CRITERION= 5682.
  RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER  8 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.5901E-05
  FORCE CONVERGENCE VALUE = .2172E+05  CRITERION= 5682.
  RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER  9 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .1042E-04
  FORCE CONVERGENCE VALUE = .1412E+05  CRITERION= 5682.
  RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .1727E-04
  FORCE CONVERGENCE VALUE = .2064E+06  CRITERION= 5560.
  * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
  FORCE CONVERGENCE VALUE = .1202E+05  CRITERION= 5681.
EQUIL ITER 11 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .3178E-05
  FORCE CONVERGENCE VALUE = .1670E+05  CRITERION= 5681.
EQUIL ITER 12 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .2198E-05
  FORCE CONVERGENCE VALUE = .1590E+05  CRITERION= 5681.
EQUIL ITER 13 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .1835E-05
  FORCE CONVERGENCE VALUE = .1507E+05  CRITERION= 5681.
  RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 14 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .1629E-05
  FORCE CONVERGENCE VALUE = .1568E+05  CRITERION= 5681.
  * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
  FORCE CONVERGENCE VALUE = .1507E+05  CRITERION= 5681.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP      5  SUBSTEP      3  NOT COMPLETED.  CUM ITER =   788
*** BEGIN BISECTION NUMBER 1  NEW TIME INCREMENT= .78125E-02

  FORCE CONVERGENCE VALUE = .1198E+08  CRITERION= .1326E+05
EQUIL ITER  1 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .1342E-03
  FORCE CONVERGENCE VALUE = .5577E+05  CRITERION= 5684.
EQUIL ITER  2 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.2639E-04
  FORCE CONVERGENCE VALUE = .4921E+05  CRITERION= 5651.
EQUIL ITER  3 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.1525E-04
  FORCE CONVERGENCE VALUE = 9059.  CRITERION= 5673.
EQUIL ITER  4 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.9143E-05
  FORCE CONVERGENCE VALUE = 2488.  CRITERION= 5671.  <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP      5  SUBSTEP      3  COMPLETED.  CUM ITER =   792
*** TIME = 4.08594      TIME INC = .781250E-02
*** MAX PLASTIC STRAIN STEP = .5342E-03  CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .78125E-02  UNCHANGED

  FORCE CONVERGENCE VALUE = .1200E+08  CRITERION= .1327E+05
EQUIL ITER  1 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .1332E-03
  FORCE CONVERGENCE VALUE = .3160E+05  CRITERION= 5686.
EQUIL ITER  2 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= -.2466E-04
  FORCE CONVERGENCE VALUE = 9802.  CRITERION= 5679.
EQUIL ITER  3 COMPLETED.  NEW TRIANG MATRIX.  MAX DOF INC= .1304E-04

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FORCE CONVERGENCE VALUE = 2571. CRITERION= 5676. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 4 COMPLETED. CUM ITER = 795
 *** TIME = 4.09375 TIME INC = .781250E-02
 *** MAX PLASTIC STRAIN STEP = .5772E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .15625E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2401E+08 CRITERION= .2467E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2647E-03
 FORCE CONVERGENCE VALUE = .1198E+06 CRITERION= 5704.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4755E-04
 FORCE CONVERGENCE VALUE = .1766E+05 CRITERION= 5692.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3096E-04
 FORCE CONVERGENCE VALUE = .8882E+05 CRITERION= 5641.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1486E+05 CRITERION= 5692.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1139E-04
 FORCE CONVERGENCE VALUE = .4294E+05 CRITERION= 5690.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6476E-05
 FORCE CONVERGENCE VALUE = .3632E+05 CRITERION= 5689.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4691E-05
 FORCE CONVERGENCE VALUE = .3001E+05 CRITERION= 5688.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3717E-05
 FORCE CONVERGENCE VALUE = .2768E+05 CRITERION= 5687.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5841E-05
 FORCE CONVERGENCE VALUE = .2020E+05 CRITERION= 5686.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8871E-05
 FORCE CONVERGENCE VALUE = .1149E+05 CRITERION= 5684.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1081E-04
 FORCE CONVERGENCE VALUE = 4793. CRITERION= 5682. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
 *** LOAD STEP 5 SUBSTEP 5 COMPLETED. CUM ITER = 805
 *** TIME = 4.10938 TIME INC = .156250E-01
 *** MAX PLASTIC STRAIN STEP = .1069E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .2405E+08 CRITERION= .2471E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2622E-03
 FORCE CONVERGENCE VALUE = .1151E+06 CRITERION= 5710.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5474E-04
 FORCE CONVERGENCE VALUE = .2029E+05 CRITERION= 5696.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3823E-04
 FORCE CONVERGENCE VALUE = 9868. CRITERION= 5690.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2716E-04
 FORCE CONVERGENCE VALUE = 3116. CRITERION= 5686. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 5 SUBSTEP 6 COMPLETED. CUM ITER = 809
 *** TIME = 4.12500 TIME INC = .156250E-01
 *** MAX PLASTIC STRAIN STEP = .1162E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .31250E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .4801E+08 CRITERION= .4834E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5197E-03
 FORCE CONVERGENCE VALUE = .4332E+06 CRITERION= 5739.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1484E-03
 FORCE CONVERGENCE VALUE = .6396E+06 CRITERION= 5708.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4330E+06 CRITERION= 5740.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4301E-04
 FORCE CONVERGENCE VALUE = .1775E+06 CRITERION= 5730.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2572E-04
 FORCE CONVERGENCE VALUE = .1441E+06 CRITERION= 5725.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1927E-04
 FORCE CONVERGENCE VALUE = .1259E+06 CRITERION= 5721.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01

EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2764E-04
 FORCE CONVERGENCE VALUE = .9284E+05 CRITERION= 5715.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4632E-04
 FORCE CONVERGENCE VALUE = .7823E+05 CRITERION= 5702.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7096E-04
 FORCE CONVERGENCE VALUE = .7235E+05 CRITERION= 5693.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8150E-04
 FORCE CONVERGENCE VALUE = .2970E+06 CRITERION= 5682.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .5720E+05 CRITERION= 5693.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1737E-04
 FORCE CONVERGENCE VALUE = .5472E+05 CRITERION= 5691.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1137E-04
 FORCE CONVERGENCE VALUE = .5008E+05 CRITERION= 5689.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9237E-05
 FORCE CONVERGENCE VALUE = .5046E+05 CRITERION= 5688.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .5008E+05 CRITERION= 5689.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 37 EXCEEDS MAX OF 25
 *** LOAD STEP 5 SUBSTEP 7 NOT COMPLETED. CUM ITER = 822
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .15625E-01

FORCE CONVERGENCE VALUE = .2400E+08 CRITERION= .2467E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2598E-03
 FORCE CONVERGENCE VALUE = .1144E+06 CRITERION= 5714.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7576E-04
 FORCE CONVERGENCE VALUE = .5423E+05 CRITERION= 5691.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5611E-04
 FORCE CONVERGENCE VALUE = .3128E+06 CRITERION= 5688.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4740E+05 CRITERION= 5691.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1658E-04
 FORCE CONVERGENCE VALUE = .5221E+05 CRITERION= 5694.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9455E-05
 FORCE CONVERGENCE VALUE = .4500E+05 CRITERION= 5693.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7016E-05
 FORCE CONVERGENCE VALUE = .3876E+05 CRITERION= 5691.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5723E-05
 FORCE CONVERGENCE VALUE = .3740E+05 CRITERION= 5690.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9337E-05
 FORCE CONVERGENCE VALUE = .3136E+05 CRITERION= 5689.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1714E-04
 FORCE CONVERGENCE VALUE = .3361E+05 CRITERION= 5686.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .2658E+05 CRITERION= 5689.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4676E-05
 FORCE CONVERGENCE VALUE = .2786E+05 CRITERION= 5688.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3915E-05
 FORCE CONVERGENCE VALUE = .2673E+05 CRITERION= 5687.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3536E-05
 FORCE CONVERGENCE VALUE = .2584E+05 CRITERION= 5687.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 5 SUBSTEP 7 NOT COMPLETED. CUM ITER = 835
 *** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .78125E-02

FORCE CONVERGENCE VALUE = .1200E+08 CRITERION= .1328E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1298E-03
 FORCE CONVERGENCE VALUE = .3291E+05 CRITERION= 5700.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4402E-04
 FORCE CONVERGENCE VALUE = .6104E+05 CRITERION= 5689.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .3224E+05 CRITERION= 5700.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1264E-04
 FORCE CONVERGENCE VALUE = .5633E+05 CRITERION= 5697.

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EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7066E-05
FORCE CONVERGENCE VALUE = .4630E+05 CRITERION= 5696.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5131E-05
FORCE CONVERGENCE VALUE = .3813E+05 CRITERION= 5694.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4098E-05
FORCE CONVERGENCE VALUE = .3571E+05 CRITERION= 5693.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7264E-05
FORCE CONVERGENCE VALUE = .2792E+05 CRITERION= 5691.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1326E-04
FORCE CONVERGENCE VALUE = .1986E+05 CRITERION= 5689.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1939E-04
FORCE CONVERGENCE VALUE = .2924E+05 CRITERION= 5685.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1536E+05 CRITERION= 5688.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3483E-05
FORCE CONVERGENCE VALUE = .1906E+05 CRITERION= 5688.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2427E-05
FORCE CONVERGENCE VALUE = .1803E+05 CRITERION= 5687.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2054E-05
FORCE CONVERGENCE VALUE = .1717E+05 CRITERION= 5687.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1842E-05
FORCE CONVERGENCE VALUE = .1878E+05 CRITERION= 5687.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1717E+05 CRITERION= 5687.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 5 SUBSTEP 7 NOT COMPLETED. CUM ITER = 849
*** BEGIN BISECTION NUMBER 3 NEW TIME INCREMENT= .39063E-02

FORCE CONVERGENCE VALUE = .6001E+07 CRITERION= 8267.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6487E-04
FORCE CONVERGENCE VALUE = .4877E+05 CRITERION= 5693.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2628E-04
FORCE CONVERGENCE VALUE = .2139E+05 CRITERION= 5686.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1584E-04
FORCE CONVERGENCE VALUE = .2086E+05 CRITERION= 5683.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8795E-05
FORCE CONVERGENCE VALUE = .2312E+05 CRITERION= 5682.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2052E+05 CRITERION= 5683.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3211E-05
FORCE CONVERGENCE VALUE = .1312E+05 CRITERION= 5683.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1726E-05
FORCE CONVERGENCE VALUE = .1037E+05 CRITERION= 5683.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1231E-05
FORCE CONVERGENCE VALUE = 9949. CRITERION= 5682.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1955E-05
FORCE CONVERGENCE VALUE = 7424. CRITERION= 5682.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3030E-05
FORCE CONVERGENCE VALUE = 3765. CRITERION= 5681. <<< CONVERGED
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 5 SUBSTEP 7 COMPLETED. CUM ITER = 858
*** TIME = 4.12891 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .5136E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .39063E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .6027E+07 CRITERION= 8283.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6617E-04
FORCE CONVERGENCE VALUE = .1209E+05 CRITERION= 5688.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1854E-04
FORCE CONVERGENCE VALUE = .1553E+05 CRITERION= 5683.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000

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FORCE CONVERGENCE VALUE = .1310E+05 CRITERION= 5689.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6638E-05
 FORCE CONVERGENCE VALUE = .2977E+05 CRITERION= 5687.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3524E-05
 FORCE CONVERGENCE VALUE = .2410E+05 CRITERION= 5686.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2482E-05
 FORCE CONVERGENCE VALUE = .1969E+05 CRITERION= 5686.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1938E-05
 FORCE CONVERGENCE VALUE = .1870E+05 CRITERION= 5685.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3477E-05
 FORCE CONVERGENCE VALUE = .1474E+05 CRITERION= 5684.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5949E-05
 FORCE CONVERGENCE VALUE = 9041. CRITERION= 5683.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7529E-05
 FORCE CONVERGENCE VALUE = 4301. CRITERION= 5681. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
 *** LOAD STEP 5 SUBSTEP 8 COMPLETED. CUM ITER = 867
 *** TIME = 4.13281 TIME INC = .390625E-02
 *** MAX PLASTIC STRAIN STEP = .3774E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .39063E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .6018E+07 CRITERION= 8276.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6683E-04
 FORCE CONVERGENCE VALUE = 9589. CRITERION= 5687.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2184E-04
 FORCE CONVERGENCE VALUE = 6321. CRITERION= 5681.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1328E-04
 FORCE CONVERGENCE VALUE = 6665. CRITERION= 5679.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 5923. CRITERION= 5681.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4277E-05
 FORCE CONVERGENCE VALUE = .1476E+05 CRITERION= 5681.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2309E-05
 FORCE CONVERGENCE VALUE = .1276E+05 CRITERION= 5681.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1672E-05
 FORCE CONVERGENCE VALUE = .1096E+05 CRITERION= 5680.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1340E-05
 FORCE CONVERGENCE VALUE = .1058E+05 CRITERION= 5680.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2470E-05
 FORCE CONVERGENCE VALUE = 8672. CRITERION= 5680.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4338E-05
 FORCE CONVERGENCE VALUE = 5712. CRITERION= 5679.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5515E-05
 FORCE CONVERGENCE VALUE = 3961. CRITERION= 5677. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
 *** LOAD STEP 5 SUBSTEP 9 COMPLETED. CUM ITER = 877
 *** TIME = 4.13672 TIME INC = .390625E-02
 *** MAX PLASTIC STRAIN STEP = .4560E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .39063E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .6031E+07 CRITERION= 8283.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6661E-04
 FORCE CONVERGENCE VALUE = 9435. CRITERION= 5685.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2000E-04
 FORCE CONVERGENCE VALUE = 6946. CRITERION= 5678.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1078E-04
 FORCE CONVERGENCE VALUE = 896.8 CRITERION= 5676. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 10 COMPLETED. CUM ITER = 880
 *** TIME = 4.14063 TIME INC = .390625E-02
 *** MAX PLASTIC STRAIN STEP = .4019E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .78125E-02 INCREASED (FACTOR = 2.0000)

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FORCE CONVERGENCE VALUE = .1207E+08 CRITERION= .1334E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1326E-03
FORCE CONVERGENCE VALUE = .3262E+05 CRITERION= 5691.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4060E-04
FORCE CONVERGENCE VALUE = .1138E+06 CRITERION= 5668.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .3191E+05 CRITERION= 5691.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1347E-04
FORCE CONVERGENCE VALUE = .5878E+05 CRITERION= 5688.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7319E-05
FORCE CONVERGENCE VALUE = .4859E+05 CRITERION= 5686.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5246E-05
FORCE CONVERGENCE VALUE = .4021E+05 CRITERION= 5684.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4145E-05
FORCE CONVERGENCE VALUE = .3825E+05 CRITERION= 5683.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7063E-05
FORCE CONVERGENCE VALUE = .2912E+05 CRITERION= 5681.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1204E-04
FORCE CONVERGENCE VALUE = .4172E+05 CRITERION= 5674.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2329E+05 CRITERION= 5681.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3121E-05
FORCE CONVERGENCE VALUE = .2417E+05 CRITERION= 5680.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2521E-05
FORCE CONVERGENCE VALUE = .2249E+05 CRITERION= 5679.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2229E-05
FORCE CONVERGENCE VALUE = .2064E+05 CRITERION= 5679.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2017E-05
FORCE CONVERGENCE VALUE = .2192E+05 CRITERION= 5678.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2064E+05 CRITERION= 5679.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 45 EXCEEDS MAX OF 25
*** LOAD STEP 5 SUBSTEP 11 NOT COMPLETED. CUM ITER = 893
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .39063E-02

FORCE CONVERGENCE VALUE = .6034E+07 CRITERION= 8284.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6634E-04
FORCE CONVERGENCE VALUE = 8715. CRITERION= 5683.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2412E-04
FORCE CONVERGENCE VALUE = .1172E+06 CRITERION= 5667.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 8293. CRITERION= 5683.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7190E-05
FORCE CONVERGENCE VALUE = .3171E+05 CRITERION= 5682.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3847E-05
FORCE CONVERGENCE VALUE = .2683E+05 CRITERION= 5681.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2755E-05
FORCE CONVERGENCE VALUE = .2258E+05 CRITERION= 5680.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2185E-05
FORCE CONVERGENCE VALUE = .2180E+05 CRITERION= 5679.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3990E-05
FORCE CONVERGENCE VALUE = .1676E+05 CRITERION= 5678.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6496E-05
FORCE CONVERGENCE VALUE = .1293E+05 CRITERION= 5675.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6916E-05
FORCE CONVERGENCE VALUE = 3363. CRITERION= 5674. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 5 SUBSTEP 11 COMPLETED. CUM ITER = 902
*** TIME = 4.14453 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .3820E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .39063E-02 UNCHANGED

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FORCE CONVERGENCE VALUE = .6051E+07 CRITERION= 8295.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6637E-04
FORCE CONVERGENCE VALUE = .1072E+05 CRITERION= 5681.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1933E-04
FORCE CONVERGENCE VALUE = .1192E+05 CRITERION= 5674.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9348. CRITERION= 5681.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6856E-05
FORCE CONVERGENCE VALUE = .3081E+05 CRITERION= 5679.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3651E-05
FORCE CONVERGENCE VALUE = .2567E+05 CRITERION= 5678.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2607E-05
FORCE CONVERGENCE VALUE = .2129E+05 CRITERION= 5677.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2061E-05
FORCE CONVERGENCE VALUE = .2009E+05 CRITERION= 5677.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3747E-05
FORCE CONVERGENCE VALUE = .1554E+05 CRITERION= 5675.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5993E-05
FORCE CONVERGENCE VALUE = 8748. CRITERION= 5673.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6437E-05
FORCE CONVERGENCE VALUE = 3227. CRITERION= 5671. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 5 SUBSTEP 12 COMPLETED. CUM ITER = 911
*** TIME = 4.14844 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .3941E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .39063E-02 UNCHANGED

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FORCE CONVERGENCE VALUE = .6054E+07 CRITERION= 8295.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6628E-04
FORCE CONVERGENCE VALUE = 9135. CRITERION= 5678.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1873E-04
FORCE CONVERGENCE VALUE = 8640. CRITERION= 5671.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9771E-05
FORCE CONVERGENCE VALUE = 1790. CRITERION= 5669. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 5 SUBSTEP 13 COMPLETED. CUM ITER = 914
*** TIME = 4.15234 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .4002E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .78125E-02 INCREASED (FACTOR = 2.0000)

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FORCE CONVERGENCE VALUE = .1211E+08 CRITERION= .1337E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1322E-03
FORCE CONVERGENCE VALUE = .3224E+05 CRITERION= 5684.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3499E-04
FORCE CONVERGENCE VALUE = .2587E+06 CRITERION= 5670.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2998E+05 CRITERION= 5684.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1309E-04
FORCE CONVERGENCE VALUE = .5768E+05 CRITERION= 5680.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7037E-05
FORCE CONVERGENCE VALUE = .4689E+05 CRITERION= 5678.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4994E-05
FORCE CONVERGENCE VALUE = .3833E+05 CRITERION= 5677.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3909E-05
FORCE CONVERGENCE VALUE = .3578E+05 CRITERION= 5676.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6508E-05
FORCE CONVERGENCE VALUE = .2731E+05 CRITERION= 5673.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9945E-05
FORCE CONVERGENCE VALUE = .1684E+05 CRITERION= 5670.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1029E-04
FORCE CONVERGENCE VALUE = 5729. CRITERION= 5666.

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EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7363E-05
 FORCE CONVERGENCE VALUE = 1664. CRITERION= 5664. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
 *** LOAD STEP 5 SUBSTEP 14 COMPLETED. CUM ITER = 924
 *** TIME = 4.16016 TIME INC = .781250E-02
 *** MAX PLASTIC STRAIN STEP = .7597E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .78125E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .1212E+08 CRITERION= .1338E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1315E-03
 FORCE CONVERGENCE VALUE = .2957E+05 CRITERION= 5680.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3244E-04
 FORCE CONVERGENCE VALUE = .2227E+05 CRITERION= 5666.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1611E-04
 FORCE CONVERGENCE VALUE = 3810. CRITERION= 5662. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 5 SUBSTEP 15 COMPLETED. CUM ITER = 927
 *** TIME = 4.16797 TIME INC = .781250E-02
 *** MAX PLASTIC STRAIN STEP = .6501E-03 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .15625E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2426E+08 CRITERION= .2491E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2622E-03
 FORCE CONVERGENCE VALUE = .1087E+06 CRITERION= 5690.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6341E-04
 FORCE CONVERGENCE VALUE = .5625E+05 CRITERION= 5668.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2973E-04
 FORCE CONVERGENCE VALUE = 7065. CRITERION= 5659.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1425E-04
 FORCE CONVERGENCE VALUE = 2268. CRITERION= 5656. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 5 SUBSTEP 16 COMPLETED. CUM ITER = 931
 *** TIME = 4.18359 TIME INC = .156250E-01
 *** MAX PLASTIC STRAIN STEP = .1304E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .2428E+08 CRITERION= .2493E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2593E-03
 FORCE CONVERGENCE VALUE = .1070E+06 CRITERION= 5683.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6698E-04
 FORCE CONVERGENCE VALUE = .7129E+05 CRITERION= 5662.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1247E-03
 FORCE CONVERGENCE VALUE = .6083E+06 CRITERION= 5654.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .6505E+05 CRITERION= 5662.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1173E-04
 FORCE CONVERGENCE VALUE = .4579E+05 CRITERION= 5660.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6522E-05
 FORCE CONVERGENCE VALUE = .4003E+05 CRITERION= 5658.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5415E-05
 FORCE CONVERGENCE VALUE = .4084E+05 CRITERION= 5657.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4003E+05 CRITERION= 5658.
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5415E-05
 FORCE CONVERGENCE VALUE = .3589E+05 CRITERION= 5657.
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4861E-05
 FORCE CONVERGENCE VALUE = .3349E+05 CRITERION= 5656.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4524E-05
 FORCE CONVERGENCE VALUE = .3770E+05 CRITERION= 5655.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .3349E+05 CRITERION= 5656.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 43 EXCEEDS MAX OF 25
 *** LOAD STEP 5 SUBSTEP 17 NOT COMPLETED. CUM ITER = 941
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .78125E-02

FORCE CONVERGENCE VALUE = .1214E+08 CRITERION= .1340E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1296E-03
 FORCE CONVERGENCE VALUE = .2852E+05 CRITERION= 5670.

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3098E-04
FORCE CONVERGENCE VALUE = .2098E+05 CRITERION= 5656.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2059E-04
FORCE CONVERGENCE VALUE = .3950E+05 CRITERION= 5654.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1561E+05 CRITERION= 5656.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5960E-05
FORCE CONVERGENCE VALUE = .2547E+05 CRITERION= 5657.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3059E-05
FORCE CONVERGENCE VALUE = .2164E+05 CRITERION= 5656.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2387E-05
FORCE CONVERGENCE VALUE = .1845E+05 CRITERION= 5656.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2023E-05
FORCE CONVERGENCE VALUE = .1793E+05 CRITERION= 5655.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4127E-05
FORCE CONVERGENCE VALUE = .1363E+05 CRITERION= 5654.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4750E-05
FORCE CONVERGENCE VALUE = 6353. CRITERION= 5653.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5022E-05
FORCE CONVERGENCE VALUE = 3235. CRITERION= 5652. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 10
*** LOAD STEP 5 SUBSTEP 17 COMPLETED. CUM ITER = 951
*** TIME = 4.19141 TIME INC = .781250E-02
*** MAX PLASTIC STRAIN STEP = .6389E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .78125E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .1215E+08 CRITERION= .1340E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1292E-03
FORCE CONVERGENCE VALUE = .5321E+05 CRITERION= 5666.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3660E-04
FORCE CONVERGENCE VALUE = .2560E+05 CRITERION= 5653.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1681E-04
FORCE CONVERGENCE VALUE = 3027. CRITERION= 5650. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 5 SUBSTEP 18 COMPLETED. CUM ITER = 954
*** TIME = 4.19922 TIME INC = .781250E-02
*** MAX PLASTIC STRAIN STEP = .7432E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .15625E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2439E+08 CRITERION= .2504E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2575E-03
FORCE CONVERGENCE VALUE = .1110E+06 CRITERION= 5676.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7363E-04
FORCE CONVERGENCE VALUE = .3581E+05 CRITERION= 5650.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3189E-04
FORCE CONVERGENCE VALUE = 4116. CRITERION= 5647. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 5 SUBSTEP 19 COMPLETED. CUM ITER = 957
*** TIME = 4.21484 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .1431E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .31250E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .4883E+08 CRITERION= .4915E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5108E-03
FORCE CONVERGENCE VALUE = .3996E+06 CRITERION= 5704.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1296E-03
FORCE CONVERGENCE VALUE = .7308E+05 CRITERION= 5651.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5276E-04
FORCE CONVERGENCE VALUE = .1318E+05 CRITERION= 5644.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2182E-04
FORCE CONVERGENCE VALUE = 3386. CRITERION= 5639. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 5 SUBSTEP 20 COMPLETED. CUM ITER = 961
*** TIME = 4.24609 TIME INC = .312500E-01
*** MAX PLASTIC STRAIN STEP = .2831E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .31250E-01 UNCHANGED

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FORCE CONVERGENCE VALUE = .4889E+08 CRITERION= .4921E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5034E-03
FORCE CONVERGENCE VALUE = .3822E+06 CRITERION= 5696.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1234E-03
FORCE CONVERGENCE VALUE = .1417E+06 CRITERION= 5652.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3529E-04
FORCE CONVERGENCE VALUE = .3688E+05 CRITERION= 5641.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1616E-04
FORCE CONVERGENCE VALUE = .1938E+05 CRITERION= 5637.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5015E-05
FORCE CONVERGENCE VALUE = 1154. CRITERION= 5636. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 5 SUBSTEP 21 COMPLETED. CUM ITER = 966
*** TIME = 4.27734 TIME INC = .312500E-01
*** MAX PLASTIC STRAIN STEP = .2645E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .31250E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .4894E+08 CRITERION= .4926E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4962E-03
FORCE CONVERGENCE VALUE = .3671E+06 CRITERION= 5693.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9854E-04
FORCE CONVERGENCE VALUE = .4006E+05 CRITERION= 5653.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3765E-04
FORCE CONVERGENCE VALUE = 5872. CRITERION= 5644.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1402E-04
FORCE CONVERGENCE VALUE = 3214. CRITERION= 5640. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 5 SUBSTEP 22 COMPLETED. CUM ITER = 970
*** TIME = 4.30859 TIME INC = .312500E-01
*** MAX PLASTIC STRAIN STEP = .2184E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .62500E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .9791E+08 CRITERION= .9808E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9782E-03
FORCE CONVERGENCE VALUE = .1362E+07 CRITERION= 5741.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2200E-03
FORCE CONVERGENCE VALUE = .3440E+06 CRITERION= 5662.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1717E-03
FORCE CONVERGENCE VALUE = .2611E+06 CRITERION= 5647.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3333E-03
FORCE CONVERGENCE VALUE = .1804E+07 CRITERION= 5629.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2599E+06 CRITERION= 5647.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2893E-04
FORCE CONVERGENCE VALUE = .1329E+06 CRITERION= 5640.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2515E-04
FORCE CONVERGENCE VALUE = .1250E+06 CRITERION= 5634.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2133E-04
FORCE CONVERGENCE VALUE = .1186E+06 CRITERION= 5631.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2847E-04
FORCE CONVERGENCE VALUE = .6468E+05 CRITERION= 5627.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2841E-04
FORCE CONVERGENCE VALUE = .2803E+05 CRITERION= 5621.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2373E-04
FORCE CONVERGENCE VALUE = .1597E+05 CRITERION= 5617.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1834E-04
FORCE CONVERGENCE VALUE = .1732E+05 CRITERION= 5614.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9834. CRITERION= 5617.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6086E-05
FORCE CONVERGENCE VALUE = .1464E+05 CRITERION= 5615.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4084E-05
FORCE CONVERGENCE VALUE = .1298E+05 CRITERION= 5615.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3145E-05
FORCE CONVERGENCE VALUE = .1148E+05 CRITERION= 5614.

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RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2506E-05
 FORCE CONVERGENCE VALUE = .1147E+05 CRITERION= 5613.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2706E-05
 FORCE CONVERGENCE VALUE = .1127E+05 CRITERION= 5613.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3167E-05
 FORCE CONVERGENCE VALUE = .1017E+05 CRITERION= 5612.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 18 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3614E-05
 FORCE CONVERGENCE VALUE = 7757. CRITERION= 5612.
 EQUIL ITER 19 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3756E-05
 FORCE CONVERGENCE VALUE = 3361. CRITERION= 5611. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 19
 *** LOAD STEP 5 SUBSTEP 23 COMPLETED. CUM ITER = 989
 *** TIME = 4.37109 TIME INC = .625000E-01
 *** MAX PLASTIC STRAIN STEP = .5834E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .41667E-01 DECREASED (FACTOR = .6667)

FORCE CONVERGENCE VALUE = .6504E+08 CRITERION= .6528E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6353E-03
 FORCE CONVERGENCE VALUE = .6012E+06 CRITERION= 5675.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1761E-03
 FORCE CONVERGENCE VALUE = .3170E+06 CRITERION= 5621.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7148E-04
 FORCE CONVERGENCE VALUE = .1451E+06 CRITERION= 5603.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1957E-04
 FORCE CONVERGENCE VALUE = 8341. CRITERION= 5596.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7625E-05
 FORCE CONVERGENCE VALUE = 182.2 CRITERION= 5594. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 5 SUBSTEP 24 COMPLETED. CUM ITER = 994
 *** TIME = 4.41276 TIME INC = .41667E-01
 *** MAX PLASTIC STRAIN STEP = .3713E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .41667E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .6386E+08 CRITERION= .6411E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6265E-03
 FORCE CONVERGENCE VALUE = .5781E+06 CRITERION= 5655.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1467E-03
 FORCE CONVERGENCE VALUE = .9996E+05 CRITERION= 5598.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4888E-04
 FORCE CONVERGENCE VALUE = .2576E+05 CRITERION= 5590.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1674E-04
 FORCE CONVERGENCE VALUE = 2698. CRITERION= 5586. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 5 SUBSTEP 25 COMPLETED. CUM ITER = 998
 *** TIME = 4.45443 TIME INC = .41667E-01
 *** MAX PLASTIC STRAIN STEP = .3026E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .83333E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .1276E+09 CRITERION= .1278E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1236E-02
 FORCE CONVERGENCE VALUE = .2147E+07 CRITERION= 5695.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2108E-03
 FORCE CONVERGENCE VALUE = .2346E+06 CRITERION= 5601.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5770E-04
 FORCE CONVERGENCE VALUE = .1167E+05 CRITERION= 5597.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1629E-04
 FORCE CONVERGENCE VALUE = 579.7 CRITERION= 5593. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 5 SUBSTEP 26 COMPLETED. CUM ITER = 1002
 *** TIME = 4.53776 TIME INC = .83333E-01
 *** MAX PLASTIC STRAIN STEP = .5171E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .16667 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2548E+09 CRITERION= .2549E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2412E-02
 FORCE CONVERGENCE VALUE = .7583E+07 CRITERION= 5742.

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2613E-03
FORCE CONVERGENCE VALUE = .1284E+08 CRITERION= 5651.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .7443E+07 CRITERION= 5735.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1351E-03
FORCE CONVERGENCE VALUE = .5487E+06 CRITERION= 5696.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7195E-04
FORCE CONVERGENCE VALUE = .2948E+06 CRITERION= 5664.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4706E-04
FORCE CONVERGENCE VALUE = .2117E+06 CRITERION= 5647.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3490E-04
FORCE CONVERGENCE VALUE = .1251E+06 CRITERION= 5640.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2536E-04
FORCE CONVERGENCE VALUE = .6710E+05 CRITERION= 5637.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1846E-04
FORCE CONVERGENCE VALUE = .3387E+05 CRITERION= 5636.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1416E-04
FORCE CONVERGENCE VALUE = .7393E+05 CRITERION= 5630.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1894E+05 CRITERION= 5632.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2416E-05
FORCE CONVERGENCE VALUE = .1777E+05 CRITERION= 5632.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1212E-05
FORCE CONVERGENCE VALUE = .1663E+05 CRITERION= 5631.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8022E-06
FORCE CONVERGENCE VALUE = .1810E+05 CRITERION= 5631.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1663E+05 CRITERION= 5631.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8022E-06
FORCE CONVERGENCE VALUE = .1576E+05 CRITERION= 5631.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7178E-06
FORCE CONVERGENCE VALUE = .1505E+05 CRITERION= 5631.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6570E-06
FORCE CONVERGENCE VALUE = .1676E+05 CRITERION= 5631.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1505E+05 CRITERION= 5631.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 49 EXCEEDS MAX OF 25
*** LOAD STEP 5 SUBSTEP 27 NOT COMPLETED. CUM ITER = 1018
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .83333E-01

FORCE CONVERGENCE VALUE = .1274E+09 CRITERION= .1275E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1206E-02
FORCE CONVERGENCE VALUE = .1964E+07 CRITERION= 5678.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1535E-03
FORCE CONVERGENCE VALUE = .3504E+06 CRITERION= 5627.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3617E-04
FORCE CONVERGENCE VALUE = .1060E+06 CRITERION= 5616.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8885E-05
FORCE CONVERGENCE VALUE = 6746. CRITERION= 5614.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2494E-05
FORCE CONVERGENCE VALUE = 390.0 CRITERION= 5613. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 5 SUBSTEP 27 COMPLETED. CUM ITER = 1023
*** TIME = 4.62109 TIME INC = .83333E-01
*** MAX PLASTIC STRAIN STEP = .5146E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .83333E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1240E+09 CRITERION= .1241E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1178E-02
FORCE CONVERGENCE VALUE = .1810E+07 CRITERION= 5686.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1270E-03
FORCE CONVERGENCE VALUE = .9549E+05 CRITERION= 5640.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2903E-04
FORCE CONVERGENCE VALUE = .5576E+05 CRITERION= 5633.

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EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7854E-05
 FORCE CONVERGENCE VALUE = 2170. CRITERION= 5632. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 5 SUBSTEP 28 COMPLETED. CUM ITER = 1027
 *** TIME = 4.70443 TIME INC = .833333E-01
 *** MAX PLASTIC STRAIN STEP = .5070E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .16667 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2473E+09 CRITERION= .2474E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2302E-02
 FORCE CONVERGENCE VALUE = .6518E+07 CRITERION= 5757.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1734E-03
 FORCE CONVERGENCE VALUE = .1239E+08 CRITERION= 5666.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .6400E+07 CRITERION= 5758.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8976E-04
 FORCE CONVERGENCE VALUE = .4674E+06 CRITERION= 5704.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4393E-04
 FORCE CONVERGENCE VALUE = .2536E+06 CRITERION= 5683.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2704E-04
 FORCE CONVERGENCE VALUE = .1637E+06 CRITERION= 5672.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1963E-04
 FORCE CONVERGENCE VALUE = .9963E+05 CRITERION= 5665.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1484E-04
 FORCE CONVERGENCE VALUE = .5641E+05 CRITERION= 5660.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1209E-04
 FORCE CONVERGENCE VALUE = .2599E+05 CRITERION= 5658.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2096E-04
 FORCE CONVERGENCE VALUE = 5256. CRITERION= 5656. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
 *** LOAD STEP 5 SUBSTEP 29 COMPLETED. CUM ITER = 1036
 *** TIME = 4.87109 TIME INC = .166667
 *** MAX PLASTIC STRAIN STEP = .9780E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .12891 DECREASED (FACTOR = .7734)

FORCE CONVERGENCE VALUE = .1903E+09 CRITERION= .1903E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1724E-02
 FORCE CONVERGENCE VALUE = .3478E+07 CRITERION= 5747.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1123E-03
 FORCE CONVERGENCE VALUE = .4008E+06 CRITERION= 5685.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1174E-03
 FORCE CONVERGENCE VALUE = .2931E+06 CRITERION= 5682.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2662E-04
 FORCE CONVERGENCE VALUE = .1808E+05 CRITERION= 5680.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7151E-05
 FORCE CONVERGENCE VALUE = 5049. CRITERION= 5680. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
 *** LOAD STEP 5 SUBSTEP 30 COMPLETED. CUM ITER = 1041
 *** TIME = 5.00000 TIME INC = .128906
 *** MAX PLASTIC STRAIN STEP = .7241E-02 CRITERION = .5000E-01

SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	13 TO	13 BY	1
REAL=-3.260700000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	5 TO	5 BY	1
REAL=-3.357000000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	97 TO	97 BY	1
REAL=-3.462100000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	405 TO	405 BY	1
REAL=-4.909400000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	849 TO	849 BY	1
REAL=-4.600900000E-03	IMAG= .000000000E+00			

SPECIFIED CONSTRAINT UX REAL=-4.537400000E-03	FOR SELECTED NODES IMAG= .000000000E+00	833 TO	833 BY	1
SPECIFIED CONSTRAINT UX REAL=-3.527400000E-03	FOR SELECTED NODES IMAG= .000000000E+00	1293 TO	1293 BY	1
SPECIFIED CONSTRAINT UX REAL=-3.419900000E-03	FOR SELECTED NODES IMAG= .000000000E+00	1277 TO	1277 BY	1
SPECIFIED CONSTRAINT UX REAL=-1.966300000E-03	FOR SELECTED NODES IMAG= .000000000E+00	1470 TO	1470 BY	1
SPECIFIED CONSTRAINT UX REAL=-5.588100000E-04	FOR SELECTED NODES IMAG= .000000000E+00	1774 TO	1774 BY	1
SPECIFIED CONSTRAINT UX REAL=-1.131000000E-04	FOR SELECTED NODES IMAG= .000000000E+00	1974 TO	1974 BY	1
SPECIFIED CONSTRAINT UX REAL=-9.329000000E-05	FOR SELECTED NODES IMAG= .000000000E+00	1973 TO	1973 BY	1
SPECIFIED CONSTRAINT UX REAL= 7.829700000E-05	FOR SELECTED NODES IMAG= .000000000E+00	11973 TO	11973 BY	1
SPECIFIED CONSTRAINT UX REAL= 9.817800000E-05	FOR SELECTED NODES IMAG= .000000000E+00	11974 TO	11974 BY	1
SPECIFIED CONSTRAINT UX REAL= 5.458000000E-04	FOR SELECTED NODES IMAG= .000000000E+00	11774 TO	11774 BY	1
SPECIFIED CONSTRAINT UX REAL= 1.958400000E-03	FOR SELECTED NODES IMAG= .000000000E+00	11470 TO	11470 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.417000000E-03	FOR SELECTED NODES IMAG= .000000000E+00	11277 TO	11277 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.524900000E-03	FOR SELECTED NODES IMAG= .000000000E+00	11293 TO	11293 BY	1
SPECIFIED CONSTRAINT UX REAL= 4.539600000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10833 TO	10833 BY	1
SPECIFIED CONSTRAINT UX REAL= 4.603500000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10849 TO	10849 BY	1
SPECIFIED CONSTRAINT UX REAL= 4.917100000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10405 TO	10405 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.475000000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10097 TO	10097 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.371800000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10005 TO	10005 BY	1
SPECIFIED CONSTRAINT UX REAL= 3.275500000E-03	FOR SELECTED NODES IMAG= .000000000E+00	10013 TO	10013 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.738800000E-02	FOR SELECTED NODES IMAG= .000000000E+00	13 TO	13 BY	1
SPECIFIED CONSTRAINT UY REAL=-2.464800000E-02	FOR SELECTED NODES IMAG= .000000000E+00	5 TO	5 BY	1
SPECIFIED CONSTRAINT UY REAL=-8.090500000E-03	FOR SELECTED NODES IMAG= .000000000E+00	97 TO	97 BY	1
SPECIFIED CONSTRAINT UY REAL=-3.187700000E-03	FOR SELECTED NODES IMAG= .000000000E+00	405 TO	405 BY	1
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	849 TO	849 BY	1

REAL=-2.924300000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	833 TO	833 BY	1
REAL=-2.916100000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1293 TO	1293 BY	1
REAL=-2.763600000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1277 TO	1277 BY	1
REAL=-2.736300000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1470 TO	1470 BY	1
REAL=-2.130200000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1774 TO	1774 BY	1
REAL=-8.837600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1974 TO	1974 BY	1
REAL=-2.058100000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	1973 TO	1973 BY	1
REAL=-1.786700000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11973 TO	11973 BY	1
REAL=-1.810100000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11974 TO	11974 BY	1
REAL=-2.085600000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11774 TO	11774 BY	1
REAL=-8.916000000E-04	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11470 TO	11470 BY	1
REAL=-2.143200000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11277 TO	11277 BY	1
REAL=-2.751200000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	11293 TO	11293 BY	1
REAL=-2.778600000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	10833 TO	10833 BY	1
REAL=-2.931100000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	10849 TO	10849 BY	1
REAL=-2.939200000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	10405 TO	10405 BY	1
REAL=-3.200700000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	10097 TO	10097 BY	1
REAL=-8.097900000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	10005 TO	10005 BY	1
REAL=-2.464900000E-02	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	10013 TO	10013 BY	1
REAL=-2.738900000E-02	IMAG= .000000000E+00			

ACEL= .00000E+00 9.8100 .00000E+00

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

USE 4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:

USE 3000 SUBSTEPS AS A MAXIMUM
USE 3 SUBSTEPS AS A MINIMUM

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 26934.470 TIME= 05:17:24
Present time 0 is less than or equal to the previous time.
Time will default to 6.

*** NOTE *** CP= 26934.500 TIME= 05:17:24
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 05:17:24 JUL 25, 1995 CP= 26934.500
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 21 PWR Tube Analysis

LOAD STEP OPTIONS

LOAD STEP NUMBER. 6
TIME AT END OF THE LOAD STEP. 6.0000
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 4
MAXIMUM NUMBER OF SUBSTEPS 3000
MINIMUM NUMBER OF SUBSTEPS 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

FORCE CONVERGENCE VALUE = .6116E+09 CRITERION= .6117E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5419E-02
FORCE CONVERGENCE VALUE = .2188E+08 CRITERION= 5945.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1056E-01
FORCE CONVERGENCE VALUE = .3848E+08 CRITERION= 5776.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2079E+08 CRITERION= 5992.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1372E-03
FORCE CONVERGENCE VALUE = .6816E+07 CRITERION= 5822.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6348E-04
FORCE CONVERGENCE VALUE = .1065E+07 CRITERION= 5818.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5093E-04
FORCE CONVERGENCE VALUE = .6020E+06 CRITERION= 5799.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6926E-04
FORCE CONVERGENCE VALUE = .5022E+06 CRITERION= 5787.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1171E-03
FORCE CONVERGENCE VALUE = .4404E+06 CRITERION= 5780.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2153E-03
FORCE CONVERGENCE VALUE = .7246E+06 CRITERION= 5771.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .3640E+06 CRITERION= 5778.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6155E-04
FORCE CONVERGENCE VALUE = .3499E+06 CRITERION= 5771.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 39 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 1 NOT COMPLETED. CUM ITER = 1051
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .12500

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FORCE CONVERGENCE VALUE = .3058E+09 CRITERION= .3059E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2710E-02
FORCE CONVERGENCE VALUE = .8063E+07 CRITERION= 5817.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2795E-03
FORCE CONVERGENCE VALUE = .6113E+07 CRITERION= 5729.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4172E-03
FORCE CONVERGENCE VALUE = .1929E+08 CRITERION= 5726.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .4664E+07 CRITERION= 5727.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4167E-04
FORCE CONVERGENCE VALUE = .1760E+07 CRITERION= 5727.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1523E-04
FORCE CONVERGENCE VALUE = .3050E+06 CRITERION= 5724.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1279E-04
FORCE CONVERGENCE VALUE = .2280E+06 CRITERION= 5722.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1714E-04
FORCE CONVERGENCE VALUE = .2232E+06 CRITERION= 5722.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3492E-04
FORCE CONVERGENCE VALUE = .1980E+06 CRITERION= 5721.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6371E-04
FORCE CONVERGENCE VALUE = .1561E+06 CRITERION= 5719.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5563E-04
FORCE CONVERGENCE VALUE = .1976E+06 CRITERION= 5716.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1139E+06 CRITERION= 5719.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 29 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 1 NOT COMPLETED. CUM ITER = 1062
*** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .62500E-01

FORCE CONVERGENCE VALUE = .1529E+09 CRITERION= .1530E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1355E-02
FORCE CONVERGENCE VALUE = .2113E+07 CRITERION= 5751.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1522E-03
FORCE CONVERGENCE VALUE = .3524E+06 CRITERION= 5705.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1361E-03
FORCE CONVERGENCE VALUE = .6629E+06 CRITERION= 5702.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .3260E+06 CRITERION= 5706.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9501E-05
FORCE CONVERGENCE VALUE = .1457E+06 CRITERION= 5703.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6016E-05
FORCE CONVERGENCE VALUE = .9555E+05 CRITERION= 5702.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5295E-05
FORCE CONVERGENCE VALUE = .7479E+05 CRITERION= 5701.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4914E-05
FORCE CONVERGENCE VALUE = .7295E+05 CRITERION= 5701.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1047E-04
FORCE CONVERGENCE VALUE = .6275E+05 CRITERION= 5701.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2381E-04
FORCE CONVERGENCE VALUE = .5186E+05 CRITERION= 5700.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2782E-04
FORCE CONVERGENCE VALUE = .3163E+05 CRITERION= 5699.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2336E-04
FORCE CONVERGENCE VALUE = .1888E+05 CRITERION= 5698.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6585E-05
FORCE CONVERGENCE VALUE = 678.9 CRITERION= 5697. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 12
*** LOAD STEP 6 SUBSTEP 1 COMPLETED. CUM ITER = 1074
*** TIME = 5.06250 TIME INC = .625000E-01
*** MAX PLASTIC STRAIN STEP = .5647E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .62500E-01 UNCHANGED

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FORCE CONVERGENCE VALUE = .1523E+09 CRITERION= .1524E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1331E-02
FORCE CONVERGENCE VALUE = .2027E+07 CRITERION= 5765.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1724E-03
FORCE CONVERGENCE VALUE = .6103E+06 CRITERION= 5719.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2014E-04
FORCE CONVERGENCE VALUE = .6118E+05 CRITERION= 5714.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4138E-05
FORCE CONVERGENCE VALUE = 4740. CRITERION= 5714. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 6 SUBSTEP 2 COMPLETED. CUM ITER = 1078
*** TIME = 5.12500 TIME INC = .625000E-01
*** MAX PLASTIC STRAIN STEP = .5427E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .12500 INCREASED (FACTOR = 2.0000)

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FORCE CONVERGENCE VALUE = .3038E+09 CRITERION= .3038E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2620E-02
FORCE CONVERGENCE VALUE = .7364E+07 CRITERION= 5840.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1234E-03
FORCE CONVERGENCE VALUE = .3300E+07 CRITERION= 5756.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2572E-03
FORCE CONVERGENCE VALUE = .1862E+07 CRITERION= 5754.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1935E-03
FORCE CONVERGENCE VALUE = .3311E+07 CRITERION= 5750.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1310E+07 CRITERION= 5753.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2989E-04
FORCE CONVERGENCE VALUE = .8540E+06 CRITERION= 5755.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5560E-05
FORCE CONVERGENCE VALUE = .2725E+06 CRITERION= 5749.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8849E-05
FORCE CONVERGENCE VALUE = .1676E+06 CRITERION= 5749.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1862E-04
FORCE CONVERGENCE VALUE = .1265E+06 CRITERION= 5750.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4754E-04
FORCE CONVERGENCE VALUE = .8404E+05 CRITERION= 5750.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1084E-03
FORCE CONVERGENCE VALUE = .2106E+06 CRITERION= 5749.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .5921E+05 CRITERION= 5750.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1791E-04
FORCE CONVERGENCE VALUE = .7735E+05 CRITERION= 5749.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1465E-04
FORCE CONVERGENCE VALUE = .7704E+05 CRITERION= 5749.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1375E-04
FORCE CONVERGENCE VALUE = .7641E+05 CRITERION= 5749.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1342E-04
FORCE CONVERGENCE VALUE = .8269E+05 CRITERION= 5748.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .7641E+05 CRITERION= 5749.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 3 NOT COMPLETED. CUM ITER = 1093
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .62500E-01

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FORCE CONVERGENCE VALUE = .1519E+09 CRITERION= .1520E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1310E-02
FORCE CONVERGENCE VALUE = .1927E+07 CRITERION= 5779.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7791E-04
FORCE CONVERGENCE VALUE = .9249E+05 CRITERION= 5737.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2114E-04
FORCE CONVERGENCE VALUE = .4521E+05 CRITERION= 5735.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2052E-04
FORCE CONVERGENCE VALUE = .1096E+05 CRITERION= 5734.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2240E-04

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FORCE CONVERGENCE VALUE = .2627E+05 CRITERION= 5733.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1528E+05 CRITERION= 5734.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4026E-05
 FORCE CONVERGENCE VALUE = .1555E+05 CRITERION= 5734.
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2299E-05
 FORCE CONVERGENCE VALUE = .1452E+05 CRITERION= 5733.
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1791E-05
 FORCE CONVERGENCE VALUE = .1338E+05 CRITERION= 5733.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1550E-05
 FORCE CONVERGENCE VALUE = .1377E+05 CRITERION= 5733.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1338E+05 CRITERION= 5733.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 30 EXCEEDS MAX OF 25
 *** LOAD STEP 6 SUBSTEP 3 NOT COMPLETED. CUM ITER = 1103
 *** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .31250E-01

FORCE CONVERGENCE VALUE = .7594E+08 CRITERION= .7615E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6551E-03
 FORCE CONVERGENCE VALUE = .4986E+06 CRITERION= 5748.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4388E-04
 FORCE CONVERGENCE VALUE = .1954E+05 CRITERION= 5726.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6554E-05
 FORCE CONVERGENCE VALUE = 1125. CRITERION= 5724. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 6 SUBSTEP 3 COMPLETED. CUM ITER = 1106
 *** TIME = 5.15625 TIME INC = .312500E-01
 *** MAX PLASTIC STRAIN STEP = .2579E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .31250E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .7584E+08 CRITERION= .7605E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6519E-03
 FORCE CONVERGENCE VALUE = .4829E+06 CRITERION= 5756.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4121E-04
 FORCE CONVERGENCE VALUE = .2462E+05 CRITERION= 5736.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1781E-04
 FORCE CONVERGENCE VALUE = .1865E+05 CRITERION= 5734.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1681E-04
 FORCE CONVERGENCE VALUE = .7519E+05 CRITERION= 5734.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1767E+05 CRITERION= 5734.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3181E-05
 FORCE CONVERGENCE VALUE = .1297E+05 CRITERION= 5734.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1764E-05
 FORCE CONVERGENCE VALUE = .1173E+05 CRITERION= 5734.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1362E-05
 FORCE CONVERGENCE VALUE = .1182E+05 CRITERION= 5734.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1173E+05 CRITERION= 5734.
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1362E-05
 FORCE CONVERGENCE VALUE = .1074E+05 CRITERION= 5734.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1165E-05
 FORCE CONVERGENCE VALUE = .1007E+05 CRITERION= 5734.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1046E-05
 FORCE CONVERGENCE VALUE = .1072E+05 CRITERION= 5734.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1007E+05 CRITERION= 5734.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1046E-05
 FORCE CONVERGENCE VALUE = 9609. CRITERION= 5734.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9665E-06
 FORCE CONVERGENCE VALUE = 9242. CRITERION= 5734.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9076E-06
 FORCE CONVERGENCE VALUE = .1011E+05 CRITERION= 5734.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 9242. CRITERION= 5734.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 32 EXCEEDS MAX OF 25

*** LOAD STEP 6 SUBSTEP 4 NOT COMPLETED. CUM ITER = 1120
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .15625E-01

FORCE CONVERGENCE VALUE = .3792E+08 CRITERION= .3835E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3259E-03
 FORCE CONVERGENCE VALUE = .1251E+06 CRITERION= 5740.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2136E-04
 FORCE CONVERGENCE VALUE = 5538. CRITERION= 5730. <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 6 SUBSTEP 4 COMPLETED. CUM ITER = 1122
 *** TIME = 5.17188 TIME INC = .156250E-01
 *** MAX PLASTIC STRAIN STEP = .1175E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3788E+08 CRITERION= .3831E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3253E-03
 FORCE CONVERGENCE VALUE = .1235E+06 CRITERION= 5745.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2136E-04
 FORCE CONVERGENCE VALUE = .5720E+05 CRITERION= 5735.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1412E-04
 FORCE CONVERGENCE VALUE = .1154E+05 CRITERION= 5734.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1483E-04
 FORCE CONVERGENCE VALUE = 3491. CRITERION= 5734. <<< CONVERGED

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** LOAD STEP 6 SUBSTEP 5 COMPLETED. CUM ITER = 1126
 *** TIME = 5.18750 TIME INC = .156250E-01
 *** MAX PLASTIC STRAIN STEP = .8940E-03 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3786E+08 CRITERION= .3829E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3253E-03
 FORCE CONVERGENCE VALUE = .1276E+06 CRITERION= 5748.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4907E-04
 FORCE CONVERGENCE VALUE = .1356E+06 CRITERION= 5739.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1262E+06 CRITERION= 5748.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8417E-05
 FORCE CONVERGENCE VALUE = .5522E+05 CRITERION= 5743.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4943E-05
 FORCE CONVERGENCE VALUE = .4318E+05 CRITERION= 5742.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3738E-05
 FORCE CONVERGENCE VALUE = .3730E+05 CRITERION= 5742.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7043E-05
 FORCE CONVERGENCE VALUE = .2667E+05 CRITERION= 5741.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1544E-04
 FORCE CONVERGENCE VALUE = .1936E+05 CRITERION= 5740.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3711E-04
 FORCE CONVERGENCE VALUE = .1131E+05 CRITERION= 5739.
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1095E-03
 FORCE CONVERGENCE VALUE = .3076E+06 CRITERION= 5492.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = 8500. CRITERION= 5739.
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8638E-05
 FORCE CONVERGENCE VALUE = .2512E+05 CRITERION= 5739.
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5746E-05
 FORCE CONVERGENCE VALUE = .2417E+05 CRITERION= 5739.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4933E-05
 FORCE CONVERGENCE VALUE = .2348E+05 CRITERION= 5739.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4585E-05
 FORCE CONVERGENCE VALUE = .2453E+05 CRITERION= 5739.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .2348E+05 CRITERION= 5739.
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25

*** LOAD STEP 6 SUBSTEP 6 NOT COMPLETED. CUM ITER = 1140
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .78125E-02

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FORCE CONVERGENCE VALUE = .1893E+08 CRITERION= .1978E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1629E-03
FORCE CONVERGENCE VALUE = .1008E+06 CRITERION= 5741.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3156E-04
FORCE CONVERGENCE VALUE = .1769E+05 CRITERION= 5737.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5125E-04
FORCE CONVERGENCE VALUE = .2204E+06 CRITERION= 5550.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1205E+05 CRITERION= 5737.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6483E-05
FORCE CONVERGENCE VALUE = .1996E+05 CRITERION= 5736.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3892E-05
FORCE CONVERGENCE VALUE = .1813E+05 CRITERION= 5736.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3081E-05
FORCE CONVERGENCE VALUE = .1621E+05 CRITERION= 5736.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2675E-05
FORCE CONVERGENCE VALUE = .1617E+05 CRITERION= 5736.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5721E-05
FORCE CONVERGENCE VALUE = .1400E+05 CRITERION= 5736.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1357E-04
FORCE CONVERGENCE VALUE = .1197E+05 CRITERION= 5735.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3081E-04
FORCE CONVERGENCE VALUE = .5708E+05 CRITERION= 5708.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9668. CRITERION= 5735.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3833E-05
FORCE CONVERGENCE VALUE = .1515E+05 CRITERION= 5735.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2818E-05
FORCE CONVERGENCE VALUE = .1510E+05 CRITERION= 5734.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2537E-05
FORCE CONVERGENCE VALUE = .1508E+05 CRITERION= 5734.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 6 NOT COMPLETED. CUM ITER = 1154
*** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .39063E-02

FORCE CONVERGENCE VALUE = .9464E+07 CRITERION= .1107E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8165E-04
FORCE CONVERGENCE VALUE = .1355E+06 CRITERION= 5737.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2434E-04
FORCE CONVERGENCE VALUE = .1002E+06 CRITERION= 5649.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2593E-04
FORCE CONVERGENCE VALUE = .9358E+05 CRITERION= 5731.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1282E-04
FORCE CONVERGENCE VALUE = .2253E+05 CRITERION= 5730.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7897E-05
FORCE CONVERGENCE VALUE = 216.9 CRITERION= 5729. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 6 SUBSTEP 6 COMPLETED. CUM ITER = 1159
*** TIME = 5.19141 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .5896E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .39063E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .9468E+07 CRITERION= .1107E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8220E-04
FORCE CONVERGENCE VALUE = .1028E+05 CRITERION= 5734.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2540E-04
FORCE CONVERGENCE VALUE = 6699. CRITERION= 5728.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1781E-04
FORCE CONVERGENCE VALUE = 4540. CRITERION= 5727. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 6 SUBSTEP 7 COMPLETED. CUM ITER = 1162
*** TIME = 5.19531 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .4385E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .78125E-02 INCREASED (FACTOR = 2.0000)

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FORCE CONVERGENCE VALUE = .1893E+08 CRITERION= .1978E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1642E-03
FORCE CONVERGENCE VALUE = .3597E+05 CRITERION= 5736.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5706E-04
FORCE CONVERGENCE VALUE = .5705E+05 CRITERION= 5724.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .3389E+05 CRITERION= 5736.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1484E-04
FORCE CONVERGENCE VALUE = .4932E+05 CRITERION= 5733.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9163E-05
FORCE CONVERGENCE VALUE = .4262E+05 CRITERION= 5732.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7355E-05
FORCE CONVERGENCE VALUE = .3733E+05 CRITERION= 5731.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6418E-05
FORCE CONVERGENCE VALUE = .3589E+05 CRITERION= 5730.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1243E-04
FORCE CONVERGENCE VALUE = .2790E+05 CRITERION= 5727.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2158E-04
FORCE CONVERGENCE VALUE = .1652E+05 CRITERION= 5724.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2779E-04
FORCE CONVERGENCE VALUE = .2746E+05 CRITERION= 5720.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1385E+05 CRITERION= 5723.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6432E-05
FORCE CONVERGENCE VALUE = .2096E+05 CRITERION= 5723.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4664E-05
FORCE CONVERGENCE VALUE = .1995E+05 CRITERION= 5722.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4064E-05
FORCE CONVERGENCE VALUE = .1886E+05 CRITERION= 5722.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3728E-05
FORCE CONVERGENCE VALUE = .1933E+05 CRITERION= 5721.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1886E+05 CRITERION= 5722.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 8 NOT COMPLETED. CUM ITER = 1176
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .39063E-02

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FORCE CONVERGENCE VALUE = .9467E+07 CRITERION= .1106E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8207E-04
FORCE CONVERGENCE VALUE = .1255E+05 CRITERION= 5731.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3350E-04
FORCE CONVERGENCE VALUE = .2232E+05 CRITERION= 5725.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1068E+05 CRITERION= 5731.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8411E-05
FORCE CONVERGENCE VALUE = .2854E+05 CRITERION= 5729.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5042E-05
FORCE CONVERGENCE VALUE = .2514E+05 CRITERION= 5729.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4010E-05
FORCE CONVERGENCE VALUE = .2235E+05 CRITERION= 5728.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3484E-05
FORCE CONVERGENCE VALUE = .2184E+05 CRITERION= 5728.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7201E-05
FORCE CONVERGENCE VALUE = .1683E+05 CRITERION= 5726.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1290E-04
FORCE CONVERGENCE VALUE = .1025E+05 CRITERION= 5724.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1635E-04
FORCE CONVERGENCE VALUE = 6700. CRITERION= 5722.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1686E-04
FORCE CONVERGENCE VALUE = 8455. CRITERION= 5720.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000

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FORCE CONVERGENCE VALUE = 5374. CRITERION= 5722.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3686E-05
FORCE CONVERGENCE VALUE = .1050E+05 CRITERION= 5721.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2308E-05
FORCE CONVERGENCE VALUE = 9815. CRITERION= 5721.
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1887E-05
FORCE CONVERGENCE VALUE = 9111. CRITERION= 5721.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1672E-05
FORCE CONVERGENCE VALUE = 9216. CRITERION= 5721.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 9111. CRITERION= 5721.
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1672E-05
FORCE CONVERGENCE VALUE = 8597. CRITERION= 5721.
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1534E-05
FORCE CONVERGENCE VALUE = 8180. CRITERION= 5720.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1434E-05
FORCE CONVERGENCE VALUE = 8464. CRITERION= 5720.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 8180. CRITERION= 5720.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 29 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 8 NOT COMPLETED. CUM ITER = 1194
*** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .19531E-02

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FORCE CONVERGENCE VALUE = .4734E+07 CRITERION= 7430.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4100E-04
FORCE CONVERGENCE VALUE = 5844. CRITERION= 5728.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2208E-04
FORCE CONVERGENCE VALUE = .2962E+05 CRITERION= 5724.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 4706. CRITERION= 5728.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5384E-05
FORCE CONVERGENCE VALUE = .1777E+05 CRITERION= 5727.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3154E-05
FORCE CONVERGENCE VALUE = .1596E+05 CRITERION= 5727.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2491E-05
FORCE CONVERGENCE VALUE = .1439E+05 CRITERION= 5727.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2159E-05
FORCE CONVERGENCE VALUE = .1419E+05 CRITERION= 5726.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4669E-05
FORCE CONVERGENCE VALUE = .1100E+05 CRITERION= 5725.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8504E-05
FORCE CONVERGENCE VALUE = 6522. CRITERION= 5724.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1096E-04
FORCE CONVERGENCE VALUE = .1022E+05 CRITERION= 5722.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 5248. CRITERION= 5724.
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2248E-05
FORCE CONVERGENCE VALUE = 8790. CRITERION= 5724.
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1568E-05
FORCE CONVERGENCE VALUE = 8399. CRITERION= 5724.
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1350E-05
FORCE CONVERGENCE VALUE = 7985. CRITERION= 5723.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1232E-05
FORCE CONVERGENCE VALUE = 8346. CRITERION= 5723.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 7985. CRITERION= 5723.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1232E-05
FORCE CONVERGENCE VALUE = 7648. CRITERION= 5723.
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1152E-05
FORCE CONVERGENCE VALUE = 7361. CRITERION= 5723.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1091E-05
FORCE CONVERGENCE VALUE = 7829. CRITERION= 5723.

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* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = 7361. CRITERION= 5723.
EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1091E-05
FORCE CONVERGENCE VALUE = 7102. CRITERION= 5723.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 26 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 8 NOT COMPLETED. CUM ITER = 1212
*** BEGIN BISECTION NUMBER 3 NEW TIME INCREMENT= .97656E-03

FORCE CONVERGENCE VALUE = .2367E+07 CRITERION= 6197.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2078E-04
FORCE CONVERGENCE VALUE = 4067. CRITERION= 5727. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 6 SUBSTEP 8 COMPLETED. CUM ITER = 1213
*** TIME = 5.19629 TIME INC = .976563E-03
*** MAX PLASTIC STRAIN STEP = .1161E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .97656E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2367E+07 CRITERION= 6196.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2353E-04
FORCE CONVERGENCE VALUE = .1472E+05 CRITERION= 5726.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1622E-04
FORCE CONVERGENCE VALUE = 3850. CRITERION= 5723. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 9 COMPLETED. CUM ITER = 1215
*** TIME = 5.19727 TIME INC = .976563E-03
*** MAX PLASTIC STRAIN STEP = .2246E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .97656E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2367E+07 CRITERION= 6193.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2046E-04
FORCE CONVERGENCE VALUE = 1981. CRITERION= 5723. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 6 SUBSTEP 10 COMPLETED. CUM ITER = 1216
*** TIME = 5.19824 TIME INC = .976563E-03
*** MAX PLASTIC STRAIN STEP = .1176E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .19531E-02 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .4733E+07 CRITERION= 7427.
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4126E-04
FORCE CONVERGENCE VALUE = 3937. CRITERION= 5724. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 6 SUBSTEP 11 COMPLETED. CUM ITER = 1217
*** TIME = 5.20020 TIME INC = .195313E-02
*** MAX PLASTIC STRAIN STEP = .1912E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .39063E-02 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .9466E+07 CRITERION= .1106E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8249E-04
FORCE CONVERGENCE VALUE = .1032E+05 CRITERION= 5726.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3818E-04
FORCE CONVERGENCE VALUE = 6135. CRITERION= 5718.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2663E-04
FORCE CONVERGENCE VALUE = 1312. CRITERION= 5715. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 6 SUBSTEP 12 COMPLETED. CUM ITER = 1220
*** TIME = 5.20410 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .6594E-03 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .39063E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .9465E+07 CRITERION= .1106E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8187E-04
FORCE CONVERGENCE VALUE = .1063E+05 CRITERION= 5718.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3526E-04
FORCE CONVERGENCE VALUE = 5664. CRITERION= 5712. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 6 SUBSTEP 13 COMPLETED. CUM ITER = 1222
*** TIME = 5.20801 TIME INC = .390625E-02
*** MAX PLASTIC STRAIN STEP = .4900E-03 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .78125E-02 INCREASED (FACTOR = 2.0000)

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FORCE CONVERGENCE VALUE = .1893E+08 CRITERION= .1977E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1636E-03
FORCE CONVERGENCE VALUE = .3299E+05 CRITERION= 5720.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5979E-04
FORCE CONVERGENCE VALUE = 9062. CRITERION= 5708.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3971E-04
FORCE CONVERGENCE VALUE = 3659. CRITERION= 5702. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 6 SUBSTEP 14 COMPLETED. CUM ITER = 1225
*** TIME = 5.21582 TIME INC = .781250E-02
*** MAX PLASTIC STRAIN STEP = .1075E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .78125E-02 UNCHANGED

FORCE CONVERGENCE VALUE = .1892E+08 CRITERION= .1976E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1633E-03
FORCE CONVERGENCE VALUE = .3279E+05 CRITERION= 5710.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5786E-04
FORCE CONVERGENCE VALUE = 9588. CRITERION= 5698.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3688E-04
FORCE CONVERGENCE VALUE = 2594. CRITERION= 5693. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 6 SUBSTEP 15 COMPLETED. CUM ITER = 1228
*** TIME = 5.22363 TIME INC = .781250E-02
*** MAX PLASTIC STRAIN STEP = .1056E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .15625E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .3784E+08 CRITERION= .3826E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3261E-03
FORCE CONVERGENCE VALUE = .1221E+06 CRITERION= 5712.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9109E-04
FORCE CONVERGENCE VALUE = .1526E+05 CRITERION= 5692.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5518E-04
FORCE CONVERGENCE VALUE = .1158E+05 CRITERION= 5684.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3207E-04
FORCE CONVERGENCE VALUE = 1893. CRITERION= 5680. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 6 SUBSTEP 16 COMPLETED. CUM ITER = 1232
*** TIME = 5.23926 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .1857E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3782E+08 CRITERION= .3825E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3243E-03
FORCE CONVERGENCE VALUE = .1205E+06 CRITERION= 5699.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8193E-04
FORCE CONVERGENCE VALUE = .5696E+05 CRITERION= 5680.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4497E-04
FORCE CONVERGENCE VALUE = .1718E+05 CRITERION= 5673.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2455E-04
FORCE CONVERGENCE VALUE = 5590. CRITERION= 5670. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 6 SUBSTEP 17 COMPLETED. CUM ITER = 1236
*** TIME = 5.25488 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .1597E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .31250E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .7561E+08 CRITERION= .7582E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6460E-03
FORCE CONVERGENCE VALUE = .4641E+06 CRITERION= 5710.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1306E-03
FORCE CONVERGENCE VALUE = .3456E+06 CRITERION= 5676.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6525E-04
FORCE CONVERGENCE VALUE = .2777E+05 CRITERION= 5666.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3210E-04
FORCE CONVERGENCE VALUE = 5474. CRITERION= 5662. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 6 SUBSTEP 18 COMPLETED. CUM ITER = 1240
*** TIME = 5.28613 TIME INC = .312500E-01
*** MAX PLASTIC STRAIN STEP = .2623E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .62500E-01 INCREASED (FACTOR = 2.0000)

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FORCE CONVERGENCE VALUE = .1511E+09 CRITERION= .1512E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1283E-02
FORCE CONVERGENCE VALUE = .1735E+07 CRITERION= 5725.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2077E-03
FORCE CONVERGENCE VALUE = .2077E+06 CRITERION= 5674.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8732E-04
FORCE CONVERGENCE VALUE = .2482E+05 CRITERION= 5661.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3616E-04
FORCE CONVERGENCE VALUE = 3563. CRITERION= 5658. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 6 SUBSTEP 19 COMPLETED. CUM ITER = 1244
*** TIME = 5.34863 TIME INC = .625000E-01
*** MAX PLASTIC STRAIN STEP = .4380E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .12500 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2980E+09 CRITERION= .2981E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2532E-02
FORCE CONVERGENCE VALUE = .6268E+07 CRITERION= 5740.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2872E-03
FORCE CONVERGENCE VALUE = .2266E+07 CRITERION= 5677.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1108E-03
FORCE CONVERGENCE VALUE = .2753E+06 CRITERION= 5663.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7355E-04
FORCE CONVERGENCE VALUE = .1003E+06 CRITERION= 5658.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3754E-04
FORCE CONVERGENCE VALUE = .3342E+05 CRITERION= 5654.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1904E-04
FORCE CONVERGENCE VALUE = 8029. CRITERION= 5653.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9669E-05
FORCE CONVERGENCE VALUE = 2911. CRITERION= 5652. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 7
*** LOAD STEP 6 SUBSTEP 20 COMPLETED. CUM ITER = 1251
*** TIME = 5.47363 TIME INC = .125000
*** MAX PLASTIC STRAIN STEP = .7455E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .12500 UNCHANGED

FORCE CONVERGENCE VALUE = .2956E+09 CRITERION= .2956E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2466E-02
FORCE CONVERGENCE VALUE = .5679E+07 CRITERION= 5740.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4124E-03
FORCE CONVERGENCE VALUE = .1354E+07 CRITERION= 5665.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1335E-02
FORCE CONVERGENCE VALUE = .4081E+07 CRITERION= 5642.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1495E+07 CRITERION= 5665.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6382E-04
FORCE CONVERGENCE VALUE = .5473E+06 CRITERION= 5655.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6429E-04
FORCE CONVERGENCE VALUE = .2973E+06 CRITERION= 5648.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8640E-04
FORCE CONVERGENCE VALUE = .4053E+06 CRITERION= 5643.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .2973E+06 CRITERION= 5648.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8640E-04
FORCE CONVERGENCE VALUE = .3479E+06 CRITERION= 5642.
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8347E-04
FORCE CONVERGENCE VALUE = .2822E+06 CRITERION= 5637.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6372E-04
FORCE CONVERGENCE VALUE = .1528E+06 CRITERION= 5632.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4260E-04
FORCE CONVERGENCE VALUE = .1096E+06 CRITERION= 5629.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3588E-04
FORCE CONVERGENCE VALUE = .7773E+05 CRITERION= 5625.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2905E-04
FORCE CONVERGENCE VALUE = .5362E+05 CRITERION= 5623.

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RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2114E-04
FORCE CONVERGENCE VALUE = .3006E+05 CRITERION= 5621.
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2389E-04
FORCE CONVERGENCE VALUE = .2156E+06 CRITERION= 5618.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1747E+05 CRITERION= 5621.
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5901E-05
FORCE CONVERGENCE VALUE = .1907E+05 CRITERION= 5620.
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3614E-05
FORCE CONVERGENCE VALUE = .1818E+05 CRITERION= 5619.
EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2447E-05
FORCE CONVERGENCE VALUE = .1754E+05 CRITERION= 5619.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 18 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1723E-05
FORCE CONVERGENCE VALUE = .1929E+05 CRITERION= 5619.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1754E+05 CRITERION= 5619.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 21 NOT COMPLETED. CUM ITER = 1270
*** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .62500E-01

FORCE CONVERGENCE VALUE = .1478E+09 CRITERION= .1479E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1233E-02
FORCE CONVERGENCE VALUE = .1485E+07 CRITERION= 5698.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2138E-03
FORCE CONVERGENCE VALUE = .4049E+06 CRITERION= 5659.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5526E-03
FORCE CONVERGENCE VALUE = .1659E+07 CRITERION= 5647.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .3561E+06 CRITERION= 5657.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3136E-04
FORCE CONVERGENCE VALUE = .1363E+06 CRITERION= 5654.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3250E-04
FORCE CONVERGENCE VALUE = .1472E+06 CRITERION= 5650.
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3121E-04
FORCE CONVERGENCE VALUE = .1438E+06 CRITERION= 5648.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3025E-04
FORCE CONVERGENCE VALUE = .1414E+06 CRITERION= 5646.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2872E-04
FORCE CONVERGENCE VALUE = .1443E+06 CRITERION= 5644.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1414E+06 CRITERION= 5646.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2872E-04
FORCE CONVERGENCE VALUE = .1288E+06 CRITERION= 5644.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 21 NOT COMPLETED. CUM ITER = 1280
*** BEGIN BISECTION NUMBER 2 NEW TIME INCREMENT= .31250E-01

FORCE CONVERGENCE VALUE = .7389E+08 CRITERION= .7411E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6165E-03
FORCE CONVERGENCE VALUE = .3844E+06 CRITERION= 5676.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1110E-03
FORCE CONVERGENCE VALUE = .1819E+06 CRITERION= 5655.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8098E-04
FORCE CONVERGENCE VALUE = .2383E+06 CRITERION= 5649.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1532E+06 CRITERION= 5655.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1758E-04
FORCE CONVERGENCE VALUE = .6876E+05 CRITERION= 5653.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1165E-04
FORCE CONVERGENCE VALUE = .5571E+05 CRITERION= 5651.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1021E-04
FORCE CONVERGENCE VALUE = .6140E+05 CRITERION= 5650.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .5571E+05 CRITERION= 5651.
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1021E-04
FORCE CONVERGENCE VALUE = .5157E+05 CRITERION= 5650.

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EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9574E-05
FORCE CONVERGENCE VALUE = .4972E+05 CRITERION= 5650.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9112E-05
FORCE CONVERGENCE VALUE = .5827E+05 CRITERION= 5649.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .4972E+05 CRITERION= 5650.
>>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
*** LOAD STEP 6 SUBSTEP 21 NOT COMPLETED. CUM ITER = 1290
*** BEGIN BISECTION NUMBER 3 NEW TIME INCREMENT= .15625E-01

FORCE CONVERGENCE VALUE = .3694E+08 CRITERION= .3737E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3082E-03
FORCE CONVERGENCE VALUE = .9930E+05 CRITERION= 5664.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5774E-04
FORCE CONVERGENCE VALUE = .9100E+05 CRITERION= 5653.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3033E-04
FORCE CONVERGENCE VALUE = .4712E+05 CRITERION= 5650.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1553E-04
FORCE CONVERGENCE VALUE = 5053. CRITERION= 5649. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 6 SUBSTEP 21 COMPLETED. CUM ITER = 1294
*** TIME = 5.48926 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .1153E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3694E+08 CRITERION= .3737E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3076E-03
FORCE CONVERGENCE VALUE = .1009E+06 CRITERION= 5661.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1777E-03
FORCE CONVERGENCE VALUE = .8397E+06 CRITERION= 5648.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .1005E+06 CRITERION= 5660.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1949E-04
FORCE CONVERGENCE VALUE = .6320E+05 CRITERION= 5655.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1241E-04
FORCE CONVERGENCE VALUE = .5577E+05 CRITERION= 5654.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1019E-04
FORCE CONVERGENCE VALUE = .5220E+05 CRITERION= 5653.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1854E-04
FORCE CONVERGENCE VALUE = .3446E+05 CRITERION= 5650.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2123E-04
FORCE CONVERGENCE VALUE = .1903E+05 CRITERION= 5647.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1846E-04
FORCE CONVERGENCE VALUE = .1283E+05 CRITERION= 5645.
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1193E-04
FORCE CONVERGENCE VALUE = 2786. CRITERION= 5643. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 9
*** LOAD STEP 6 SUBSTEP 22 COMPLETED. CUM ITER = 1303
*** TIME = 5.50488 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .1385E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .15625E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .3694E+08 CRITERION= .3737E+05
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3068E-03
FORCE CONVERGENCE VALUE = .9973E+05 CRITERION= 5655.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6022E-04
FORCE CONVERGENCE VALUE = .3002E+05 CRITERION= 5643.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2704E-04
FORCE CONVERGENCE VALUE = .1749E+05 CRITERION= 5639.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1076E-04
FORCE CONVERGENCE VALUE = 3804. CRITERION= 5638. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 6 SUBSTEP 23 COMPLETED. CUM ITER = 1307
*** TIME = 5.52051 TIME INC = .156250E-01
*** MAX PLASTIC STRAIN STEP = .1331E-02 CRITERION = .5000E-01

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*** AUTO TIME STEP: NEXT TIME INC = .31250E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .7388E+08 CRITERION= .7409E+05
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6109E-03
 FORCE CONVERGENCE VALUE = .3795E+06 CRITERION= 5661.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1267E-03
 FORCE CONVERGENCE VALUE = .1658E+06 CRITERION= 5638.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4752E-04
 FORCE CONVERGENCE VALUE = .7782E+05 CRITERION= 5631.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1527E-04
 FORCE CONVERGENCE VALUE = 3603. CRITERION= 5629. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 6 SUBSTEP 24 COMPLETED. CUM ITER = 1311
 *** TIME = 5.55176 TIME INC = .312500E-01
 *** MAX PLASTIC STRAIN STEP = .2618E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .62500E-01 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .1477E+09 CRITERION= .1478E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1217E-02
 FORCE CONVERGENCE VALUE = .1428E+07 CRITERION= 5670.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1840E-03
 FORCE CONVERGENCE VALUE = .4237E+06 CRITERION= 5628.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7185E-04
 FORCE CONVERGENCE VALUE = .3020E+05 CRITERION= 5620.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2899E-04
 FORCE CONVERGENCE VALUE = .3913E+05 CRITERION= 5617.
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .2060E+05 CRITERION= 5620.
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1199E-04
 FORCE CONVERGENCE VALUE = .2361E+05 CRITERION= 5619.
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6715E-05
 FORCE CONVERGENCE VALUE = .1795E+05 CRITERION= 5618.
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4616E-05
 FORCE CONVERGENCE VALUE = .1379E+05 CRITERION= 5617.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3290E-05
 FORCE CONVERGENCE VALUE = .1219E+05 CRITERION= 5617.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3539E-05
 FORCE CONVERGENCE VALUE = 9087. CRITERION= 5617.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3670E-05
 FORCE CONVERGENCE VALUE = 7105. CRITERION= 5616.
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3436E-05
 FORCE CONVERGENCE VALUE = 5885. CRITERION= 5616.
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5188E-05
 FORCE CONVERGENCE VALUE = 1975. CRITERION= 5616. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 12
 *** LOAD STEP 6 SUBSTEP 25 COMPLETED. CUM ITER = 1323
 *** TIME = 5.61426 TIME INC = .625000E-01
 *** MAX PLASTIC STRAIN STEP = .4333E-02 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .62500E-01 UNCHANGED

FORCE CONVERGENCE VALUE = .1478E+09 CRITERION= .1480E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1204E-02
 FORCE CONVERGENCE VALUE = .1363E+07 CRITERION= 5649.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1432E-03
 FORCE CONVERGENCE VALUE = .6687E+05 CRITERION= 5619.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4286E-04
 FORCE CONVERGENCE VALUE = 5166. CRITERION= 5613. <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 6 SUBSTEP 26 COMPLETED. CUM ITER = 1326
 *** TIME = 5.67676 TIME INC = .625000E-01
 *** MAX PLASTIC STRAIN STEP = .3346E-02 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .12500 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .2955E+09 CRITERION= .2955E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2377E-02
 FORCE CONVERGENCE VALUE = .5016E+07 CRITERION= 5647.

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EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2056E-03
FORCE CONVERGENCE VALUE = .1537E+07 CRITERION= 5618.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5324E-04
FORCE CONVERGENCE VALUE = .8697E+05 CRITERION= 5604.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1577E-04
FORCE CONVERGENCE VALUE = .1863E+05 CRITERION= 5602.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7379E-05
FORCE CONVERGENCE VALUE = 4164. CRITERION= 5601. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 6 SUBSTEP 27 COMPLETED. CUM ITER = 1331
*** TIME = 5.80176 TIME INC = .125000
*** MAX PLASTIC STRAIN STEP = .5810E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .12500 UNCHANGED

FORCE CONVERGENCE VALUE = .2960E+09 CRITERION= .2961E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2323E-02
FORCE CONVERGENCE VALUE = .4631E+07 CRITERION= 5640.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1533E-03
FORCE CONVERGENCE VALUE = .5919E+06 CRITERION= 5595.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3626E-04
FORCE CONVERGENCE VALUE = .7011E+05 CRITERION= 5590.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1065E-04
FORCE CONVERGENCE VALUE = .1745E+05 CRITERION= 5589.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6283E-05
FORCE CONVERGENCE VALUE = 577.4 CRITERION= 5588. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 6 SUBSTEP 28 COMPLETED. CUM ITER = 1336
*** TIME = 5.92676 TIME INC = .125000
*** MAX PLASTIC STRAIN STEP = .5637E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .7324E-01 DECREASED (FACTOR = .5859)

FORCE CONVERGENCE VALUE = .1735E+09 CRITERION= .1736E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1333E-02
FORCE CONVERGENCE VALUE = .1529E+07 CRITERION= 5609.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7779E-04
FORCE CONVERGENCE VALUE = .6732E+05 CRITERION= 5585.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1921E-04
FORCE CONVERGENCE VALUE = 3594. CRITERION= 5582. <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 6 SUBSTEP 29 COMPLETED. CUM ITER = 1339
*** TIME = 6.00000 TIME INC = .732422E-01
*** MAX PLASTIC STRAIN STEP = .3245E-02 CRITERION = .5000E-01

```

FINISH SOLUTION PROCESSING

***** ROUTINE COMPLETED ***** CP = 34760.390

PURGE ALL SOLUTION AND POST DATA
SAVE ALL MODEL DATA

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= stat2dbt.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 0
NUMBER OF ERROR MESSAGES ENCOUNTERED= 0

```

*-----*
|                                     |
|               ANSYS RUN COMPLETED               |
|-----|
|               REV. 5.0 A               |               HP 9000/7XX
|               CP TIME      (sec) = 34762.690      |               TIME = 07:40:56
|-----|

```

ELAPSED TIME (sec) = 38110.000 DATE = 07/25/95

WELCOME TO THE ANSYS PROGRAM

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

JOB NAME = exwobt12
 MEMORY REQUESTED (MB) = 64.0
 BATCH MODE REQUESTED
 start.ans FILE

***** ANSYS DYNAMIC MEMORY ALLOCATION *****

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

***** NOTICE ***** THIS IS THE ANSYS GENERAL PURPOSE
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 RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
 ENTER /MENU,ON TO START THE ANSYS MENU SYSTEM
 ENTER HELP FOR GENERAL ANSYS HELP INFORMATION

- 1 /config,nvpag,512
- 2 /units,si
- 3 /prep7
- 4 /title, 12 PWR Tube Rock Fall Accident Condition
- 5 /vcon,,0
- 6 /com, Rotate WP 45 degrees with respect to symmetry axis
- 7 wprota,45
- 8 local,11,0,0,0,0,45,0,0
- 9 local,12,1,0,0,0,45,0,0
- 10 /com, Define Parameters
- 11 ibir=0.52885 ! Inner Barrier Inner Radius (DIA = 1.0577 m)
- 12 obir=0.54885 ! Outer Barrier Inner Radius (DIA = 1.0977 m)
- 13 obsr=0.59885 ! Outer Barrier Skirt Radius (DIA = 1.1977 m)
- 14 obor=0.64885 ! Outer Barrier Outer Radius (DIA = 1.2977 m)
- 15 ts1=.0145

```

16 ts2=.0145
17 ts3=.01
18 ts4=.005
19 ts5=.0095      ! basket structure thicknesses
20 ts124=ts1+ts2+ts4
21 ts23=ts2+ts3
22 ts234=ts2+ts3+ts4
23 ts14=ts1+ts4
24 ts34=ts3+ts4
25 b=2*ts1+4*(ts23)+6*ts4
26 tp1=(ts234)**2
27 tp2=(ts14)**2
28 stp=sqrt(b**2-20*(tp1+tp2-ibir**2))
29 x=(-1*b+stp)/10 ! calculated fuel assembly width
30 ang1=(180/3.14159)*asin(ts5/ibir)
31 ang2=(180/3.14159)*asin((x+ts4+ts1)/ibir)
32 ang3=(180/3.14159)*acos((x+ts4+ts1)/ibir)
33 ang4=(180/3.14159)*acos(ts5/ibir)
34 bsht=4.585      ! basket structure height
35 uilh=.025       ! upper inner lid height
36 ght=.03         ! gap height
37 uolh=.11        ! upper outer lid height
38 usht=.225       ! upper skirt height
39 lilh=.025       ! lower inner lid height
40 lolh=.11        ! lower outer lid height
41 lsht=.225       ! lower skirt height
42 elev1=bsht+uilh ! elevations of all planes to be dragged
43 elev2=elev1+ght
44 elev3=elev2+uolh
45 elev4=elev3+usht
46 elev5=-1*lilh
47 elev6=elev5-lolh
48 elev7=elev6-lsht
49
50 r1d=2           ! Vertical Divisions Region 1
51 r1sr=1          ! Spacing Ratio Region 1 (from lower to upper keypoint)
52 r2d=2           ! Horizontal Divisions Region 2
53 r2sr=1          ! Spacing Ratio Region 2 (from left to right keypoint)
54 r3d=2           ! Refer to the figures to locate following regions
55 r3sr=1
56 r4d=2
57 r4sr=1
58 r5d=2
59 r5sr=1
60 r6d=2
61 r6sr=1
62 r7d=2
63 r7sr=1
64 r8d=2
65 r8sr=1
66 r9d=2
67 r9sr=1
68 r10d=2
69 r10sr=1
70 r11d=2
71 r11sr=1
72 r12d=2
73 r12sr=1
74 r13d=2
75 r13sr=1
76 r14d=2
77 r14sr=1
78 r15d=2
79 r15sr=1
80 r16d=2
81 r16sr=1
82 r17d=2
83 r17sr=1
84 r18d=2
85 r18sr=1

```

```

86 r19d=2
87 r19sr=1
88 r20d=2
89 r20sr=1
90 r21d=2
91 r21sr=1
92
93 lc1d=2      ! Divisions of lines in circle 1
94 lc1sr=1     ! Spacing Ratio of lines in circle 1
95 lc2d=3      ! Divisions of lines in circle 2
96 lc2sr=1     ! Spacing Ratio of lines in circle 2
97 lc3d=2      ! Divisions of lines in circle 3
98 lc3sr=1     ! Spacing Ratio of lines in circle 3
99
100 c1d=2       ! Divisions of circles in circles # 1
101 c1sr=1      ! Spacing Ratio of circles in circles # 1
102 c2d=3       ! Divisions of circles in circles # 2
103 c2sr=1      ! Spacing Ratio of circles in circles # 2
104 c3d=2       ! Divisions of circles in circles # 3
105 c3sr=1      ! Spacing Ratio of circles in circles # 3
106 c4d=2       ! Divisions of circles in circles # 4
107 c4sr=1      ! Spacing Ratio of circles in circles # 4
108 c5d=3       ! Divisions of circles in circles # 5
109 c5sr=1      ! Spacing Ratio of circles in circles # 5
110 c6d=2       ! Divisions of circles in circles # 6
111 c6sr=1      ! Spacing Ratio of circles in circles # 6
112
113 btd=15      ! Divisions along the basket assembly
114 btsr=-.15   ! spacing Ratio along the basket assembly
115
116 rockrad=1.0 ! Radius of Rock
117 xrc=0.0     ! X Coordinate of Rock Center
118 yrc=9.705+rockrad-obor ! Y Coordinate of Rock Center
119 zrc=bsht/2  ! Z Coordinate of Rock Center
120
121 /com, Define Element Properties
122 et,1,solid45 ! 316L Stainless Steel
123 et,2,solid45 ! Alloy 825
124 et,3,solid45 ! A 516 Carbon Steel
125 et,4,solid45 ! Rock
126 et,5,contac49,,0,1,,,1 ! 3D Contact
127 r,5,2.0e8,,,1.298,15 ! Real Constant Set for Contact, kn=2.0E8,
128 /com, ratio of static to dynamic coeff. of friction fact=1.298, Area Tol.=15%
129 mp,ex,1,195e9 ! 316L Stainless Steel
130 mp,ex,2,206e9 ! Alloy 825
131 mp,ex,3,206e9 ! A 516 Carbon Steel
132 mp,ex,4,32.7e9 ! Rock
133 mp,nuxy,1,0.298 ! 316L Stainless Steel
134 mp,nuxy,2,0.42 ! Alloy 825
135 mp,nuxy,3,0.3 ! A 516 Carbon Steel
136 mp,nuxy,4,0.22 ! Rock
137 mp,dens,1,29233.8 ! 316L Stainless Steel (Adjusted to provide proper mass)
138 mp,dens,2,4285.9 ! Alloy 825 (Adjusted to provide proper mass)
139 mp,dens,3,9390.6 ! A 516 Carbon Steel (Adjusted to provide proper mass)
140 mp,dens,4,6793 ! Rock (Adjusted to provide proper mass)
141 mp,mu,5,0.74 ! Coefficient of Friction (Steel on Steel Assumed)
142 ET,6,SHELL43
143 MP,EX,6,206E9
144 MP,NUXY,6,.3
145 MP,DENS,6,8131
146 tb,biso,1
147 tbddata,,172e6,.776e9 ! 316L Stainless Steel
148 tb,biso,2
149 tbddata,,338e6,.722e9 ! Alloy 825
150 tb,biso,3
151 tbddata,,205e6,.6505e9 ! A 516 Carbon Steel
152
153 /com, Define keypoints in the basket assembly
154 csys,11
155 k,1,0,0

```



```

156 k,2,0,ts4
157 k,3,ts4,ts4
158 k,4,x+ts4,ts4
159 k,5,x+ts34,ts4
160 k,6,2*x+ts34,ts4
161 k,7,2*x+ts234,ts5
162 k,8,0,x+ts4
163 k,9,ts4,x+ts4
164 k,10,x+ts4,x+ts4
165 k,11,x+ts34,x+ts4
166 k,12,2*x+ts34,x+ts4
167 k,13,0,x+ts34
168 k,14,ts4,x+ts34
169 k,15,x+ts4,x+ts34
170 k,16,x+ts14,x+ts14
171 k,17,0,2*x+ts34
172 k,18,ts4,2*x+ts34
173 k,19,x+ts4,2*x+ts34
174 k,20,0,2*x+ts234
175 k,21,ts5,2*x+ts234
176 ksymm,y,2,21,1,0,1,0
177
178 csys,12
179 k,42,ibir,ang1
180 k,43,ibir,ang2
181 k,44,ibir,ang3
182 k,45,ibir,ang4
183 k,46,ibir,90
184 k,47,obir,ang1
185 k,48,obir,ang2
186 k,49,obir,ang3
187 k,50,obir,ang4
188 k,51,obir,90
189 k,52,obsr,ang1
190 k,53,obsr,ang2
191 k,54,obsr,ang3
192 k,55,obsr,ang4
193 k,56,obsr,90
194 k,57,obor,ang1
195 k,58,obor,ang2
196 k,59,obor,ang3
197 k,60,obor,ang4
198 k,61,obor,90
199 ksymm,y,42,61,1,0,1,0
200 /com, Define default value of esize
201 esize,,1
202
203 /com, Line divisions and spacing ratios
204 /com, in the basket structure
205 csys,11
206 l,20,46
207 l,21,45 ! region 1
208 lesize,all,,,r1d,r1sr,1
209 lsel,none
210 l,21,44
211 l,18,19 ! region 2
212 lesize,all,,,r2d,r2sr,1
213 lsel,none
214 l,13,17
215 l,14,18 ! region 3
216 lesize,all,,,r3d,r3sr,1
217 lsel,none
218 l,15,19
219 l,16,44 ! region 4
220 lesize,all,,,r4d,r4sr,1
221 lsel,none
222 l,14,15
223 l,9,10 ! region 5
224 lesize,all,,,r5d,r5sr,1
225 lsel,none

```

```
226 l,16,43
227 l,11,12 ! region 6
228 lesize,all,,,r6d,r6sr,1
229 lsel,none
230 l,2,8
231 l,3,9 ! region 7
232 lesize,all,,,r7d,r7sr,1
233 lsel,none
234 l,4,10
235 l,5,11 ! region 8
236 lesize,all,,,r8d,r8sr,1
237 lsel,none
238 l,6,12
239 l,7,43 ! region 9
240 lesize,all,,,r9d,r9sr,1
241 lsel,none
242 l,3,4
243 l,23,24 ! region 10
244 lesize,all,,,r10d,r10sr,1
245 lsel,none
246 l,5,6
247 l,25,26 ! region 11
248 lesize,all,,,r11d,r11sr,1
249 lsel,none
250 l,7,42
251 l,27,62 ! region 12
252 lesize,all,,,r12d,r12sr,1
253 lsel,none
254 l,28,22
255 l,29,23 ! region 13
256 lesize,all,,,r13d,r13sr,1
257 lsel,none
258 l,30,24
259 l,31,25 ! region 14
260 lesize,all,,,r14d,r14sr,1
261 lsel,none
262 l,32,26
263 l,63,27 ! region 15
264 lesize,all,,,r15d,r15sr,1
265 lsel,none
266 l,29,30
267 l,34,35 ! region 16
268 lesize,all,,,r16d,r16sr,1
269 lsel,none
270 l,31,32
271 l,36,63 ! region 17
272 lesize,all,,,r17d,r17sr,1
273 lsel,none
274 l,37,33
275 l,38,34 ! region 18
276 lesize,all,,,r18d,r18sr,1
277 lsel,none
278 l,39,35
279 l,64,36 ! region 19
280 lesize,all,,,r19d,r19sr,1
281 lsel,none
282 l,38,39
283 l,41,64 ! region 20
284 lesize,all,,,r20d,r20sr,1
285 lsel,none
286 l,66,40
287 l,65,41 ! region 21
288 lesize,all,,,r21d,r21sr,1
289 lsel,none
290 /com, Define perpendicular lines to the circles
291 l,46,51
292 l,45,50
293 l,44,49
294 l,43,48
295 l,42,47
```

```
296 l,62,67
297 l,63,68
298 l,64,69
299 l,65,70
300 l,66,71 ! lines in circle 1
301 lesize,all,,,lc1d,lc1sr,1
302 lsel,none
303 l,51,56
304 l,50,55
305 l,49,54
306 l,48,53
307 l,47,52
308 l,67,72
309 l,68,73
310 l,69,74
311 l,70,75
312 l,71,76 ! lines in circle 2
313 lesize,all,,,lc2d,lc2sr,1
314 lsel,none
315 l,56,61
316 l,55,60
317 l,54,59
318 l,53,58
319 l,52,57
320 l,72,77
321 l,73,78
322 l,74,79
323 l,75,80
324 l,76,81 ! lines in circle 3
325 lesize,all,,,lc3d,lc3sr,1
326 lsel,none
327 /com, Define circles of inner and outer barriers
328 csys,12
329 l,65,64
330 l,70,69
331 l,75,74
332 l,80,79 ! circles # 1
333 lesize,all,,,c1d,c1sr,1
334 lsel,none
335 l,64,63
336 l,69,68
337 l,74,73
338 l,79,78 ! circles # 2
339 lesize,all,,,c2d,c2sr,1
340 lsel,none
341 l,63,62
342 l,68,67
343 l,73,72
344 l,78,77 ! circles # 3
345 lesize,all,,,c3d,c3sr,1
346 lsel,none
347 l,42,43
348 l,47,48
349 l,52,53
350 l,57,58 ! circles # 4
351 lesize,all,,,c4d,c4sr,1
352 lsel,none
353 l,43,44
354 l,48,49
355 l,53,54
356 l,58,59 ! circles # 5
357 lesize,all,,,c5d,c5sr,1
358 lsel,none
359 l,44,45
360 l,49,50
361 l,54,55
362 l,59,60 ! circles # 6
363 lesize,all,,,c6d,c6sr,1
364 lsel,none
365
```

```

366 csys,11
367 k,82,0,0,bsht
368 k,83,0,0,elev1
369 k,84,0,0,elev2
370 k,85,0,0,elev3
371 k,86,0,0,elev4
372 k,87,0,0,elev5
373 k,88,0,0,elev6
374 k,89,0,0,elev7
375
376 l,1,82 ! define lines to drag areas (line#97)
377 l,82,83 ! (line#98)
378 l,83,84 ! (line#99)
379 l,84,85 ! (line#100)
380 l,85,86 ! (line#101)
381 l,1,87 ! (line#102)
382 l,87,88 ! (line#103)
383 l,88,89 ! (line#104)
384
385 /com, Define areas in the inner barrier
386 csys,11
387 a,46,45,50,51
388 a,45,44,49,50
389 a,44,43,48,49
390 a,43,42,47,48
391 a,42,62,67,47
392 a,63,68,67,62
393 a,64,69,68,63
394 a,70,69,64,65
395 a,71,70,65,66
396 TYPE,6
397 MAT,6
398 ESHAPE,2
399 AMESH,ALL
400
401 /COM,Extrude inner barrier in three steps
402 type,2 ! SOLID45
403 mat,2 ! Alloy 825
404 ESIZE,,3
405 VEXT,all,,,0,0,1.425
406
407 ASEL,S,loc,z,1.425
408 csys,12
409 asel,u,loc,x,0,.5
410 csys,11
411 TYPE,6
412 mat,6
413 AMESH,ALL
414 TYPE,2
415 MAT,2
416 ESIZE,,15
417 VEXT,ALL,,,0,0,1.735
418
419 ASEL,S,loc,z,3.16
420 csys,12
421 asel,u,loc,x,0,.5
422 csys,11
423 TYPE,6
424 mat,6
425 AMESH,ALL
426 TYPE,2
427 MAT,2
428 ESIZE,,3
429 VEXT,ALL,,,0,0,1.425
430 asel,none
431
432 /com, Define areas in the inner part of outer barrier
433 a,51,50,55,56
434 a,50,49,54,55
435 a,49,48,53,54

```

```

436 a,48,47,52,53
437 a,47,67,72,52
438 a,68,73,72,67
439 a,74,73,68,69
440 a,75,74,69,70
441 a,76,75,70,71
442
443 /com, Define areas in the outer part of outer barrier
444 a,56,55,60,61
445 a,55,54,59,60
446 a,54,53,58,59
447 a,53,52,57,58
448 a,52,72,77,57
449 a,73,78,77,72
450 a,74,79,78,73
451 a,80,79,74,75
452 a,81,80,75,76
453 TYPE,6
454 MAT,6
455 ESHAPE,2
456 AMESH,ALL
457
458 /COM,Extrude outer barrier in three steps
459 type,3      ! SOLID45
460 mat,3      ! A 516 Carbon Steel
461 ESIZE,,3
462 VEXT,all,,1,0,0,1.425
463
464 ASEL,S,loc,z,1.425
465 csys,12
466 asel,u,loc,x,0,.54885
467 csys,11
468 TYPE,6
469 mat,6
470 AMESH,ALL
471 TYPE,3
472 MAT,3
473 ESIZE,,15
474 VEXT,ALL,,,0,0,1.735
475
476 ASEL,S,loc,z,3.16
477 csys,12
478 asel,u,loc,x,0,.54885
479 csys,11
480 TYPE,6
481 mat,6
482 AMESH,ALL
483 TYPE,3
484 MAT,3
485 ESIZE,,3
486 VEXT,ALL,,,0,0,1.425
487 asel,none
488
489 /com, Half Model is used to create the other half
490 /com, by symmetry along the x-axis
491 allsel
492 csys,11
493 vsymm,x,all,,,0,0,0
494 nummrg,node
495 nummrg,kp
496
497 wpstyl,defa
498 /com, Generate Rock
499 vsel,none
500 asel,none
501 lsel,none
502 ksel,none
503 nsel,none
504 esel,none
505 csys,0

```

```

506 n,10000,xrc,ycr,zrc
507 n,10001,xrc,ycr,zrc+1
508 n,10002,xrc+1,ycr,zrc
509 cs,13,2,10000,10001,10002
510 k,10000
511 k,10001,rockrad,,90
512 k,10002,rockrad,,0
513 k,10003,rockrad,, -90
514 l,10000,10001
515 l,10000,10002
516 l,10000,10003
517 lsize,all,,,4,0.5,0
518 l,10001,10002
519 lsize,all,,,4,1,0
520 l,10002,10003
521 lsize,all,,,4,0.25,0
522 lgen,3,all,,,90,,10
523 nummrg,kp
524 lv,10002,10001,10012,10012,10000,10000,10000,10000
525 v,10002,10003,10012,10012,10000,10000,10000,10000
526 lv,10001,10022,10012,10012,10000,10000,10000,10000
527 v,10003,10022,10012,10012,10000,10000,10000,10000
528 eshape,2
529 type,4
530 mat,4
531 vmesh,all
532
533
534 /com, Half Model is used to create the other half
535 /com, of the rock by symmetry along the x-axis
536 csys,0
537 vsym,x,all,,,0,0,0
538 nummrg,node
539 nummrg,kp
540
541 allsel
542 /com, Contact Elements Generation
543 type,5
544 real,5
545 mat,5
546 csys,13
547 nsel,s,loc,x,rockrad
548 nsel,r,loc,z,-60,-90
549 cm,surfa,node
550 csys,1
551 nsel,s,loc,z,(bsht/2)-.7,(bsht/2)+.7
552 nsel,r,loc,x,obor-0.001,obor+0.001
553 nsel,r,loc,y,60,120
554 cm,surfb,node
555 nsel,all
556 gcgen,surfa,surfb
557 csys,0
558 allsel
559
560 /com, Apply Constraints at Support Locations
561 csys,1
562 nsel,s,loc,z,-.001,.476
563 nsel,a,loc,z,4.1,bsht+.001
564 nsel,r,loc,x,obor-.01,obor+.01
565 nsel,r,loc,y,-45,-135
566 nrotate,all
567 d,all,ux,0
568 nsel,s,loc,z,0
569 nsel,r,loc,x,0.99*obor,1.01*obor
570 nsel,r,loc,y,-90
571 d,all,uz,0
572 nsel,all
573 csys,0
574 esel,u,mat,,6
575 save

```

```

576 fini
577
578 /sol
579 antype,trans
580 nlgeom,on
581 trnopt,full
582 acel,,9.81
583 kbc,1
584 time,1e-3
585 nsubst,3
586 outres,all,1
587 solve
588
589 timint,on
590 time,1.308
591 nsubst,10
592 outres,all,1
593 solve
594
595 timint,on
596 autots,on
597 time,1.34
598 nsubst,80,1000,50,on
599 outres,all,1
600 solve
601 fini
602
603 /exit
604 /eof

```

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

```

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

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,
ABBREVIATION= T1      /pnum,type,1,

```

ABBREVIATION= TO /phum,type,0,
ABBREVIATION= C1 /number,1,
ABBREVIATION= C0 /number,0,
ABBREVIATION= INP /input,,inp,
ABBREVIATION= X3D /show,3d,
ABBREVIATION= X11 /show,x11,
ABBREVIATION= VEC /show,,,1,
ABBREVIATION= RAS /show,,,0,
ABBREVIATION= ON /menu,on,
ABBREVIATION= OFF /menu,off,
ABBREVIATION= NVP /config,nvpag,512,
ABBREVIATION= QUIT /exit,nosav,
XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

END start.ans

To start ANSYS menu:

type: x3d for console
x11 for X-term

type: on

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

SI UNITS SPECIFIED

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

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:20:13 JUL 19, 1995 CP= .530
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=

12 PWR Tube Rock Fall Accident Condition

VIEW CONE ANGLE FOR WINDOW 1 .00

Rotate WP 45 degrees with respect to symmetry axis

ROTATE WORKING PLANE

45.000 DEGREES ABOUT WORKING PLANE'S Z AXIS (X TOWARDS Y)
.00000E+00 DEGREES ABOUT WORKING PLANE'S X AXIS (Y TOWARDS Z)
.00000E+00 DEGREES ABOUT WORKING PLANE'S Y AXIS (Z TOWARDS X)

COORDINATE SYSTEM 11 DEFINITION. TYPE= 0 (CARTESIAN)
 XC,YC,ZC= .00000E+00 .00000E+00 .00000E+00
 ANGLES= 45.00 .00 .00 PARAMETERS= 1.000 1.000
 ORIENTATION= .71 .71 .00 -.71 .71 .00 .00 .00 1.00

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

COORDINATE SYSTEM 12 DEFINITION. TYPE= 1 (CYLINDRICAL)
 XC,YC,ZC= .00000E+00 .00000E+00 .00000E+00
 ANGLES= 45.00 .00 .00 PARAMETERS= 1.000 1.000
 ORIENTATION= .71 .71 .00 -.71 .71 .00 .00 .00 1.00

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)
 Define Parameters

PARAMETER IBIR = .5288500
 PARAMETER OBIR = .5488500
 PARAMETER OBSR = .5988500
 PARAMETER OBOR = .6488500
 PARAMETER TS1 = .1450000E-01
 PARAMETER TS2 = .1450000E-01
 PARAMETER TS3 = .1000000E-01
 PARAMETER TS4 = .5000000E-02
 PARAMETER TS5 = .9500000E-02
 PARAMETER TS124 = .3400000E-01
 PARAMETER TS23 = .2450000E-01
 PARAMETER TS234 = .2950000E-01
 PARAMETER TS14 = .1950000E-01
 PARAMETER TS34 = .1500000E-01
 PARAMETER B = .1570000
 PARAMETER TP1 = .8702500E-03
 PARAMETER TP2 = .3802500E-03
 PARAMETER STP = 2.365013
 PARAMETER X = .2208013
 PARAMETER ANG1 = 1.029289
 PARAMETER ANG2 = 27.02537
 PARAMETER ANG3 = 62.97471
 PARAMETER ANG4 = 88.97079
 PARAMETER BSHT = 4.585000
 PARAMETER UILH = .2500000E-01
 PARAMETER GHT = .3000000E-01
 PARAMETER UOLH = .1100000

PARAMETER USHT	=	.2250000
PARAMETER LILH	=	.2500000E-01
PARAMETER LOLH	=	.1100000
PARAMETER LSHT	=	.2250000
PARAMETER ELEV1	=	4.610000
PARAMETER ELEV2	=	4.640000
PARAMETER ELEV3	=	4.750000
PARAMETER ELEV4	=	4.975000
PARAMETER ELEV5	=	-.2500000E-01
PARAMETER ELEV6	=	-.1350000
PARAMETER ELEV7	=	-.3600000
PARAMETER R1D	=	2.000000
PARAMETER R1SR	=	1.000000
PARAMETER R2D	=	2.000000
PARAMETER R2SR	=	1.000000
PARAMETER R3D	=	2.000000
PARAMETER R3SR	=	1.000000
PARAMETER R4D	=	2.000000
PARAMETER R4SR	=	1.000000
PARAMETER R5D	=	2.000000
PARAMETER R5SR	=	1.000000
PARAMETER R6D	=	2.000000
PARAMETER R6SR	=	1.000000
PARAMETER R7D	=	2.000000
PARAMETER R7SR	=	1.000000
PARAMETER R8D	=	2.000000
PARAMETER R8SR	=	1.000000
PARAMETER R9D	=	2.000000
PARAMETER R9SR	=	1.000000
PARAMETER R10D	=	2.000000
PARAMETER R10SR	=	1.000000
PARAMETER R11D	=	2.000000
PARAMETER R11SR	=	1.000000
PARAMETER R12D	=	2.000000
PARAMETER R12SR	=	1.000000

PARAMETER R13D	=	2.000000
PARAMETER R13SR	=	1.000000
PARAMETER R14D	=	2.000000
PARAMETER R14SR	=	1.000000
PARAMETER R15D	=	2.000000
PARAMETER R15SR	=	1.000000
PARAMETER R16D	=	2.000000
PARAMETER R16SR	=	1.000000
PARAMETER R17D	=	2.000000
PARAMETER R17SR	=	1.000000
PARAMETER R18D	=	2.000000
PARAMETER R18SR	=	1.000000
PARAMETER R19D	=	2.000000
PARAMETER R19SR	=	1.000000
PARAMETER R20D	=	2.000000
PARAMETER R20SR	=	1.000000
PARAMETER R21D	=	2.000000
PARAMETER R21SR	=	1.000000
PARAMETER LC1D	=	2.000000
PARAMETER LC1SR	=	1.000000
PARAMETER LC2D	=	3.000000
PARAMETER LC2SR	=	1.000000
PARAMETER LC3D	=	2.000000
PARAMETER LC3SR	=	1.000000
PARAMETER C1D	=	2.000000
PARAMETER C1SR	=	1.000000
PARAMETER C2D	=	3.000000
PARAMETER C2SR	=	1.000000
PARAMETER C3D	=	2.000000
PARAMETER C3SR	=	1.000000
PARAMETER C4D	=	2.000000
PARAMETER C4SR	=	1.000000
PARAMETER C5D	=	3.000000
PARAMETER C5SR	=	1.000000
PARAMETER C6D	=	2.000000

PARAMETER C6SR = 1.000000
 PARAMETER BTD = 15.00000
 PARAMETER BSR = -.1500000
 PARAMETER ROCKRAD = 1.000000
 PARAMETER XRC = .0000000E+00
 PARAMETER YRC = 10.05615
 PARAMETER ZRC = 2.292500
 Define Element Properties

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

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

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

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

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

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

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

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

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

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

REAL CONSTANT SET 5 ITEMS 1 TO 6
 .20000E+09 .00000E+00 .00000E+00 1.2980 15.000 .00000E+00
 ratio of static to dynamic coeff. of friction fact=1.298, Area Tol.=15%

MATERIAL 1 EX = .1950000E+12
 MATERIAL 2 EX = .2060000E+12
 MATERIAL 3 EX = .2060000E+12
 MATERIAL 4 EX = .3270000E+11
 MATERIAL 1 NUXY = .2980000
 MATERIAL 2 NUXY = .4200000
 MATERIAL 3 NUXY = .3000000
 MATERIAL 4 NUXY = .2200000
 MATERIAL 1 DENS = 29233.80
 MATERIAL 2 DENS = 4285.900

MATERIAL 3 DENS = 9390.600

MATERIAL 4 DENS = 6793.000

MATERIAL 5 MU = .7400000

ELEMENT TYPE 6 IS SHELL43 4-NODE STRUCTURAL SHELL
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

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

MATERIAL 6 EX = .2060000E+12

MATERIAL 6 NUXY = .3000000

MATERIAL 6 DENS = 8131.000

DEFINE DATA TABLE BISO FOR MATERIAL 1
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 1 AT TEMPERATURE= .00000E+00
LOC= 1 .17200E+09 .77600E+09

DEFINE DATA TABLE BISO FOR MATERIAL 2
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 2 AT TEMPERATURE= .00000E+00
LOC= 1 .33800E+09 .72200E+09

DEFINE DATA TABLE BISO FOR MATERIAL 3
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 3 AT TEMPERATURE= .00000E+00
LOC= 1 .20500E+09 .65050E+09
Define keypoints in the basket assembly

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT	1	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS= 11
			.000000E+00	.000000E+00	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	.500000E-02	.000000E+00	IN CSYS= 11
			-.353553E-02	.353553E-02	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	.500000E-02	.500000E-02	.000000E+00	IN CSYS= 11
			.137759E-13	.707107E-02	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	.225801	.500000E-02	.000000E+00	IN CSYS= 11
			.156130	.163201	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.235801	.500000E-02	.000000E+00	IN CSYS= 11
			.163201	.170272	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	.456603	.500000E-02	.000000E+00	IN CSYS= 11
			.319331	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	.471103	.950000E-02	.000000E+00	IN CSYS= 11
			.326402	.339837	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.000000E+00	.225801	.000000E+00	IN CSYS= 11
			-.159666	.159666	.000000E+00	IN CSYS= 0

KEYPOINT	9	X,Y,Z=	.500000E-02	.225801	.000000E+00	IN CSYS= 11
			-.156130	.163201	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	.225801	.225801	.000000E+00	IN CSYS= 11
			.622113E-12	.319331	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.235801	.225801	.000000E+00	IN CSYS= 11
			.707107E-02	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	.456603	.225801	.000000E+00	IN CSYS= 11
			.163201	.482532	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	.000000E+00	.235801	.000000E+00	IN CSYS= 11
			-.166737	.166737	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.500000E-02	.235801	.000000E+00	IN CSYS= 11
			-.163201	.170272	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	.225801	.235801	.000000E+00	IN CSYS= 11
			-.707107E-02	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	.240301	.240301	.000000E+00	IN CSYS= 11
			.662054E-12	.339837	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	.000000E+00	.456603	.000000E+00	IN CSYS= 11
			-.322867	.322867	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	.500000E-02	.456603	.000000E+00	IN CSYS= 11
			-.319331	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.225801	.456603	.000000E+00	IN CSYS= 11
			-.163201	.482532	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	.000000E+00	.471103	.000000E+00	IN CSYS= 11
			-.333120	.333120	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	.950000E-02	.471103	.000000E+00	IN CSYS= 11
			-.326402	.339837	.000000E+00	IN CSYS= 0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y
DO NOT COPY NODE AND ELEMENTS
SET IS FROM 2 TO 21 IN STEPS OF 1

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

KEYPOINT	42	X,Y,Z=	.528850	1.02929	.000000E+00	IN CSYS= 12
			.367176	.380611	.000000E+00	IN CSYS= 0
KEYPOINT	43	X,Y,Z=	.528850	27.0254	.000000E+00	IN CSYS= 12
			.163201	.503039	.000000E+00	IN CSYS= 0
KEYPOINT	44	X,Y,Z=	.528850	62.9747	.000000E+00	IN CSYS= 12
			-.163202	.503038	.000000E+00	IN CSYS= 0

KEYPOINT	45	X,Y,Z=	.528850	88.9708	.000000E+00	IN CSYS= 12
			-.367176	.380610	.000000E+00	IN CSYS= 0
KEYPOINT	46	X,Y,Z=	.528850	90.0000	.000000E+00	IN CSYS= 12
			-.373953	.373953	.000000E+00	IN CSYS= 0
KEYPOINT	47	X,Y,Z=	.548850	1.02929	.000000E+00	IN CSYS= 12
			.381061	.395004	.000000E+00	IN CSYS= 0
KEYPOINT	48	X,Y,Z=	.548850	27.0254	.000000E+00	IN CSYS= 12
			.169373	.522062	.000000E+00	IN CSYS= 0
KEYPOINT	49	X,Y,Z=	.548850	62.9747	.000000E+00	IN CSYS= 12
			-.169374	.522062	.000000E+00	IN CSYS= 0
KEYPOINT	50	X,Y,Z=	.548850	88.9708	.000000E+00	IN CSYS= 12
			-.381062	.395004	.000000E+00	IN CSYS= 0
KEYPOINT	51	X,Y,Z=	.548850	90.0000	.000000E+00	IN CSYS= 12
			-.388096	.388096	.000000E+00	IN CSYS= 0
KEYPOINT	52	X,Y,Z=	.598850	1.02929	.000000E+00	IN CSYS= 12
			.415776	.430989	.000000E+00	IN CSYS= 0
KEYPOINT	53	X,Y,Z=	.598850	27.0254	.000000E+00	IN CSYS= 12
			.184803	.569622	.000000E+00	IN CSYS= 0
KEYPOINT	54	X,Y,Z=	.598850	62.9747	.000000E+00	IN CSYS= 12
			-.184803	.569622	.000000E+00	IN CSYS= 0
KEYPOINT	55	X,Y,Z=	.598850	88.9708	.000000E+00	IN CSYS= 12
			-.415776	.430989	.000000E+00	IN CSYS= 0
KEYPOINT	56	X,Y,Z=	.598850	90.0000	.000000E+00	IN CSYS= 12
			-.423451	.423451	.000000E+00	IN CSYS= 0
KEYPOINT	57	X,Y,Z=	.648850	1.02929	.000000E+00	IN CSYS= 12
			.450490	.466974	.000000E+00	IN CSYS= 0
KEYPOINT	58	X,Y,Z=	.648850	27.0254	.000000E+00	IN CSYS= 12
			.200232	.617182	.000000E+00	IN CSYS= 0
KEYPOINT	59	X,Y,Z=	.648850	62.9747	.000000E+00	IN CSYS= 12
			-.200233	.617181	.000000E+00	IN CSYS= 0
KEYPOINT	60	X,Y,Z=	.648850	88.9708	.000000E+00	IN CSYS= 12
			-.450491	.466973	.000000E+00	IN CSYS= 0
KEYPOINT	61	X,Y,Z=	.648850	90.0000	.000000E+00	IN CSYS= 12
			-.458806	.458806	.000000E+00	IN CSYS= 0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y

DO NOT COPY NODE AND ELEMENTS
SET IS FROM 42 TO 61 IN STEPS OF 1
Define default value of esize

DEFAULT ELEMENT DIVISIONS PER LINE = 1
Line divisions and spacing ratios
in the basket structure

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

LINE CONNECTS KEYPOINTS 20 46
LINE NO.= 1 KP1= 20 TAN1= .7071 -.7071 .0000
KP2= 46 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 21 45
LINE NO.= 2 KP1= 21 TAN1= .7071 -.7071 .0000
KP2= 45 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 2 STEP 1

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

LINE CONNECTS KEYPOINTS 21 44
LINE NO.= 3 KP1= 21 TAN1= -.7071 -.7071 .0000
KP2= 44 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 18 19
LINE NO.= 4 KP1= 18 TAN1= -.7071 -.7071 .0000
KP2= 19 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 4 STEP 1

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

LINE CONNECTS KEYPOINTS 13 17
LINE NO.= 5 KP1= 13 TAN1= .7071 -.7071 .0000
KP2= 17 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 14 18
LINE NO.= 6 KP1= 14 TAN1= .7071 -.7071 .0000
KP2= 18 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 6 STEP 1

0 LINES (OF 6 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 15 19
LINE NO.= 7 KP1= 15 TAN1= .7071 -.7071 .0000
KP2= 19 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 16 44
LINE NO.= 8 KP1= 16 TAN1= .7071 -.7071 .0000
KP2= 44 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 8 STEP 1

0 LINES (OF 8 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 14 15
LINE NO.= 9 KP1= 14 TAN1= -.7071 -.7071 .0000
KP2= 15 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 9 10
LINE NO.= 10 KP1= 9 TAN1= -.7071 -.7071 .0000
KP2= 10 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 10 STEP 1

0 LINES (OF 10 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 16 43
LINE NO.= 11 KP1= 16 TAN1= -.7071 -.7071 .0000
KP2= 43 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 11 12
LINE NO.= 12 KP1= 11 TAN1= -.7071 -.7071 .0000
KP2= 12 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

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

0 LINES (OF 12 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 2 8
LINE NO.= 13 KP1= 2 TAN1= .7071 -.7071 .0000
KP2= 8 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 3 9
LINE NO.= 14 KP1= 3 TAN1= .7071 -.7071 .0000
KP2= 9 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 14 STEP 1

0 LINES (OF 14 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 4 10
LINE NO.= 15 KP1= 4 TAN1= .7071 -.7071 .0000
KP2= 10 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 5 11
LINE NO.= 16 KP1= 5 TAN1= .7071 -.7071 .0000
KP2= 11 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 16 STEP 1

0 LINES (OF 16 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 6 12
LINE NO.= 17 KP1= 6 TAN1= -.7071 -.7071 .0000
KP2= 12 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 7 43
LINE NO.= 18 KP1= 7 TAN1= -.7071 -.7071 .0000
KP2= 43 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 18 STEP 1

0 LINES (OF 18 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 3 4
LINE NO.= 19 KP1= 3 TAN1= -.7071 -.7071 .0000
KP2= 4 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 23 24
LINE NO.= 20 KP1= 23 TAN1= -.7071 -.7071 .0000
KP2= 24 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 20 STEP 1

0 LINES (OF 20 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 5 6
LINE NO.= 21 KP1= 5 TAN1= -.7071 -.7071 .0000
KP2= 6 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 25 26
LINE NO.= 22 KP1= 25 TAN1= -.7071 -.7071 .0000
KP2= 26 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 22 STEP 1

0 LINES (OF 22 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 7 42
LINE NO.= 23 KP1= 7 TAN1= -.7071 -.7071 .0000
KP2= 42 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 27 62
LINE NO.= 24 KP1= 27 TAN1= -.7071 -.7071 .0000
KP2= 62 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=

IN RANGE 1 TO 24 STEP 1

0 LINES (OF 24 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 28 22
 LINE NO.= 25 KP1= 28 TAN1= .7071 -.7071 .0000
 KP2= 22 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 29 23
 LINE NO.= 26 KP1= 29 TAN1= .7071 -.7071 .0000
 KP2= 23 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 26 STEP 1

0 LINES (OF 26 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 30 24
 LINE NO.= 27 KP1= 30 TAN1= .7071 -.7071 .0000
 KP2= 24 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 31 25
 LINE NO.= 28 KP1= 31 TAN1= .7071 -.7071 .0000
 KP2= 25 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 28 STEP 1

0 LINES (OF 28 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 32 26
 LINE NO.= 29 KP1= 32 TAN1= .7071 -.7071 .0000
 KP2= 26 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 63 27
 LINE NO.= 30 KP1= 63 TAN1= .7071 -.7071 .0000
 KP2= 27 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 30 STEP 1

0 LINES (OF 30 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 29 30
 LINE NO.= 31 KP1= 29 TAN1= -.7071 -.7071 .0000
 KP2= 30 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 34 35
 LINE NO.= 32 KP1= 34 TAN1= -.7071 -.7071 .0000
 KP2= 35 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 32 STEP 1

0 LINES (OF 32 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	31	32			
LINE NO.= 33 KP1=	31	TAN1=	-.7071	-.7071	.0000
KP2= 32	TAN2=	.7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	36	63			
LINE NO.= 34 KP1=	36	TAN1=	-.7071	-.7071	.0000
KP2= 63	TAN2=	.7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 34 STEP 1

0 LINES (OF 34 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	37	33			
LINE NO.= 35 KP1=	37	TAN1=	.7071	-.7071	.0000
KP2= 33	TAN2=	-.7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	38	34			
LINE NO.= 36 KP1=	38	TAN1=	.7071	-.7071	.0000
KP2= 34	TAN2=	-.7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 36 STEP 1

0 LINES (OF 36 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	39	35			
LINE NO.= 37 KP1=	39	TAN1=	.7071	-.7071	.0000
KP2= 35	TAN2=	-.7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	64	36			
LINE NO.= 38 KP1=	64	TAN1=	.7071	-.7071	.0000
KP2= 36	TAN2=	-.7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 38 STEP 1

0 LINES (OF 38 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	38	39			
LINE NO.= 39 KP1=	38	TAN1=	-.7071	-.7071	.0000
KP2= 39	TAN2=	.7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	41	64			
LINE NO.= 40 KP1=	41	TAN1=	-.7071	-.7071	.0000
KP2= 64	TAN2=	.7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 40 STEP 1

0 LINES (OF 40 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 66 40
 LINE NO.= 41 KP1= 66 TAN1= .7071 -.7071 .0000
 KP2= 40 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 65 41
 LINE NO.= 42 KP1= 65 TAN1= .7071 -.7071 .0000
 KP2= 41 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 42 STEP 1

0 LINES (OF 42 DEFINED) SELECTED BY LSEL COMMAND.
 Define perpendicular lines to the circles

LINE CONNECTS KEYPOINTS 46 51
 LINE NO.= 43 KP1= 46 TAN1= .7071 -.7071 .0000
 KP2= 51 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 45 50
 LINE NO.= 44 KP1= 45 TAN1= .6943 -.7197 .0000
 KP2= 50 TAN2= -.6943 .7197 .0000

LINE CONNECTS KEYPOINTS 44 49
 LINE NO.= 45 KP1= 44 TAN1= .3086 -.9512 .0000
 KP2= 49 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 43 48
 LINE NO.= 46 KP1= 43 TAN1= -.3086 -.9512 .0000
 KP2= 48 TAN2= .3086 .9512 .0000

LINE CONNECTS KEYPOINTS 42 47
 LINE NO.= 47 KP1= 42 TAN1= -.6943 -.7197 .0000
 KP2= 47 TAN2= .6943 .7197 .0000

LINE CONNECTS KEYPOINTS 62 67
 LINE NO.= 48 KP1= 62 TAN1= -.7197 -.6943 .0000
 KP2= 67 TAN2= .7197 .6943 .0000

LINE CONNECTS KEYPOINTS 63 68
 LINE NO.= 49 KP1= 63 TAN1= -.9512 -.3086 .0000
 KP2= 68 TAN2= .9512 .3086 .0000

LINE CONNECTS KEYPOINTS 64 69
 LINE NO.= 50 KP1= 64 TAN1= -.9512 .3086 .0000
 KP2= 69 TAN2= .9512 -.3086 .0000

LINE CONNECTS KEYPOINTS 65 70
 LINE NO.= 51 KP1= 65 TAN1= -.7197 .6943 .0000
 KP2= 70 TAN2= .7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 66 71
 LINE NO.= 52 KP1= 66 TAN1= -.7071 .7071 .0000
 KP2= 71 TAN2= .7071 -.7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 52 STEP 1

0 LINES (OF 52 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 51 56
 LINE NO.= 53 KP1= 51 TAN1= .7071 -.7071 .0000
 KP2= 56 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS	50	55			
LINE NO.= 54	KP1= 50	TAN1= .6943	-.7197	.0000	
	KP2= 55	TAN2= -.6943	.7197	.0000	
LINE CONNECTS KEYPOINTS	49	54			
LINE NO.= 55	KP1= 49	TAN1= .3086	-.9512	.0000	
	KP2= 54	TAN2= -.3086	.9512	.0000	
LINE CONNECTS KEYPOINTS	48	53			
LINE NO.= 56	KP1= 48	TAN1= -.3086	-.9512	.0000	
	KP2= 53	TAN2= .3086	.9512	.0000	
LINE CONNECTS KEYPOINTS	47	52			
LINE NO.= 57	KP1= 47	TAN1= -.6943	-.7197	.0000	
	KP2= 52	TAN2= .6943	.7197	.0000	
LINE CONNECTS KEYPOINTS	67	72			
LINE NO.= 58	KP1= 67	TAN1= -.7197	-.6943	.0000	
	KP2= 72	TAN2= .7197	.6943	.0000	
LINE CONNECTS KEYPOINTS	68	73			
LINE NO.= 59	KP1= 68	TAN1= -.9512	-.3086	.0000	
	KP2= 73	TAN2= .9512	.3086	.0000	
LINE CONNECTS KEYPOINTS	69	74			
LINE NO.= 60	KP1= 69	TAN1= -.9512	.3086	.0000	
	KP2= 74	TAN2= .9512	-.3086	.0000	
LINE CONNECTS KEYPOINTS	70	75			
LINE NO.= 61	KP1= 70	TAN1= -.7197	.6943	.0000	
	KP2= 75	TAN2= .7197	-.6943	.0000	
LINE CONNECTS KEYPOINTS	71	76			
LINE NO.= 62	KP1= 71	TAN1= -.7071	.7071	.0000	
	KP2= 76	TAN2= .7071	-.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 3, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 62 STEP 1

0 LINES (OF 62 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	56	61			
LINE NO.= 63	KP1= 56	TAN1= .7071	-.7071	.0000	
	KP2= 61	TAN2= -.7071	.7071	.0000	
LINE CONNECTS KEYPOINTS	55	60			
LINE NO.= 64	KP1= 55	TAN1= .6943	-.7197	.0000	
	KP2= 60	TAN2= -.6943	.7197	.0000	
LINE CONNECTS KEYPOINTS	54	59			
LINE NO.= 65	KP1= 54	TAN1= .3086	-.9512	.0000	
	KP2= 59	TAN2= -.3086	.9512	.0000	
LINE CONNECTS KEYPOINTS	53	58			
LINE NO.= 66	KP1= 53	TAN1= -.3086	-.9512	.0000	
	KP2= 58	TAN2= .3086	.9512	.0000	
LINE CONNECTS KEYPOINTS	52	57			
LINE NO.= 67	KP1= 52	TAN1= -.6943	-.7197	.0000	
	KP2= 57	TAN2= .6943	.7197	.0000	
LINE CONNECTS KEYPOINTS	72	77			
LINE NO.= 68	KP1= 72	TAN1= -.7197	-.6943	.0000	
	KP2= 77	TAN2= .7197	.6943	.0000	

LINE CONNECTS KEYPOINTS 73 78
 LINE NO.= 69 KP1= 73 TAN1= -.9512 -.3086 .0000
 KP2= 78 TAN2= .9512 .3086 .0000

LINE CONNECTS KEYPOINTS 74 79
 LINE NO.= 70 KP1= 74 TAN1= -.9512 .3086 .0000
 KP2= 79 TAN2= .9512 -.3086 .0000

LINE CONNECTS KEYPOINTS 75 80
 LINE NO.= 71 KP1= 75 TAN1= -.7197 .6943 .0000
 KP2= 80 TAN2= .7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 76 81
 LINE NO.= 72 KP1= 76 TAN1= -.7071 .7071 .0000
 KP2= 81 TAN2= .7071 -.7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 72 STEP 1

0 LINES (OF 72 DEFINED) SELECTED BY LSEL COMMAND.
 Define circles of inner and outer barriers

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

LINE CONNECTS KEYPOINTS 65 64
 LINE NO.= 73 KP1= 65 TAN1= -.6943 -.7197 .0000
 KP2= 64 TAN2= .3086 .9512 .0000

LINE CONNECTS KEYPOINTS 70 69
 LINE NO.= 74 KP1= 70 TAN1= -.6943 -.7197 .0000
 KP2= 69 TAN2= .3086 .9512 .0000

LINE CONNECTS KEYPOINTS 75 74
 LINE NO.= 75 KP1= 75 TAN1= -.6943 -.7197 .0000
 KP2= 74 TAN2= .3086 .9512 .0000

LINE CONNECTS KEYPOINTS 80 79
 LINE NO.= 76 KP1= 80 TAN1= -.6943 -.7197 .0000
 KP2= 79 TAN2= .3086 .9512 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 76 STEP 1

0 LINES (OF 76 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 64 63
 LINE NO.= 77 KP1= 64 TAN1= -.3086 -.9512 .0000
 KP2= 63 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 69 68
 LINE NO.= 78 KP1= 69 TAN1= -.3086 -.9512 .0000
 KP2= 68 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 74 73
 LINE NO.= 79 KP1= 74 TAN1= -.3086 -.9512 .0000
 KP2= 73 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 79 78
 LINE NO.= 80 KP1= 79 TAN1= -.3086 -.9512 .0000
 KP2= 78 TAN2= -.3086 .9512 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES

TO NDIV = 3, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 80 STEP 1

0 LINES (OF 80 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	63	62			
LINE NO.= 81 KP1=	63	TAN1=	.3086	-.9512	.0000
KP2=	62	TAN2=	-.6943	.7197	.0000

LINE CONNECTS KEYPOINTS	68	67			
LINE NO.= 82 KP1=	68	TAN1=	.3086	-.9512	.0000
KP2=	67	TAN2=	-.6943	.7197	.0000

LINE CONNECTS KEYPOINTS	73	72			
LINE NO.= 83 KP1=	73	TAN1=	.3086	-.9512	.0000
KP2=	72	TAN2=	-.6943	.7197	.0000

LINE CONNECTS KEYPOINTS	78	77			
LINE NO.= 84 KP1=	78	TAN1=	.3086	-.9512	.0000
KP2=	77	TAN2=	-.6943	.7197	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 84 STEP 1

0 LINES (OF 84 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	42	43			
LINE NO.= 85 KP1=	42	TAN1=	.7197	-.6943	.0000
KP2=	43	TAN2=	-.9512	.3086	.0000

LINE CONNECTS KEYPOINTS	47	48			
LINE NO.= 86 KP1=	47	TAN1=	.7197	-.6943	.0000
KP2=	48	TAN2=	-.9512	.3086	.0000

LINE CONNECTS KEYPOINTS	52	53			
LINE NO.= 87 KP1=	52	TAN1=	.7197	-.6943	.0000
KP2=	53	TAN2=	-.9512	.3086	.0000

LINE CONNECTS KEYPOINTS	57	58			
LINE NO.= 88 KP1=	57	TAN1=	.7197	-.6943	.0000
KP2=	58	TAN2=	-.9512	.3086	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 88 STEP 1

0 LINES (OF 88 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	43	44			
LINE NO.= 89 KP1=	43	TAN1=	.9512	-.3086	.0000
KP2=	44	TAN2=	-.9512	-.3086	.0000

LINE CONNECTS KEYPOINTS	48	49			
LINE NO.= 90 KP1=	48	TAN1=	.9512	-.3086	.0000
KP2=	49	TAN2=	-.9512	-.3086	.0000

LINE CONNECTS KEYPOINTS	53	54			
LINE NO.= 91 KP1=	53	TAN1=	.9512	-.3086	.0000
KP2=	54	TAN2=	-.9512	-.3086	.0000

LINE CONNECTS KEYPOINTS 58 59
 LINE NO.= 92 KP1= 58 TAN1= .9512 -.3086 .0000
 KP2= 59 TAN2= -.9512 -.3086 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 3, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 92 STEP 1

0 LINES (OF 92 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 44 45
 LINE NO.= 93 KP1= 44 TAN1= .9512 .3086 .0000
 KP2= 45 TAN2= -.7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 49 50
 LINE NO.= 94 KP1= 49 TAN1= .9512 .3086 .0000
 KP2= 50 TAN2= -.7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 54 55
 LINE NO.= 95 KP1= 54 TAN1= .9512 .3086 .0000
 KP2= 55 TAN2= -.7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 59 60
 LINE NO.= 96 KP1= 59 TAN1= .9512 .3086 .0000
 KP2= 60 TAN2= -.7197 -.6943 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 96 STEP 1

0 LINES (OF 96 DEFINED) SELECTED BY LSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT	82	X,Y,Z=	.000000E+00	.000000E+00	4.58500	IN CSYS= 11
			.000000E+00	.000000E+00	4.58500	IN CSYS= 0
KEYPOINT	83	X,Y,Z=	.000000E+00	.000000E+00	4.61000	IN CSYS= 11
			.000000E+00	.000000E+00	4.61000	IN CSYS= 0
KEYPOINT	84	X,Y,Z=	.000000E+00	.000000E+00	4.64000	IN CSYS= 11
			.000000E+00	.000000E+00	4.64000	IN CSYS= 0
KEYPOINT	85	X,Y,Z=	.000000E+00	.000000E+00	4.75000	IN CSYS= 11
			.000000E+00	.000000E+00	4.75000	IN CSYS= 0
KEYPOINT	86	X,Y,Z=	.000000E+00	.000000E+00	4.97500	IN CSYS= 11
			.000000E+00	.000000E+00	4.97500	IN CSYS= 0
KEYPOINT	87	X,Y,Z=	.000000E+00	.000000E+00	-.250000E-01	IN CSYS= 11
			.000000E+00	.000000E+00	-.250000E-01	IN CSYS= 0
KEYPOINT	88	X,Y,Z=	.000000E+00	.000000E+00	-.135000	IN CSYS= 11
			.000000E+00	.000000E+00	-.135000	IN CSYS= 0
KEYPOINT	89	X,Y,Z=	.000000E+00	.000000E+00	-.360000	IN CSYS= 11

```

.000000E+00 .000000E+00 -.360000 IN CSYS= 0

LINE CONNECTS KEYPOINTS      1      82
LINE NO.=  97 KP1=      1 TAN1= .0000 .0000 -1.0000
              KP2=      82 TAN2= .0000 .0000  1.0000

LINE CONNECTS KEYPOINTS      82      83
LINE NO.=  98 KP1=      82 TAN1= .0000 .0000 -1.0000
              KP2=      83 TAN2= .0000 .0000  1.0000

LINE CONNECTS KEYPOINTS      83      84
LINE NO.=  99 KP1=      83 TAN1= .0000 .0000 -1.0000
              KP2=      84 TAN2= .0000 .0000  1.0000

LINE CONNECTS KEYPOINTS      84      85
LINE NO.= 100 KP1=      84 TAN1= .0000 .0000 -1.0000
              KP2=      85 TAN2= .0000 .0000  1.0000

LINE CONNECTS KEYPOINTS      85      86
LINE NO.= 101 KP1=      85 TAN1= .0000 .0000 -1.0000
              KP2=      86 TAN2= .0000 .0000  1.0000

LINE CONNECTS KEYPOINTS      1      87
LINE NO.= 102 KP1=      1 TAN1= .0000 .0000  1.0000
              KP2=      87 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS      87      88
LINE NO.= 103 KP1=      87 TAN1= .0000 .0000  1.0000
              KP2=      88 TAN2= .0000 .0000 -1.0000

LINE CONNECTS KEYPOINTS      88      89
LINE NO.= 104 KP1=      88 TAN1= .0000 .0000  1.0000
              KP2=      89 TAN2= .0000 .0000 -1.0000

Define areas in the inner barrier

```

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 46 45 50 51

*** WARNING *** CP= 1.730 TIME= 21:20:14
Unselected line 44.

*** WARNING *** CP= 1.740 TIME= 21:20:14
Unselected line 43.

AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 45 44 49 50

*** WARNING *** CP= 1.770 TIME= 21:20:14
Unselected line 93.

*** WARNING *** CP= 1.780 TIME= 21:20:14
Unselected line 45.

*** WARNING *** CP= 1.780 TIME= 21:20:14
Unselected line 94.

*** WARNING *** CP= 1.780 TIME= 21:20:14
Unselected line 44.

AREA NUMBER = 2

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 44 43 48 49

*** WARNING *** CP= 1.850 TIME= 21:20:15
Unselected line 89.

*** WARNING *** CP= 1.850 TIME= 21:20:15
Unselected line 46.

*** WARNING *** CP= 1.850 TIME= 21:20:15
Unselected line 90.

*** WARNING *** CP= 1.850 TIME= 21:20:15
Unselected line 45.

AREA NUMBER = 3

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 43 42 47 48

*** WARNING *** CP= 1.880 TIME= 21:20:15
Unselected line 85.

*** WARNING *** CP= 1.880 TIME= 21:20:15
Unselected line 47.

*** WARNING *** CP= 1.880 TIME= 21:20:15
Unselected line 86.

*** WARNING *** CP= 1.880 TIME= 21:20:15
Unselected line 46.

AREA NUMBER = 4

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 42 62 67 47

*** WARNING *** CP= 1.920 TIME= 21:20:15
Unselected line 48.

*** WARNING *** CP= 1.920 TIME= 21:20:15
Unselected line 47.

AREA NUMBER = 5

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 63 68 67 62

*** WARNING *** CP= 1.950 TIME= 21:20:15
Unselected line 49.

*** WARNING *** CP= 1.950 TIME= 21:20:15
Unselected line 82.

*** WARNING *** CP= 1.950 TIME= 21:20:15
Unselected line 48.

*** WARNING *** CP= 1.950 TIME= 21:20:15
Unselected line 81.

AREA NUMBER = 6

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 64 69 68 63

*** WARNING *** CP= 1.990 TIME= 21:20:15
Unselected line 50.

*** WARNING *** CP= 2.000 TIME= 21:20:15
Unselected line 78.

*** WARNING *** CP= 2.000 TIME= 21:20:15
Unselected line 49.

*** WARNING *** CP= 2.000 TIME= 21:20:15

Unselected line 77.

AREA NUMBER = 7

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 70 69 64 65

*** WARNING *** CP= 2.040 TIME= 21:20:15

Unselected line 74.

*** WARNING *** CP= 2.040 TIME= 21:20:15

Unselected line 50.

*** WARNING *** CP= 2.040 TIME= 21:20:15

Unselected line 73.

*** WARNING *** CP= 2.040 TIME= 21:20:15

Unselected line 51.

AREA NUMBER = 8

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 71 70 65 66

*** WARNING *** CP= 2.090 TIME= 21:20:15

Unselected line 51.

*** WARNING *** CP= 2.090 TIME= 21:20:15

Unselected line 52.

AREA NUMBER = 9

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 9

MAXIMUM NODE NUMBER = 54

MAXIMUM ELEMENT NUMBER = 34

Extrude inner barrier in three steps

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS

IN DIRECTION .0000000E+00, .0000000E+00, 1.425000

SCALED .0000000E+00, .0000000E+00, .0000000E+00

*** WARNING *** CP= 2.670 TIME= 21:20:15

Meshing of volume 1 produced 6 elements with excessive aspect ratio.

Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 1 WITH EXCESSIVE ASPECT RATIO ***

35 36 37 38 39 40

*** WARNING *** CP= 3.340 TIME= 21:20:16

Meshing of volume 5 produced 6 elements with excessive aspect ratio.

Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 5 WITH EXCESSIVE ASPECT RATIO ***

83 84 85 86 87 88

*** WARNING *** CP= 3.970 TIME= 21:20:17
Meshing of volume 9 produced 6 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 9 WITH EXCESSIVE ASPECT RATIO ***
131 132 133 134 135 136

MAXIMUM NODE NUMBER = 216
MAXIMUM ELEMENT NUMBER = 136

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 1.4250 AND 1.4250
KABS= 0. TOLERANCE= .712500E-02

9 AREAS (OF 46 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .50000
KABS= 0. TOLERANCE= .000000E+00

9 AREAS (OF 46 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 9
MAXIMUM NODE NUMBER = 216
MAXIMUM ELEMENT NUMBER = 170

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

DEFAULT ELEMENT DIVISIONS PER LINE = 15

EXTRUDE ALL AREAS
IN DIRECTION .0000000E+00, .0000000E+00, 1.735000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

MAXIMUM NODE NUMBER = 1026
MAXIMUM ELEMENT NUMBER = 680

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 3.1600 AND 3.1600
KABS= 0. TOLERANCE= .158000E-01

9 AREAS (OF 83 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .50000
KABS= 0. TOLERANCE= .000000E+00

9 AREAS (OF 83 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 9
 MAXIMUM NODE NUMBER = 1026
 MAXIMUM ELEMENT NUMBER = 714

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS
 IN DIRECTION .0000000E+00, .0000000E+00, 1.425000
 SCALED .0000000E+00, .0000000E+00, .0000000E+00

*** WARNING *** CP= 6.870 TIME= 21:20:20
 Meshing of volume 19 produced 6 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 19 WITH EXCESSIVE ASPECT RATIO ***
 715 716 717 718 719 720

*** WARNING *** CP= 7.550 TIME= 21:20:21
 Meshing of volume 23 produced 6 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 23 WITH EXCESSIVE ASPECT RATIO ***
 763 764 765 766 767 768

*** WARNING *** CP= 8.260 TIME= 21:20:22
 Meshing of volume 27 produced 6 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 27 WITH EXCESSIVE ASPECT RATIO ***
 811 812 813 814 815 816

MAXIMUM NODE NUMBER = 1188
 MAXIMUM ELEMENT NUMBER = 816

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 120 STEP 1

0 AREAS (OF 120 DEFINED) SELECTED BY ASEL COMMAND.
 Define areas in the inner part of outer barrier

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 51 50 55 56

*** WARNING *** CP= 8.270 TIME= 21:20:22
 Unselected line 54.

*** WARNING *** CP= 8.270 TIME= 21:20:22
 Unselected line 53.

AREA NUMBER = 121

DEFINE AREA BY LIST OF KEYPOINTS
 KEYPOINT LIST = 50 49 54 55

*** WARNING *** CP= 8.300 TIME= 21:20:22
 Unselected line 94.

*** WARNING *** CP= 8.300 TIME= 21:20:22
 Unselected line 55.

*** WARNING *** CP= 8.300 TIME= 21:20:22
 Unselected line 95.

*** WARNING *** CP= 8.300 TIME= 21:20:22
Unselected line 54.

AREA NUMBER = 122

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 49 48 53 54

*** WARNING *** CP= 8.340 TIME= 21:20:22
Unselected line 90.

*** WARNING *** CP= 8.340 TIME= 21:20:22
Unselected line 56.

*** WARNING *** CP= 8.340 TIME= 21:20:22
Unselected line 91.

*** WARNING *** CP= 8.340 TIME= 21:20:22
Unselected line 55.

AREA NUMBER = 123

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 48 47 52 53

*** WARNING *** CP= 8.390 TIME= 21:20:22
Unselected line 86.

*** WARNING *** CP= 8.390 TIME= 21:20:22
Unselected line 57.

*** WARNING *** CP= 8.390 TIME= 21:20:22
Unselected line 87.

*** WARNING *** CP= 8.390 TIME= 21:20:22
Unselected line 56.

AREA NUMBER = 124

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 47 67 72 52

*** WARNING *** CP= 8.420 TIME= 21:20:22
Unselected line 58.

*** WARNING *** CP= 8.420 TIME= 21:20:22
Unselected line 57.

AREA NUMBER = 125

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 68 73 72 67

*** WARNING *** CP= 8.450 TIME= 21:20:22
Unselected line 59.

*** WARNING *** CP= 8.450 TIME= 21:20:22
Unselected line 83.

*** WARNING *** CP= 8.450 TIME= 21:20:22
Unselected line 58.

*** WARNING *** CP= 8.450 TIME= 21:20:22
Unselected line 82.

AREA NUMBER = 126

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 74 73 68 69

*** WARNING *** CP= 8.470 TIME= 21:20:22
Unselected line 79.

*** WARNING *** CP= 8.470 TIME= 21:20:22
Unselected line 59.

*** WARNING *** CP= 8.470 TIME= 21:20:22
Unselected line 78.

*** WARNING *** CP= 8.480 TIME= 21:20:22
Unselected line 60.

AREA NUMBER = 127

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 75 74 69 70

*** WARNING *** CP= 8.510 TIME= 21:20:22
Unselected line 75.

*** WARNING *** CP= 8.510 TIME= 21:20:22
Unselected line 60.

*** WARNING *** CP= 8.510 TIME= 21:20:22
Unselected line 74.

*** WARNING *** CP= 8.520 TIME= 21:20:22
Unselected line 61.

AREA NUMBER = 128

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 76 75 70 71

*** WARNING *** CP= 8.550 TIME= 21:20:22
Unselected line 61.

*** WARNING *** CP= 8.550 TIME= 21:20:22
Unselected line 62.

AREA NUMBER = 129

Define areas in the outer part of outer barrier

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 56 55 60 61

*** WARNING *** CP= 8.580 TIME= 21:20:22
Unselected line 64.

*** WARNING *** CP= 8.580 TIME= 21:20:22
Unselected line 63.

AREA NUMBER = 130

DEFINE AREA BY LIST OF KEYPOINTS
KEYPOINT LIST = 55 54 59 60

*** WARNING *** CP= 8.600 TIME= 21:20:22
Unselected line 95.

*** WARNING *** CP= 8.600 TIME= 21:20:22
Unselected line 65.

*** WARNING *** CP= 8.600 TIME= 21:20:22
Unselected line 96.

*** WARNING *** CP= 8.600 TIME= 21:20:22
Unselected line 64.

AREA NUMBER = 131

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 54 53 58 59

*** WARNING *** CP= 8.640 TIME= 21:20:22
Unselected line 91.

*** WARNING *** CP= 8.640 TIME= 21:20:22
Unselected line 66.

*** WARNING *** CP= 8.640 TIME= 21:20:22
Unselected line 92.

*** WARNING *** CP= 8.640 TIME= 21:20:22
Unselected line 65.

AREA NUMBER = 132

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 53 52 57 58

*** WARNING *** CP= 8.690 TIME= 21:20:22
Unselected line 87.

*** WARNING *** CP= 8.690 TIME= 21:20:22
Unselected line 67.

*** WARNING *** CP= 8.690 TIME= 21:20:22
Unselected line 88.

*** WARNING *** CP= 8.700 TIME= 21:20:22
Unselected line 66.

AREA NUMBER = 133

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 52 72 77 57

*** WARNING *** CP= 8.730 TIME= 21:20:22
Unselected line 68.

*** WARNING *** CP= 8.730 TIME= 21:20:22
Unselected line 67.

AREA NUMBER = 134

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 73 78 77 72

*** WARNING *** CP= 8.760 TIME= 21:20:22
Unselected line 69.

*** WARNING *** CP= 8.760 TIME= 21:20:22
Unselected line 84.

*** WARNING *** CP= 8.760 TIME= 21:20:22
Unselected line 68.

*** WARNING *** CP= 8.760 TIME= 21:20:22
Unselected line 83.

AREA NUMBER = 135

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 74 79 78 73

*** WARNING *** CP= 8.800 TIME= 21:20:22
Unselected line 70.

*** WARNING *** CP= 8.800 TIME= 21:20:22

Unselected line 80.

*** WARNING *** CP= 8.800 TIME= 21:20:22
Unselected line 69.

*** WARNING *** CP= 8.810 TIME= 21:20:22
Unselected line 79.

AREA NUMBER = 136

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 80 79 74 75

*** WARNING *** CP= 8.850 TIME= 21:20:22
Unselected line 76.

*** WARNING *** CP= 8.850 TIME= 21:20:22
Unselected line 70.

*** WARNING *** CP= 8.850 TIME= 21:20:22
Unselected line 75.

*** WARNING *** CP= 8.850 TIME= 21:20:22
Unselected line 71.

AREA NUMBER = 137

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 81 80 75 76

*** WARNING *** CP= 8.890 TIME= 21:20:22
Unselected line 71.

*** WARNING *** CP= 8.890 TIME= 21:20:22
Unselected line 72.

AREA NUMBER = 138

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 18
MAXIMUM NODE NUMBER = 1278
MAXIMUM ELEMENT NUMBER = 901
Extrude outer barrier in three steps

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS

IN DIRECTION .0000000E+00, .0000000E+00, 1.425000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

*** WARNING *** CP= 9.740 TIME= 21:20:23
Meshing of volume 28 produced 9 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 28 WITH EXCESSIVE ASPECT RATIO ***
902 903 904 905 906 907 908 909
910

*** WARNING *** CP= 11.070 TIME= 21:20:25
Meshing of volume 36 produced 9 elements with excessive aspect ratio.
Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 36 WITH EXCESSIVE ASPECT RATIO ***
1046 1047 1048 1049 1050 1051 1052 1053
1054

MAXIMUM NODE NUMBER = 1602
MAXIMUM ELEMENT NUMBER = 1156

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 1.4250 AND 1.4250
KABS= 0. TOLERANCE= .712500E-02

27 AREAS (OF 203 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .54885
KABS= 0. TOLERANCE= .000000E+00

18 AREAS (OF 203 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 18
MAXIMUM NODE NUMBER = 1602
MAXIMUM ELEMENT NUMBER = 1241

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

DEFAULT ELEMENT DIVISIONS PER LINE = 15

EXTRUDE ALL AREAS
IN DIRECTION .0000000E+00, .0000000E+00, 1.735000
SCALED .0000000E+00, .0000000E+00, .0000000E+00

MAXIMUM NODE NUMBER = 3222
MAXIMUM ELEMENT NUMBER = 2516

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 3.1600 AND 3.1600
KABS= 0. TOLERANCE= .158000E-01

27 AREAS (OF 268 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

UNSELECT FOR ITEM=LOC COMPONENT=X BETWEEN .00000E+00 AND .54885
KABS= 0. TOLERANCE= .000000E+00

18 AREAS (OF 268 DEFINED) SELECTED BY ASEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

ELEMENT TYPE SET TO 6

MATERIAL NUMBER SET TO 6

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 18
 MAXIMUM NODE NUMBER = 3222
 MAXIMUM ELEMENT NUMBER = 2601

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

DEFAULT ELEMENT DIVISIONS PER LINE = 3

EXTRUDE ALL AREAS
 IN DIRECTION .0000000E+00, .0000000E+00, 1.425000
 SCALED .0000000E+00, .0000000E+00, .0000000E+00

*** WARNING *** CP= 18.250 TIME= 21:20:32
 Meshing of volume 64 produced 9 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 64 WITH EXCESSIVE ASPECT RATIO ***
 2602 2603 2604 2605 2606 2607 2608 2609
 2610

*** WARNING *** CP= 19.690 TIME= 21:20:34
 Meshing of volume 72 produced 9 elements with excessive aspect ratio.
 Changing the element divisions on this volume may help.

*** LIST OF ELEMENTS IN VOLUME 72 WITH EXCESSIVE ASPECT RATIO ***
 2746 2747 2748 2749 2750 2751 2752 2753
 2754

MAXIMUM NODE NUMBER = 3546
 MAXIMUM ELEMENT NUMBER = 2856

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 333 STEP 1

0 AREAS (OF 333 DEFINED) SELECTED BY ASEL COMMAND.
 Half Model is used to create the other half
 by symmetry along the x-axis

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 81 STEP 1

81 VOLUMES (OF 81 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 333 STEP 1

333 AREAS (OF 333 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 491 STEP 1

491 LINES (OF 491 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 239 STEP 1

239 KEYPOINTS (OF 239 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 2856 STEP 1

2856 ELEMENTS (OF 2856 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=

IN RANGE 1 TO 3546 STEP 1

3546 NODES (OF 3546 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

SYMMETRY TRANSFORMATION OF VOLUMES USING COMPONENT X
SET IS ALL SELECTED VOLUMES

MAXIMUM NODE NUMBER = 7092
MAXIMUM ELEMENT NUMBER = 5754

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 3623	USED FOR NODES	4818
NODE 3609	USED FOR NODES	4805
NODE 4026	USED FOR NODES	5419
NODE 3624	USED FOR NODES	4819
NODE 4023	USED FOR NODES	5416
NODE 4024	USED FOR NODES	5417
NODE 4022	USED FOR NODES	5415
NODE 4028	USED FOR NODES	5421
NODE 4025	USED FOR NODES	5418
NODE 4027	USED FOR NODES	5420
NODE 4032	USED FOR NODES	5425
NODE 4030	USED FOR NODES	5423
NODE 4034	USED FOR NODES	5427
NODE 3948	USED FOR NODES	5390
NODE 4029	USED FOR NODES	5422
NODE 4035	USED FOR NODES	5428
NODE 4031	USED FOR NODES	5424
NODE 4033	USED FOR NODES	5426
NODE 4628	USED FOR NODES	6831
NODE 4614	USED FOR NODES	6818
NODE 4629	USED FOR NODES	6832
NODE 3625	USED FOR NODES	4820
NODE 3610	USED FOR NODES	4806
NODE 4036	USED FOR NODES	5429
NODE 4037	USED FOR NODES	5430
NODE 3626	USED FOR NODES	4821
NODE 4038	USED FOR NODES	5431
NODE 4039	USED FOR NODES	5432
NODE 4040	USED FOR NODES	5433
NODE 4041	USED FOR NODES	5434
NODE 4042	USED FOR NODES	5435
NODE 4631	USED FOR NODES	6834
NODE 3949	USED FOR NODES	5391
NODE 4630	USED FOR NODES	6833
NODE 4048	USED FOR NODES	5441
NODE 4049	USED FOR NODES	5442
NODE 4047	USED FOR NODES	5440
NODE 4615	USED FOR NODES	6819
NODE 4044	USED FOR NODES	5437
NODE 4043	USED FOR NODES	5436
NODE 4045	USED FOR NODES	5438
NODE 4046	USED FOR NODES	5439
NODE 3619	USED FOR NODES	4816
NODE 3997	USED FOR NODES	5404
NODE 4001	USED FOR NODES	5408
NODE 4000	USED FOR NODES	5407
NODE 4002	USED FOR NODES	5409
NODE 4003	USED FOR NODES	5410
NODE 4004	USED FOR NODES	5411
NODE 4005	USED FOR NODES	5412
NODE 3607	USED FOR NODES	4804
NODE 4006	USED FOR NODES	5413
NODE 4007	USED FOR NODES	5414
NODE 4624	USED FOR NODES	6829
NODE 4625	USED FOR NODES	6830
NODE 3994	USED FOR NODES	5401
NODE 3946	USED FOR NODES	5389

NODE	3998	USED FOR NODES	5405
NODE	3995	USED FOR NODES	5402
NODE	3999	USED FOR NODES	5406
NODE	3620	USED FOR NODES	4817
NODE	3996	USED FOR NODES	5403
NODE	4612	USED FOR NODES	6817
NODE	3587	USED FOR NODES	4779
NODE	3891	USED FOR NODES	5281
NODE	3888	USED FOR NODES	5278
NODE	3889	USED FOR NODES	5279
NODE	3588	USED FOR NODES	4780
NODE	3897	USED FOR NODES	5287
NODE	3887	USED FOR NODES	5277
NODE	3890	USED FOR NODES	5280
NODE	3579	USED FOR NODES	4771
NODE	3892	USED FOR NODES	5282
NODE	3893	USED FOR NODES	5283
NODE	3895	USED FOR NODES	5285
NODE	3894	USED FOR NODES	5284
NODE	3899	USED FOR NODES	5289
NODE	4601	USED FOR NODES	6801
NODE	3896	USED FOR NODES	5286
NODE	3855	USED FOR NODES	5269
NODE	3900	USED FOR NODES	5290
NODE	3898	USED FOR NODES	5288
NODE	4602	USED FOR NODES	6802
NODE	4593	USED FOR NODES	6793
NODE	3652	USED FOR NODES	4857
NODE	3651	USED FOR NODES	4856
NODE	3641	USED FOR NODES	4847
NODE	4146	USED FOR NODES	5597
NODE	4143	USED FOR NODES	5594
NODE	4144	USED FOR NODES	5595
NODE	4142	USED FOR NODES	5593
NODE	4140	USED FOR NODES	5591
NODE	4141	USED FOR NODES	5592
NODE	4145	USED FOR NODES	5596
NODE	4149	USED FOR NODES	5600
NODE	4153	USED FOR NODES	5604
NODE	4152	USED FOR NODES	5603
NODE	4650	USED FOR NODES	6863
NODE	4082	USED FOR NODES	5570
NODE	4150	USED FOR NODES	5601
NODE	4151	USED FOR NODES	5602
NODE	4148	USED FOR NODES	5599
NODE	4147	USED FOR NODES	5598
NODE	4651	USED FOR NODES	6864
NODE	4640	USED FOR NODES	6854
NODE	3591	USED FOR NODES	4781
NODE	3917	USED FOR NODES	5293
NODE	3916	USED FOR NODES	5292
NODE	3919	USED FOR NODES	5295
NODE	3915	USED FOR NODES	5291
NODE	3921	USED FOR NODES	5297
NODE	3592	USED FOR NODES	4782
NODE	3918	USED FOR NODES	5294
NODE	3920	USED FOR NODES	5296
NODE	3581	USED FOR NODES	4772
NODE	3923	USED FOR NODES	5299
NODE	3926	USED FOR NODES	5302
NODE	3925	USED FOR NODES	5301
NODE	3927	USED FOR NODES	5303
NODE	3928	USED FOR NODES	5304
NODE	3857	USED FOR NODES	5270
NODE	4605	USED FOR NODES	6803
NODE	3922	USED FOR NODES	5298
NODE	3924	USED FOR NODES	5300
NODE	4606	USED FOR NODES	6804
NODE	4595	USED FOR NODES	6794
NODE	1245	USED FOR NODES	5007

NODE	1501	USED	FOR	NODES	5017
NODE	2702	USED	FOR	NODES	6262
NODE	2703	USED	FOR	NODES	6263
NODE	1497	USED	FOR	NODES	5011
NODE	2707	USED	FOR	NODES	6267
NODE	2705	USED	FOR	NODES	6265
NODE	1502	USED	FOR	NODES	5018
NODE	2704	USED	FOR	NODES	6264
NODE	2701	USED	FOR	NODES	6261
NODE	2706	USED	FOR	NODES	6266
NODE	2710	USED	FOR	NODES	6270
NODE	2709	USED	FOR	NODES	6269
NODE	3445	USED	FOR	NODES	6993
NODE	2708	USED	FOR	NODES	6268
NODE	2714	USED	FOR	NODES	6274
NODE	2711	USED	FOR	NODES	6271
NODE	2712	USED	FOR	NODES	6272
NODE	2685	USED	FOR	NODES	6231
NODE	2713	USED	FOR	NODES	6273
NODE	3441	USED	FOR	NODES	6987
NODE	3446	USED	FOR	NODES	6994
NODE	2686	USED	FOR	NODES	6232
NODE	1246	USED	FOR	NODES	5008
NODE	1498	USED	FOR	NODES	5012
NODE	1503	USED	FOR	NODES	5019
NODE	1504	USED	FOR	NODES	5020
NODE	2729	USED	FOR	NODES	6275
NODE	2730	USED	FOR	NODES	6276
NODE	2731	USED	FOR	NODES	6277
NODE	2732	USED	FOR	NODES	6278
NODE	2733	USED	FOR	NODES	6279
NODE	2734	USED	FOR	NODES	6280
NODE	2735	USED	FOR	NODES	6281
NODE	2736	USED	FOR	NODES	6282
NODE	2737	USED	FOR	NODES	6283
NODE	2738	USED	FOR	NODES	6284
NODE	2739	USED	FOR	NODES	6285
NODE	2740	USED	FOR	NODES	6286
NODE	2741	USED	FOR	NODES	6287
NODE	2742	USED	FOR	NODES	6288
NODE	3442	USED	FOR	NODES	6988
NODE	3449	USED	FOR	NODES	6995
NODE	3450	USED	FOR	NODES	6996
NODE	3237	USED	FOR	NODES	6787
NODE	3238	USED	FOR	NODES	6788
NODE	1284	USED	FOR	NODES	4746
NODE	1653	USED	FOR	NODES	5227
NODE	1654	USED	FOR	NODES	5228
NODE	1655	USED	FOR	NODES	5229
NODE	1656	USED	FOR	NODES	5230
NODE	1657	USED	FOR	NODES	5231
NODE	1658	USED	FOR	NODES	5232
NODE	1659	USED	FOR	NODES	5233
NODE	1293	USED	FOR	NODES	4759
NODE	1660	USED	FOR	NODES	5234
NODE	1661	USED	FOR	NODES	5235
NODE	1662	USED	FOR	NODES	5236
NODE	1663	USED	FOR	NODES	5237
NODE	1664	USED	FOR	NODES	5238
NODE	1665	USED	FOR	NODES	5239
NODE	1666	USED	FOR	NODES	5240
NODE	3228	USED	FOR	NODES	6774
NODE	1294	USED	FOR	NODES	4760
NODE	1192	USED	FOR	NODES	4738
NODE	1608	USED	FOR	NODES	5154
NODE	1297	USED	FOR	NODES	4763
NODE	1194	USED	FOR	NODES	4740
NODE	1298	USED	FOR	NODES	4764
NODE	1712	USED	FOR	NODES	5258
NODE	1713	USED	FOR	NODES	5259

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NODE	208	USED FOR NODES	1484	3754	4994
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NODE	990	USED FOR NODES	2646	4536	6192
NODE	213	USED FOR NODES	1487	3757	4999
NODE	52	USED FOR NODES	3751		
NODE	906	USED FOR NODES	2533		
NODE	898	USED FOR NODES	2525		
NODE	198	USED FOR NODES	1467		
NODE	1168	USED FOR NODES	3413		
NODE	1169	USED FOR NODES	3414		
NODE	199	USED FOR NODES	1468		
NODE	899	USED FOR NODES	2526		
NODE	910	USED FOR NODES	2537		
NODE	900	USED FOR NODES	2527		
NODE	1162	USED FOR NODES	3405		
NODE	903	USED FOR NODES	2530		

NODE	892	USED FOR NODES	2505
NODE	908	USED FOR NODES	2535
NODE	902	USED FOR NODES	2529
NODE	904	USED FOR NODES	2531
NODE	905	USED FOR NODES	2532
NODE	907	USED FOR NODES	2534
NODE	909	USED FOR NODES	2536
NODE	911	USED FOR NODES	2538
NODE	190	USED FOR NODES	1461
NODE	901	USED FOR NODES	2528
NODE	1109	USED FOR NODES	3331
NODE	640	USED FOR NODES	2148
NODE	642	USED FOR NODES	2150
NODE	137	USED FOR NODES	1387
NODE	647	USED FOR NODES	2155
NODE	649	USED FOR NODES	2157
NODE	650	USED FOR NODES	2158
NODE	651	USED FOR NODES	2159
NODE	652	USED FOR NODES	2160
NODE	623	USED FOR NODES	2143
NODE	646	USED FOR NODES	2154
NODE	142	USED FOR NODES	1392
NODE	645	USED FOR NODES	2153
NODE	1113	USED FOR NODES	3335
NODE	648	USED FOR NODES	2156
NODE	639	USED FOR NODES	2147
NODE	641	USED FOR NODES	2149
NODE	643	USED FOR NODES	2151
NODE	141	USED FOR NODES	1391
NODE	1114	USED FOR NODES	3336
NODE	644	USED FOR NODES	2152
NODE	1491	USED FOR NODES	5001
NODE	1492	USED FOR NODES	5002
NODE	1241	USED FOR NODES	4991
NODE	3429	USED FOR NODES	6975
NODE	2625	USED FOR NODES	6171
NODE	3435	USED FOR NODES	6981
NODE	3436	USED FOR NODES	6982
NODE	1485	USED FOR NODES	4995
NODE	2655	USED FOR NODES	6201
NODE	2656	USED FOR NODES	6202
NODE	2657	USED FOR NODES	6203
NODE	2658	USED FOR NODES	6204
NODE	2659	USED FOR NODES	6205
NODE	2660	USED FOR NODES	6206
NODE	2661	USED FOR NODES	6207
NODE	2662	USED FOR NODES	6208
NODE	2663	USED FOR NODES	6209
NODE	2664	USED FOR NODES	6210
NODE	2665	USED FOR NODES	6211
NODE	2666	USED FOR NODES	6212
NODE	2667	USED FOR NODES	6213
NODE	2668	USED FOR NODES	6214
NODE	3430	USED FOR NODES	6976
NODE	3438	USED FOR NODES	6984
NODE	2681	USED FOR NODES	6227
NODE	3437	USED FOR NODES	6983
NODE	2682	USED FOR NODES	6228
NODE	2626	USED FOR NODES	6172
NODE	2680	USED FOR NODES	6226
NODE	2678	USED FOR NODES	6224
NODE	1486	USED FOR NODES	4996
NODE	2675	USED FOR NODES	6221
NODE	2669	USED FOR NODES	6215
NODE	2671	USED FOR NODES	6217
NODE	2670	USED FOR NODES	6216
NODE	2673	USED FOR NODES	6219
NODE	2677	USED FOR NODES	6223
NODE	2676	USED FOR NODES	6222
NODE	2679	USED FOR NODES	6225

NODE	2674	USED FOR NODES	6220
NODE	2672	USED FOR NODES	6218
NODE	1493	USED FOR NODES	5003
NODE	1242	USED FOR NODES	4992
NODE	1494	USED FOR NODES	5004
NODE	2627	USED FOR NODES	6173
NODE	2628	USED FOR NODES	6174
NODE	2629	USED FOR NODES	6175
NODE	2630	USED FOR NODES	6176
NODE	2631	USED FOR NODES	6177
NODE	2632	USED FOR NODES	6178
NODE	2633	USED FOR NODES	6179
NODE	2634	USED FOR NODES	6180
NODE	2635	USED FOR NODES	6181
NODE	2636	USED FOR NODES	6182
NODE	2637	USED FOR NODES	6183
NODE	2638	USED FOR NODES	6184
NODE	2639	USED FOR NODES	6185
NODE	2640	USED FOR NODES	6186
NODE	1240	USED FOR NODES	4990
NODE	3427	USED FOR NODES	6973
NODE	3431	USED FOR NODES	6977
NODE	3432	USED FOR NODES	6978
NODE	2623	USED FOR NODES	6169
NODE	1483	USED FOR NODES	4993
NODE	1489	USED FOR NODES	4997
NODE	1490	USED FOR NODES	4998
NODE	3209	USED FOR NODES	6755
NODE	3210	USED FOR NODES	6756
NODE	3211	USED FOR NODES	6757
NODE	3212	USED FOR NODES	6758
NODE	3213	USED FOR NODES	6759
NODE	3214	USED FOR NODES	6760
NODE	3215	USED FOR NODES	6761
NODE	3216	USED FOR NODES	6762
NODE	1278	USED FOR NODES	5142
NODE	3217	USED FOR NODES	6763
NODE	3218	USED FOR NODES	6764
NODE	3194	USED FOR NODES	6740
NODE	3219	USED FOR NODES	6765
NODE	1598	USED FOR NODES	5144
NODE	3220	USED FOR NODES	6766
NODE	3221	USED FOR NODES	6767
NODE	1601	USED FOR NODES	5147
NODE	1602	USED FOR NODES	5148
NODE	3222	USED FOR NODES	6768
NODE	3542	USED FOR NODES	7088
NODE	3545	USED FOR NODES	7091
NODE	3546	USED FOR NODES	7092
NODE	3541	USED FOR NODES	7087
NODE	3544	USED FOR NODES	7090
NODE	3200	USED FOR NODES	6746
NODE	3203	USED FOR NODES	6749
NODE	3204	USED FOR NODES	6750
NODE	3207	USED FOR NODES	6753
NODE	3206	USED FOR NODES	6752
NODE	3205	USED FOR NODES	6751
NODE	3202	USED FOR NODES	6748
NODE	3543	USED FOR NODES	7089
NODE	3208	USED FOR NODES	6754
NODE	3193	USED FOR NODES	6739
NODE	3201	USED FOR NODES	6747
NODE	1600	USED FOR NODES	5146
NODE	3198	USED FOR NODES	6744
NODE	3196	USED FOR NODES	6742
NODE	3197	USED FOR NODES	6743
NODE	3199	USED FOR NODES	6745
NODE	3195	USED FOR NODES	6741
NODE	1597	USED FOR NODES	5143
NODE	1277	USED FOR NODES	5141

NODE	1599	USED	FOR	NODES	5145
NODE	1173	USED	FOR	NODES	3418
NODE	1163	USED	FOR	NODES	3406
NODE	936	USED	FOR	NODES	2563
NODE	937	USED	FOR	NODES	2564
NODE	934	USED	FOR	NODES	2561
NODE	933	USED	FOR	NODES	2560
NODE	893	USED	FOR	NODES	2506
NODE	1172	USED	FOR	NODES	3417
NODE	935	USED	FOR	NODES	2562
NODE	939	USED	FOR	NODES	2566
NODE	938	USED	FOR	NODES	2565
NODE	926	USED	FOR	NODES	2553
NODE	928	USED	FOR	NODES	2555
NODE	930	USED	FOR	NODES	2557
NODE	927	USED	FOR	NODES	2554
NODE	191	USED	FOR	NODES	1462
NODE	932	USED	FOR	NODES	2559
NODE	931	USED	FOR	NODES	2558
NODE	929	USED	FOR	NODES	2556
NODE	205	USED	FOR	NODES	1476
NODE	204	USED	FOR	NODES	1475
NODE	1120	USED	FOR	NODES	3348
NODE	1130	USED	FOR	NODES	3362
NODE	1129	USED	FOR	NODES	3361
NODE	670	USED	FOR	NODES	2208
NODE	728	USED	FOR	NODES	2294
NODE	727	USED	FOR	NODES	2293
NODE	726	USED	FOR	NODES	2292
NODE	721	USED	FOR	NODES	2287
NODE	718	USED	FOR	NODES	2284
NODE	725	USED	FOR	NODES	2291
NODE	720	USED	FOR	NODES	2286
NODE	722	USED	FOR	NODES	2288
NODE	723	USED	FOR	NODES	2289
NODE	724	USED	FOR	NODES	2290
NODE	719	USED	FOR	NODES	2285
NODE	715	USED	FOR	NODES	2281
NODE	148	USED	FOR	NODES	1404
NODE	716	USED	FOR	NODES	2282
NODE	717	USED	FOR	NODES	2283
NODE	159	USED	FOR	NODES	1415
NODE	160	USED	FOR	NODES	1416
NODE	1147	USED	FOR	NODES	3382
NODE	1136	USED	FOR	NODES	3370
NODE	790	USED	FOR	NODES	2359
NODE	791	USED	FOR	NODES	2360
NODE	793	USED	FOR	NODES	2362
NODE	758	USED	FOR	NODES	2326
NODE	787	USED	FOR	NODES	2356
NODE	1146	USED	FOR	NODES	3381
NODE	789	USED	FOR	NODES	2358
NODE	792	USED	FOR	NODES	2361
NODE	788	USED	FOR	NODES	2357
NODE	786	USED	FOR	NODES	2355
NODE	781	USED	FOR	NODES	2350
NODE	784	USED	FOR	NODES	2353
NODE	175	USED	FOR	NODES	1436
NODE	164	USED	FOR	NODES	1426
NODE	783	USED	FOR	NODES	2352
NODE	782	USED	FOR	NODES	2351
NODE	780	USED	FOR	NODES	2349
NODE	785	USED	FOR	NODES	2354
NODE	174	USED	FOR	NODES	1435
NODE	1118	USED	FOR	NODES	3343
NODE	1126	USED	FOR	NODES	3352
NODE	698	USED	FOR	NODES	2222
NODE	699	USED	FOR	NODES	2223
NODE	668	USED	FOR	NODES	2203
NODE	700	USED	FOR	NODES	2224

NODE	694	USED FOR NODES	2218
NODE	696	USED FOR NODES	2220
NODE	1125	USED FOR NODES	3351
NODE	697	USED FOR NODES	2221
NODE	690	USED FOR NODES	2214
NODE	689	USED FOR NODES	2213
NODE	693	USED FOR NODES	2217
NODE	688	USED FOR NODES	2212
NODE	692	USED FOR NODES	2216
NODE	154	USED FOR NODES	1408
NODE	687	USED FOR NODES	2211
NODE	691	USED FOR NODES	2215
NODE	146	USED FOR NODES	1399
NODE	695	USED FOR NODES	2219
NODE	153	USED FOR NODES	1407
NODE	1138	USED FOR NODES	3371
NODE	1151	USED FOR NODES	3388
NODE	817	USED FOR NODES	2400
NODE	1150	USED FOR NODES	3387
NODE	760	USED FOR NODES	2327
NODE	815	USED FOR NODES	2398
NODE	816	USED FOR NODES	2399
NODE	821	USED FOR NODES	2404
NODE	819	USED FOR NODES	2402
NODE	820	USED FOR NODES	2403
NODE	818	USED FOR NODES	2401
NODE	166	USED FOR NODES	1427
NODE	183	USED FOR NODES	1444
NODE	809	USED FOR NODES	2392
NODE	814	USED FOR NODES	2397
NODE	813	USED FOR NODES	2396
NODE	808	USED FOR NODES	2391
NODE	811	USED FOR NODES	2394
NODE	812	USED FOR NODES	2395
NODE	810	USED FOR NODES	2393
NODE	182	USED FOR NODES	1443
NODE	1139	USED FOR NODES	3372
NODE	1153	USED FOR NODES	3390
NODE	834	USED FOR NODES	2417
NODE	831	USED FOR NODES	2414
NODE	829	USED FOR NODES	2412
NODE	835	USED FOR NODES	2418
NODE	833	USED FOR NODES	2416
NODE	832	USED FOR NODES	2415
NODE	830	USED FOR NODES	2413
NODE	1152	USED FOR NODES	3389
NODE	761	USED FOR NODES	2328
NODE	185	USED FOR NODES	1446
NODE	167	USED FOR NODES	1428
NODE	826	USED FOR NODES	2409
NODE	822	USED FOR NODES	2405
NODE	827	USED FOR NODES	2410
NODE	828	USED FOR NODES	2411
NODE	824	USED FOR NODES	2407
NODE	825	USED FOR NODES	2408
NODE	823	USED FOR NODES	2406
NODE	184	USED FOR NODES	1445

*** WARNING *** CP= 42.520 TIME= 21:20:58
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT	46	USED FOR KEYPOINT(S)	240
KEYPOINT	51	USED FOR KEYPOINT(S)	243
KEYPOINT	56	USED FOR KEYPOINT(S)	321
KEYPOINT	61	USED FOR KEYPOINT(S)	351
KEYPOINT	66	USED FOR KEYPOINT(S)	277
KEYPOINT	71	USED FOR KEYPOINT(S)	276

KEYPOINT	76 USED FOR KEYPOINT(S)	347		
KEYPOINT	81 USED FOR KEYPOINT(S)	368		
KEYPOINT	90 USED FOR KEYPOINT(S)	244		
KEYPOINT	92 USED FOR KEYPOINT(S)	150		
KEYPOINT	93 USED FOR KEYPOINT(S)	151	247	323
KEYPOINT	95 USED FOR KEYPOINT(S)	154		
KEYPOINT	97 USED FOR KEYPOINT(S)	156		
KEYPOINT	99 USED FOR KEYPOINT(S)	158		
KEYPOINT	101 USED FOR KEYPOINT(S)	160		
KEYPOINT	103 USED FOR KEYPOINT(S)	162		
KEYPOINT	105 USED FOR KEYPOINT(S)	165		
KEYPOINT	106 USED FOR KEYPOINT(S)	167		
KEYPOINT	108 USED FOR KEYPOINT(S)	169	278	349
KEYPOINT	109 USED FOR KEYPOINT(S)	279		
KEYPOINT	110 USED FOR KEYPOINT(S)	280		
KEYPOINT	112 USED FOR KEYPOINT(S)	180		
KEYPOINT	113 USED FOR KEYPOINT(S)	181	283	371
KEYPOINT	115 USED FOR KEYPOINT(S)	184		
KEYPOINT	117 USED FOR KEYPOINT(S)	186		
KEYPOINT	119 USED FOR KEYPOINT(S)	188		
KEYPOINT	121 USED FOR KEYPOINT(S)	190		
KEYPOINT	123 USED FOR KEYPOINT(S)	192		
KEYPOINT	125 USED FOR KEYPOINT(S)	195		
KEYPOINT	126 USED FOR KEYPOINT(S)	197		
KEYPOINT	128 USED FOR KEYPOINT(S)	199	298	389
KEYPOINT	129 USED FOR KEYPOINT(S)	299		
KEYPOINT	130 USED FOR KEYPOINT(S)	300		
KEYPOINT	132 USED FOR KEYPOINT(S)	210		
KEYPOINT	133 USED FOR KEYPOINT(S)	211	303	401
KEYPOINT	135 USED FOR KEYPOINT(S)	214		
KEYPOINT	137 USED FOR KEYPOINT(S)	216		
KEYPOINT	139 USED FOR KEYPOINT(S)	218		
KEYPOINT	141 USED FOR KEYPOINT(S)	220		
KEYPOINT	143 USED FOR KEYPOINT(S)	222		
KEYPOINT	145 USED FOR KEYPOINT(S)	225		
KEYPOINT	146 USED FOR KEYPOINT(S)	227		
KEYPOINT	148 USED FOR KEYPOINT(S)	229	318	419
KEYPOINT	149 USED FOR KEYPOINT(S)	319		
KEYPOINT	153 USED FOR KEYPOINT(S)	325		
KEYPOINT	168 USED FOR KEYPOINT(S)	348		
KEYPOINT	171 USED FOR KEYPOINT(S)	353		
KEYPOINT	179 USED FOR KEYPOINT(S)	369		
KEYPOINT	183 USED FOR KEYPOINT(S)	373		
KEYPOINT	198 USED FOR KEYPOINT(S)	388		
KEYPOINT	201 USED FOR KEYPOINT(S)	391		
KEYPOINT	209 USED FOR KEYPOINT(S)	399		
KEYPOINT	213 USED FOR KEYPOINT(S)	403		
KEYPOINT	228 USED FOR KEYPOINT(S)	418		
KEYPOINT	231 USED FOR KEYPOINT(S)	421		
KEYPOINT	239 USED FOR KEYPOINT(S)	429		
KEYPOINT	246 USED FOR KEYPOINT(S)	322		
KEYPOINT	251 USED FOR KEYPOINT(S)	327		
KEYPOINT	255 USED FOR KEYPOINT(S)	330		
KEYPOINT	259 USED FOR KEYPOINT(S)	333		
KEYPOINT	263 USED FOR KEYPOINT(S)	336		
KEYPOINT	267 USED FOR KEYPOINT(S)	339		
KEYPOINT	271 USED FOR KEYPOINT(S)	343		
KEYPOINT	274 USED FOR KEYPOINT(S)	346		
KEYPOINT	282 USED FOR KEYPOINT(S)	370		
KEYPOINT	285 USED FOR KEYPOINT(S)	374		
KEYPOINT	287 USED FOR KEYPOINT(S)	376		
KEYPOINT	289 USED FOR KEYPOINT(S)	378		
KEYPOINT	291 USED FOR KEYPOINT(S)	380		
KEYPOINT	293 USED FOR KEYPOINT(S)	382		
KEYPOINT	295 USED FOR KEYPOINT(S)	385		
KEYPOINT	296 USED FOR KEYPOINT(S)	387		
KEYPOINT	302 USED FOR KEYPOINT(S)	400		
KEYPOINT	305 USED FOR KEYPOINT(S)	404		
KEYPOINT	307 USED FOR KEYPOINT(S)	406		
KEYPOINT	309 USED FOR KEYPOINT(S)	408		

KEYPOINT	311 USED FOR KEYPOINT(S)	410	
KEYPOINT	313 USED FOR KEYPOINT(S)	412	
KEYPOINT	315 USED FOR KEYPOINT(S)	415	
KEYPOINT	316 USED FOR KEYPOINT(S)	417	
LINE	43 USED FOR LINE(S)	495	
LINE	52 USED FOR LINE(S)	562	
LINE	53 USED FOR LINE(S)	666	
LINE	62 USED FOR LINE(S)	725	
LINE	63 USED FOR LINE(S)	733	
LINE	72 USED FOR LINE(S)	775	
LINE	113 USED FOR LINE(S)	261	
LINE	114 USED FOR LINE(S)	499	
LINE	115 USED FOR LINE(S)	501	
LINE	117 USED FOR LINE(S)	266	
LINE	118 USED FOR LINE(S)	265	503 672
LINE	121 USED FOR LINE(S)	269	
LINE	123 USED FOR LINE(S)	272	
LINE	126 USED FOR LINE(S)	274	
LINE	128 USED FOR LINE(S)	277	
LINE	131 USED FOR LINE(S)	279	
LINE	133 USED FOR LINE(S)	282	
LINE	136 USED FOR LINE(S)	284	
LINE	138 USED FOR LINE(S)	287	
LINE	140 USED FOR LINE(S)	291	
LINE	143 USED FOR LINE(S)	292	
LINE	145 USED FOR LINE(S)	295	
LINE	148 USED FOR LINE(S)	298	
LINE	149 USED FOR LINE(S)	300	
LINE	152 USED FOR LINE(S)	303	
LINE	154 USED FOR LINE(S)	305	
LINE	156 USED FOR LINE(S)	565	
LINE	157 USED FOR LINE(S)	308	566 730
LINE	158 USED FOR LINE(S)	567	
LINE	161 USED FOR LINE(S)	338	
LINE	162 USED FOR LINE(S)	571	
LINE	163 USED FOR LINE(S)	573	
LINE	165 USED FOR LINE(S)	343	
LINE	166 USED FOR LINE(S)	342	575 784
LINE	169 USED FOR LINE(S)	346	
LINE	171 USED FOR LINE(S)	349	
LINE	174 USED FOR LINE(S)	351	
LINE	176 USED FOR LINE(S)	354	
LINE	179 USED FOR LINE(S)	356	
LINE	181 USED FOR LINE(S)	359	
LINE	184 USED FOR LINE(S)	361	
LINE	186 USED FOR LINE(S)	364	
LINE	188 USED FOR LINE(S)	368	
LINE	191 USED FOR LINE(S)	369	
LINE	193 USED FOR LINE(S)	372	
LINE	196 USED FOR LINE(S)	375	
LINE	197 USED FOR LINE(S)	377	
LINE	200 USED FOR LINE(S)	380	
LINE	202 USED FOR LINE(S)	382	
LINE	204 USED FOR LINE(S)	613	
LINE	205 USED FOR LINE(S)	385	614 826
LINE	206 USED FOR LINE(S)	615	
LINE	209 USED FOR LINE(S)	415	
LINE	210 USED FOR LINE(S)	619	
LINE	211 USED FOR LINE(S)	621	
LINE	213 USED FOR LINE(S)	420	
LINE	214 USED FOR LINE(S)	419	623 861
LINE	217 USED FOR LINE(S)	423	
LINE	219 USED FOR LINE(S)	426	
LINE	222 USED FOR LINE(S)	428	
LINE	224 USED FOR LINE(S)	431	
LINE	227 USED FOR LINE(S)	433	
LINE	229 USED FOR LINE(S)	436	
LINE	232 USED FOR LINE(S)	438	
LINE	234 USED FOR LINE(S)	441	
LINE	236 USED FOR LINE(S)	445	

LINE	239	USED	FOR	LINE(S)	446		
LINE	241	USED	FOR	LINE(S)	449		
LINE	244	USED	FOR	LINE(S)	452		
LINE	245	USED	FOR	LINE(S)	454		
LINE	248	USED	FOR	LINE(S)	457		
LINE	250	USED	FOR	LINE(S)	459		
LINE	252	USED	FOR	LINE(S)	661		
LINE	253	USED	FOR	LINE(S)	462	662	903
LINE	254	USED	FOR	LINE(S)	663		
LINE	264	USED	FOR	LINE(S)	670		
LINE	268	USED	FOR	LINE(S)	674		
LINE	306	USED	FOR	LINE(S)	728		
LINE	307	USED	FOR	LINE(S)	729		
LINE	311	USED	FOR	LINE(S)	736		
LINE	313	USED	FOR	LINE(S)	738		
LINE	336	USED	FOR	LINE(S)	777		
LINE	337	USED	FOR	LINE(S)	778		
LINE	341	USED	FOR	LINE(S)	782		
LINE	345	USED	FOR	LINE(S)	786		
LINE	383	USED	FOR	LINE(S)	824		
LINE	384	USED	FOR	LINE(S)	825		
LINE	388	USED	FOR	LINE(S)	829		
LINE	390	USED	FOR	LINE(S)	831		
LINE	413	USED	FOR	LINE(S)	854		
LINE	414	USED	FOR	LINE(S)	855		
LINE	418	USED	FOR	LINE(S)	859		
LINE	422	USED	FOR	LINE(S)	863		
LINE	460	USED	FOR	LINE(S)	901		
LINE	461	USED	FOR	LINE(S)	902		
LINE	465	USED	FOR	LINE(S)	906		
LINE	467	USED	FOR	LINE(S)	908		
LINE	490	USED	FOR	LINE(S)	931		
LINE	491	USED	FOR	LINE(S)	932		
LINE	498	USED	FOR	LINE(S)	667		
LINE	502	USED	FOR	LINE(S)	671		
LINE	509	USED	FOR	LINE(S)	677		
LINE	511	USED	FOR	LINE(S)	680		
LINE	517	USED	FOR	LINE(S)	684		
LINE	519	USED	FOR	LINE(S)	687		
LINE	525	USED	FOR	LINE(S)	691		
LINE	527	USED	FOR	LINE(S)	694		
LINE	533	USED	FOR	LINE(S)	698		
LINE	535	USED	FOR	LINE(S)	701		
LINE	540	USED	FOR	LINE(S)	707		
LINE	542	USED	FOR	LINE(S)	709		
LINE	548	USED	FOR	LINE(S)	713		
LINE	550	USED	FOR	LINE(S)	716		
LINE	555	USED	FOR	LINE(S)	720		
LINE	558	USED	FOR	LINE(S)	723		
LINE	563	USED	FOR	LINE(S)	727		
LINE	570	USED	FOR	LINE(S)	779		
LINE	574	USED	FOR	LINE(S)	783		
LINE	578	USED	FOR	LINE(S)	787		
LINE	580	USED	FOR	LINE(S)	790		
LINE	583	USED	FOR	LINE(S)	792		
LINE	585	USED	FOR	LINE(S)	795		
LINE	588	USED	FOR	LINE(S)	797		
LINE	590	USED	FOR	LINE(S)	800		
LINE	593	USED	FOR	LINE(S)	802		
LINE	595	USED	FOR	LINE(S)	805		
LINE	597	USED	FOR	LINE(S)	809		
LINE	599	USED	FOR	LINE(S)	811		
LINE	602	USED	FOR	LINE(S)	813		
LINE	604	USED	FOR	LINE(S)	816		
LINE	606	USED	FOR	LINE(S)	818		
LINE	609	USED	FOR	LINE(S)	821		
LINE	611	USED	FOR	LINE(S)	823		
LINE	618	USED	FOR	LINE(S)	856		
LINE	622	USED	FOR	LINE(S)	860		
LINE	626	USED	FOR	LINE(S)	864		

LINE	628	USED	FOR	LINE(S)	867
LINE	631	USED	FOR	LINE(S)	869
LINE	633	USED	FOR	LINE(S)	872
LINE	636	USED	FOR	LINE(S)	874
LINE	638	USED	FOR	LINE(S)	877
LINE	641	USED	FOR	LINE(S)	879
LINE	643	USED	FOR	LINE(S)	882
LINE	645	USED	FOR	LINE(S)	886
LINE	647	USED	FOR	LINE(S)	888
LINE	650	USED	FOR	LINE(S)	890
LINE	652	USED	FOR	LINE(S)	893
LINE	654	USED	FOR	LINE(S)	895
LINE	657	USED	FOR	LINE(S)	898
LINE	659	USED	FOR	LINE(S)	900
AREA	13	USED	FOR	AREA(S)	140
AREA	14	USED	FOR	AREA(S)	339
AREA	18	USED	FOR	AREA(S)	145
AREA	22	USED	FOR	AREA(S)	149
AREA	26	USED	FOR	AREA(S)	153
AREA	30	USED	FOR	AREA(S)	157
AREA	33	USED	FOR	AREA(S)	163
AREA	37	USED	FOR	AREA(S)	166
AREA	40	USED	FOR	AREA(S)	170
AREA	44	USED	FOR	AREA(S)	174
AREA	46	USED	FOR	AREA(S)	379
AREA	50	USED	FOR	AREA(S)	205
AREA	51	USED	FOR	AREA(S)	384
AREA	55	USED	FOR	AREA(S)	210
AREA	59	USED	FOR	AREA(S)	214
AREA	63	USED	FOR	AREA(S)	218
AREA	67	USED	FOR	AREA(S)	222
AREA	70	USED	FOR	AREA(S)	228
AREA	74	USED	FOR	AREA(S)	231
AREA	77	USED	FOR	AREA(S)	235
AREA	81	USED	FOR	AREA(S)	239
AREA	83	USED	FOR	AREA(S)	416
AREA	87	USED	FOR	AREA(S)	270
AREA	88	USED	FOR	AREA(S)	421
AREA	92	USED	FOR	AREA(S)	275
AREA	96	USED	FOR	AREA(S)	279
AREA	100	USED	FOR	AREA(S)	283
AREA	104	USED	FOR	AREA(S)	287
AREA	107	USED	FOR	AREA(S)	293
AREA	111	USED	FOR	AREA(S)	296
AREA	114	USED	FOR	AREA(S)	300
AREA	118	USED	FOR	AREA(S)	304
AREA	120	USED	FOR	AREA(S)	453
AREA	143	USED	FOR	AREA(S)	459
AREA	175	USED	FOR	AREA(S)	499
AREA	179	USED	FOR	AREA(S)	504
AREA	203	USED	FOR	AREA(S)	536
AREA	208	USED	FOR	AREA(S)	541
AREA	240	USED	FOR	AREA(S)	573
AREA	244	USED	FOR	AREA(S)	577
AREA	268	USED	FOR	AREA(S)	601
AREA	273	USED	FOR	AREA(S)	606
AREA	305	USED	FOR	AREA(S)	638
AREA	309	USED	FOR	AREA(S)	642
AREA	333	USED	FOR	AREA(S)	666
AREA	338	USED	FOR	AREA(S)	456
AREA	344	USED	FOR	AREA(S)	462
AREA	349	USED	FOR	AREA(S)	467
AREA	354	USED	FOR	AREA(S)	472
AREA	359	USED	FOR	AREA(S)	477
AREA	363	USED	FOR	AREA(S)	484
AREA	368	USED	FOR	AREA(S)	488
AREA	372	USED	FOR	AREA(S)	493
AREA	377	USED	FOR	AREA(S)	498
AREA	383	USED	FOR	AREA(S)	538
AREA	388	USED	FOR	AREA(S)	543

AREA 392 USED FOR AREA(S) 547
 AREA 396 USED FOR AREA(S) 551
 AREA 400 USED FOR AREA(S) 555
 AREA 403 USED FOR AREA(S) 561
 AREA 407 USED FOR AREA(S) 564
 AREA 410 USED FOR AREA(S) 568
 AREA 414 USED FOR AREA(S) 572
 AREA 420 USED FOR AREA(S) 603
 AREA 425 USED FOR AREA(S) 608
 AREA 429 USED FOR AREA(S) 612
 AREA 433 USED FOR AREA(S) 616
 AREA 437 USED FOR AREA(S) 620
 AREA 440 USED FOR AREA(S) 626
 AREA 444 USED FOR AREA(S) 629
 AREA 447 USED FOR AREA(S) 633
 AREA 451 USED FOR AREA(S) 637

SET WORKING PLANE TO DEFAULT VALUES.
 Generate Rock

NONE SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 162 STEP 1

0 VOLUMES (OF 162 DEFINED) SELECTED BY VSEL COMMAND.

NONE SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 666 STEP 1

0 AREAS (OF 594 DEFINED) SELECTED BY ASEL COMMAND.

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 932 STEP 1

0 LINES (OF 770 DEFINED) SELECTED BY LSEL COMMAND.

NONE SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 429 STEP 1

0 KEYPOINTS (OF 337 DEFINED) SELECTED BY KSEL COMMAND.

NONE SELECT FOR ITEM=NODE COMPONENT=
 IN RANGE 1 TO 7092 STEP 1

0 NODES (OF 5984 DEFINED) SELECTED BY NSEL COMMAND.

NONE SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 5754 STEP 1

0 ELEMENTS (OF 5754 DEFINED) SELECTED BY ESEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

NODE 10000 KCS= 0 X,Y,Z= .00000E+00 10.056 2.2925

NODE 10001 KCS= 0 X,Y,Z= .00000E+00 10.056 3.2925

NODE 10002 KCS= 0 X,Y,Z= 1.0000 10.056 2.2925

COORDINATE SYSTEM 13 DEFINITION. TYPE= 2 (SPHERICAL)
 ORIGIN NODE= 10000 XNODE= 10001 YNODE= 10002 PARAMETERS= 1.000 1.000
 ORIENTATION= .00 .00 1.00 1.00 .00 .00 .00 1.00 .00
 THXY,THYZ,THZX= -90.000 .000 -90.000

ACTIVE COORDINATE SYSTEM SET TO 13 (SPHERICAL)

KEYPOINT 10000 X,Y,Z= .000000E+00 .000000E+00 .000000E+00 IN CSYS= 13

.000000E+00 10.0562 2.29250 IN CSYS= 0

KEYPOINT 10001 X,Y,Z= 1.00000 .000000E+00 90.0000 IN CSYS= 13

.000000E+00 11.0562 2.29250 IN CSYS= 0
 KEYPOINT 10002 X,Y,Z= 1.00000 .000000E+00 .000000E+00 IN CSYS= 13
 .000000E+00 10.0562 3.29250 IN CSYS= 0
 KEYPOINT 10003 X,Y,Z= 1.00000 .000000E+00 -90.0000 IN CSYS= 13
 .000000E+00 9.05615 2.29250 IN CSYS= 0

LINE CONNECTS KEYPOINTS 10000 10001
 LINE NO.= 261 KP1= 10000 TAN1= .0000 -1.0000 .0000
 KP2= 10001 TAN2= .0000 1.0000 .0000

LINE CONNECTS KEYPOINTS 10000 10002
 LINE NO.= 265 KP1= 10000 TAN1= .0000 .0000 -1.0000
 KP2= 10002 TAN2= .0000 .0000 1.0000

LINE CONNECTS KEYPOINTS 10000 10003
 LINE NO.= 266 KP1= 10000 TAN1= .0000 1.0000 .0000
 KP2= 10003 TAN2= .0000 -1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 4, SPACING RATIO = .500

LINE CONNECTS KEYPOINTS 10001 10002
 LINE NO.= 269 KP1= 10001 TAN1= .0000 .0000 -1.0000
 KP2= 10002 TAN2= .0000 -1.0000 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 4, SPACING RATIO = 1.000

LINE CONNECTS KEYPOINTS 10002 10003
 LINE NO.= 272 KP1= 10002 TAN1= .0000 1.0000 .0000
 KP2= 10003 TAN2= .0000 .0000 -1.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 4, SPACING RATIO = .250

GENERATE 3 TOTAL SETS OF LINES
 SET IS ALL SELECTED LINES
 DX,DY,DZ= .000E+00 90.0 .000E+00 CSYS= 13
 KEYPOINT INCREMENT = 10

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03
 KEYPOINT 10000 USED FOR KEYPOINT(S) 10010 10020
 KEYPOINT 10001 USED FOR KEYPOINT(S) 10011 10021
 KEYPOINT 10003 USED FOR KEYPOINT(S) 10013 10023
 LINE 261 USED FOR LINE(S) 274 287
 LINE 266 USED FOR LINE(S) 279 292

VOLUME CONNECTING KEYPOINTS 10002 10003 10012 10012 10000 10000 10000 10000
 (GENERATED LINES AND AREAS FITTED IN ACTIVE CSYS = 13)

VOLUME NUMBER = 163

VOLUME CONNECTING KEYPOINTS 10003 10022 10012 10012 10000 10000 10000 10000
 (GENERATED LINES AND AREAS FITTED IN ACTIVE CSYS = 13)

VOLUME NUMBER = 164

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

ELEMENT TYPE SET TO 4

MATERIAL NUMBER SET TO 4

GENERATE NODES AND ELEMENTS IN ALL SELECTED VOLUMES

*** WARNING *** CP= 51.400 TIME= 21:21:07
 Meshing of volume 163 produced 3 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 163 WITH EXCESSIVE DISTORTION ***
 5780 5783 5786

*** WARNING *** CP= 51.710 TIME= 21:21:07
 Meshing of volume 164 produced 3 elements with excessive distortion.

*** LIST OF ELEMENTS IN VOLUME 164 WITH EXCESSIVE DISTORTION ***
 5812 5815 5818

NUMBER OF VOLUMES MESHED = 2
 MAXIMUM NODE NUMBER = 10113
 MAXIMUM ELEMENT NUMBER = 5818
 Half Model is used to create the other half
 of the rock by symmetry along the x-axis

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SYMMETRY TRANSFORMATION OF VOLUMES USING COMPONENT X
 SET IS ALL SELECTED VOLUMES

MAXIMUM NODE NUMBER = 10224
 MAXIMUM ELEMENT NUMBER = 5882

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 10068 USED FOR NODES 10179
 NODE 10084 USED FOR NODES 10195
 NODE 10069 USED FOR NODES 10180
 NODE 10083 USED FOR NODES 10194
 NODE 10090 USED FOR NODES 10201
 NODE 10087 USED FOR NODES 10198
 NODE 10070 USED FOR NODES 10181
 NODE 10086 USED FOR NODES 10197
 NODE 10085 USED FOR NODES 10196
 NODE 10082 USED FOR NODES 10193
 NODE 10091 USED FOR NODES 10202
 NODE 10088 USED FOR NODES 10199
 NODE 10089 USED FOR NODES 10200
 NODE 10071 USED FOR NODES 10182
 NODE 10000 USED FOR NODES 10022 10133
 NODE 10024 USED FOR NODES 10135
 NODE 10027 USED FOR NODES 10138
 NODE 10035 USED FOR NODES 10146
 NODE 10004 USED FOR NODES 10115
 NODE 10030 USED FOR NODES 10141
 NODE 10032 USED FOR NODES 10143
 NODE 10023 USED FOR NODES 10134
 NODE 10028 USED FOR NODES 10139
 NODE 10033 USED FOR NODES 10144
 NODE 10029 USED FOR NODES 10140
 NODE 10001 USED FOR NODES 10003 10114
 NODE 10007 USED FOR NODES 10118
 NODE 10031 USED FOR NODES 10142
 NODE 10025 USED FOR NODES 10136
 NODE 10026 USED FOR NODES 10137
 NODE 10005 USED FOR NODES 10116
 NODE 10006 USED FOR NODES 10117
 NODE 10034 USED FOR NODES 10145
 NODE 10002 USED FOR NODES 10008

*** WARNING *** CP= 52.330 TIME= 21:21:08
 Same node numbers associated with more than one solid model entity.
 Future mesh clearing operations could produce unexpected results.
 NUMMRG,KP could correct this problem.

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

KEYPOINT 156 USED FOR KEYPOINT(S) 10000
 KEYPOINT 150 USED FOR KEYPOINT(S) 10002
 KEYPOINT 151 USED FOR KEYPOINT(S) 10003
 KEYPOINT 158 USED FOR KEYPOINT(S) 10022
 LINE 265 USED FOR LINE(S) 305
 LINE 266 USED FOR LINE(S) 303
 LINE 272 USED FOR LINE(S) 287
 LINE 291 USED FOR LINE(S) 343
 LINE 298 USED FOR LINE(S) 338
 AREA 145 USED FOR AREA(S) 174
 AREA 163 USED FOR AREA(S) 218

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
 IN RANGE 1 TO 166 STEP 1

166 VOLUMES (OF 166 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 666 STEP 1

606 AREAS (OF 606 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 932 STEP 1

787 LINES (OF 787 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 10023 STEP 1

344 KEYPOINTS (OF 344 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 5882 STEP 1

5882 ELEMENTS (OF 5882 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
 IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.
 Contact Elements Generation

ELEMENT TYPE SET TO 5

REAL CONSTANT NUMBER= 5

MATERIAL NUMBER SET TO 5

ACTIVE COORDINATE SYSTEM SET TO 13 (SPHERICAL)

SELECT FOR ITEM=LOC COMPONENT=X BETWEEN 1.0000 AND 1.0000
 KABS= 0. TOLERANCE= .500000E-02

57 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Z BETWEEN -90.000 AND -60.000
 KABS= 0. TOLERANCE= .000000E+00

13 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFA ENTITY=NODE

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 1.5925 AND 2.9925
 KABS= 0. TOLERANCE= .000000E+00

3435 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .64785 AND .64985
KABS= 0. TOLERANCE= .000000E+00

408 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN 60.000 AND 120.00
KABS= 0. TOLERANCE= .000000E+00

48 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

DEFINITION OF COMPONENT = SURFB ENTITY=NODE

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

GENERATE ELEMENTS BETWEEN CONTACT (SURFA) AND TARGET (SURFB) SURFACES.
TARGET SURFACE OF PLATE OR BEAM ELEMENTS IS TOP.
ELEMENT TYPE TO BE GENERATED = CONTAC49.

NUMBER OF CONTACT ELEMENTS GENERATED = 429

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

ALL SELECT FOR ITEM=VOLU COMPONENT=
IN RANGE 1 TO 166 STEP 1

166 VOLUMES (OF 166 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 666 STEP 1

606 AREAS (OF 606 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 932 STEP 1

787 LINES (OF 787 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 10023 STEP 1

344 KEYPOINTS (OF 344 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 6311 STEP 1

6311 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.
Apply Constraints at Support Locations

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN -.10000E-02 AND .47600
KABS= 0. TOLERANCE= .000000E+00

544 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

ALSO SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN 4.1000 AND 4.5860
KABS= 0. TOLERANCE= .000000E+00

1088 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .63885 AND .65885
KABS= 0. TOLERANCE= .000000E+00

136 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -135.00 AND -45.000
KABS= 0. TOLERANCE= .000000E+00

36 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

IN COORDINATE SYSTEM 1, ROTATE ALL SELECTED NODES.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 10224 BY 1
REAL= .000000000E+00 IMAG= .000000000E+00

SELECT FOR ITEM=LOC COMPONENT=Z BETWEEN .00000E+00 AND .00000E+00
KABS= 0. TOLERANCE= .100000E-05

272 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .64236 AND .65534
KABS= 0. TOLERANCE= .000000E+00

34 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -90.000 AND -90.000
KABS= 0. TOLERANCE= .450000

0 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

SPECIFIED CONSTRAINT UZ FOR SELECTED NODES 1 TO 10224 BY 1
REAL= .000000000E+00 IMAG= .000000000E+00

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 10224 STEP 1

6173 NODES (OF 6173 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

UNSELECT FOR ITEM=MAT COMPONENT=
IN RANGE 6 TO 6 STEP 1

5555 ELEMENTS (OF 6311 DEFINED) SELECTED BY ESEL COMMAND.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= exwobt12.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 64.970

***** ANSYS SOLUTION ROUTINE *****

PERFORM A TRANSIENT ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS

*** NOTE *** CP= 64.970 TIME= 21:21:21
Damping (if present) may be ignored only in reduced transient analyses.

PERFORM A FULL TRANSIENT ANALYSIS

ACEL= .00000E+00 9.8100 .00000E+00

STEP BOUNDARY CONDITION KEY= 1

TIME= .10000E-02

USE 3 SUBSTEP(S) THIS LOAD STEP FOR ALL DOFS

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 66.500 TIME= 21:21:23
All shape tests were bypassed for elements associated with the solid
model, because most of them were already done at AMESH or VMESH. Use
CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 21:21:23 JUL 19, 1995 CP= 66.500
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY. 3-D
DEGREES OF FREEDOM. . . . UX UY UZ ROTX ROTY ROTZ
ANALYSIS TYPE TRANSIENT
SOLUTION METHOD. FULL
NONLINEAR GEOMETRIC EFFECTS ON
PLASTIC MATERIAL PROPERTIES INCLUDED. YES
NEWTON-RAPHSON OPTION PROGRAM CHOSEN

*** WARNING *** CP= 66.500 TIME= 21:21:23
Out of the 6311 defined elements, only 5555 elements are selected.

*** NOTE *** CP= 68.680 TIME= 21:21:25
The step data was checked and warning messages were found.
Please review output or errors file (exwobt12.err) for these warning
messages.

*** NOTE *** CP= 68.680 TIME= 21:21:25
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER. 1
TIME AT END OF THE LOAD STEP. 10000E-02
NUMBER OF SUBSTEPS. 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS YES
TRANSIENT (INERTIA) EFFECTS
STRUCTURAL DOFS. ON
TRANSIENT INTEGRATION PARAMETERS
ALPHA. 25251
DELTA. 50500
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 30394.

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.57341E-10	IXX = .1415E+07	IXX = .7341E+06
YC = 4.1426	IYY = .1976E+06	IYY = .3783E+05
ZC = 2.2925	IZZ = .1228E+07	IZZ = .7069E+06
	IXY = .8596E-02	IXY = .8589E-02
	IYZ = -.2887E+06	IYZ = .1377E-02
	IZX = .4023E-05	IZX = .2756E-07

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
2	1320.19
3	16073.4
4	13000.4

Range of element maximum matrix coefficients in global coordinates
 Maximum= 2.557212837E+11 at element 3611.
 Minimum= 1.887161083E+09 at element 5836.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	1428	SOLID45	19.890	.014
3	3570	SOLID45	49.980	.014
4	128	SOLID45	1.630	.013
5	429	CONTAC49	.600	.001

Time at end of element matrix formulation CP= 148.85.
 FORCE CONVERGENCE VALUE = .1059E+05 CRITERION= 10.59
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

Estimated number of active DOF= 18483.
 Maximum wavefront= 1421.

Time at end of matrix triangularization CP= 649.52.
 Equation solver maximum pivot= 9.220799689E+11 at node 4699 UY.
 Equation solver minimum pivot= 3.349758101E+09 at node 10073 UY.
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2935E-06
 FORCE CONVERGENCE VALUE = .3031E-01 CRITERION= 4.848 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 763.520 TIME= 21:38:10
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1

*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	1428	SOLID45	15.900	.011
3	3570	SOLID45	40.570	.011
4	128	SOLID45	1.140	.009
5	429	CONTAC49	.520	.001

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
2	1428	SOLID45	.750	.001
3	3570	SOLID45	1.690	.000
4	128	SOLID45	.060	.000
5	429	CONTAC49	.080	.000

*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 1
 *** TIME = .333333E-03 TIME INC = .333333E-03
 *** RESPONSE FREQ = 169.6 PERIOD= .5897E-02 PTS/CYC = 18.

FORCE CONVERGENCE VALUE = .4169E+05 CRITERION= 42.05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1130E-05
 FORCE CONVERGENCE VALUE = .4276 CRITERION= 13.88 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 1525.870 TIME= 22:00:42
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 1 SUBSTEP 2 COMPLETED. CUM ITER = 2
 *** TIME = .666667E-03 TIME INC = .333333E-03
 *** RESPONSE FREQ = 134.1 PERIOD= .7457E-02 PTS/CYC = 22.

FORCE CONVERGENCE VALUE = .8256E+05 CRITERION= 83.88
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2224E-05
 FORCE CONVERGENCE VALUE = 1.581 CRITERION= 25.38 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 2307.180 TIME= 22:23:57
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 1 SUBSTEP 3 COMPLETED. CUM ITER = 3
 *** TIME = .100000E-02 TIME INC = .333333E-03
 *** RESPONSE FREQ = 105.6 PERIOD= .9473E-02 PTS/CYC = 28.

*** PROBLEM STATISTICS
 ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 18483
 R.M.S. WAVEFRONT SIZE = 1153.7

*** ANSYS BINARY FILE STATISTICS
 BUFFER SIZE USED= 4096
 27.203 MB WRITTEN ON ELEMENT MATRIX FILE: exwobt12.emat
 41.172 MB WRITTEN ON ELEMENT SAVED DATA FILE: exwobt12.esav
 158.297 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: exwobt12.tri
 39.688 MB WRITTEN ON RESULTS FILE: exwobt12.rst

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

TIME= 1.3080

USE 10 SUBSTEP(S) THIS LOAD STEP FOR ALL DOFS

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
 FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 2387.980 TIME= 22:26:25
 Out of the 6311 defined elements, only 5555 elements are selected.

*** NOTE *** CP= 2390.130 TIME= 22:26:27
 The step data was checked and warning messages were found.
 Please review output or errors file (exwobt12.err) for these warning

messages.

*** NOTE *** CP= 2390.130 TIME= 22:26:27
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 22:26:27 JUL 19, 1995 CP= 2390.130
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
TIME AT END OF THE LOAD STEP. 1.3080
NUMBER OF SUBSTEPS. 10
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS YES
TRANSIENT (INERTIA) EFFECTS
STRUCTURAL DOFS. ON
TRANSIENT INTEGRATION PARAMETERS
ALPHA. 25251
DELTA. 50500
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

FORCE CONVERGENCE VALUE = .2062E+05 CRITERION= 32.70
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8486E-01
FORCE CONVERGENCE VALUE = 96.29 CRITERION= 94.77
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 3101.270 TIME= 22:47:25
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1055E-08
FORCE CONVERGENCE VALUE = .1360E-03 CRITERION= 94.78 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 3691.310 TIME= 23:03:20
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 5
*** TIME = .131700 TIME INC = .130700
*** RESPONSE FREQ = .3023E-01 PERIOD= 33.08 PTS/CYC = .25E+03
FORCE CONVERGENCE VALUE = .6044E+05 CRITERION= 112.3
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2524
FORCE CONVERGENCE VALUE = 98.01 CRITERION= 24.46
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 4485.160 TIME= 23:26:46
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2290E-08
 FORCE CONVERGENCE VALUE = .9469E-04 CRITERION= 24.46 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 5074.110 TIME= 23:42:42

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 2 COMPLETED. CUM ITER = 7

*** TIME = .262400 TIME INC = .130700

*** RESPONSE FREQ = .1026E-01 PERIOD= 97.44 PTS/CYC = .75E+03

FORCE CONVERGENCE VALUE = .1004E+06 CRITERION= 103.4

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4200

FORCE CONVERGENCE VALUE = 99.88 CRITERION= 95.60

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 5866.590 TIME= 00:06:06

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8194E-08

FORCE CONVERGENCE VALUE = .1151E-02 CRITERION= 95.61 <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 6456.040 TIME= 00:22:02

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 3 COMPLETED. CUM ITER = 9

*** TIME = .393100 TIME INC = .130700

*** RESPONSE FREQ = .6219E-02 PERIOD= 160.8 PTS/CYC = .12E+04

FORCE CONVERGENCE VALUE = .1405E+06 CRITERION= 169.8

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5876

FORCE CONVERGENCE VALUE = 101.2 CRITERION= 23.75

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 7250.460 TIME= 00:45:27

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7381E-08

FORCE CONVERGENCE VALUE = .2771E-03 CRITERION= 23.75 <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 7838.870 TIME= 01:01:22

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 4 COMPLETED. CUM ITER = 11

*** TIME = .523800 TIME INC = .130700

*** RESPONSE FREQ = .4475E-02 PERIOD= 223.4 PTS/CYC = .17E+04

FORCE CONVERGENCE VALUE = .1805E+06 CRITERION= 182.0

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7552

FORCE CONVERGENCE VALUE = 102.5 CRITERION= 96.20

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 8630.670 TIME= 01:24:44

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3453E-07
 FORCE CONVERGENCE VALUE = .5201E-02 CRITERION= 96.21 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 9219.880 TIME= 01:40:40

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 5 COMPLETED. CUM ITER = 13

*** TIME = .654500 TIME INC = .130700

*** RESPONSE FREQ = .3501E-02 PERIOD= 285.6 PTS/CYC = .22E+04

FORCE CONVERGENCE VALUE = .2205E+06 CRITERION= 240.5

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9228

FORCE CONVERGENCE VALUE = 103.7 CRITERION= 23.25

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 10014.940 TIME= 02:04:15

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2455E-07

FORCE CONVERGENCE VALUE = .1048E-02 CRITERION= 23.26 <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 10604.070 TIME= 02:20:11

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 6 COMPLETED. CUM ITER = 15

*** TIME = .785200 TIME INC = .130700

*** RESPONSE FREQ = .2877E-02 PERIOD= 347.6 PTS/CYC = .27E+04

FORCE CONVERGENCE VALUE = .2605E+06 CRITERION= 261.6

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.090

FORCE CONVERGENCE VALUE = 104.9 CRITERION= 96.59

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 11397.290 TIME= 02:43:34

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1272E-06

FORCE CONVERGENCE VALUE = .2433E-01 CRITERION= 96.60 <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 11987.100 TIME= 02:59:30

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 7 COMPLETED. CUM ITER = 17

*** TIME = .915900 TIME INC = .130700

*** RESPONSE FREQ = .2441E-02 PERIOD= 409.6 PTS/CYC = .31E+04

FORCE CONVERGENCE VALUE = .3006E+06 CRITERION= 315.7

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.258

FORCE CONVERGENCE VALUE = 109.3 CRITERION= 22.96

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 12780.650 TIME= 03:22:55

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8466E-07

FORCE CONVERGENCE VALUE = .7407E-02 CRITERION= 22.97 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 13369.290 TIME= 03:38:49

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 8 COMPLETED. CUM ITER = 19
*** TIME = 1.04660 TIME INC = .130700
*** RESPONSE FREQ = .2119E-02 PERIOD= 471.9 PTS/CYC = .36E+04

FORCE CONVERGENCE VALUE = .3406E+06 CRITERION= 341.4
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.425
FORCE CONVERGENCE VALUE = 117.8 CRITERION= 96.78
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 14161.770 TIME= 04:02:13

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4549E-06

FORCE CONVERGENCE VALUE = .2072 CRITERION= 96.78 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 14751.420 TIME= 04:18:08

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 9 COMPLETED. CUM ITER = 21
*** TIME = 1.17730 TIME INC = .130700
*** RESPONSE FREQ = .1870E-02 PERIOD= 534.6 PTS/CYC = .41E+04

FORCE CONVERGENCE VALUE = .3807E+06 CRITERION= 392.7
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -1.593
FORCE CONVERGENCE VALUE = 157.6 CRITERION= 22.86
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 15546.490 TIME= 04:41:33

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2962E-06

FORCE CONVERGENCE VALUE = .8360E-01 CRITERION= 22.87 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 16136.280 TIME= 04:57:28

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 2 SUBSTEP 10 COMPLETED. CUM ITER = 23
*** TIME = 1.30800 TIME INC = .130700
*** RESPONSE FREQ = .1672E-02 PERIOD= 598.1 PTS/CYC = .46E+04

INCLUDE TRANSIENT EFFECTS FOR ALL DOFS THIS LOAD STEP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

TIME= 1.3400

USE 80 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:

USE 1000 SUBSTEPS AS A MAXIMUM

USE 50 SUBSTEPS AS A MINIMUM

USE THE FINAL TIME STEP SIZE OF THE PREVIOUS LOAD STEP
AS THE STARTING TIME STEP SIZE.

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** WARNING *** CP= 16218.520 TIME= 05:00:00
Out of the 6311 defined elements, only 5555 elements are selected.

*** NOTE *** CP= 16220.670 TIME= 05:00:03
The step data was checked and warning messages were found.
Please review output or errors file (exwobt12.err) for these warning messages.

*** NOTE *** CP= 16220.670 TIME= 05:00:03
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 05:00:03 JUL 20, 1995 CP= 16220.670
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

12 PWR Tube Rock Fall Accident Condition

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 1.3400
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 80
MAXIMUM NUMBER OF SUBSTEPS 1000
MINIMUM NUMBER OF SUBSTEPS 50
START WITH TIME STEP FROM PREVIOUS SUBSTEP . YES
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. . . . 25
STEP CHANGE BOUNDARY CONDITIONS YES
TRANSIENT (INERTIA) EFFECTS
STRUCTURAL DOFS. ON
TRANSIENT INTEGRATION PARAMETERS
ALPHA. 25251
DELTA. 50500
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

FORCE CONVERGENCE VALUE = .8184E+08 CRITERION= .8184E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8213E-02
FORCE CONVERGENCE VALUE = 6.806 CRITERION= 39.79 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 16931.260 TIME= 05:20:56
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 24
*** TIME = 1.30864 TIME INC = .640000E-03
*** RESPONSE FREQ = .7330E-01 PERIOD= 13.64 PTS/CYC = .21E+05
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .8188E+08 CRITERION= .8188E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8217E-02
 FORCE CONVERGENCE VALUE = 9.680 CRITERION= 61.00 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 17724.710 TIME= 05:44:21
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 1
 *** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 25
 *** TIME = 1.30928 TIME INC = .640000E-03
 *** RESPONSE FREQ = .9977E-01 PERIOD= 10.02 PTS/CYC = .16E+05
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .8192E+08 CRITERION= .8192E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8221E-02
 FORCE CONVERGENCE VALUE = .7730E+06 CRITERION= 85.11
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 18520.970 TIME= 06:07:46
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1707E-03
 FORCE CONVERGENCE VALUE = 1045. CRITERION= 108.0
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 19111.560 TIME= 06:23:44
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1680E-07
 FORCE CONVERGENCE VALUE = .2894E-01 CRITERION= 108.0 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 19702.330 TIME= 06:39:40
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 28
 *** TIME = 1.30992 TIME INC = .640000E-03
 *** RESPONSE FREQ = 19.24 PERIOD= .5198E-01 PTS/CYC = 81.
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .8178E+08 CRITERION= .8183E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8204E-02
 FORCE CONVERGENCE VALUE = .1175E+05 CRITERION= 228.8
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 20502.600 TIME= 07:03:09
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1993E-06
 FORCE CONVERGENCE VALUE = .9133 CRITERION= 228.8 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 21095.620 TIME= 07:19:08
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2
 *** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 30
 *** TIME = 1.31056 TIME INC = .640000E-03
 *** RESPONSE FREQ = 18.81 PERIOD= .5316E-01 PTS/CYC = 83.

*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .8115E+08 CRITERION= .8132E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8147E-02
 FORCE CONVERGENCE VALUE = .2902E+07 CRITERION= 445.5
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 21896.980 TIME= 07:42:39
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3203E-03
 FORCE CONVERGENCE VALUE = .1388E+05 CRITERION= 631.1
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 22491.950 TIME= 07:58:47
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3792E-06
 FORCE CONVERGENCE VALUE = 4.618 CRITERION= 631.0 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 23085.700 TIME= 08:14:47
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 23163.550 TIME= 08:17:04
 Contact node 10071 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 23163.640 TIME= 08:17:04
 Contact node 10007 is in contact with more than one target. Check your
 results carefully.

*** LOAD STEP 3 SUBSTEP 5 COMPLETED. CUM ITER = 33
 *** TIME = 1.31120 TIME INC = .640000E-03
 *** RESPONSE FREQ = 39.82 PERIOD= .2511E-01 PTS/CYC = 39.
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .7923E+08 CRITERION= .7973E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7950E-02
 FORCE CONVERGENCE VALUE = .3203E+07 CRITERION= 1420.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 23889.580 TIME= 08:38:21
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1268E-03
 FORCE CONVERGENCE VALUE = .2916E+06 CRITERION= 1413.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 24482.760 TIME= 08:54:21
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1745E-04
 FORCE CONVERGENCE VALUE = .3574E+05 CRITERION= 1412.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 25077.760 TIME= 09:10:24
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6733E-06
 FORCE CONVERGENCE VALUE = 6938. CRITERION= 1412.

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 25674.860 TIME= 09:26:46
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5030E-07
FORCE CONVERGENCE VALUE = 11.99 CRITERION= 1412. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 26267.960 TIME= 09:42:45
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** WARNING *** CP= 26345.480 TIME= 09:45:00
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 26345.560 TIME= 09:45:00
Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 6 COMPLETED. CUM ITER = 38
*** TIME = 1.31184 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .1961E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 37.16 PERIOD= .2691E-01 PTS/CYC = 42.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .7540E+08 CRITERION= .7638E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7581E-02
FORCE CONVERGENCE VALUE = .5129E+07 CRITERION= 2841.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 27069.350 TIME= 10:06:17
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4485E-03
FORCE CONVERGENCE VALUE = .1362E+07 CRITERION= 2808.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 27662.810 TIME= 10:22:16
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1118E-03
FORCE CONVERGENCE VALUE = .2786E+06 CRITERION= 2803.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 28255.930 TIME= 10:38:14
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2077E-04
FORCE CONVERGENCE VALUE = .4200E+05 CRITERION= 2802.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 28849.520 TIME= 10:54:14
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1774E-05
FORCE CONVERGENCE VALUE = 590.7 CRITERION= 2802. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 29442.720 TIME= 11:10:11
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).

Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** WARNING *** CP= 29520.470 TIME= 11:12:28
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 29520.550 TIME= 11:12:28
Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 7 COMPLETED. CUM ITER = 43
*** TIME = 1.31248 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .6260E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 32.89 PERIOD= .3040E-01 PTS/CYC = 48.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .7013E+08 CRITERION= .7151E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.7031E-02
FORCE CONVERGENCE VALUE = .7715E+07 CRITERION= 5198.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 30245.620 TIME= 11:33:44
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 2 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.8644E-03
FORCE CONVERGENCE VALUE = .1223E+07 CRITERION= 5132.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 30842.390 TIME= 11:49:54
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 3 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.9744E-04
FORCE CONVERGENCE VALUE = .7987E+05 CRITERION= 5127.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 31446.920 TIME= 12:06:25
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 4 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.6336E-05
FORCE CONVERGENCE VALUE = .1032E+05 CRITERION= 5127.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 32048.360 TIME= 12:22:55
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 5 COMPLETED, NEW TRIANG MATRIX. MAX DOF INC= -.3782E-06
FORCE CONVERGENCE VALUE = 281.1 CRITERION= 5127. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 32642.620 TIME= 12:38:57
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** WARNING *** CP= 32719.200 TIME= 12:41:13
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 32719.280 TIME= 12:41:13
Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 8 COMPLETED. CUM ITER = 48
*** TIME = 1.31312 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .1273E-01 CRITERION = .5000E-01

*** RESPONSE FREQ = 25.40 PERIOD= .3937E-01 PTS/CYC = 62.
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .6428E+08 CRITERION= .6595E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7172E-02
 FORCE CONVERGENCE VALUE = .1244E+08 CRITERION= 7953.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 33445.610 TIME= 13:02:37
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5085E-03
 FORCE CONVERGENCE VALUE = .6387E+06 CRITERION= 8008.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 34038.910 TIME= 13:18:36
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2907E-04
 FORCE CONVERGENCE VALUE = .3472E+05 CRITERION= 8006.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 34632.130 TIME= 13:34:36
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1163E-05
 FORCE CONVERGENCE VALUE = 160.0 CRITERION= 8006. <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 35224.630 TIME= 13:50:35
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** WARNING *** CP= 35301.300 TIME= 13:52:52
 Contact node 10071 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 35301.380 TIME= 13:52:52
 Contact node 10007 is in contact with more than one target. Check your
 results carefully.

*** LOAD STEP 3 SUBSTEP 9 COMPLETED. CUM ITER = 52
 *** TIME = 1.31376 TIME INC = .640000E-03
 *** MAX PLASTIC STRAIN STEP = .1892E-01 CRITERION = .5000E-01
 *** RESPONSE FREQ = 22.27 PERIOD= .4491E-01 PTS/CYC = 70.
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .5846E+08 CRITERION= .6045E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7797E-02
 FORCE CONVERGENCE VALUE = .1456E+08 CRITERION= .1036E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 36026.170 TIME= 14:14:08
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2361E-03
 FORCE CONVERGENCE VALUE = .1822E+06 CRITERION= .1024E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 36620.260 TIME= 14:30:08
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1254E-04
FORCE CONVERGENCE VALUE = 7790. CRITERION= .1024E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 37214.200 TIME= 14:46:08
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 37290.980 TIME= 14:48:21
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 37291.050 TIME= 14:48:21
Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 10 COMPLETED. CUM ITER = 55
*** TIME = 1.31440 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .1909E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 23.13 PERIOD= .4324E-01 PTS/CYC = 68.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .5288E+08 CRITERION= .5523E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6373E-02
FORCE CONVERGENCE VALUE = .9039E+07 CRITERION= .1116E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 38016.100 TIME= 15:09:39
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1401E-03
FORCE CONVERGENCE VALUE = .1443E+06 CRITERION= .1107E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 38609.520 TIME= 15:25:39
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5722E-05
FORCE CONVERGENCE VALUE = .3074E+05 CRITERION= .1107E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 39203.070 TIME= 15:41:38
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2336E-06
FORCE CONVERGENCE VALUE = 246.9 CRITERION= .1107E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 39796.770 TIME= 15:57:37
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

*** WARNING *** CP= 39873.730 TIME= 15:59:52
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 39873.810 TIME= 15:59:52
Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 11 COMPLETED. CUM ITER = 59
*** TIME = 1.31504 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .1385E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 18.72 PERIOD= .5343E-01 PTS/CYC = 83.

*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .4720E+08 CRITERION= .4986E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4908E-02
 FORCE CONVERGENCE VALUE = .5264E+07 CRITERION= .1079E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 40599.750 TIME= 16:21:11
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8883E-04
 FORCE CONVERGENCE VALUE = .6198E+05 CRITERION= .1073E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 41193.540 TIME= 16:37:10
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4705E-05
 FORCE CONVERGENCE VALUE = 661.9 CRITERION= .1073E+05 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 41787.960 TIME= 16:53:13
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 41864.660 TIME= 16:55:28
 Contact node 10071 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 41864.740 TIME= 16:55:28
 Contact node 10007 is in contact with more than one target. Check your
 results carefully.
 *** LOAD STEP 3 SUBSTEP 12 COMPLETED. CUM ITER = 62
 *** TIME = 1.31568 TIME INC = .640000E-03
 *** MAX PLASTIC STRAIN STEP = .1103E-01 CRITERION = .5000E-01
 *** RESPONSE FREQ = 19.24 PERIOD= .5197E-01 PTS/CYC = 81.
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .4117E+08 CRITERION= .4400E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4470E-02
 FORCE CONVERGENCE VALUE = .5148E+07 CRITERION= 9961.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 42590.310 TIME= 17:16:48
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1431E-03
 FORCE CONVERGENCE VALUE = .7969E+05 CRITERION= 9882.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 43184.030 TIME= 17:32:48
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1048E-04
 FORCE CONVERGENCE VALUE = 1547. CRITERION= 9882. <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 43777.410 TIME= 17:48:46
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 43854.280 TIME= 17:51:01
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 43854.360 TIME= 17:51:01
Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 13 COMPLETED. CUM ITER = 65
*** TIME = 1.31632 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .1061E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 18.36 PERIOD= .5445E-01 PTS/CYC = 85.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3500E+08 CRITERION= .3785E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4417E-02
FORCE CONVERGENCE VALUE = .6154E+07 CRITERION= 9139.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 44580.110 TIME= 18:12:19
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1357E-03
FORCE CONVERGENCE VALUE = .8867E+05 CRITERION= 9158.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 45174.290 TIME= 18:28:19
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1288E-04
FORCE CONVERGENCE VALUE = 4712. CRITERION= 9158. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 45769.350 TIME= 18:44:21
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 45846.020 TIME= 18:46:36
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 45846.100 TIME= 18:46:36
Contact node 10007 is in contact with more than one target. Check your results carefully.
*** LOAD STEP 3 SUBSTEP 14 COMPLETED. CUM ITER = 68
*** TIME = 1.31696 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .1103E-01 CRITERION = .5000E-01
*** RESPONSE FREQ = 23.31 PERIOD= .4290E-01 PTS/CYC = 67.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2879E+08 CRITERION= .3168E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3792E-02
FORCE CONVERGENCE VALUE = .4887E+07 CRITERION= 8611.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 46572.100 TIME= 19:07:54
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1179E-03
FORCE CONVERGENCE VALUE = .6897E+05 CRITERION= 8631.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 47165.930 TIME= 19:23:54

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1054E-04
FORCE CONVERGENCE VALUE = 2713. CRITERION= 8631. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 47759.250 TIME= 19:39:53

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 47835.700 TIME= 19:42:08

Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 47835.770 TIME= 19:42:08

Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 15 COMPLETED. CUM ITER = 71

*** TIME = 1.31760 TIME INC = .640000E-03

*** MAX PLASTIC STRAIN STEP = .9760E-02 CRITERION = .5000E-01

*** RESPONSE FREQ = 29.49 PERIOD= .3391E-01 PTS/CYC = 53.

*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2261E+08 CRITERION= .2563E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2451E-02

FORCE CONVERGENCE VALUE = .2223E+07 CRITERION= 7892.

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 48562.150 TIME= 20:03:29

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8001E-04

FORCE CONVERGENCE VALUE = .4462E+05 CRITERION= 7901.

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 49174.290 TIME= 20:21:22

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5640E-05

FORCE CONVERGENCE VALUE = 814.3 CRITERION= 7901. <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 49798.000 TIME= 20:38:13

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 49874.610 TIME= 20:40:28

Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 49874.680 TIME= 20:40:28

Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 16 COMPLETED. CUM ITER = 74

*** TIME = 1.31824 TIME INC = .640000E-03

*** MAX PLASTIC STRAIN STEP = .6299E-02 CRITERION = .5000E-01

*** RESPONSE FREQ = 26.83 PERIOD= .3727E-01 PTS/CYC = 58.

*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .1639E+08 CRITERION= .1956E+05

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1648E-02

FORCE CONVERGENCE VALUE = .6013E+06 CRITERION= 7099.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 50600.000 TIME= 21:01:47
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3020E-04
FORCE CONVERGENCE VALUE = .1154E+05 CRITERION= 7097.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 51193.420 TIME= 21:17:48
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1218E-05
FORCE CONVERGENCE VALUE = 337.7 CRITERION= 7097. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 51787.040 TIME= 21:33:48
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 51863.380 TIME= 21:36:02
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 51863.460 TIME= 21:36:02
Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 17 COMPLETED. CUM ITER = 77
*** TIME = 1.31888 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .3059E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 31.45 PERIOD= .3180E-01 PTS/CYC = 50.
*** AUTO STEP TIME: NEXT TIME INC = .640000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .9808E+07 CRITERION= .1339E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9963E-03
FORCE CONVERGENCE VALUE = .1101E+07 CRITERION= 7007.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 52590.100 TIME= 21:57:23
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1638E-04
FORCE CONVERGENCE VALUE = .4639E+05 CRITERION= 7001.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 53184.910 TIME= 22:13:25
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9148E-06
FORCE CONVERGENCE VALUE = 1153. CRITERION= 7001. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 53778.780 TIME= 22:29:24
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 53855.290 TIME= 22:31:38
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 53855.370 TIME= 22:31:39
Contact node 10007 is in contact with more than one target. Check your results carefully.
*** LOAD STEP 3 SUBSTEP 18 COMPLETED. CUM ITER = 80
*** TIME = 1.31952 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .1882E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 37.81 PERIOD= .2645E-01 PTS/CYC = 41.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3233E+07 CRITERION= 8362.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1075E-02
FORCE CONVERGENCE VALUE = .1069E+07 CRITERION= 7667.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 54579.140 TIME= 22:52:57
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2085E-04
FORCE CONVERGENCE VALUE = .4927E+05 CRITERION= 7664.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 55172.310 TIME= 23:08:56
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1007E-05
FORCE CONVERGENCE VALUE = 1438. CRITERION= 7664. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 55765.220 TIME= 23:24:54
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 55841.700 TIME= 23:27:09
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 55841.770 TIME= 23:27:09
Contact node 10007 is in contact with more than one target. Check your results carefully.
*** LOAD STEP 3 SUBSTEP 19 COMPLETED. CUM ITER = 83
*** TIME = 1.32016 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .2276E-02 CRITERION = .5000E-01
*** RESPONSE FREQ = 131.2 PERIOD= .7625E-02 PTS/CYC = 12.
*** AUTO TIME STEP: NEXT TIME INC = .38124E-03 DECREASED (FACTOR = .5957)

FORCE CONVERGENCE VALUE = .3467E+07 CRITERION= 7755.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3209E-03
FORCE CONVERGENCE VALUE = .7621E+06 CRITERION= 8232.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 56566.080 TIME= 23:48:28
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7204E-05
FORCE CONVERGENCE VALUE = .3101E+05 CRITERION= 8233.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 57158.910 TIME= 00:04:27
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3759E-06
FORCE CONVERGENCE VALUE = 2761. CRITERION= 8233. <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 57752.240 TIME= 00:20:25
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 57828.750 TIME= 00:22:41
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 57828.830 TIME= 00:22:41
Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 20 COMPLETED. CUM ITER = 86
*** TIME = 1.32054 TIME INC = .381238E-03
*** MAX PLASTIC STRAIN STEP = .5317E-03 CRITERION = .5000E-01
*** RESPONSE FREQ = 166.1 PERIOD= .6019E-02 PTS/CYC = 16.
*** AUTO STEP TIME: NEXT TIME INC = .38124E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .9587E+07 CRITERION= .1137E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3777E-03
FORCE CONVERGENCE VALUE = .1015E+08 CRITERION= 8888.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 58551.270 TIME= 00:43:58
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .9587E+07 CRITERION= .1137E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3406E-03
FORCE CONVERGENCE VALUE = .6253E+05 CRITERION= 8876.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 59264.040 TIME= 01:03:37
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8112E-06
FORCE CONVERGENCE VALUE = .1958E+05 CRITERION= 8876.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 59855.210 TIME= 01:19:34
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1230E-06
FORCE CONVERGENCE VALUE = 9876. CRITERION= 8876.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 60445.910 TIME= 01:35:32
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6316E-07
FORCE CONVERGENCE VALUE = 2112. CRITERION= 8876. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 61037.220 TIME= 01:51:29
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5

*** WARNING *** CP= 61113.350 TIME= 01:53:45
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 61113.430 TIME= 01:53:45
Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 21 COMPLETED. CUM ITER = 91
*** TIME = 1.32092 TIME INC = .381238E-03
*** MAX PLASTIC STRAIN STEP = .3672E-04 CRITERION = .5000E-01
*** RESPONSE FREQ = 109.3 PERIOD= .9150E-02 PTS/CYC = 24.
*** AUTO STEP TIME: NEXT TIME INC = .38124E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .1566E+08 CRITERION= .1660E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5606E-03
FORCE CONVERGENCE VALUE = .9623E+05 CRITERION= 9642.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 61837.910 TIME= 02:15:12
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9438E-06
FORCE CONVERGENCE VALUE = 1046. CRITERION= 9641. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 62428.920 TIME= 02:31:08
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** WARNING *** CP= 62505.030 TIME= 02:33:23
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 62505.100 TIME= 02:33:23
Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 22 COMPLETED. CUM ITER = 93
*** TIME = 1.32130 TIME INC = .381238E-03
*** MAX PLASTIC STRAIN STEP = .3720E-04 CRITERION = .5000E-01
*** RESPONSE FREQ = 81.50 PERIOD= .1227E-01 PTS/CYC = 32.
*** AUTO STEP TIME: NEXT TIME INC = .38124E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2152E+08 CRITERION= .2218E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7693E-03
FORCE CONVERGENCE VALUE = .9649E+05 CRITERION= .1032E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 63227.160 TIME= 02:54:38
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4977E-06
FORCE CONVERGENCE VALUE = 6372. CRITERION= .1033E+05 <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 63817.600 TIME= 03:10:35
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** WARNING *** CP= 63893.970 TIME= 03:12:48
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 63894.040 TIME= 03:12:48
 Contact node 10007 is in contact with more than one target. Check your results carefully.
 *** LOAD STEP 3 SUBSTEP 23 COMPLETED. CUM ITER = 95
 *** TIME = 1.32168 TIME INC = .381238E-03
 *** MAX PLASTIC STRAIN STEP = .8762E-04 CRITERION = .5000E-01
 *** RESPONSE FREQ = 63.64 PERIOD= .1571E-01 PTS/CYC = 41.
 *** AUTO TIME STEP: NEXT TIME INC = .64000E-03 INCREASED (FACTOR = 1.6787)
 FORCE CONVERGENCE VALUE = .1728E+08 CRITERION= .1886E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1749E-02
 FORCE CONVERGENCE VALUE = .1771E+06 CRITERION= .1053E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 64616.560 TIME= 03:34:02
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1830E-05
 FORCE CONVERGENCE VALUE = 1001. CRITERION= .1053E+05 <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 65207.320 TIME= 03:50:00
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** WARNING *** CP= 65283.620 TIME= 03:52:14
 Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 65283.700 TIME= 03:52:14
 Contact node 10007 is in contact with more than one target. Check your results carefully.
 *** LOAD STEP 3 SUBSTEP 24 COMPLETED. CUM ITER = 97
 *** TIME = 1.32232 TIME INC = .640000E-03
 *** MAX PLASTIC STRAIN STEP = .8383E-04 CRITERION = .5000E-01
 *** RESPONSE FREQ = 49.71 PERIOD= .2012E-01 PTS/CYC = 31.
 *** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED
 FORCE CONVERGENCE VALUE = .2221E+08 CRITERION= .2341E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2234E-02
 FORCE CONVERGENCE VALUE = .1188E+07 CRITERION= 9341.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 66005.470 TIME= 04:13:29
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5626E-05
 FORCE CONVERGENCE VALUE = 908.9 CRITERION= 9355. <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 66597.380 TIME= 04:29:27
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command). Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** WARNING *** CP= 66673.850 TIME= 04:31:42
 Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 66673.930 TIME= 04:31:42
 Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 25 COMPLETED. CUM ITER = 99
 *** TIME = 1.32296 TIME INC = .640000E-03
 *** MAX PLASTIC STRAIN STEP = .3573E-04 CRITERION = .5000E-01
 *** RESPONSE FREQ = 42.88 PERIOD = .2332E-01 PTS/CYC = 36.
 *** AUTO STEP TIME: NEXT TIME INC = .640000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .2651E+08 CRITERION= .2705E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2654E-02
 FORCE CONVERGENCE VALUE = .1925E+06 CRITERION= 7539.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 67397.570 TIME= 04:52:57
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1645E-05
 FORCE CONVERGENCE VALUE = 928.8 CRITERION= 7542. <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 67988.540 TIME= 05:08:53
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** WARNING *** CP= 68064.830 TIME= 05:11:09
 Contact node 10071 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 68064.920 TIME= 05:11:09
 Contact node 10007 is in contact with more than one target. Check your
 results carefully.

*** LOAD STEP 3 SUBSTEP 26 COMPLETED. CUM ITER = 101
 *** TIME = 1.32360 TIME INC = .640000E-03
 *** MAX PLASTIC STRAIN STEP = .9181E-04 CRITERION = .5000E-01
 *** RESPONSE FREQ = 45.06 PERIOD = .2219E-01 PTS/CYC = 35.
 *** AUTO STEP TIME: NEXT TIME INC = .640000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3027E+08 CRITERION= .3024E+05
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3029E-02
 FORCE CONVERGENCE VALUE = .4061E+06 CRITERION= 5533.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 68787.370 TIME= 05:32:23
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3465E-04
 FORCE CONVERGENCE VALUE = .1455E+05 CRITERION= 5544.
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 69378.130 TIME= 05:48:20
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2027E-06
 FORCE CONVERGENCE VALUE = 13.62 CRITERION= 5544. <<< CONVERGED
 MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 69969.440 TIME= 06:04:16
 The calculated reference MOMENT CONVERGENCE VALUE = 0 is
 less than the default minimum of 1 (MINREF field of CNVTOL command).
 Check results carefully.
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 70045.980 TIME= 06:06:30
 Contact node 10071 is in contact with more than one target. Check your
 results carefully.

*** WARNING *** CP= 70046.060 TIME= 06:06:30
Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 27 COMPLETED. CUM ITER = 104
*** TIME = 1.32424 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .2263E-03 CRITERION = .5000E-01
*** RESPONSE FREQ = 43.58 PERIOD= .2295E-01 PTS/CYC = 36.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3342E+08 CRITERION= .3307E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3369E-02
FORCE CONVERGENCE VALUE = .4901E+06 CRITERION= 4112.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 70768.840 TIME= 06:27:45
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5991E-05
FORCE CONVERGENCE VALUE = .2012E+05 CRITERION= 4118.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 71360.440 TIME= 06:43:41
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1973E-06
FORCE CONVERGENCE VALUE = 21.32 CRITERION= 4118. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 71951.980 TIME= 06:59:40
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 72028.530 TIME= 07:01:55
Contact node 10071 is in contact with more than one target. Check your results carefully.

*** WARNING *** CP= 72028.610 TIME= 07:01:55
Contact node 10007 is in contact with more than one target. Check your results carefully.

*** LOAD STEP 3 SUBSTEP 28 COMPLETED. CUM ITER = 107
*** TIME = 1.32488 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .3292E-03 CRITERION = .5000E-01
*** RESPONSE FREQ = 41.84 PERIOD= .2390E-01 PTS/CYC = 37.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3593E+08 CRITERION= .3552E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3605E-02
FORCE CONVERGENCE VALUE = .3869E+06 CRITERION= 3735.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 72751.600 TIME= 07:23:11
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3588E-05
FORCE CONVERGENCE VALUE = .1229E+05 CRITERION= 3739.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 73343.500 TIME= 07:39:09
The calculated reference MOMENT CONVERGENCE VALUE = 0 is less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1778E-06

FORCE CONVERGENCE VALUE = 11.80 CRITERION= 3739. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 73939.660 TIME= 07:55:18
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 74016.330 TIME= 07:57:33
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 74016.410 TIME= 07:57:33
Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 29 COMPLETED. CUM ITER = 110
*** TIME = 1.32552 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .2739E-03 CRITERION = .5000E-01
*** RESPONSE FREQ = 38.71 PERIOD= .2584E-01 PTS/CYC = 40.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3783E+08 CRITERION= .3752E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3786E-02
FORCE CONVERGENCE VALUE = .7254E+06 CRITERION= 3850.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 74799.060 TIME= 08:21:38
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9984E-05
FORCE CONVERGENCE VALUE = .1852E+05 CRITERION= 3850.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 75421.940 TIME= 08:38:35
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2381E-06
FORCE CONVERGENCE VALUE = 149.8 CRITERION= 3851. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 76014.810 TIME= 08:54:33
The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** WARNING *** CP= 76091.840 TIME= 08:56:48
Contact node 10071 is in contact with more than one target. Check your
results carefully.

*** WARNING *** CP= 76091.920 TIME= 08:56:48
Contact node 10007 is in contact with more than one target. Check your
results carefully.

*** LOAD STEP 3 SUBSTEP 30 COMPLETED. CUM ITER = 113
*** TIME = 1.32616 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .7445E-03 CRITERION = .5000E-01
*** RESPONSE FREQ = 37.97 PERIOD= .2634E-01 PTS/CYC = 41.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3886E+08 CRITERION= .3877E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3921E-02
FORCE CONVERGENCE VALUE = .1599E+07 CRITERION= 4071.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 76823.590 TIME= 09:19:47

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1448E-03
FORCE CONVERGENCE VALUE = .7824E+05 CRITERION= 4074.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 77423.850 TIME= 09:36:27

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8218E-06
FORCE CONVERGENCE VALUE = 210.5 CRITERION= 4075. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 78024.280 TIME= 09:53:19

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 3 SUBSTEP 31 COMPLETED. CUM ITER = 116
*** TIME = 1.32680 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .5665E-03 CRITERION = .5000E-01
*** RESPONSE FREQ = 20.20 PERIOD= .4951E-01 PTS/CYC = 77.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3932E+08 CRITERION= .3940E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3955E-02
FORCE CONVERGENCE VALUE = .3081E+06 CRITERION= 3672.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 78833.260 TIME= 10:17:36

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2153E-05
FORCE CONVERGENCE VALUE = 287.8 CRITERION= 3685. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 79433.400 TIME= 10:34:08

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 2

*** LOAD STEP 3 SUBSTEP 32 COMPLETED. CUM ITER = 118
*** TIME = 1.32744 TIME INC = .640000E-03
*** MAX PLASTIC STRAIN STEP = .3600E-03 CRITERION = .5000E-01
*** RESPONSE FREQ = 21.23 PERIOD= .4711E-01 PTS/CYC = 74.
*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3956E+08 CRITERION= .3966E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3990E-02
FORCE CONVERGENCE VALUE = .2213E+06 CRITERION= 3360.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 80244.190 TIME= 10:58:50

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4712E-05
FORCE CONVERGENCE VALUE = .1320E+05 CRITERION= 3362.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 80845.960 TIME= 11:15:53

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6174E-07

FORCE CONVERGENCE VALUE = 149.2 CRITERION= 3362. <<< CONVERGED
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 81465.260 TIME= 11:34:51

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 3 SUBSTEP 33 COMPLETED. CUM ITER = 121

*** TIME = 1.32808 TIME INC = .640000E-03

*** MAX PLASTIC STRAIN STEP = .3664E-03 CRITERION = .5000E-01

*** RESPONSE FREQ = 23.84 PERIOD= .4194E-01 PTS/CYC = 66.

*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3961E+08 CRITERION= .3973E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3983E-02
FORCE CONVERGENCE VALUE = .6582E+06 CRITERION= 3630.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 82354.210 TIME= 12:04:00

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1427E-03

FORCE CONVERGENCE VALUE = .3758E+05 CRITERION= 3637.

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 82948.410 TIME= 12:20:00

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5359E-06

FORCE CONVERGENCE VALUE = 29.64 CRITERION= 3637. <<< CONVERGED

MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 83543.000 TIME= 12:36:01

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3

*** LOAD STEP 3 SUBSTEP 34 COMPLETED. CUM ITER = 124

*** TIME = 1.32872 TIME INC = .640000E-03

*** MAX PLASTIC STRAIN STEP = .2853E-03 CRITERION = .5000E-01

*** RESPONSE FREQ = 13.71 PERIOD= .7294E-01 PTS/CYC = .11E+03

*** AUTO STEP TIME: NEXT TIME INC = .64000E-03 UNCHANGED

FORCE CONVERGENCE VALUE = .3961E+08 CRITERION= .3977E+05
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4000E-02
FORCE CONVERGENCE VALUE = .1981E+07 CRITERION= 3920.
MOMENT CONVERGENCE VALUE = .0000E+00 CRITERION= .1000E-02 <<< CONVERGED

*** WARNING *** CP= 84349.450 TIME= 12:59:50

The calculated reference MOMENT CONVERGENCE VALUE = 0 is
less than the default minimum of 1 (MINREF field of CNVTOL command).
Check results carefully.

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2747E-04

*** ERROR *** CP= 84828.840 TIME= 13:13:02

Run terminated at user request from the ABT file.

*** WARNING *** CP= 84828.860 TIME= 13:13:02

The unconverged solution (identified as time 1.34 substep 999999) is
output for analysis debug purposes. Results should not be used for
any other purpose.

RESTART INFORMATION

REASON FOR TERMINATION. NONLINEAR KEYWORD ON THE ABT FILE
FILES NEEDED FOR RESTARTING exwobt12.esav
exwobt12.emat
exwobt12.db
TIME OF LAST SOLUTION 1.3287
TIME AT START OF THE LOAD STEP 1.3080
TIME AT END OF THE LOAD STEP 1.3400
ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= exwobt12.db
FOR POSSIBLE RESUME FROM THIS POINT

NUMBER OF WARNING MESSAGES ENCOUNTERED= 285
NUMBER OF ERROR MESSAGES ENCOUNTERED= 1

***** PROBLEM TERMINATED BY INDICATED ERROR(S) OR BY END OF INPUT DATA *****

```

*-----*
|
|               ANSYS RUN COMPLETED
|
|-----|
|
|      REV. 5.0 A                      HP 9000/7XX
|
|      CP TIME      (sec) =      84920.890      TIME = 13:15:49
|      ELAPSED TIME (sec) =     143738.000      DATE  = 07/21/95
|
|-----|
*-----*

```

```

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

```

***** ANSYS COMMAND LINE ARGUMENTS *****
JOB NAME = stat2d
MEMORY REQUESTED (MB) = 64.0
BATCH MODE REQUESTED
start.ans FILE

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

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 RESULTS SHOULD BE IMMEDIATELY BROUGHT TO OUR ATTENTION.

```

ENTER /SHOW,device TO SET THE GRAPHICS DISPLAY TO device(e.g. X11,4207,ETC.)
ENTER /MENU,ON      TO START THE ANSYS MENU SYSTEM
ENTER HELP          FOR GENERAL ANSYS HELP INFORMATION
1  /config,nvpag,512
2  /units,si
3  /prep7
4  /title, Static 2-D 12 PWR Tube Analysis
5  /vcon,,0
6  /com, Rotate WP 45 degrees with respect to symmetry axis
7  wprota,45
8  local,11,0,0,0,0,45,0,0
9  local,12,1,0,0,0,45,0,0
10 /com, Define Parameters
11 ibir=0.52885      ! Inner Barrier Inner Radius (DIA = 1.0577 m)
12 obir=0.54885      ! Outer Barrier Inner Radius (DIA = 1.0977 m)
13 obsr=0.59885      ! Outer Barrier Skirt Radius (DIA = 1.1977 m)
14 obor=0.64885      ! Outer Barrier Outer Radius (DIA = 1.2977 m)
15 ts1=.0145
16 ts2=.0145
17 ts3=.01
18 ts4=.005
19 ts5=.0095          ! basket structure thicknesses
20 ts124=ts1+ts2+ts4
21 ts23=ts2+ts3
22 ts234=ts2+ts3+ts4
23 ts14=ts1+ts4
24 ts34=ts3+ts4
25 b=2*ts1+4*(ts23)+6*ts4
26 tp1=(ts234)**2
27 tp2=(ts14)**2
28 stp=sqrt(b**2-20*(tp1+tp2-ibir**2))
29 x=(-1*b+stp)/10 ! calculated fuel assembly width
30 ang1=(180/3.14159)*asin(ts5/ibir)
31 ang2=(180/3.14159)*asin((x+ts4+ts1)/ibir)
32 ang3=(180/3.14159)*acos((x+ts4+ts1)/ibir)
33 ang4=(180/3.14159)*acos(ts5/ibir)
34 bsht=4.585         ! basket structure height
35 uilh=.025          ! upper inner lid height
36 ght=.03            ! gap height
37 uolh=.11           ! upper outer lid height
38 usht=.225          ! upper skirt height
39 lilh=.025          ! lower inner lid height
40 lolh=.11           ! lower outer lid height
41 lsht=.225          ! lower skirt height
42 elev1=bsht+uilh    ! elevations of all planes to be dragged
43 elev2=elev1+ght
44 elev3=elev2+uolh
45 elev4=elev3+usht
46 elev5=-1*lilh
47 elev6=elev5-lolh
48 elev7=elev6-lsht
49
50 r1d=10              ! Vertical Divisions Region 1
51 r1sr=1              ! Spacing Ratio Region 1 (from lower to upper keypoint)

```

```

52 r2d=25      ! Horizontal Divisions Region 2
53 r2sr=1      ! Spacing Ratio Region 2 (from left to right keypoint)
54 r3d=25      ! Refer to the figures to locate following regions
55 r3sr=1
56 r4d=25
57 r4sr=1
58 r5d=25
59 r5sr=1
60 r6d=25
61 r6sr=1
62 r7d=25
63 r7sr=1
64 r8d=25
65 r8sr=1
66 r9d=25
67 r9sr=1
68 r10d=25
69 r10sr=1
70 r11d=25
71 r11sr=1
72 r12d=25
73 r12sr=1
74 r13d=25
75 r13sr=1
76 r14d=25
77 r14sr=1
78 r15d=25
79 r15sr=1
80 r16d=25
81 r16sr=1
82 r17d=25
83 r17sr=1
84 r18d=25
85 r18sr=1
86 r19d=26
87 r19sr=1
88 r20d=25
89 r20sr=1
90 r21d=10
91 r21sr=1
92
93 lc1d=2      ! Divisions of lines in circle 1
94 lc1sr=1     ! Spacing Ratio of lines in circle 1
95 lc2d=3      ! Divisions of lines in circle 2
96 lc2sr=1     ! Spacing Ratio of lines in circle 2
97 lc3d=2      ! Divisions of lines in circle 3
98 lc3sr=1     ! Spacing Ratio of lines in circle 3
99
100 c1d=17     ! Divisions of circles in circles # 1
101 c1sr=1      ! Spacing Ratio of circles in circles # 1
102 c2d=23     ! Divisions of circles in circles # 2
103 c2sr=1      ! Spacing Ratio of circles in circles # 2
104 c3d=17     ! Divisions of circles in circles # 3
105 c3sr=1      ! Spacing Ratio of circles in circles # 3
106 c4d=17     ! Divisions of circles in circles # 4
107 c4sr=1      ! Spacing Ratio of circles in circles # 4
108 c5d=23     ! Divisions of circles in circles # 5
109 c5sr=1      ! Spacing Ratio of circles in circles # 5
110 c6d=17     ! Divisions of circles in circles # 6
111 c6sr=1      ! Spacing Ratio of circles in circles # 6
112
113 btd=15     ! Divisions along the basket assembly
114 btsr=-.15  ! spacing Ratio along the basket assembly
115
116 rockrad=1.0 ! Radius of Rock
117 xrc=0.0    ! X Coordinate of Rock Center
118 yrc=9.705+rockrad-obor ! Y Coordinate of Rock Center
119 zrc=bsht/2 ! Z Coordinate of Rock Center
120
121 /com, Define Element Properties

```

```

122 et,1,plane42,0,0,2, ! 316L Stainless Steel
123 et,2,plane42,0,0,2, ! Alloy 825
124 et,3,plane42,0,0,2, ! A 516 Carbon Steel
125
126 /com, ratio of static to dynamic coeff. of friction fact=1.298, Area Tol.=15%
127 mp,ex,1,195e9 ! 316L Stainless Steel
128 mp,ex,2,206e9 ! Alloy 825
129 mp,ex,3,206e9 ! A 516 Carbon Steel
130 !mp,ex,4,32.7e9 ! Rock
131 mp,nuxy,1,0.298 ! 316L Stainless Steel
132 mp,nuxy,2,0.42 ! Alloy 825
133 mp,nuxy,3,0.3 ! A 516 Carbon Steel
134 !mp,nuxy,4,0.22 ! Rock
135 mp,dens,1,29233.8 ! 316L Stainless Steel (Adjusted to provide proper mass)
136 mp,dens,2,4285.9 ! Alloy 825 (Adjusted to provide proper mass)
137 mp,dens,3,9390.6 ! A 516 Carbon Steel (Adjusted to provide proper mass)
138 !mp,dens,4,5225.2 ! Rock (Adjusted to provide proper mass)
139 !mp,mu,5,0.74 ! Coefficient of Friction (Steel on Steel Assumed)
140
141 tb,biso,1
142 tbddata,,172e6,.776e9 ! 316L Stainless Steel
143 tb,biso,2
144 tbddata,,338e6,.722e9 ! Alloy 825
145 tb,biso,3
146 tbddata,,205e6,.6505e9 ! A 516 Carbon Steel
147
148 /com, Define keypoints in the basket assembly
149 csys,11
150 k,1,0,0
151 k,2,0,ts4
152 k,3,ts4,ts4
153 k,4,x+ts4,ts4
154 k,5,x+ts34,ts4
155 k,6,2*x+ts34,ts4
156 k,7,2*x+ts234,ts5
157 k,8,0,x+ts4
158 k,9,ts4,x+ts4
159 k,10,x+ts4,x+ts4
160 k,11,x+ts34,x+ts4
161 k,12,2*x+ts34,x+ts4
162 k,13,0,x+ts34
163 k,14,ts4,x+ts34
164 k,15,x+ts4,x+ts34
165 k,16,x+ts14,x+ts14
166 k,17,0,2*x+ts34
167 k,18,ts4,2*x+ts34
168 k,19,x+ts4,2*x+ts34
169 k,20,0,2*x+ts234
170 k,21,ts5,2*x+ts234
171 ksymm,y,2,21,1,0,1,0
172
173 csys,12
174 k,42,ibir,ang1
175 k,43,ibir,ang2
176 k,44,ibir,ang3
177 k,45,ibir,ang4
178 k,46,ibir,90
179 k,47,obir,ang1
180 k,48,obir,ang2
181 k,49,obir,ang3
182 k,50,obir,ang4
183 k,51,obir,90
184 k,52,obsr,ang1
185 k,53,obsr,ang2
186 k,54,obsr,ang3
187 k,55,obsr,ang4
188 k,56,obsr,90
189 k,57,obor,ang1
190 k,58,obor,ang2
191 k,59,obor,ang3

```

```

192 k,60,obor,ang4
193 k,61,obor,90
194 ksymm,y,42,61,1,0,1,0
195 /com, Define default value of esize
196 esize,,3
197
198 /com, Line divisions and spacing ratios
199 /com, in the basket structure
200 csys,11
201 l,20,46
202 l,21,45 ! region 1
203 lesize,all,,,r1d,r1sr,1
204 lsel,none
205 l,21,44
206 l,18,19 ! region 2
207 lesize,all,,,r2d,r2sr,1
208 lsel,none
209 l,13,17
210 l,14,18 ! region 3
211 lesize,all,,,r3d,r3sr,1
212 lsel,none
213 l,15,19
214 l,16,44 ! region 4
215 lesize,all,,,r4d,r4sr,1
216 lsel,none
217 l,14,15
218 l,9,10 ! region 5
219 lesize,all,,,r5d,r5sr,1
220 lsel,none
221 l,16,43
222 l,11,12 ! region 6
223 lesize,all,,,r6d,r6sr,1
224 lsel,none
225 l,2,8
226 l,3,9 ! region 7
227 lesize,all,,,r7d,r7sr,1
228 lsel,none
229 l,4,10
230 l,5,11 ! region 8
231 lesize,all,,,r8d,r8sr,1
232 lsel,none
233 l,6,12
234 l,7,43 ! region 9
235 lesize,all,,,r9d,r9sr,1
236 lsel,none
237 l,3,4
238 l,23,24 ! region 10
239 lesize,all,,,r10d,r10sr,1
240 lsel,none
241 l,5,6
242 l,25,26 ! region 11
243 lesize,all,,,r11d,r11sr,1
244 lsel,none
245 l,7,42
246 l,27,62 ! region 12
247 lesize,all,,,r12d,r12sr,1
248 lsel,none
249 l,28,22
250 l,29,23 ! region 13
251 lesize,all,,,r13d,r13sr,1
252 lsel,none
253 l,30,24
254 l,31,25 ! region 14
255 lesize,all,,,r14d,r14sr,1
256 lsel,none
257 l,32,26
258 l,63,27 ! region 15
259 lesize,all,,,r15d,r15sr,1
260 lsel,none
261 l,29,30

```

```

262 l,34,35 ! region 16
263 lesize,all,,,r16d,r16sr,1
264 lsel,none
265 l,31,32
266 l,36,63 ! region 17
267 lesize,all,,,r17d,r17sr,1
268 lsel,none
269 l,37,33
270 l,38,34 ! region 18
271 lesize,all,,,r18d,r18sr,1
272 lsel,none
273 l,39,35
274 l,64,36 ! region 19
275 lesize,all,,,r19d,r19sr,1
276 lsel,none
277 l,38,39
278 l,41,64 ! region 20
279 lesize,all,,,r20d,r20sr,1
280 lsel,none
281 l,66,40
282 l,65,41 ! region 21
283 lesize,all,,,r21d,r21sr,1
284 lsel,none
285 /com, Define perpendicular lines to the circles
286 l,46,51
287 l,45,50
288 l,44,49
289 l,43,48
290 l,42,47
291 l,62,67
292 l,63,68
293 l,64,69
294 l,65,70
295 l,66,71 ! lines in circle 1
296 lesize,all,,,lc1d,lc1sr,1
297 lsel,none
298 l,51,56
299 l,50,55
300 l,49,54
301 l,48,53
302 l,47,52
303 l,67,72
304 l,68,73
305 l,69,74
306 l,70,75
307 l,71,76 ! lines in circle 2
308 lesize,all,,,lc2d,lc2sr,1
309 lsel,none
310 l,56,61
311 l,55,60
312 l,54,59
313 l,53,58
314 l,52,57
315 l,72,77
316 l,73,78
317 l,74,79
318 l,75,80
319 l,76,81 ! lines in circle 3
320 lesize,all,,,lc3d,lc3sr,1
321 lsel,none
322 /com, Define circles of inner and outer barriers
323 csys,12
324 l,65,64
325 l,70,69
326 l,75,74
327 l,80,79 ! circles # 1
328 lesize,all,,,c1d,c1sr,1
329 lsel,none
330 l,64,63
331 l,69,68

```

```

332 l,74,73
333 l,79,78 ! circles # 2
334 lesize,all,,,c2d,c2sr,1
335 lsel,none
336 l,63,62
337 l,68,67
338 l,73,72
339 l,78,77 ! circles # 3
340 lesize,all,,,c3d,c3sr,1
341 lsel,none
342 l,42,43
343 l,47,48
344 l,52,53
345 l,57,58 ! circles # 4
346 lesize,all,,,c4d,c4sr,1
347 lsel,none
348 l,43,44
349 l,48,49
350 l,53,54
351 l,58,59 ! circles # 5
352 lesize,all,,,c5d,c5sr,1
353 lsel,none
354 l,44,45
355 l,49,50
356 l,54,55
357 l,59,60 ! circles # 6
358 lesize,all,,,c6d,c6sr,1
359 lsel,none
360
361 csys,11
362 k,82,0,0,bsht
363 k,83,0,0,elev1
364 k,84,0,0,elev2
365 k,85,0,0,elev3
366 k,86,0,0,elev4
367 k,87,0,0,elev5
368 k,88,0,0,elev6
369 k,89,0,0,elev7
370
371 l,1,82 ! define lines to drag areas (line#97)
372 l,82,83 ! (line#98)
373 l,83,84 ! (line#99)
374 l,84,85 ! (line#100)
375 l,85,86 ! (line#101)
376 l,1,87 ! (line#102)
377 l,87,88 ! (line#103)
378 l,88,89 ! (line#104)
379
380 /com, Define areas in basket structure
381 lsel,all
382 a,20,21,45,46
383 a,17,18,21,20
384 a,18,19,44,21
385 a,13,14,18,17
386 a,15,16,44,19
387 a,8,9,14,13
388 a,9,10,15,14
389 a,10,11,16,15
390 a,11,12,43,16
391 a,2,3,9,8
392 a,4,5,11,10
393 a,6,7,43,12
394 a,22,23,3,2
395 a,23,24,4,3
396 a,24,25,5,4
397 a,25,26,6,5
398 a,26,27,7,6
399 a,27,62,42,7
400 a,28,29,23,22
401 a,30,31,25,24

```

```

402 a,32,63,27,26
403 a,33,34,29,28
404 a,34,35,30,29
405 a,35,36,31,30
406 a,36,63,32,31
407 a,37,38,34,33
408 a,39,64,36,35
409 a,40,41,38,37
410 a,41,64,39,38
411 a,66,65,41,40
412 TYPE,1
413 MAT,1
414 ESHAPE,2
415 AMESH,ALL
416
417 /com, Define areas in the inner barrier
418 csys,11
419 a,46,45,50,51
420 a,45,44,49,50
421 a,44,43,48,49
422 a,43,42,47,48
423 a,42,62,67,47
424 a,63,68,67,62
425 a,64,69,68,63
426 a,70,69,64,65
427 a,71,70,65,66
428 TYPE,2
429 MAT,2
430 ESHAPE,2
431 AMESH,ALL
432
433 /com, Define areas in the inner part of outer barrier
434 a,51,50,55,56
435 a,50,49,54,55
436 a,49,48,53,54
437 a,48,47,52,53
438 a,47,67,72,52
439 a,68,73,72,67
440 a,74,73,68,69
441 a,75,74,69,70
442 a,76,75,70,71
443
444 /com, Define areas in the outer part of outer barrier
445 a,56,55,60,61
446 a,55,54,59,60
447 a,54,53,58,59
448 a,53,52,57,58
449 a,52,72,77,57
450 a,73,78,77,72
451 a,74,79,78,73
452 a,80,79,74,75
453 a,81,80,75,76
454 TYPE,3
455 MAT,3
456 ESHAPE,2
457 AMESH,ALL
458
459 /com, Half Model is used to create the other half
460 /com, by symmetry along the x-axis
461 allsel
462 csys,11
463 nsym,x,20000,all
464 esym,,20000,all,
465 nummrg,node
466 nummrg,kp
467 wpstyl,defa
468 allsel
469 csys,0
470
471 /com, Apply Constraints at Support Locations

```



```
472 csys,1
473 nsel,r,loc,x,obor-.01,obor+.01
474 nsel,r,loc,y,-80,-100
475 nrotate,all
476 d,all,ux,0,,,uy
477 nsel,all
478 csys,0
479 save
480 fini
481
482 /sol
483 antype,static
484 nlgeom,on
485
486 !divide by 6
487 d,2809,ux,.82783e-2/6
488 d,2859,ux,.55695e-2/6
489 d,2852,ux,-.56597e-2/6
490 d,2843,ux,-.83891e-2/6
491
492 d,2809,uy,-.2907e-1/6
493 d,2859,uy,-.50464e-1/6
494 d,2852,uy,-.50466e-1/6
495 d,2843,uy,-.29084e-1/6
496
497 acel,,9.81
498 autots,on
499 nsubst,4,1000,3
500 outres,all,1
501 solve
502
503 !divide by 4
504 d,2809,ux,.82783e-2/4
505 d,2859,ux,.55695e-2/4
506 d,2852,ux,-.56597e-2/4
507 d,2843,ux,-.83891e-2/4
508
509 d,2809,uy,-.2907e-1/4
510 d,2859,uy,-.50464e-1/4
511 d,2852,uy,-.50466e-1/4
512 d,2843,uy,-.29084e-1/4
513
514 acel,,9.81
515 autots,on
516 nsubst,4,1000,3
517 outres,all,1
518 solve
519
520 !divide by 2
521 d,2809,ux,.82783e-2/2
522 d,2859,ux,.55695e-2/2
523 d,2852,ux,-.56597e-2/2
524 d,2843,ux,-.83891e-2/2
525
526 d,2809,uy,-.2907e-1/2
527 d,2859,uy,-.50464e-1/2
528 d,2852,uy,-.50466e-1/2
529 d,2843,uy,-.29084e-1/2
530
531 acel,,9.81
532 autots,on
533 nsubst,4,1000,3
534 outres,all,1
535 solve
536
537 !original displacements
538 d,2809,ux,.82783e-2
539 d,2859,ux,.55695e-2
540 d,2852,ux,-.56597e-2
541 d,2843,ux,-.83891e-2
```

```

542
543 d,2809,uy,-.2907e-1
544 d,2859,uy,-.50464e-1
545 d,2852,uy,-.50466e-1
546 d,2843,uy,-.29084e-1
547
548 acel,,9.81
549 autots,on
550 nsubst,4,1000,3
551 outres,all,1
552 solve
553 fini
554
555 /exit
556 /eof
557
558
559
560
561
562
563
564
565
566
567 !f,1336,fx,103.05/6
568 !f,1337,fx,103.08/6
569
570 !f,1336,fy,-3547500/6
571 !f,1337,fy,-3548800/6

```

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

```

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

```

```

ABBREVIATION= K1      /pnum,kp ,1,
ABBREVIATION= K0      /pnum,kp ,0,
ABBREVIATION= L1      /pnum,line,1,
ABBREVIATION= L0      /pnum,line,0,
ABBREVIATION= A1      /pnum,area,1,
ABBREVIATION= A0      /pnum,area,0,
ABBREVIATION= V1      /pnum,volu,1,
ABBREVIATION= V0      /pnum,volu,0,
ABBREVIATION= N1      /pnum,node,1,
ABBREVIATION= N0      /pnum,node,0,
ABBREVIATION= E1      /pnum,elem,1,
ABBREVIATION= E0      /pnum,elem,0,
ABBREVIATION= M1      /pnum,mat ,1,
ABBREVIATION= M0      /pnum,mat ,0,
ABBREVIATION= R1      /pnum,real,1,
ABBREVIATION= R0      /pnum,real,0,

```

ABBREVIATION= T1 /pnum,type,1,
 ABBREVIATION= T0 /pnum,type,0,
 ABBREVIATION= C1 /number,1,
 ABBREVIATION= C0 /number,0,
 ABBREVIATION= INP /input,,inp,
 ABBREVIATION= X3D /show,3d,
 ABBREVIATION= X11 /show,x11,
 ABBREVIATION= VEC /show,,,1,
 ABBREVIATION= RAS /show,,,0,
 ABBREVIATION= ON /menu,on,
 ABBREVIATION= OFF /menu,off,
 ABBREVIATION= NVP /config,nvpag,512,
 ABBREVIATION= QUIT /exit,nosav,
 XYZ TRIAD DISPLAY SET TO OFF

VIEW CONE ANGLE FOR WINDOW 1 25.00

 END start.ans

To start ANSYS menu:

type: x3d for console
 x11 for X-term

type: on

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

SI UNITS SPECIFIED

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

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 22:59:39 JUL 21, 1995 CP= .550
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

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

TITLE=

Static 2-D 12 PWR Tube Analysis

VIEW CONE ANGLE FOR WINDOW 1 .00

Rotate WP 45 degrees with respect to symmetry axis

ROTATE WORKING PLANE

45.000 DEGREES ABOUT WORKING PLANE'S Z AXIS (X TOWARDS Y)
 .00000E+00 DEGREES ABOUT WORKING PLANE'S X AXIS (Y TOWARDS Z)

.00000E+00 DEGREES ABOUT WORKING PLANE'S Y AXIS (Z TOWARDS X)

COORDINATE SYSTEM 11 DEFINITION. TYPE= 0 (CARTESIAN)

XC,YC,ZC= .00000E+00 .00000E+00 .00000E+00
 ANGLES= 45.00 .00 .00 PARAMETERS= 1.000 1.000
 ORIENTATION= .71 .71 .00 -.71 .71 .00 .00 .00 1.00

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

COORDINATE SYSTEM 12 DEFINITION. TYPE= 1 (CYLINDRICAL)

XC,YC,ZC= .00000E+00 .00000E+00 .00000E+00
 ANGLES= 45.00 .00 .00 PARAMETERS= 1.000 1.000
 ORIENTATION= .71 .71 .00 -.71 .71 .00 .00 .00 1.00

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

Define Parameters

PARAMETER IBIR = .5288500
 PARAMETER OBIR = .5488500
 PARAMETER OBSR = .5988500
 PARAMETER OBOR = .6488500
 PARAMETER TS1 = .1450000E-01
 PARAMETER TS2 = .1450000E-01
 PARAMETER TS3 = .1000000E-01
 PARAMETER TS4 = .5000000E-02
 PARAMETER TS5 = .9500000E-02
 PARAMETER TS124 = .3400000E-01
 PARAMETER TS23 = .2450000E-01
 PARAMETER TS234 = .2950000E-01
 PARAMETER TS14 = .1950000E-01
 PARAMETER TS34 = .1500000E-01
 PARAMETER B = .1570000
 PARAMETER TP1 = .8702500E-03
 PARAMETER TP2 = .3802500E-03
 PARAMETER STP = 2.365013
 PARAMETER X = .2208013
 PARAMETER ANG1 = 1.029289
 PARAMETER ANG2 = 27.02537
 PARAMETER ANG3 = 62.97471
 PARAMETER ANG4 = 88.97079
 PARAMETER BSHT = 4.585000
 PARAMETER UILH = .2500000E-01
 PARAMETER GHT = .3000000E-01
 PARAMETER UOLH = .1100000

PARAMETER USHT	=	.2250000
PARAMETER L1LH	=	.2500000E-01
PARAMETER LOLH	=	.1100000
PARAMETER LSHT	=	.2250000
PARAMETER ELEV1	=	4.610000
PARAMETER ELEV2	=	4.640000
PARAMETER ELEV3	=	4.750000
PARAMETER ELEV4	=	4.975000
PARAMETER ELEV5	=	-.2500000E-01
PARAMETER ELEV6	=	-.1350000
PARAMETER ELEV7	=	-.3600000
PARAMETER R1D	=	10.00000
PARAMETER R1SR	=	1.000000
PARAMETER R2D	=	25.00000
PARAMETER R2SR	=	1.000000
PARAMETER R3D	=	25.00000
PARAMETER R3SR	=	1.000000
PARAMETER R4D	=	25.00000
PARAMETER R4SR	=	1.000000
PARAMETER R5D	=	25.00000
PARAMETER R5SR	=	1.000000
PARAMETER R6D	=	25.00000
PARAMETER R6SR	=	1.000000
PARAMETER R7D	=	25.00000
PARAMETER R7SR	=	1.000000
PARAMETER R8D	=	25.00000
PARAMETER R8SR	=	1.000000
PARAMETER R9D	=	25.00000
PARAMETER R9SR	=	1.000000
PARAMETER R10D	=	25.00000
PARAMETER R10SR	=	1.000000
PARAMETER R11D	=	25.00000
PARAMETER R11SR	=	1.000000
PARAMETER R12D	=	25.00000
PARAMETER R12SR	=	1.000000

PARAMETER R13D	=	25.00000
PARAMETER R13SR	=	1.000000
PARAMETER R14D	=	25.00000
PARAMETER R14SR	=	1.000000
PARAMETER R15D	=	25.00000
PARAMETER R15SR	=	1.000000
PARAMETER R16D	=	25.00000
PARAMETER R16SR	=	1.000000
PARAMETER R17D	=	25.00000
PARAMETER R17SR	=	1.000000
PARAMETER R18D	=	25.00000
PARAMETER R18SR	=	1.000000
PARAMETER R19D	=	26.00000
PARAMETER R19SR	=	1.000000
PARAMETER R20D	=	25.00000
PARAMETER R20SR	=	1.000000
PARAMETER R21D	=	10.00000
PARAMETER R21SR	=	1.000000
PARAMETER LC1D	=	2.000000
PARAMETER LC1SR	=	1.000000
PARAMETER LC2D	=	3.000000
PARAMETER LC2SR	=	1.000000
PARAMETER LC3D	=	2.000000
PARAMETER LC3SR	=	1.000000
PARAMETER C1D	=	17.00000
PARAMETER C1SR	=	1.000000
PARAMETER C2D	=	23.00000
PARAMETER C2SR	=	1.000000
PARAMETER C3D	=	17.00000
PARAMETER C3SR	=	1.000000
PARAMETER C4D	=	17.00000
PARAMETER C4SR	=	1.000000
PARAMETER C5D	=	23.00000
PARAMETER C5SR	=	1.000000
PARAMETER C6D	=	17.00000

PARAMETER C6SR = 1.000000

PARAMETER BTD = 15.00000

PARAMETER BSR = -.1500000

PARAMETER ROCKRAD = 1.000000

PARAMETER XRC = .0000000E+00

PARAMETER YRC = 10.05615

PARAMETER ZRC = 2.292500

Define Element Properties

ELEMENT TYPE 1 IS PLANE42 2-D STRUCTURAL SOLID
KEYOPT(1-12)= 0 0 2 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY
TWO-DIMENSIONAL MODEL

ELEMENT TYPE 2 IS PLANE42 2-D STRUCTURAL SOLID
KEYOPT(1-12)= 0 0 2 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY
TWO-DIMENSIONAL MODEL

ELEMENT TYPE 3 IS PLANE42 2-D STRUCTURAL SOLID
KEYOPT(1-12)= 0 0 2 0 0 0 0 0 0 0 0 0

CURRENT NODAL DOF SET IS UX UY
TWO-DIMENSIONAL MODEL
ratio of static to dynamic coeff. of friction fact=1.298, Area Tol.=15%

MATERIAL 1 EX = .1950000E+12

MATERIAL 2 EX = .2060000E+12

MATERIAL 3 EX = .2060000E+12

MATERIAL 1 NUXY = .2980000

MATERIAL 2 NUXY = .4200000

MATERIAL 3 NUXY = .3000000

MATERIAL 1 DENS = 29233.80

MATERIAL 2 DENS = 4285.900

MATERIAL 3 DENS = 9390.600

DEFINE DATA TABLE BISO FOR MATERIAL 1
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 1 AT TEMPERATURE= .00000E+00
LOC= 1 .17200E+09 .77600E+09

DEFINE DATA TABLE BISO FOR MATERIAL 2
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 2 AT TEMPERATURE= .00000E+00
LOC= 1 .33800E+09 .72200E+09

DEFINE DATA TABLE BISO FOR MATERIAL 3
WITH A MAXIMUM OF 6 TEMPERATURE SPECIFICATIONS

DATA FOR BISO TABLE FOR MATERIAL 3 AT TEMPERATURE= .00000E+00
LOC= 1 .20500E+09 .65050E+09

Define keypoints in the basket assembly

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT	1	X,Y,Z=	.000000E+00	.000000E+00	.000000E+00	IN CSYS= 11
			.000000E+00	.000000E+00	.000000E+00	IN CSYS= 0
KEYPOINT	2	X,Y,Z=	.000000E+00	.500000E-02	.000000E+00	IN CSYS= 11
			-.353553E-02	.353553E-02	.000000E+00	IN CSYS= 0
KEYPOINT	3	X,Y,Z=	.500000E-02	.500000E-02	.000000E+00	IN CSYS= 11
			.137759E-13	.707107E-02	.000000E+00	IN CSYS= 0
KEYPOINT	4	X,Y,Z=	.225801	.500000E-02	.000000E+00	IN CSYS= 11
			.156130	.163201	.000000E+00	IN CSYS= 0
KEYPOINT	5	X,Y,Z=	.235801	.500000E-02	.000000E+00	IN CSYS= 11
			.163201	.170272	.000000E+00	IN CSYS= 0
KEYPOINT	6	X,Y,Z=	.456603	.500000E-02	.000000E+00	IN CSYS= 11
			.319331	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	7	X,Y,Z=	.471103	.950000E-02	.000000E+00	IN CSYS= 11
			.326402	.339837	.000000E+00	IN CSYS= 0
KEYPOINT	8	X,Y,Z=	.000000E+00	.225801	.000000E+00	IN CSYS= 11
			-.159666	.159666	.000000E+00	IN CSYS= 0
KEYPOINT	9	X,Y,Z=	.500000E-02	.225801	.000000E+00	IN CSYS= 11
			-.156130	.163201	.000000E+00	IN CSYS= 0
KEYPOINT	10	X,Y,Z=	.225801	.225801	.000000E+00	IN CSYS= 11
			.622113E-12	.319331	.000000E+00	IN CSYS= 0
KEYPOINT	11	X,Y,Z=	.235801	.225801	.000000E+00	IN CSYS= 11
			.707107E-02	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	12	X,Y,Z=	.456603	.225801	.000000E+00	IN CSYS= 11
			.163201	.482532	.000000E+00	IN CSYS= 0
KEYPOINT	13	X,Y,Z=	.000000E+00	.235801	.000000E+00	IN CSYS= 11
			-.166737	.166737	.000000E+00	IN CSYS= 0
KEYPOINT	14	X,Y,Z=	.500000E-02	.235801	.000000E+00	IN CSYS= 11
			-.163201	.170272	.000000E+00	IN CSYS= 0
KEYPOINT	15	X,Y,Z=	.225801	.235801	.000000E+00	IN CSYS= 11
			-.707107E-02	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	16	X,Y,Z=	.240301	.240301	.000000E+00	IN CSYS= 11
			.662054E-12	.339837	.000000E+00	IN CSYS= 0
KEYPOINT	17	X,Y,Z=	.000000E+00	.456603	.000000E+00	IN CSYS= 11

			-.322867	.322867	.000000E+00	IN CSYS= 0
KEYPOINT	18	X,Y,Z=	.500000E-02	.456603	.000000E+00	IN CSYS= 11
			-.319331	.326402	.000000E+00	IN CSYS= 0
KEYPOINT	19	X,Y,Z=	.225801	.456603	.000000E+00	IN CSYS= 11
			-.163201	.482532	.000000E+00	IN CSYS= 0
KEYPOINT	20	X,Y,Z=	.000000E+00	.471103	.000000E+00	IN CSYS= 11
			-.333120	.333120	.000000E+00	IN CSYS= 0
KEYPOINT	21	X,Y,Z=	.950000E-02	.471103	.000000E+00	IN CSYS= 11
			-.326402	.339837	.000000E+00	IN CSYS= 0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y
DO NOT COPY NODE AND ELEMENTS
SET IS FROM 2 TO 21 IN STEPS OF 1

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

KEYPOINT	42	X,Y,Z=	.528850	1.02929	.000000E+00	IN CSYS= 12
			.367176	.380611	.000000E+00	IN CSYS= 0
KEYPOINT	43	X,Y,Z=	.528850	27.0254	.000000E+00	IN CSYS= 12
			.163201	.503039	.000000E+00	IN CSYS= 0
KEYPOINT	44	X,Y,Z=	.528850	62.9747	.000000E+00	IN CSYS= 12
			-.163202	.503038	.000000E+00	IN CSYS= 0
KEYPOINT	45	X,Y,Z=	.528850	88.9708	.000000E+00	IN CSYS= 12
			-.367176	.380610	.000000E+00	IN CSYS= 0
KEYPOINT	46	X,Y,Z=	.528850	90.0000	.000000E+00	IN CSYS= 12
			-.373953	.373953	.000000E+00	IN CSYS= 0
KEYPOINT	47	X,Y,Z=	.548850	1.02929	.000000E+00	IN CSYS= 12
			.381061	.395004	.000000E+00	IN CSYS= 0
KEYPOINT	48	X,Y,Z=	.548850	27.0254	.000000E+00	IN CSYS= 12
			.169373	.522062	.000000E+00	IN CSYS= 0
KEYPOINT	49	X,Y,Z=	.548850	62.9747	.000000E+00	IN CSYS= 12
			-.169374	.522062	.000000E+00	IN CSYS= 0
KEYPOINT	50	X,Y,Z=	.548850	88.9708	.000000E+00	IN CSYS= 12
			-.381062	.395004	.000000E+00	IN CSYS= 0
KEYPOINT	51	X,Y,Z=	.548850	90.0000	.000000E+00	IN CSYS= 12
			-.388096	.388096	.000000E+00	IN CSYS= 0
KEYPOINT	52	X,Y,Z=	.598850	1.02929	.000000E+00	IN CSYS= 12
			.415776	.430989	.000000E+00	IN CSYS= 0
KEYPOINT	53	X,Y,Z=	.598850	27.0254	.000000E+00	IN CSYS= 12

			.184803	.569622	.000000E+00	IN CSYS= 0
KEYPOINT	54	X,Y,Z=	.598850	62.9747	.000000E+00	IN CSYS= 12
			-.184803	.569622	.000000E+00	IN CSYS= 0
KEYPOINT	55	X,Y,Z=	.598850	88.9708	.000000E+00	IN CSYS= 12
			-.415776	.430989	.000000E+00	IN CSYS= 0
KEYPOINT	56	X,Y,Z=	.598850	90.0000	.000000E+00	IN CSYS= 12
			-.423451	.423451	.000000E+00	IN CSYS= 0
KEYPOINT	57	X,Y,Z=	.648850	1.02929	.000000E+00	IN CSYS= 12
			.450490	.466974	.000000E+00	IN CSYS= 0
KEYPOINT	58	X,Y,Z=	.648850	27.0254	.000000E+00	IN CSYS= 12
			.200232	.617182	.000000E+00	IN CSYS= 0
KEYPOINT	59	X,Y,Z=	.648850	62.9747	.000000E+00	IN CSYS= 12
			-.200233	.617181	.000000E+00	IN CSYS= 0
KEYPOINT	60	X,Y,Z=	.648850	88.9708	.000000E+00	IN CSYS= 12
			-.450491	.466973	.000000E+00	IN CSYS= 0
KEYPOINT	61	X,Y,Z=	.648850	90.0000	.000000E+00	IN CSYS= 12
			-.458806	.458806	.000000E+00	IN CSYS= 0

SYMMETRY TRANSFORMATION OF KEYPOINTS USING COMPONENT Y
DO NOT COPY NODE AND ELEMENTS
SET IS FROM 42 TO 61 IN STEPS OF 1
Define default value of esize

DEFAULT ELEMENT DIVISIONS PER LINE = 3
Line divisions and spacing ratios
in the basket structure

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

LINE CONNECTS KEYPOINTS 20 46
LINE NO.= 1 KP1= 20 TAN1= .7071 -.7071 .0000
KP2= 46 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 21 45
LINE NO.= 2 KP1= 21 TAN1= .7071 -.7071 .0000
KP2= 45 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 10, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 2 STEP 1

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

LINE CONNECTS KEYPOINTS 21 44
LINE NO.= 3 KP1= 21 TAN1= -.7071 -.7071 .0000
KP2= 44 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 18 19
LINE NO.= 4 KP1= 18 TAN1= -.7071 -.7071 .0000
KP2= 19 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 4 STEP 1

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

LINE CONNECTS KEYPOINTS	13	17			
LINE NO.= 5	KP1= 13	TAN1= .7071	-.7071	.0000	
	KP2= 17	TAN2= -.7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	14	18			
LINE NO.= 6	KP1= 14	TAN1= .7071	-.7071	.0000	
	KP2= 18	TAN2= -.7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 6 STEP 1

0 LINES (OF 6 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	15	19			
LINE NO.= 7	KP1= 15	TAN1= .7071	-.7071	.0000	
	KP2= 19	TAN2= -.7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	16	44			
LINE NO.= 8	KP1= 16	TAN1= .7071	-.7071	.0000	
	KP2= 44	TAN2= -.7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 8 STEP 1

0 LINES (OF 8 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	14	15			
LINE NO.= 9	KP1= 14	TAN1= -.7071	-.7071	.0000	
	KP2= 15	TAN2= .7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	9	10			
LINE NO.= 10	KP1= 9	TAN1= -.7071	-.7071	.0000	
	KP2= 10	TAN2= .7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 10 STEP 1

0 LINES (OF 10 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	16	43			
LINE NO.= 11	KP1= 16	TAN1= -.7071	-.7071	.0000	
	KP2= 43	TAN2= .7071	.7071	.0000	

LINE CONNECTS KEYPOINTS	11	12			
LINE NO.= 12	KP1= 11	TAN1= -.7071	-.7071	.0000	
	KP2= 12	TAN2= .7071	.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000

(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

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

0 LINES (OF 12 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	2	8			
LINE NO.= 13 KP1=	2	TAN1=	.7071	-.7071	.0000
KP2=	8	TAN2=	-.7071	.7071	.0000

LINE CONNECTS KEYPOINTS	3	9			
LINE NO.= 14 KP1=	3	TAN1=	.7071	-.7071	.0000
KP2=	9	TAN2=	-.7071	.7071	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 14 STEP 1

0 LINES (OF 14 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	4	10			
LINE NO.= 15 KP1=	4	TAN1=	.7071	-.7071	.0000
KP2=	10	TAN2=	-.7071	.7071	.0000

LINE CONNECTS KEYPOINTS	5	11			
LINE NO.= 16 KP1=	5	TAN1=	.7071	-.7071	.0000
KP2=	11	TAN2=	-.7071	.7071	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 16 STEP 1

0 LINES (OF 16 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	6	12			
LINE NO.= 17 KP1=	6	TAN1=	.7071	-.7071	.0000
KP2=	12	TAN2=	-.7071	.7071	.0000

LINE CONNECTS KEYPOINTS	7	43			
LINE NO.= 18 KP1=	7	TAN1=	.7071	-.7071	.0000
KP2=	43	TAN2=	-.7071	.7071	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 18 STEP 1

0 LINES (OF 18 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	3	4			
LINE NO.= 19 KP1=	3	TAN1=	-.7071	-.7071	.0000
KP2=	4	TAN2=	.7071	.7071	.0000

LINE CONNECTS KEYPOINTS	23	24			
LINE NO.= 20 KP1=	23	TAN1=	-.7071	-.7071	.0000
KP2=	24	TAN2=	.7071	.7071	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 20 STEP 1

0 LINES (OF 20 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 5 6
LINE NO.= 21 KP1= 5 TAN1= -.7071 -.7071 .0000
KP2= 6 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 25 26
LINE NO.= 22 KP1= 25 TAN1= -.7071 -.7071 .0000
KP2= 26 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 22 STEP 1

0 LINES (OF 22 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 7 42
LINE NO.= 23 KP1= 7 TAN1= -.7071 -.7071 .0000
KP2= 42 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 27 62
LINE NO.= 24 KP1= 27 TAN1= -.7071 -.7071 .0000
KP2= 62 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 24 STEP 1

0 LINES (OF 24 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 28 22
LINE NO.= 25 KP1= 28 TAN1= .7071 -.7071 .0000
KP2= 22 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 29 23
LINE NO.= 26 KP1= 29 TAN1= .7071 -.7071 .0000
KP2= 23 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 26 STEP 1

0 LINES (OF 26 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 30 24
LINE NO.= 27 KP1= 30 TAN1= .7071 -.7071 .0000
KP2= 24 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 31 25
LINE NO.= 28 KP1= 31 TAN1= .7071 -.7071 .0000
KP2= 25 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 25, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 28 STEP 1

0 LINES (OF 28 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 32 26
 LINE NO.= 29 KP1= 32 TAN1= .7071 -.7071 .0000
 KP2= 26 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 63 27
 LINE NO.= 30 KP1= 63 TAN1= .7071 -.7071 .0000
 KP2= 27 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 30 STEP 1

0 LINES (OF 30 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 29 30
 LINE NO.= 31 KP1= 29 TAN1= -.7071 -.7071 .0000
 KP2= 30 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 34 35
 LINE NO.= 32 KP1= 34 TAN1= -.7071 -.7071 .0000
 KP2= 35 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 32 STEP 1

0 LINES (OF 32 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 31 32
 LINE NO.= 33 KP1= 31 TAN1= -.7071 -.7071 .0000
 KP2= 32 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 36 63
 LINE NO.= 34 KP1= 36 TAN1= -.7071 -.7071 .0000
 KP2= 63 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 34 STEP 1

0 LINES (OF 34 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 37 33
 LINE NO.= 35 KP1= 37 TAN1= .7071 -.7071 .0000
 KP2= 33 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 38 34
 LINE NO.= 36 KP1= 38 TAN1= .7071 -.7071 .0000
 KP2= 34 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 36 STEP 1

0 LINES (OF 36 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 39 35
 LINE NO.= 37 KP1= 39 TAN1= .7071 -.7071 .0000
 KP2= 35 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 64 36
 LINE NO.= 38 KP1= 64 TAN1= .7071 -.7071 .0000
 KP2= 36 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 26, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 38 STEP 1

0 LINES (OF 38 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 38 39
 LINE NO.= 39 KP1= 38 TAN1= -.7071 -.7071 .0000
 KP2= 39 TAN2= .7071 .7071 .0000

LINE CONNECTS KEYPOINTS 41 64
 LINE NO.= 40 KP1= 41 TAN1= -.7071 -.7071 .0000
 KP2= 64 TAN2= .7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 25, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 40 STEP 1

0 LINES (OF 40 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 66 40
 LINE NO.= 41 KP1= 66 TAN1= .7071 -.7071 .0000
 KP2= 40 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 65 41
 LINE NO.= 42 KP1= 65 TAN1= .7071 -.7071 .0000
 KP2= 41 TAN2= -.7071 .7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 10, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 42 STEP 1

0 LINES (OF 42 DEFINED) SELECTED BY LSEL COMMAND.
 Define perpendicular lines to the circles

LINE CONNECTS KEYPOINTS 46 51
 LINE NO.= 43 KP1= 46 TAN1= .7071 -.7071 .0000
 KP2= 51 TAN2= -.7071 .7071 .0000

LINE CONNECTS KEYPOINTS 45 50
 LINE NO.= 44 KP1= 45 TAN1= .6943 -.7197 .0000
 KP2= 50 TAN2= -.6943 .7197 .0000

LINE CONNECTS KEYPOINTS 44 49
 LINE NO.= 45 KP1= 44 TAN1= .3086 -.9512 .0000
 KP2= 49 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 43 48
 LINE NO.= 46 KP1= 43 TAN1= -.3086 -.9512 .0000
 KP2= 48 TAN2= .3086 .9512 .0000

LINE CONNECTS KEYPOINTS 42 47

LINE NO.=	47	KP1=	42	TAN1=	-.6943	-.7197	.0000
		KP2=	47	TAN2=	.6943	.7197	.0000

LINE CONNECTS KEYPOINTS	62	67					
LINE NO.=	48	KP1=	62	TAN1=	-.7197	-.6943	.0000
		KP2=	67	TAN2=	.7197	.6943	.0000

LINE CONNECTS KEYPOINTS	63	68					
LINE NO.=	49	KP1=	63	TAN1=	-.9512	-.3086	.0000
		KP2=	68	TAN2=	.9512	.3086	.0000

LINE CONNECTS KEYPOINTS	64	69					
LINE NO.=	50	KP1=	64	TAN1=	-.9512	.3086	.0000
		KP2=	69	TAN2=	.9512	-.3086	.0000

LINE CONNECTS KEYPOINTS	65	70					
LINE NO.=	51	KP1=	65	TAN1=	-.7197	.6943	.0000
		KP2=	70	TAN2=	.7197	-.6943	.0000

LINE CONNECTS KEYPOINTS	66	71					
LINE NO.=	52	KP1=	66	TAN1=	-.7071	.7071	.0000
		KP2=	71	TAN2=	.7071	-.7071	.0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 2, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 52 STEP 1

0 LINES (OF 52 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	51	56					
LINE NO.=	53	KP1=	51	TAN1=	.7071	-.7071	.0000
		KP2=	56	TAN2=	-.7071	.7071	.0000

LINE CONNECTS KEYPOINTS	50	55					
LINE NO.=	54	KP1=	50	TAN1=	.6943	-.7197	.0000
		KP2=	55	TAN2=	-.6943	.7197	.0000

LINE CONNECTS KEYPOINTS	49	54					
LINE NO.=	55	KP1=	49	TAN1=	.3086	-.9512	.0000
		KP2=	54	TAN2=	-.3086	.9512	.0000

LINE CONNECTS KEYPOINTS	48	53					
LINE NO.=	56	KP1=	48	TAN1=	-.3086	-.9512	.0000
		KP2=	53	TAN2=	.3086	.9512	.0000

LINE CONNECTS KEYPOINTS	47	52					
LINE NO.=	57	KP1=	47	TAN1=	-.6943	-.7197	.0000
		KP2=	52	TAN2=	.6943	.7197	.0000

LINE CONNECTS KEYPOINTS	67	72					
LINE NO.=	58	KP1=	67	TAN1=	-.7197	-.6943	.0000
		KP2=	72	TAN2=	.7197	.6943	.0000

LINE CONNECTS KEYPOINTS	68	73					
LINE NO.=	59	KP1=	68	TAN1=	-.9512	-.3086	.0000
		KP2=	73	TAN2=	.9512	.3086	.0000

LINE CONNECTS KEYPOINTS	69	74					
LINE NO.=	60	KP1=	69	TAN1=	-.9512	.3086	.0000
		KP2=	74	TAN2=	.9512	-.3086	.0000

LINE CONNECTS KEYPOINTS	70	75					
LINE NO.=	61	KP1=	70	TAN1=	-.7197	.6943	.0000
		KP2=	75	TAN2=	.7197	-.6943	.0000

LINE CONNECTS KEYPOINTS	71	76					
LINE NO.=	62	KP1=	71	TAN1=	-.7071	.7071	.0000

KP2= 76 TAN2= .7071 -.7071 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 3, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 62 STEP 1

0 LINES (OF 62 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS	56	61			
LINE NO.= 63 KP1=	56	TAN1=	.7071	-.7071	.0000
KP2= 61	TAN2=	-.7071	.7071	.0000	
LINE CONNECTS KEYPOINTS	55	60			
LINE NO.= 64 KP1=	55	TAN1=	.6943	-.7197	.0000
KP2= 60	TAN2=	-.6943	.7197	.0000	
LINE CONNECTS KEYPOINTS	54	59			
LINE NO.= 65 KP1=	54	TAN1=	.3086	-.9512	.0000
KP2= 59	TAN2=	-.3086	.9512	.0000	
LINE CONNECTS KEYPOINTS	53	58			
LINE NO.= 66 KP1=	53	TAN1=	-.3086	-.9512	.0000
KP2= 58	TAN2=	.3086	.9512	.0000	
LINE CONNECTS KEYPOINTS	52	57			
LINE NO.= 67 KP1=	52	TAN1=	-.6943	-.7197	.0000
KP2= 57	TAN2=	.6943	.7197	.0000	
LINE CONNECTS KEYPOINTS	72	77			
LINE NO.= 68 KP1=	72	TAN1=	-.7197	-.6943	.0000
KP2= 77	TAN2=	.7197	.6943	.0000	
LINE CONNECTS KEYPOINTS	73	78			
LINE NO.= 69 KP1=	73	TAN1=	-.9512	-.3086	.0000
KP2= 78	TAN2=	.9512	.3086	.0000	
LINE CONNECTS KEYPOINTS	74	79			
LINE NO.= 70 KP1=	74	TAN1=	-.9512	.3086	.0000
KP2= 79	TAN2=	.9512	-.3086	.0000	
LINE CONNECTS KEYPOINTS	75	80			
LINE NO.= 71 KP1=	75	TAN1=	-.7197	.6943	.0000
KP2= 80	TAN2=	.7197	-.6943	.0000	
LINE CONNECTS KEYPOINTS	76	81			
LINE NO.= 72 KP1=	76	TAN1=	-.7071	.7071	.0000
KP2= 81	TAN2=	.7071	-.7071	.0000	

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
TO NDIV = 2, SPACING RATIO = 1.000
(KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 72 STEP 1

0 LINES (OF 72 DEFINED) SELECTED BY LSEL COMMAND.
Define circles of inner and outer barriers

ACTIVE COORDINATE SYSTEM SET TO 12 (CYLINDRICAL)

LINE CONNECTS KEYPOINTS	65	64			
LINE NO.= 73 KP1=	65	TAN1=	-.6943	-.7197	.0000
KP2= 64	TAN2=	.3086	.9512	.0000	
LINE CONNECTS KEYPOINTS	70	69			
LINE NO.= 74 KP1=	70	TAN1=	-.6943	-.7197	.0000
KP2= 69	TAN2=	.3086	.9512	.0000	

LINE CONNECTS KEYPOINTS 75 74
 LINE NO.= 75 KP1= 75 TAN1= -.6943 -.7197 .0000
 KP2= 74 TAN2= .3086 .9512 .0000

LINE CONNECTS KEYPOINTS 80 79
 LINE NO.= 76 KP1= 80 TAN1= -.6943 -.7197 .0000
 KP2= 79 TAN2= .3086 .9512 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 17, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 76 STEP 1

0 LINES (OF 76 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 64 63
 LINE NO.= 77 KP1= 64 TAN1= -.3086 -.9512 .0000
 KP2= 63 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 69 68
 LINE NO.= 78 KP1= 69 TAN1= -.3086 -.9512 .0000
 KP2= 68 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 74 73
 LINE NO.= 79 KP1= 74 TAN1= -.3086 -.9512 .0000
 KP2= 73 TAN2= -.3086 .9512 .0000

LINE CONNECTS KEYPOINTS 79 78
 LINE NO.= 80 KP1= 79 TAN1= -.3086 -.9512 .0000
 KP2= 78 TAN2= -.3086 .9512 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 23, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 80 STEP 1

0 LINES (OF 80 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 63 62
 LINE NO.= 81 KP1= 63 TAN1= .3086 -.9512 .0000
 KP2= 62 TAN2= -.6943 .7197 .0000

LINE CONNECTS KEYPOINTS 68 67
 LINE NO.= 82 KP1= 68 TAN1= .3086 -.9512 .0000
 KP2= 67 TAN2= -.6943 .7197 .0000

LINE CONNECTS KEYPOINTS 73 72
 LINE NO.= 83 KP1= 73 TAN1= .3086 -.9512 .0000
 KP2= 72 TAN2= -.6943 .7197 .0000

LINE CONNECTS KEYPOINTS 78 77
 LINE NO.= 84 KP1= 78 TAN1= .3086 -.9512 .0000
 KP2= 77 TAN2= -.6943 .7197 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 17, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 84 STEP 1

0 LINES (OF 84 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 42 43
 LINE NO.= 85 KP1= 42 TAN1= .7197 -.6943 .0000

KP2= 43 TAN2= -.9512 .3086 .0000

LINE CONNECTS KEYPOINTS 47 48

LINE NO.= 86 KP1= 47 TAN1= .7197 -.6943 .0000

KP2= 48 TAN2= -.9512 .3086 .0000

LINE CONNECTS KEYPOINTS 52 53

LINE NO.= 87 KP1= 52 TAN1= .7197 -.6943 .0000

KP2= 53 TAN2= -.9512 .3086 .0000

LINE CONNECTS KEYPOINTS 57 58

LINE NO.= 88 KP1= 57 TAN1= .7197 -.6943 .0000

KP2= 58 TAN2= -.9512 .3086 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 17, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 88 STEP 1

0 LINES (OF 88 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 43 44

LINE NO.= 89 KP1= 43 TAN1= .9512 -.3086 .0000

KP2= 44 TAN2= -.9512 -.3086 .0000

LINE CONNECTS KEYPOINTS 48 49

LINE NO.= 90 KP1= 48 TAN1= .9512 -.3086 .0000

KP2= 49 TAN2= -.9512 -.3086 .0000

LINE CONNECTS KEYPOINTS 53 54

LINE NO.= 91 KP1= 53 TAN1= .9512 -.3086 .0000

KP2= 54 TAN2= -.9512 -.3086 .0000

LINE CONNECTS KEYPOINTS 58 59

LINE NO.= 92 KP1= 58 TAN1= .9512 -.3086 .0000

KP2= 59 TAN2= -.9512 -.3086 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 23, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 92 STEP 1

0 LINES (OF 92 DEFINED) SELECTED BY LSEL COMMAND.

LINE CONNECTS KEYPOINTS 44 45

LINE NO.= 93 KP1= 44 TAN1= .9512 .3086 .0000

KP2= 45 TAN2= -.7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 49 50

LINE NO.= 94 KP1= 49 TAN1= .9512 .3086 .0000

KP2= 50 TAN2= -.7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 54 55

LINE NO.= 95 KP1= 54 TAN1= .9512 .3086 .0000

KP2= 55 TAN2= -.7197 -.6943 .0000

LINE CONNECTS KEYPOINTS 59 60

LINE NO.= 96 KP1= 59 TAN1= .9512 .3086 .0000

KP2= 60 TAN2= -.7197 -.6943 .0000

SET DIVISIONS ON ALL SELECTED UNMESHED LINES
 TO NDIV = 17, SPACING RATIO = 1.000
 (KFORCE = 1 PREVIOUS NONZERO VALUES WILL BE ALTERED)

NONE SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 96 STEP 1

0 LINES (OF 96 DEFINED) SELECTED BY LSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

KEYPOINT	82	X,Y,Z=	.000000E+00	.000000E+00	4.58500	IN CSYS= 11
			.000000E+00	.000000E+00	4.58500	IN CSYS= 0
KEYPOINT	83	X,Y,Z=	.000000E+00	.000000E+00	4.61000	IN CSYS= 11
			.000000E+00	.000000E+00	4.61000	IN CSYS= 0
KEYPOINT	84	X,Y,Z=	.000000E+00	.000000E+00	4.64000	IN CSYS= 11
			.000000E+00	.000000E+00	4.64000	IN CSYS= 0
KEYPOINT	85	X,Y,Z=	.000000E+00	.000000E+00	4.75000	IN CSYS= 11
			.000000E+00	.000000E+00	4.75000	IN CSYS= 0
KEYPOINT	86	X,Y,Z=	.000000E+00	.000000E+00	4.97500	IN CSYS= 11
			.000000E+00	.000000E+00	4.97500	IN CSYS= 0
KEYPOINT	87	X,Y,Z=	.000000E+00	.000000E+00	-.250000E-01	IN CSYS= 11
			.000000E+00	.000000E+00	-.250000E-01	IN CSYS= 0
KEYPOINT	88	X,Y,Z=	.000000E+00	.000000E+00	-.135000	IN CSYS= 11
			.000000E+00	.000000E+00	-.135000	IN CSYS= 0
KEYPOINT	89	X,Y,Z=	.000000E+00	.000000E+00	-.360000	IN CSYS= 11
			.000000E+00	.000000E+00	-.360000	IN CSYS= 0

LINE CONNECTS KEYPOINTS	1	82			
LINE NO.= 97	KP1= 1	TAN1=	.0000	.0000	-1.0000
	KP2= 82	TAN2=	.0000	.0000	1.0000

LINE CONNECTS KEYPOINTS	82	83			
LINE NO.= 98	KP1= 82	TAN1=	.0000	.0000	-1.0000
	KP2= 83	TAN2=	.0000	.0000	1.0000

LINE CONNECTS KEYPOINTS	83	84			
LINE NO.= 99	KP1= 83	TAN1=	.0000	.0000	-1.0000
	KP2= 84	TAN2=	.0000	.0000	1.0000

LINE CONNECTS KEYPOINTS	84	85			
LINE NO.= 100	KP1= 84	TAN1=	.0000	.0000	-1.0000
	KP2= 85	TAN2=	.0000	.0000	1.0000

LINE CONNECTS KEYPOINTS	85	86			
LINE NO.= 101	KP1= 85	TAN1=	.0000	.0000	-1.0000
	KP2= 86	TAN2=	.0000	.0000	1.0000

LINE CONNECTS KEYPOINTS	1	87			
LINE NO.= 102	KP1= 1	TAN1=	.0000	.0000	1.0000
	KP2= 87	TAN2=	.0000	.0000	-1.0000

LINE CONNECTS KEYPOINTS	87	88			
LINE NO.= 103	KP1= 87	TAN1=	.0000	.0000	1.0000
	KP2= 88	TAN2=	.0000	.0000	-1.0000

LINE CONNECTS KEYPOINTS	88	89			
LINE NO.= 104	KP1= 88	TAN1=	.0000	.0000	1.0000
	KP2= 89	TAN2=	.0000	.0000	-1.0000

Define areas in basket structure

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 104 STEP 1

104 LINES (OF 104 DEFINED) SELECTED BY LSEL COMMAND.

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 20 21 45 46

AREA NUMBER = 1

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 17 18 21 20

AREA NUMBER = 2

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 18 19 44 21

AREA NUMBER = 3

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 13 14 18 17

AREA NUMBER = 4

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 15 16 44 19

AREA NUMBER = 5

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 8 9 14 13

AREA NUMBER = 6

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 9 10 15 14

AREA NUMBER = 7

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 10 11 16 15

AREA NUMBER = 8

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 11 12 43 16

AREA NUMBER = 9

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 2 3 9 8

AREA NUMBER = 10

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 4 5 11 10

AREA NUMBER = 11

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 6 7 43 12

AREA NUMBER = 12

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 22 23 3 2

AREA NUMBER = 13

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 23 24 4 3

AREA NUMBER = 14

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 24 25 5 4

AREA NUMBER = 15

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 25 26 6 5

AREA NUMBER = 16

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 26 27 7 6

AREA NUMBER = 17

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 27 62 42 7

AREA NUMBER = 18

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 28 29 23 22

AREA NUMBER = 19

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 30 31 25 24

AREA NUMBER = 20

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 32 63 27 26

AREA NUMBER = 21

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 33 34 29 28

AREA NUMBER = 22

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 34 35 30 29

AREA NUMBER = 23

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 35 36 31 30

AREA NUMBER = 24

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 36 63 32 31

AREA NUMBER = 25

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 37 38 34 33

AREA NUMBER = 26

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 39 64 36 35

AREA NUMBER = 27

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 40 41 38 37

AREA NUMBER = 28

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 41 64 39 38

AREA NUMBER = 29

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 66 65 41 40

AREA NUMBER = 30

ELEMENT TYPE SET TO 1

MATERIAL NUMBER SET TO 1

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 30

MAXIMUM NODE NUMBER = 2072

MAXIMUM ELEMENT NUMBER = 1569

Define areas in the inner barrier

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 46 45 50 51

AREA NUMBER = 31

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 45 44 49 50

AREA NUMBER = 32

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 44 43 48 49

AREA NUMBER = 33

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 43 42 47 48

AREA NUMBER = 34

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 42 62 67 47

AREA NUMBER = 35

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 63 68 67 62

AREA NUMBER = 36

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 64 69 68 63

AREA NUMBER = 37

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 70 69 64 65

AREA NUMBER = 38

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 71 70 65 66

AREA NUMBER = 39

ELEMENT TYPE SET TO 2

MATERIAL NUMBER SET TO 2

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 9

MAXIMUM NODE NUMBER = 2428

MAXIMUM ELEMENT NUMBER = 1815

Define areas in the inner part of outer barrier

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 51 50 55 56

AREA NUMBER = 40

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 50 49 54 55

AREA NUMBER = 41

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 49 48 53 54

AREA NUMBER = 42

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 48 47 52 53

AREA NUMBER = 43

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 47 67 72 52

AREA NUMBER = 44

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 68 73 72 67

AREA NUMBER = 45

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 74 73 68 69

AREA NUMBER = 46

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 75 74 69 70

AREA NUMBER = 47

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 76 75 70 71

AREA NUMBER = 48

Define areas in the outer part of outer barrier

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 56 55 60 61

AREA NUMBER = 49

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 55 54 59 60

AREA NUMBER = 50

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 54 53 58 59

AREA NUMBER = 51

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 53 52 57 58

AREA NUMBER = 52

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 52 72 77 57

AREA NUMBER = 53

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 73 78 77 72

AREA NUMBER = 54

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 74 79 78 73

AREA NUMBER = 55

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 80 79 74 75

AREA NUMBER = 56

DEFINE AREA BY LIST OF KEYPOINTS

KEYPOINT LIST = 81 80 75 76

AREA NUMBER = 57

ELEMENT TYPE SET TO 3

MATERIAL NUMBER SET TO 3

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

GENERATE NODES AND ELEMENTS IN ALL SELECTED AREAS

NUMBER OF AREAS MESHED = 18

MAXIMUM NODE NUMBER = 3048

MAXIMUM ELEMENT NUMBER = 2430

Half Model is used to create the other half
by symmetry along the x-axis

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

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

0 VOLUMES (OF 0 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
IN RANGE 1 TO 57 STEP 1

57 AREAS (OF 57 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
IN RANGE 1 TO 156 STEP 1

156 LINES (OF 156 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
IN RANGE 1 TO 89 STEP 1

89 KEYPOINTS (OF 89 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
IN RANGE 1 TO 2430 STEP 1

2430 ELEMENTS (OF 2430 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 3048 STEP 1

3048 NODES (OF 3048 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 11 (CARTESIAN)

SYMMETRY TRANSFORMATION USING COMPONENT X NODE INCREMENT= 20000
SET IS ALL SELECTED NODES FROM 1 TO 3048 BY 1

REFLECT SELECTED ELEMENTS IN THE RANGE 1 TO 2430 IN STEPS OF 1
WITH NODE INCREMENT OF 20000
MAXIMUM ELEMENT NUMBER= 4860

MERGE COINCIDENT NODES WITHIN TOLERANCE OF .10000E-03

NODE 2803 USED FOR NODES 22803
NODE 2806 USED FOR NODES 22806
NODE 2432 USED FOR NODES 22432
NODE 2436 USED FOR NODES 22436
NODE 2435 USED FOR NODES 22435
NODE 2075 USED FOR NODES 22075
NODE 2078 USED FOR NODES 22078
NODE 15 USED FOR NODES 20015
NODE 26 USED FOR NODES 20026
NODE 25 USED FOR NODES 20025
NODE 24 USED FOR NODES 20024
NODE 23 USED FOR NODES 20023
NODE 22 USED FOR NODES 20022
NODE 21 USED FOR NODES 20021
NODE 20 USED FOR NODES 20020
NODE 19 USED FOR NODES 20019
NODE 18 USED FOR NODES 20018
NODE 1 USED FOR NODES 20001
NODE 51 USED FOR NODES 20051
NODE 52 USED FOR NODES 20052
NODE 45 USED FOR NODES 20045
NODE 208 USED FOR NODES 20208
NODE 207 USED FOR NODES 20207
NODE 206 USED FOR NODES 20206
NODE 205 USED FOR NODES 20205
NODE 204 USED FOR NODES 20204
NODE 203 USED FOR NODES 20203
NODE 202 USED FOR NODES 20202
NODE 201 USED FOR NODES 20201
NODE 200 USED FOR NODES 20200
NODE 199 USED FOR NODES 20199
NODE 198 USED FOR NODES 20198
NODE 197 USED FOR NODES 20197
NODE 196 USED FOR NODES 20196
NODE 195 USED FOR NODES 20195
NODE 194 USED FOR NODES 20194
NODE 193 USED FOR NODES 20193
NODE 192 USED FOR NODES 20192
NODE 191 USED FOR NODES 20191
NODE 190 USED FOR NODES 20190
NODE 189 USED FOR NODES 20189
NODE 188 USED FOR NODES 20188

NODE	187	USED FOR NODES	20187
NODE	186	USED FOR NODES	20186
NODE	185	USED FOR NODES	20185
NODE	157	USED FOR NODES	20157
NODE	363	USED FOR NODES	20363
NODE	364	USED FOR NODES	20364
NODE	357	USED FOR NODES	20357
NODE	628	USED FOR NODES	20628
NODE	627	USED FOR NODES	20627
NODE	626	USED FOR NODES	20626
NODE	625	USED FOR NODES	20625
NODE	624	USED FOR NODES	20624
NODE	623	USED FOR NODES	20623
NODE	622	USED FOR NODES	20622
NODE	621	USED FOR NODES	20621
NODE	620	USED FOR NODES	20620
NODE	619	USED FOR NODES	20619
NODE	618	USED FOR NODES	20618
NODE	617	USED FOR NODES	20617
NODE	616	USED FOR NODES	20616
NODE	615	USED FOR NODES	20615
NODE	614	USED FOR NODES	20614
NODE	613	USED FOR NODES	20613
NODE	612	USED FOR NODES	20612
NODE	611	USED FOR NODES	20611
NODE	610	USED FOR NODES	20610
NODE	609	USED FOR NODES	20609
NODE	608	USED FOR NODES	20608
NODE	607	USED FOR NODES	20607
NODE	606	USED FOR NODES	20606
NODE	605	USED FOR NODES	20605
NODE	577	USED FOR NODES	20577
NODE	883	USED FOR NODES	20883
NODE	884	USED FOR NODES	20884
NODE	877	USED FOR NODES	20877
NODE	1256	USED FOR NODES	21256
NODE	1255	USED FOR NODES	21255
NODE	1254	USED FOR NODES	21254
NODE	1253	USED FOR NODES	21253
NODE	1252	USED FOR NODES	21252
NODE	1251	USED FOR NODES	21251
NODE	1250	USED FOR NODES	21250
NODE	1249	USED FOR NODES	21249
NODE	1248	USED FOR NODES	21248
NODE	1247	USED FOR NODES	21247
NODE	1246	USED FOR NODES	21246
NODE	1245	USED FOR NODES	21245
NODE	1244	USED FOR NODES	21244
NODE	1243	USED FOR NODES	21243
NODE	1242	USED FOR NODES	21242
NODE	1241	USED FOR NODES	21241
NODE	1240	USED FOR NODES	21240
NODE	1239	USED FOR NODES	21239
NODE	1238	USED FOR NODES	21238
NODE	1237	USED FOR NODES	21237
NODE	1236	USED FOR NODES	21236
NODE	1235	USED FOR NODES	21235
NODE	1234	USED FOR NODES	21234
NODE	1233	USED FOR NODES	21233
NODE	1205	USED FOR NODES	21205
NODE	1511	USED FOR NODES	21511
NODE	1512	USED FOR NODES	21512
NODE	1505	USED FOR NODES	21505
NODE	1772	USED FOR NODES	21772
NODE	1771	USED FOR NODES	21771
NODE	1770	USED FOR NODES	21770
NODE	1769	USED FOR NODES	21769
NODE	1768	USED FOR NODES	21768
NODE	1767	USED FOR NODES	21767
NODE	1766	USED FOR NODES	21766

NODE 1765 USED FOR NODES 21765
 NODE 1764 USED FOR NODES 21764
 NODE 1763 USED FOR NODES 21763
 NODE 1762 USED FOR NODES 21762
 NODE 1761 USED FOR NODES 21761
 NODE 1760 USED FOR NODES 21760
 NODE 1759 USED FOR NODES 21759
 NODE 1758 USED FOR NODES 21758
 NODE 1757 USED FOR NODES 21757
 NODE 1756 USED FOR NODES 21756
 NODE 1755 USED FOR NODES 21755
 NODE 1754 USED FOR NODES 21754
 NODE 1753 USED FOR NODES 21753
 NODE 1752 USED FOR NODES 21752
 NODE 1751 USED FOR NODES 21751
 NODE 1750 USED FOR NODES 21750
 NODE 1749 USED FOR NODES 21749
 NODE 1721 USED FOR NODES 21721
 NODE 1931 USED FOR NODES 21931
 NODE 1932 USED FOR NODES 21932
 NODE 1925 USED FOR NODES 21925
 NODE 2054 USED FOR NODES 22054
 NODE 2053 USED FOR NODES 22053
 NODE 2052 USED FOR NODES 22052
 NODE 2051 USED FOR NODES 22051
 NODE 2050 USED FOR NODES 22050
 NODE 2049 USED FOR NODES 22049
 NODE 2048 USED FOR NODES 22048
 NODE 2047 USED FOR NODES 22047
 NODE 2046 USED FOR NODES 22046
 NODE 2033 USED FOR NODES 22033
 NODE 2426 USED FOR NODES 22426
 NODE 2423 USED FOR NODES 22423
 NODE 2795 USED FOR NODES 22795
 NODE 2796 USED FOR NODES 22796
 NODE 2792 USED FOR NODES 22792
 NODE 3046 USED FOR NODES 23046
 NODE 3043 USED FOR NODES 23043

MERGE COINCIDENT KEYPOINTS WITHIN TOLERANCE OF .10000E-03

SET WORKING PLANE TO DEFAULT VALUES.

SELECT ALL ENTITIES OF TYPE= ALL AND BELOW

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

0 VOLUMES (OF 0 DEFINED) SELECTED BY VSEL COMMAND.

ALL SELECT FOR ITEM=AREA COMPONENT=
 IN RANGE 1 TO 57 STEP 1

57 AREAS (OF 57 DEFINED) SELECTED BY ASEL COMMAND.

ALL SELECT FOR ITEM=LINE COMPONENT=
 IN RANGE 1 TO 156 STEP 1

156 LINES (OF 156 DEFINED) SELECTED BY LSEL COMMAND.

ALL SELECT FOR ITEM=KP COMPONENT=
 IN RANGE 1 TO 89 STEP 1

89 KEYPOINTS (OF 89 DEFINED) SELECTED BY KSEL COMMAND.

ALL SELECT FOR ITEM=ELEM COMPONENT=
 IN RANGE 1 TO 4860 STEP 1

4860 ELEMENTS (OF 4860 DEFINED) SELECTED BY ESEL COMMAND.

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 23048 STEP 1

5946 NODES (OF 5946 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)
Apply Constraints at Support Locations

ACTIVE COORDINATE SYSTEM SET TO 1 (CYLINDRICAL)

RESELECT FOR ITEM=LOC COMPONENT=X BETWEEN .63885 AND .65885
KABS= 0. TOLERANCE= .000000E+00

246 NODES (OF 5946 DEFINED) SELECTED BY NSEL COMMAND.

RESELECT FOR ITEM=LOC COMPONENT=Y BETWEEN -100.00 AND -80.000
KABS= 0. TOLERANCE= .000000E+00

12 NODES (OF 5946 DEFINED) SELECTED BY NSEL COMMAND.

IN COORDINATE SYSTEM 1, ROTATE ALL SELECTED NODES.

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 1 TO 23048 BY 1
REAL= .000000000E+00 IMAG= .000000000E+00
ADDITIONAL DOFS= UY

ALL SELECT FOR ITEM=NODE COMPONENT=
IN RANGE 1 TO 23048 STEP 1

5946 NODES (OF 5946 DEFINED) SELECTED BY NSEL COMMAND.

ACTIVE COORDINATE SYSTEM SET TO 0 (CARTESIAN)

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= stat2d.db
FOR POSSIBLE RESUME FROM THIS POINT

***** ROUTINE COMPLETED ***** CP = 19.620

***** ANSYS SOLUTION ROUTINE *****

PERFORM A STATIC ANALYSIS
THIS WILL BE A NEW ANALYSIS

LARGE DEFORMATION ANALYSIS

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2809 TO 2809 BY 1
REAL= 1.379716667E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2859 TO 2859 BY 1
REAL= 9.282500000E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2852 TO 2852 BY 1
REAL=-9.432833333E-04 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2843 TO 2843 BY 1
REAL=-1.398183333E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2809 TO 2809 BY 1
REAL=-4.845000000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2859 TO 2859 BY 1
REAL=-8.410666667E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2852 TO 2852 BY 1
REAL=-8.411000000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2843 TO 2843 BY 1
 REAL=-4.84733333E-03 IMAG= .000000000E+00

ACEL= .00000E+00 9.8100 .00000E+00

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

USE 4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS

FOR AUTOMATIC TIME STEPPING:

USE 1000 SUBSTEPS AS A MAXIMUM

USE 3 SUBSTEPS AS A MINIMUM

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
 FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 21.300 TIME= 23:00:01

All shape tests were bypassed for elements associated with the solid model, because most of them were already done at AMESH or VMESH. Use CHECK if desired to perform all of the element tests.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 23:00:01 JUL 21, 1995 CP= 21.310
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 12 PWR Tube Analysis

SOLUTION OPTIONS

PROBLEM DIMENSIONALITY. 2-D
 DEGREES OF FREEDOM. UX UY
 ANALYSIS TYPE STATIC (STEADY-STATE)
 NONLINEAR GEOMETRIC EFFECTS ON
 PLASTIC MATERIAL PROPERTIES INCLUDED. YES
 NEWTON-RAPHSON OPTION PROGRAM CHOSEN

*** NOTE *** CP= 22.310 TIME= 23:00:02
 Present time 0 is less than or equal to the previous time.
 Time will default to 1.

*** NOTE *** CP= 22.400 TIME= 23:00:02
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution procedure) for ALL DOFs.

LOAD STEP OPTIONS

LOAD STEP NUMBER. 1
 TIME AT END OF THE LOAD STEP. 1.0000
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 4
 MAXIMUM NUMBER OF SUBSTEPS 1000
 MINIMUM NUMBER OF SUBSTEPS 3
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
 CONVERGENCE CONTROLS. USE DEFAULTS
 INERTIA LOADS X Y Z
 ACEL 0.00000E+00 9.8100 .00000E+00
 COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
 ACTIVE MAT. NONLINEARITIES
 PRINT OUTPUT CONTROLS NO PRINTOUT
 DATABASE OUTPUT CONTROLS
 ITEM FREQUENCY COMPONENT
 ALL ALL

***** CENTROID, MASS, AND MASS MOMENTS OF INERTIA *****

CALCULATIONS ASSUME ELEMENT MASS AT ELEMENT CENTROID

TOTAL MASS = 6571.7

CENTROID	MOM. OF INERTIA ABOUT ORIGIN	MOM. OF INERTIA ABOUT CENTROID
XC = -.19364E-09	IXX = 895.3	IXX = 895.3
YC = .19364E-09	IYY = 895.3	IYY = 895.3
ZC = .00000E+00	IZZ = 1791.	IZZ = 1791.
	IXY = .8540E-02	IXY = .8540E-02
	IYZ = .0000E+00	IYZ = .0000E+00
	IZX = .0000E+00	IZX = .0000E+00

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
1	2748.53
2	290.180
3	3532.96

Range of element maximum matrix coefficients in global coordinates
 Maximum= 4.356235593E+11 at element 2187.
 Minimum= 1.109403084E+11 at element 1933.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	3138	PLANE42	11.710	.004
2	492	PLANE42	1.750	.004
3	1230	PLANE42	4.650	.004

Time at end of element matrix formulation CP= 46.2.

FORCE CONVERGENCE VALUE = .4670E+09 CRITERION= .4670E+06

Estimated number of active DOF= 11860.

Maximum wavefront= 152.

Time at end of matrix triangularization CP= 58.34.

Equation solver maximum pivot= 7.675652172E+11 at node 22073 UX.

Equation solver minimum pivot= 1.14294829E+10 at node 1481 UY.

EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2166E-02

FORCE CONVERGENCE VALUE = .1568E+08 CRITERION= .2005E+05

EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2669E-03

FORCE CONVERGENCE VALUE = .2985E+08 CRITERION= .1762E+05

* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000

FORCE CONVERGENCE VALUE = .1533E+08 CRITERION= .2014E+05

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7757E-04

FORCE CONVERGENCE VALUE = .5173E+07 CRITERION= .1802E+05

EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6441E-04

FORCE CONVERGENCE VALUE = .3123E+07 CRITERION= .1711E+05

EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5134E-04

FORCE CONVERGENCE VALUE = .2109E+07 CRITERION= .1652E+05

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500

EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3928E-04

FORCE CONVERGENCE VALUE = .1533E+07 CRITERION= .1614E+05

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01

EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3882E-04

FORCE CONVERGENCE VALUE = .9409E+06 CRITERION= .1583E+05

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01

EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4040E-04

FORCE CONVERGENCE VALUE = .5263E+06 CRITERION= .1550E+05

RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00

EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2632E-04

FORCE CONVERGENCE VALUE = .7315E+06 CRITERION= .1528E+05

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* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .4882E+06 CRITERION= .1548E+05
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9727E-05
FORCE CONVERGENCE VALUE = .2939E+06 CRITERION= .1539E+05
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5858E-05
FORCE CONVERGENCE VALUE = .2368E+06 CRITERION= .1532E+05
EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3673E-05
FORCE CONVERGENCE VALUE = .1668E+06 CRITERION= .1529E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2318E-05
FORCE CONVERGENCE VALUE = .1250E+06 CRITERION= .1528E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2358E-05
FORCE CONVERGENCE VALUE = .7565E+05 CRITERION= .1526E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2828E-05
FORCE CONVERGENCE VALUE = .8985E+05 CRITERION= .1524E+05
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .6360E+05 CRITERION= .1525E+05
EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8969E-06
FORCE CONVERGENCE VALUE = .5232E+05 CRITERION= .1524E+05
EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6552E-06
FORCE CONVERGENCE VALUE = .4203E+05 CRITERION= .1524E+05
EQUIL ITER 18 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5078E-06
FORCE CONVERGENCE VALUE = .3135E+05 CRITERION= .1523E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 19 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3479E-06
FORCE CONVERGENCE VALUE = .2709E+05 CRITERION= .1523E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 20 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3896E-06
FORCE CONVERGENCE VALUE = .1884E+05 CRITERION= .1523E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 21 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3149E-06
FORCE CONVERGENCE VALUE = .1421E+05 CRITERION= .1523E+05 <<< CONVERGED
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 21

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*** ELEMENT RESULT CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	3138	PLANE42	17.310	.006
2	492	PLANE42	2.790	.006
3	1230	PLANE42	6.740	.005

*** NODAL LOAD CALCULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	3138	PLANE42	.850	.000
2	492	PLANE42	.100	.000
3	1230	PLANE42	.300	.000

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*** LOAD STEP 1 SUBSTEP 1 COMPLETED. CUM ITER = 21
*** TIME = .250000 TIME INC = .250000
*** MAX PLASTIC STRAIN STEP = .1205E-01 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .12500 DECREASED (FACTOR = .5000)

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FORCE CONVERGENCE VALUE = .2159E+09 CRITERION= .2164E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1066E-02
FORCE CONVERGENCE VALUE = .2814E+07 CRITERION= .1718E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2422E-04
FORCE CONVERGENCE VALUE = .8911E+06 CRITERION= .1636E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2551E-05
FORCE CONVERGENCE VALUE = .6276E+05 CRITERION= .1635E+05
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2841E-06
FORCE CONVERGENCE VALUE = 478.2 CRITERION= .1635E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4

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*** LOAD STEP 1 SUBSTEP 2 COMPLETED. CUM ITER = 25
*** TIME = .375000 TIME INC = .125000
*** MAX PLASTIC STRAIN STEP = .1102E-01 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .12500 UNCHANGED

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FORCE CONVERGENCE VALUE = .2293E+09 CRITERION= .2299E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1065E-02
FORCE CONVERGENCE VALUE = .1792E+07 CRITERION= .1718E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1412E-04
FORCE CONVERGENCE VALUE = .2192E+06 CRITERION= .1723E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1517E-05
FORCE CONVERGENCE VALUE = 5466. CRITERION= .1721E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 1 SUBSTEP 3 COMPLETED. CUM ITER = 28
*** TIME = .500000 TIME INC = .125000
*** MAX PLASTIC STRAIN STEP = .9863E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .25000 INCREASED (FACTOR = 2.0000)

FORCE CONVERGENCE VALUE = .4755E+09 CRITERION= .4758E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2141E-02
FORCE CONVERGENCE VALUE = .3230E+07 CRITERION= .1855E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4905E-04
FORCE CONVERGENCE VALUE = .6695E+06 CRITERION= .1857E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5698E-05
FORCE CONVERGENCE VALUE = .8705E+05 CRITERION= .1855E+05
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3966E-06
FORCE CONVERGENCE VALUE = .2516E+05 CRITERION= .1855E+05
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9100E-07
FORCE CONVERGENCE VALUE = 200.9 CRITERION= .1855E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 5
*** LOAD STEP 1 SUBSTEP 4 COMPLETED. CUM ITER = 33
*** TIME = .750000 TIME INC = .250000
*** MAX PLASTIC STRAIN STEP = .1702E-01 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .25000 UNCHANGED

FORCE CONVERGENCE VALUE = .4756E+09 CRITERION= .4759E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2133E-02
FORCE CONVERGENCE VALUE = .2752E+07 CRITERION= .1923E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6438E-04
FORCE CONVERGENCE VALUE = .4772E+06 CRITERION= .1949E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7013E-05
FORCE CONVERGENCE VALUE = .7425E+05 CRITERION= .1947E+05
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8356E-06
FORCE CONVERGENCE VALUE = 998.3 CRITERION= .1947E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 1 SUBSTEP 5 COMPLETED. CUM ITER = 37
*** TIME = 1.00000 TIME INC = .250000
*** MAX PLASTIC STRAIN STEP = .1465E-01 CRITERION = .5000E-01

*** PROBLEM STATISTICS

ACTUAL NO. OF ACTIVE DEGREES OF FREEDOM = 11860
R.M.S. WAVEFRONT SIZE = 110.0

*** ANSYS BINARY FILE STATISTICS

BUFFER SIZE USED= 4096
4.031 MB WRITTEN ON ELEMENT MATRIX FILE: stat2d.emat
15.594 MB WRITTEN ON ELEMENT SAVED DATA FILE: stat2d.esav
10.469 MB WRITTEN ON TRIANGULARIZED MATRIX FILE: stat2d.tri
28.797 MB WRITTEN ON RESULTS FILE: stat2d.rst

SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	2809 TO	2809 BY	1
REAL= 2.069575000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	2859 TO	2859 BY	1
REAL= 1.392375000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	2852 TO	2852 BY	1
REAL=-1.414925000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UX	FOR SELECTED NODES	2843 TO	2843 BY	1
REAL=-2.097275000E-03	IMAG= .000000000E+00			
SPECIFIED CONSTRAINT UY	FOR SELECTED NODES	2809 TO	2809 BY	1

REAL=-7.267500000E-03 IMAG= .000000000E+00
 SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2859 TO 2859 BY 1
 REAL=-1.261600000E-02 IMAG= .000000000E+00
 SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2852 TO 2852 BY 1
 REAL=-1.261650000E-02 IMAG= .000000000E+00
 SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2843 TO 2843 BY 1
 REAL=-7.271000000E-03 IMAG= .000000000E+00
 ACEL= .00000E+00 9.8100 .00000E+00

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

USE 4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
 FOR AUTOMATIC TIME STEPPING:
 USE 1000 SUBSTEPS AS A MAXIMUM
 USE 3 SUBSTEPS AS A MINIMUM

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
 FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2050.550 TIME= 00:21:08
 Present time 0 is less than or equal to the previous time.
 Time will default to 2.

*** NOTE *** CP= 2050.630 TIME= 00:21:08
 Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
 procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
 38303 VERSION=HP 9000/7XX 00:21:08 JUL 22, 1995 CP= 2050.630
 FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 12 PWR Tube Analysis

LOAD STEP OPTIONS

LOAD STEP NUMBER. 2
 TIME AT END OF THE LOAD STEP. 2.0000
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 4
 MAXIMUM NUMBER OF SUBSTEPS 1000
 MINIMUM NUMBER OF SUBSTEPS 3
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
 STEP CHANGE BOUNDARY CONDITIONS NO
 TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
 CONVERGENCE CONTROLS. USE DEFAULTS
 INERTIA LOADS X Y Z
 ACEL 00000E+00 9.8100 .00000E+00
 COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
 ACTIVE MAT. NONLINEARITIES
 PRINT OUTPUT CONTROLS NO PRINTOUT
 DATABASE OUTPUT CONTROLS
 ITEM FREQUENCY COMPONENT
 ALL ALL

FORCE CONVERGENCE VALUE = .2428E+09 CRITERION= .2436E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1051E-02
 FORCE CONVERGENCE VALUE = .1201E+07 CRITERION= .1978E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9426E-05
 FORCE CONVERGENCE VALUE = .9580E+05 CRITERION= .1983E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8723E-06
 FORCE CONVERGENCE VALUE = 4645. CRITERION= .1983E+05 <<< CONVERGED

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>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 1 COMPLETED. CUM ITER = 40
*** TIME = 1.25000 TIME INC = .250000
*** MAX PLASTIC STRAIN STEP = .7349E-02 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .25000 UNCHANGED

FORCE CONVERGENCE VALUE = .2436E+09 CRITERION= .2444E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1051E-02
FORCE CONVERGENCE VALUE = .1227E+07 CRITERION= .2010E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1348E-04
FORCE CONVERGENCE VALUE = .3008E+06 CRITERION= .2014E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1557E-05
FORCE CONVERGENCE VALUE = .1920E+05 CRITERION= .2013E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 2 COMPLETED. CUM ITER = 43
*** TIME = 1.50000 TIME INC = .250000
*** MAX PLASTIC STRAIN STEP = .7402E-02 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .33333 INCREASED (FACTOR = 1.3333)

FORCE CONVERGENCE VALUE = .3251E+09 CRITERION= .3257E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1402E-02
FORCE CONVERGENCE VALUE = .1774E+07 CRITERION= .2037E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2110E-04
FORCE CONVERGENCE VALUE = .2671E+06 CRITERION= .2046E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1144E-05
FORCE CONVERGENCE VALUE = 8030. CRITERION= .2045E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 3 COMPLETED. CUM ITER = 46
*** TIME = 1.83333 TIME INC = .333333
*** MAX PLASTIC STRAIN STEP = .1053E-01 CRITERION = .5000E-01
*** AUTO TIME STEP: NEXT TIME INC = .16667 DECREASED (FACTOR = .5000)

FORCE CONVERGENCE VALUE = .1626E+09 CRITERION= .1638E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.7009E-03
FORCE CONVERGENCE VALUE = .4235E+06 CRITERION= .2057E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6679E-05
FORCE CONVERGENCE VALUE = .3173E+05 CRITERION= .2059E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3572E-06
FORCE CONVERGENCE VALUE = 214.2 CRITERION= .2059E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
*** LOAD STEP 2 SUBSTEP 4 COMPLETED. CUM ITER = 49
*** TIME = 2.00000 TIME INC = .166667
*** MAX PLASTIC STRAIN STEP = .5414E-02 CRITERION = .5000E-01

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2809 TO 2809 BY 1
REAL= 4.139150000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2859 TO 2859 BY 1
REAL= 2.784750000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2852 TO 2852 BY 1
REAL=-2.829850000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2843 TO 2843 BY 1
REAL=-4.194550000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2809 TO 2809 BY 1
REAL=-1.453500000E-02 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2859 TO 2859 BY 1
REAL=-2.523200000E-02 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2852 TO 2852 BY 1
REAL=-2.523300000E-02 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2843 TO 2843 BY 1
REAL=-1.454200000E-02 IMAG= .000000000E+00

ACEL= .00000E+00 9.8100 .00000E+00

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USE AUTOMATIC TIME STEPPING THIS LOAD STEP

USE 4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
FOR AUTOMATIC TIME STEPPING:

USE 1000 SUBSTEPS AS A MAXIMUM
USE 3 SUBSTEPS AS A MINIMUM

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 2860.810 TIME= 01:00:14
Present time 0 is less than or equal to the previous time.
Time will default to 3.

*** NOTE *** CP= 2860.900 TIME= 01:00:14
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFS.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 01:00:14 JUL 22, 1995 CP= 2860.900
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 12 PWR Tube Analysis

LOAD STEP OPTIONS

LOAD STEP NUMBER. 3
TIME AT END OF THE LOAD STEP. 3.0000
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 4
MAXIMUM NUMBER OF SUBSTEPS 1000
MINIMUM NUMBER OF SUBSTEPS 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

FORCE CONVERGENCE VALUE = .7314E+09 CRITERION= .7317E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3154E-02
FORCE CONVERGENCE VALUE = .4305E+07 CRITERION= .2056E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6092E-04
FORCE CONVERGENCE VALUE = .1111E+07 CRITERION= .2113E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6054E-05
FORCE CONVERGENCE VALUE = .8142E+05 CRITERION= .2112E+05
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1319E-05
FORCE CONVERGENCE VALUE = 6332. CRITERION= .2112E+05 <<< CONVERGED
>>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
*** LOAD STEP 3 SUBSTEP 1 COMPLETED. CUM ITER = 53
*** TIME = 2.25000 TIME INC = .250000
*** MAX PLASTIC STRAIN STEP = .2628E-01 CRITERION = .5000E-01
*** AUTO STEP TIME: NEXT TIME INC = .25000 UNCHANGED

FORCE CONVERGENCE VALUE = .7311E+09 CRITERION= .7314E+06
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3154E-02
FORCE CONVERGENCE VALUE = .3377E+07 CRITERION= .2088E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5679E-04
FORCE CONVERGENCE VALUE = .8393E+06 CRITERION= .2159E+05

EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7582E-05
 FORCE CONVERGENCE VALUE = .4203E+05 CRITERION= .2159E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1512E-05
 FORCE CONVERGENCE VALUE = 694.8 CRITERION= .2159E+05 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 3 SUBSTEP 2 COMPLETED. CUM ITER = 57
 *** TIME = 2.50000 TIME INC = .250000
 *** MAX PLASTIC STRAIN STEP = .2720E-01 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .33333 INCREASED (FACTOR = 1.3333)

FORCE CONVERGENCE VALUE = .9742E+09 CRITERION= .9745E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4206E-02
 FORCE CONVERGENCE VALUE = .5160E+07 CRITERION= .2102E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6654E-04
 FORCE CONVERGENCE VALUE = .6220E+06 CRITERION= .2216E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1073E-04
 FORCE CONVERGENCE VALUE = .6889E+05 CRITERION= .2215E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4035E-05
 FORCE CONVERGENCE VALUE = 6020. CRITERION= .2215E+05 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 4
 *** LOAD STEP 3 SUBSTEP 3 COMPLETED. CUM ITER = 61
 *** TIME = 2.83333 TIME INC = .333333
 *** MAX PLASTIC STRAIN STEP = .3660E-01 CRITERION = .5000E-01
 *** AUTO TIME STEP: NEXT TIME INC = .16667 DECREASED (FACTOR = .5000)

FORCE CONVERGENCE VALUE = .4870E+09 CRITERION= .4875E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2103E-02
 FORCE CONVERGENCE VALUE = .1336E+07 CRITERION= .2211E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2692E-04
 FORCE CONVERGENCE VALUE = .1083E+06 CRITERION= .2240E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6462E-05
 FORCE CONVERGENCE VALUE = 9450. CRITERION= .2240E+05 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 3
 *** LOAD STEP 3 SUBSTEP 4 COMPLETED. CUM ITER = 64
 *** TIME = 3.00000 TIME INC = .166667
 *** MAX PLASTIC STRAIN STEP = .1749E-01 CRITERION = .5000E-01

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2809 TO 2809 BY 1
 REAL= 8.278300000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2859 TO 2859 BY 1
 REAL= 5.569500000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2852 TO 2852 BY 1
 REAL=-5.659700000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UX FOR SELECTED NODES 2843 TO 2843 BY 1
 REAL=-8.389100000E-03 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2809 TO 2809 BY 1
 REAL=-2.907000000E-02 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2859 TO 2859 BY 1
 REAL=-5.046400000E-02 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2852 TO 2852 BY 1
 REAL=-5.046600000E-02 IMAG= .000000000E+00

SPECIFIED CONSTRAINT UY FOR SELECTED NODES 2843 TO 2843 BY 1
 REAL=-2.908400000E-02 IMAG= .000000000E+00

ACEL= .00000E+00 9.8100 .00000E+00

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

USE 4 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DOFS
 FOR AUTOMATIC TIME STEPPING:
 USE 1000 SUBSTEPS AS A MAXIMUM
 USE 3 SUBSTEPS AS A MINIMUM

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF 1
FOR ALL APPLICABLE ENTITIES

***** ANSYS SOLVE COMMAND *****

*** NOTE *** CP= 3805.270 TIME= 01:45:40
Present time 0 is less than or equal to the previous time.
Time will default to 4.

*** NOTE *** CP= 3805.360 TIME= 01:45:40
Nonlinear analysis, NROPT set to 1 (full Newton-Raphson solution
procedure) for ALL DOFs.

1

***** ANSYS - ENGINEERING ANALYSIS SYSTEM REVISION 5.0A *****
38303 VERSION=HP 9000/7XX 01:45:40 JUL 22, 1995 CP= 3805.360
FOR SUPPORT CALL ROBERT BAHNEY PHONE (702) 794-5337 FAX (702) 794-1844

Static 2-D 12 PWR Tube Analysis

LOAD STEP OPTIONS

LOAD STEP NUMBER. 4
TIME AT END OF THE LOAD STEP. 4.0000
AUTOMATIC TIME STEPPING ON
INITIAL NUMBER OF SUBSTEPS 4
MAXIMUM NUMBER OF SUBSTEPS 1000
MINIMUM NUMBER OF SUBSTEPS 3
MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 25
STEP CHANGE BOUNDARY CONDITIONS NO
TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
CONVERGENCE CONTROLS. USE DEFAULTS
INERTIA LOADS X Y Z
ACEL 00000E+00 9.8100 .00000E+00
COPY INTEGRATION POINT VALUES TO NODE YES, FOR ELEMENTS WITH
ACTIVE MAT. NONLINEARITIES
PRINT OUTPUT CONTROLS NO PRINTOUT
DATABASE OUTPUT CONTROLS
ITEM FREQUENCY COMPONENT
ALL ALL

FORCE CONVERGENCE VALUE = .1461E+10 CRITERION= .1461E+07
EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6308E-02
FORCE CONVERGENCE VALUE = .1077E+08 CRITERION= .2132E+05
EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.9483E-04
FORCE CONVERGENCE VALUE = .7322E+06 CRITERION= .2308E+05
EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5512E-04
FORCE CONVERGENCE VALUE = .2012E+06 CRITERION= .2308E+05
EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3673E-04
FORCE CONVERGENCE VALUE = .4863E+05 CRITERION= .2308E+05
EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2894E-04
FORCE CONVERGENCE VALUE = .5476E+05 CRITERION= .2308E+05
* RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
FORCE CONVERGENCE VALUE = .4977E+05 CRITERION= .2308E+05
EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5702E-05
FORCE CONVERGENCE VALUE = .3623E+05 CRITERION= .2308E+05
EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2578E-05
FORCE CONVERGENCE VALUE = .3235E+05 CRITERION= .2308E+05
EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1973E-05
FORCE CONVERGENCE VALUE = .2921E+05 CRITERION= .2308E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1716E-05
FORCE CONVERGENCE VALUE = .2787E+05 CRITERION= .2308E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3158E-05
FORCE CONVERGENCE VALUE = .2354E+05 CRITERION= .2308E+05
RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6295E-05

FORCE CONVERGENCE VALUE = .1696E+05 CRITERION= .2308E+05 <<< CONVERGED
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 11
 *** LOAD STEP 4 SUBSTEP 1 COMPLETED. CUM ITER = 75
 *** TIME = 3.25000 TIME INC = .250000
 *** MAX PLASTIC STRAIN STEP = .5048E-01 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .25000 UNCHANGED

FORCE CONVERGENCE VALUE = .1463E+10 CRITERION= .1463E+07
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6316E-02
 FORCE CONVERGENCE VALUE = .1048E+08 CRITERION= .2230E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2029E-03
 FORCE CONVERGENCE VALUE = .2417E+07 CRITERION= .2365E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1239E-03
 FORCE CONVERGENCE VALUE = .1340E+07 CRITERION= .2365E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6074E-04
 FORCE CONVERGENCE VALUE = .7159E+06 CRITERION= .2365E+05
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4705E-04
 FORCE CONVERGENCE VALUE = .3864E+06 CRITERION= .2365E+05
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2596E-04
 FORCE CONVERGENCE VALUE = .1694E+06 CRITERION= .2365E+05
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1299E-04
 FORCE CONVERGENCE VALUE = .1304E+05 CRITERION= .2365E+05 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 7
 *** LOAD STEP 4 SUBSTEP 2 COMPLETED. CUM ITER = 82
 *** TIME = 3.50000 TIME INC = .250000
 *** MAX PLASTIC STRAIN STEP = .4649E-01 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .25000 UNCHANGED

FORCE CONVERGENCE VALUE = .1465E+10 CRITERION= .1465E+07
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6359E-02
 FORCE CONVERGENCE VALUE = .1046E+08 CRITERION= .2319E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2173E-03
 FORCE CONVERGENCE VALUE = .3143E+07 CRITERION= .2413E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1056E-03
 FORCE CONVERGENCE VALUE = .2502E+07 CRITERION= .2415E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2037E-03
 FORCE CONVERGENCE VALUE = .4730E+07 CRITERION= .2415E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .2279E+07 CRITERION= .2415E+05
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1919E-04
 FORCE CONVERGENCE VALUE = .4698E+06 CRITERION= .2414E+05
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5999E-05
 FORCE CONVERGENCE VALUE = .2472E+06 CRITERION= .2414E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5130E-05
 FORCE CONVERGENCE VALUE = .1805E+06 CRITERION= .2415E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.8956E-05
 FORCE CONVERGENCE VALUE = .1248E+06 CRITERION= .2415E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1753E-04
 FORCE CONVERGENCE VALUE = .3617E+06 CRITERION= .2415E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1116E+06 CRITERION= .2415E+05
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.4134E-05
 FORCE CONVERGENCE VALUE = .1025E+06 CRITERION= .2415E+05
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3482E-05
 FORCE CONVERGENCE VALUE = .9422E+05 CRITERION= .2415E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3229E-05
 FORCE CONVERGENCE VALUE = .8230E+05 CRITERION= .2415E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.5186E-05
 FORCE CONVERGENCE VALUE = .5982E+05 CRITERION= .2415E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9224E-05
 FORCE CONVERGENCE VALUE = .4385E+05 CRITERION= .2415E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1599E-04

FORCE CONVERGENCE VALUE = .3227E+05 CRITERION= .2415E+05
 EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3176E-04
 FORCE CONVERGENCE VALUE = .2356E+05 CRITERION= .2414E+05 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 16
 *** LOAD STEP 4 SUBSTEP 3 COMPLETED. CUM ITER = 98
 *** TIME = 3.75000 TIME INC = .250000
 *** MAX PLASTIC STRAIN STEP = .4250E-01 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .25000 UNCHANGED

FORCE CONVERGENCE VALUE = .1463E+10 CRITERION= .1464E+07
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.6391E-02
 FORCE CONVERGENCE VALUE = .1075E+08 CRITERION= .2392E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.2815E-03
 FORCE CONVERGENCE VALUE = .2755E+07 CRITERION= .2459E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2537E-03
 FORCE CONVERGENCE VALUE = .3244E+07 CRITERION= .2459E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .2672E+07 CRITERION= .2459E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3175E-04
 FORCE CONVERGENCE VALUE = .6662E+06 CRITERION= .2458E+05
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2101E-04
 FORCE CONVERGENCE VALUE = .4357E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2067E-04
 FORCE CONVERGENCE VALUE = .3722E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3659E-04
 FORCE CONVERGENCE VALUE = .2855E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6994E-04
 FORCE CONVERGENCE VALUE = .2179E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8099E-04
 FORCE CONVERGENCE VALUE = .1849E+06 CRITERION= .2459E+05
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1636E-03
 FORCE CONVERGENCE VALUE = .5889E+06 CRITERION= .2459E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1923E+06 CRITERION= .2459E+05
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1692E-04
 FORCE CONVERGENCE VALUE = .1064E+06 CRITERION= .2459E+05
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1129E-04
 FORCE CONVERGENCE VALUE = .1001E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9538E-05
 FORCE CONVERGENCE VALUE = .9934E+05 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1323E-04
 FORCE CONVERGENCE VALUE = .8985E+05 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2435E-04
 FORCE CONVERGENCE VALUE = .8255E+05 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4951E-04
 FORCE CONVERGENCE VALUE = .6657E+05 CRITERION= .2459E+05
 EQUIL ITER 17 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1428E-03
 FORCE CONVERGENCE VALUE = .6991E+06 CRITERION= .2459E+05
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 50 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 4 NOT COMPLETED. CUM ITER = 116
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .12500

FORCE CONVERGENCE VALUE = .7317E+09 CRITERION= .7321E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3195E-02
 FORCE CONVERGENCE VALUE = .2762E+07 CRITERION= .2415E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1387E-03
 FORCE CONVERGENCE VALUE = .9972E+06 CRITERION= .2437E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7708E-04
 FORCE CONVERGENCE VALUE = .3689E+06 CRITERION= .2438E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4359E-04
 FORCE CONVERGENCE VALUE = .2627E+06 CRITERION= .2437E+05
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2045E-04

FORCE CONVERGENCE VALUE = .8258E+05 CRITERION= .2437E+05
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1097E-04
 FORCE CONVERGENCE VALUE = .1426E+05 CRITERION= .2437E+05 <<< CONVERGED
 >>> SOLUTION CONVERGED AFTER EQUILIBRIUM ITERATION 6
 *** LOAD STEP 4 SUBSTEP 4 COMPLETED. CUM ITER = 122
 *** TIME = 3.87500 TIME INC = .125000
 *** MAX PLASTIC STRAIN STEP = .1956E-01 CRITERION = .5000E-01
 *** AUTO STEP TIME: NEXT TIME INC = .12500 UNCHANGED

FORCE CONVERGENCE VALUE = .7315E+09 CRITERION= .7319E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.3197E-02
 FORCE CONVERGENCE VALUE = .2781E+07 CRITERION= .2443E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1828E-03
 FORCE CONVERGENCE VALUE = .9992E+06 CRITERION= .2460E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1806E-03
 FORCE CONVERGENCE VALUE = .2027E+07 CRITERION= .2460E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .1073E+07 CRITERION= .2460E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1923E-04
 FORCE CONVERGENCE VALUE = .3066E+06 CRITERION= .2459E+05
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1149E-04
 FORCE CONVERGENCE VALUE = .2038E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .9880E-05
 FORCE CONVERGENCE VALUE = .1796E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1755E-04
 FORCE CONVERGENCE VALUE = .1256E+06 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .2586E-04
 FORCE CONVERGENCE VALUE = .8834E+05 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4465E-04
 FORCE CONVERGENCE VALUE = .7018E+05 CRITERION= .2460E+05
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1030E-03
 FORCE CONVERGENCE VALUE = .1331E+07 CRITERION= .2460E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .6790E+05 CRITERION= .2460E+05
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8091E-05
 FORCE CONVERGENCE VALUE = .5548E+05 CRITERION= .2459E+05
 EQUIL ITER 12 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .5124E-05
 FORCE CONVERGENCE VALUE = .5308E+05 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .2500
 EQUIL ITER 13 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .4231E-05
 FORCE CONVERGENCE VALUE = .5301E+05 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .6250E-01
 EQUIL ITER 14 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .6285E-05
 FORCE CONVERGENCE VALUE = .4982E+05 CRITERION= .2459E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .1563E-01
 EQUIL ITER 15 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1311E-04
 FORCE CONVERGENCE VALUE = .4713E+05 CRITERION= .2460E+05
 RESIDUAL DECREASED. DESCENT PARAMETER SET TO .0000E+00
 EQUIL ITER 16 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .3023E-04
 FORCE CONVERGENCE VALUE = .1804E+06 CRITERION= .2460E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .4346E+05 CRITERION= .2460E+05
 >>> PREDICTED NUMBER OF ITERATIONS FOR CONVERGENCE= 28 EXCEEDS MAX OF 25
 *** LOAD STEP 4 SUBSTEP 5 NOT COMPLETED. CUM ITER = 139
 *** BEGIN BISECTION NUMBER 1 NEW TIME INCREMENT= .62500E-01

FORCE CONVERGENCE VALUE = .3658E+09 CRITERION= .3666E+06
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -.1598E-02
 FORCE CONVERGENCE VALUE = .7256E+06 CRITERION= .2445E+05
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .8575E-04
 FORCE CONVERGENCE VALUE = .2816E+06 CRITERION= .2449E+05
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .7537E-04
 FORCE CONVERGENCE VALUE = .5340E+06 CRITERION= .2449E+05
 * RESIDUAL INCREASED. PREV SOLN REMOVED. DESCENT PARAM SET TO 1.000
 FORCE CONVERGENCE VALUE = .3634E+06 CRITERION= .2449E+05
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= .1145E-04


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