COLUMBIA GENERATING STATION

DOCKET NO. 50-397

ANALYTICAL EVALUATION OF INSERVICE INSPECTION EXAMINATION RESULTS

Enclosure

ENERGY NORTHWEST CALCULATION ME-02-05-07, REVISION 1

ENERGY NORTHWEST People·Vision·Solutions	CALCULATION COVER SHEET ORIGINAL	BDC/PDC Page N/A

Equipment Piece No.	Project Columbia	Page 1.000	Cont'd on Page 1.100
MS-RPV-3	Discipline	Calculation No. ME-02-05-07	
		Quality Class 1	
	Remarks		

TITLE/SUBJECT/PURPOSE

Title/Subject

EVALUATION OF RPV SHELL INDICATIONS IDENTIFIED DURING R17 ISI

Purpose

Two unacceptable indications in the RPV shell were identified using UT methods during the R17 ISI activities. The indications were documented in PER 205-0348 and CR-2-05-03803. ASME Section XI allows acceptance of such indications as outlined in IWB-3610 of the Code. This calculation documents and reviews the evaluations performed by a QC 1 Engineering Services contractor with expertise in the methods prescribed by ASME Section XI for evaluation of the flaws.

CALCULATION REVISION RECORD

REV NO.	STATUS/ F,P, OR S	REVISION DESCRIPTION	INITIATING DOCUMENTS	TRANSMITTAL NO.
0	F	New Calculation	FAO 205-0348	19364
1	F	Revised based on input correction	CR-02-05-05427	19408

PERFORMANCE/VERIFICATION RECORD

REV NO.	PERFORMED BY/DATE	VERIFIED BY/DATE	APPROVED BY/DATE
0	JR Zimmerschied 5/27/05	5/28/05	5-29-05
1	7/20/05	8/8/05	8/10/05

* Study Calculations shall be used only for the purpose of evaluating alternate design options or assisting the engineer in performing assessments.

18645 R5

ENERGY NORTHWEST People·Vision·Solutions	CALCULATION INDEX	Page 1.100	Cont'd on Page 1.200
		Calculation No. ME-02-05-07	
		Revision No. 0	

ITEM	PAGE NO. SEQUENCE	
Calculation Cover Sheet	1.000 -	-----
Calculation Index	1.100 -	-----
Verification Checklist for Calculations and CMR's	1.200 -	-----
Calculation Reference List	1.300 -	-----
Calculation Output Interface Documents Revision Index	1.400 -	-----
Calculation Output Summary	2.000 -	------
Calculation Method	3.000 -	------
Sketches	4.000 -	N/A
Manual Calculation	5.000 -	5.001

APPENDICES:

SI ASSOCIATES CGS-02Q-302 REV ~~1~~ 2	Appendix	A	31	Pages
SI ASSOCIATES CGS-02Q-303 REV 1	Appendix	B	194	Pages
E-mail Ronald Casavant to JR Zimmerschied Fw: QA Status on Structural Integrity (SI)	Appendix	C	1	Pages
	Appendix	D		Pages
	Appendix			Pages
	Appendix			Pages
	Appendix			Pages
	Appendix			Pages

ENERGY NORTHWEST People·Vision·Solutions	VERIFICATION CHECKLIST FOR CALCULATIONS AND CMRs	Page 1.200	Cont'd On Page 1.300

Calculation/CMR ME-02-05-07 Revision 1
was verified using the following methods:

☒ Checklist Below ☐ Alternate Calculation(s)

Checklist Item	Verifier Initials
Clear statement of purpose of analysis	TC
Methodology is clearly stated, sufficiently detailed, and appropriate for the proposed application	TC
Does the analysis/calculation methodology (including criteria and assumptions) differ from that described in the Plant or ISFSI FSAR or NRC Safety Evaluation Report, or are the results of the analysis/calculation as described in the Plant or ISFSI FSAR or NRC Safety Evaluation Report affected? ☐ Yes ☒ No	TC
If Yes, ensure that the requirements of 10 CFR 50.59 and/or 10 CFR 72.48 have been processed in accordance with SWP-LIC-02	
Does the analysis/calculation result require revising any existing output interface document as identified in DES-4-1, Attachment 7.3? ☐ Yes ☒ No	TC
If Yes, ensure that the appropriate actions are taken to revise the output interface documents per DES-4-1, section 3.1.8 (i.e., document change is initiated in accordance with applicable procedures)	
Logical consistency of analysis	TC
• Completeness of documenting references	TC
• Completeness of input	TC
• Accuracy of input data	TC
• Consistency of input data with approved criteria	TC
• Completeness in stating assumptions	TC
• Validity of assumptions	TC
• Calculation sufficiently detailed	TC
• Arithmetical accuracy	TC
• Physical units specified and correctly used	TC
• Reasonableness of output conclusion	TC
Supervisor independency check (if acting as Verifier)	
- Did not specify analysis approach - Did not rule out specific analysis options - Did not establish analysis inputs	TC
If a computer program was used:	
- Is the program appropriate for the proposed application? - Have the program error notices been reviewed to determine if they pose any limitations for this application? - Is the program name, revision number, and date of run inscribed on the output? - Is the program identified on the Calculation Method Form? If so, is it listed in Chapter 10 of the Engineering Standards Manual?	TC
Other elements considered:	

If separate Verifiers were used for validating these functions or a portion of these functions, each sign and initial below.

Based on the foregoing, the Calculation/CMR is adequate for the purpose intended.

Verifier Signature(s)/Date	Verifier Initials
Tom Cline 8/8/05	TC

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CALCULATION REFERENCE LIST

Page	Cont'd On Page
1.300	1.400

Calculation No. ME-02-05-07

Revision No. 1

SEQUENCE NO.	AUTHOR	ISSUE DATE, EDITION OR REVISION	TITLE	DOCUMENT NO.
1	ASME	1989	SECTION XI B&PV CODE	
2	Energy Northwest	5/16/05	PER	205-0348
3	Energy Northwest	5/18/05	CR	2-05-03803
4	Energy Northwest	6/27/05	CR	2-05-05427

ENERGY NORTHWEST	CALCULATION OUTPUT INTERFACE DOCUMENTS REVISION INDEX	Page 1.400	Cont'd On Page 2.000
		Calculation No. ME-02-05-07	
Prepared By/Date JR Zimmerschied JRZimmerschied 5/27/05	Verified by/Date [illegible] 5/28/05	Revision No. 0 1	Δ JRZ 7/17/05 Δ JRZ 8/1/05

The below listed output interface calculations and/or documents are impacted by the current revision of the subject calculation. The listed output interfaces require revision as a result of this calculation. The documents have been revised, or the revision deferred with Manager approval, as indicated below.

AFFECTED DOCUMENT NO.	CHANGED BY (e.g., BDC, SCN, CMR, Rev.)	CHANGED DEFERRED (e.g., RFTS, LETTER NO.)	DEPT. MANAGER *
None	N/A	N/A	N/A

* Required for deferred changes only.

25285 R3

Discussion of Results

The calculation in Appendix A calculated the crack growth and the stress intensity factors for the indications reported in PER 205-0348 and CR 2-05-03803 . CR 2-05-05427 reported that the GE input for the flaw location "S" distances and wall thicknesses were incorrect as provided for revision 0 of this calculation. Revision 1 was re-computed using corrected GE flaw location and wall thickness information which resulted in an insignificant change in the results from revision 0. The evaluation in revision 1 showed that the stress intensity factors for normal and faulted conditions were less than the allowable stress intensity factors permitted by IWB-3612 of ASME Section XI. In addition, the crack growth when 500 SRV blow down events were applied was only 0.0064 in over the life of the plant. This growth is negligible compared to the original indication sizes which were determined to be acceptable by the rules in ASME Section XI.

Conclusions

The indications reported by PER 205-0348 and CR 2-05-03803 in the RPV shell are acceptable under the rules laid out in ASME Section XI. The RPV is considered fully qualified.

ENERGY NORTHWEST People·Vision·Solutions	CALCULATION METHOD	Page 3.000	Cont'd On Page 5.000
		Calculation No. ME-02-05-07	
Prepared By/Date JR Zimmerschied 7/20/15	Verified by/Date 8/8/15	Revision No. 1	

Analysis Method (Check appropriate boxes)

- ☐ Manual (As required, document source of equations in Reference List)
- ☒ Computer ☐ Main Frame ☒ Personal
  - ☐ In-House Program
  - ☐ Computer Service Bureau Program
    - ☐ BCS ☐ CDC ☐ PCC ☒ OTHER S I Associates provided
- ☒ Verified Program: Code name/Revision pc-CRACK version 3.1-98348, PIPE-TS2 version 1.01
- ☐ Unverified Program: Document in Appendix B

Approach/Methodology

REV. BAR

The indications (flaws) were evaluated using the methodology outlined in ASME Section XI IWB-3610. This methodology classifies the flaw as subsurface based on their dimensions and location within the RPV wall. The flaw was evaluated per IWB 3612 for acceptance based on applied stress intensity factor. The thermal stress analysis in Appendix B calculated the primary stress limits for two transient conditions. These stresses were well below the NB-3000 allowable stresses which implied that a reduction of area equal to the flaw area would not exceed the allowable stresses.

The stress intensity allowable was determined by Fig A-4200-1 of Appendix A of ASME Section XI using the RT_{NDT} from Ref 4 of Appendix A of this calculation which accounts for neutron flux changes to the vessel wall over the operating life of the plant. The stress intensity for normal and emergency conditions was calculated using Linear Elastic Fracture Mechanics as contained in Appendix A of this calculation. It was conservatively assumed the ASME Code allowable stresses were present when calculating the stress intensity for normal and emergency conditions.

Appendix B of this calculation contains the results of a thermal/stress analysis for SRV Blowdown and Pipe Rupture & Blowdown using parameters supplied by Energy Northwest used for RPV reanalysis for power uprate. The calculation was performed by a computer code using the finite element method.

PROBLEM
Two indications (flaws) were identified in the RPV cylindrical shell which were larger than allowed by the current version of ASME Section XI. As reported in PER 205-0348 and CR 2-05-03803, the indications were present in past ISI examinations but were now rejectable based on current requirements.

The indications (flaws) were evaluated using the methodology outlined in ASME Section XI IWB-3610. This methodology classified the flaws as subsurface based on their dimensions and location within the RPV wall. Revision 1 of this calculation uses revised data from GE on flaw location "S" dimensions and RPV wall thicknesses.

If S > 0.4 * d then the flaw is subsurface.
For BG d = 0.195 in
0.4 * 0.195 in = 0.078 in
S = 2.68 in > 0.078 in (therefore subsurface).

For BM d = 0.190 in
0.4 * 0.190 in = 0.076 in
S = 2.78 in > 0.076 in (therefore subsurface).

The flaw was evaluated per IWB 3612 for acceptance based on applied stress intensity factor. The thermal stress analysis in Appendix B calculated the primary stress limits for two transient conditions. These stresses were well below the NB-3000 allowable stresses. Per page 8 of Appendix A the flaw area reduced the wall by 0.17% which was considered negligible.
Another way to show this is as follows:

The largest flaw depth was 0.39 in. The reduction in thickness is 6.435 in - 0.39 in = 6.045 in.
The peak hoop stress times the ratio of original wall to reduced wall due to the flaw is:

26.1 ksi * 6.435 in/6.045 in = 27.78 ksi < 42.3 ksi (Ref pg 4 of App B and pg 7 of App A))

43.2 ksi * 6.435 in/6.045 in = 45.99 ksi < 56 ksi (Ref pg 4 of App B and pg 7 of App A)

[Note: the SRV blow down is considered an Emergency Condition and the Pipe Rupture is considered a Faulted Condition.]
The Code requirement IWB 3610(d)2 is satisfied.

The stress intensity allowable was determined by Fig A-4200-1 of Appendix A of ASME Section XI using the RT_{NDT} from Ref 4 of Appendix A of this calculation which accounts for neutron flux changes to the vessel wall over the operating life of the plant. The highest RT_{NDT} is 63 deg F at the end of 33.1 EFPY. From Fig A-4200-1 for an average 300 deg F -63 deg F = 237 deg F the K_{IC} and K_{IA} are over 200 ksi√in. Using this limiting material stress intensity, the normal and upset stress intensity limits were calculated as 63.25 ksi√in and 141.42 ksi√in respectively [Ref App A pg 5].

The stress intensity for normal and emergency conditions was calculated using Linear Elastic Fracture Mechanics as contained in Appendix A of this calculation. The computer code pc-CRACK was used to perform the calculations. It was conservatively assumed that the ASME Code allowable stresses were present when calculating the stress intensity for normal and emergency conditions. The results of this are shown in the following Table from data on pg 5 of App A:

Condition	Flaw in BG	Flaw in BM	Allowable
Normal/Upset	29.43 ksi√in	27.47 ksi√in	63.25 ksi√in
Emergency	38.53 ksi√in	37.28 ksi√in	141.42 ksi√in
Faulted	50.70 ksi√in	49.12 ksi√in	141.42 ksi√in

Based on the above the Code requirement of IWB 3612 is satisfied.

Additional information is provided by calculation of a predicted flaw size after 500 SRV Blowdown cycles (very conservative - end of life). This calculation (revision 1) shows a maximum growth of 0.0064 in which is negligible. {Ref App A pg 5]

Based on satisfying the flaw evaluations of IWB-3610, the flaws are acceptable and the RPV is fully qualified.

Structural Integrity Associates, Inc.	CALCULATION PACKAGE	File No.: CGS-02Q-302 Project No.: CGS-02Q

PROJECT NAME: Development of Dissimilar Metal Weld Overlay Repair Designs for Columbia Generating Station

Contract No.: 00318201

CLIENT: Energy Northwest

PLANT: Columbia Generating Station

CALCULATION TITLE: ASME Code Evaluation of Indications in RPV Axial Welds (Beltline and Non Beltline)

Document Revision	Affected Pages	Revision Description	Project Mgr. Approval Signature & Date	Preparer(s) & Checker(s) Signatures & Date
0	1-12 A1-A19	Original Issue	HLG 5/26/05	SST 5/25/05 GAM 5/25/05
1	1-12	Incorporated client comments. No changes to Appendix A.	H. L. GUSTIN 5/27/05	S. S. TANG 5/27/05 H. L. GUSTIN 5/27/05
2	3-6,8,9,11,12 A1-A19	Incorporated revised surface separation data	H. L. Gustin H L Gustin 7/20/05	S. S. Tang S. S. C. Tang 7/14/05 G. A. Miessi Miessi 7/14/05

ENERGY NORTHWEST
APPENDIX: A
TOTAL NUMBER OF PAGES: 31
CALC: ME02-05-07 REV: 1
PAGE: A1 CONT'D ON: A2
BY: [illegible] DATE: 7/20/05
VERIFIED: [illegible] DATE: 8/8/05

SI Form F2001R2a

1 INTRODUCTION

Two indications were identified during the 2005 inservice inspection of the reactor pressure vessel (RPV) of Columbia Generating Station. The indications were found unacceptable per the rules of the ASME Boiler and Pressure Vessel (B&PV) Code, Section XI, IWB-3510, [1]. Consequently, the indications are evaluated per the guidelines of ASME B&PV Code, Section XI, IWB-3610, which include acceptance criteria based on the applied stress intensity factors. Conservative assumptions in the applied stresses were used in this evaluation to determine the stress intensity factors for the two indications for comparison to the Code allowable stress intensity factor.

2 TECHNICAL APPROACH

The original RPV stress report [2] was performed in accordance with the requirement of ASME B&PV Code, Section III, 1971 Edition with Addenda to and including Summer 1971 and Paragraph NB-3338.2 of Winter 1971 Addenda. Reference 2 does not contain detail stress results for the beltline axial weld. Conservative applied stresses were assumed using the ASME B&PV Code Section III allowable stress for the RPV material.

The stress intensity factor was calculated based on Reference 1, Appendix A methodology. The flaw acceptance criteria based on applied stress intensity was evaluated based on Paragraph IWB-3612 of Reference 1.

3 FLAW CHARACTERIZATION

The two indications are planar indications located in or near the beltline axial welds [3]. The first indication, G2K-R17-009, is located in the base material adjacent to Weld BG. The inspection results for this indication are shown in Figure 1. It is a subsurface indication with a depth of 0.39 inch, a length of 3.0 inches, with a surface separation of 2.68". The second indication, G2K-R17-013, is in Weld BM. The indication is 0.38 inch in depth, 3.75 inches in length, and 2.78 inch in surface separation. The inspection results for this indication are shown in Figure 2.

4 DESIGN INPUTS

From Reference 4, the nominal wall thickness is 6.4375 inch for Welds BM and BG. For this evaluation, the nominal wall thickness was used.

The neutron fluence at ¼ T in the beltline weld BG is 5.11×10^{17} n/cm^2, Reference 5.

From Reference 6, Sheet 1 of of S21, the shell material is identified as SA 533, Class 1 Grade B. From Reference 6, the allowable stress S_m is 26.7 ksi at 575 °F, the design temperature [2], for SA-533 Class 1 Grade B. The yield stress for SA-533 Class 1 Grade B is 42.3 ksi at 575 °F, Reference 2.

5 ASSUMPTIONS

Since no detailed stress analysis results were provided, the applied stress was assumed to be at the Code allowable stress at 575 °F, the design temperature, as shown in Table 1, References 2, 6 and 7. In particular, the membrane stress was assumed to be at 1.0 S_m, and the through wall bending stress was assumed to be at 2 S_m. This assumption is based on the Code stress limits for the Normal and Upset Conditions, where $P_m < S_m$ and $P_l+P_b+Q < 3\ S_m$. Typical primary plus secondary stresses in the reactor vessel are about 25 ksi. Therefore, assuming the applied stresses are at the Code allowable limit should be bounding on the vessel stress.

For Emergency and Faulted conditions, the applied stresses were also assumed to be at the Code stress allowable, as shown in Table 1.

In addition, an 8 ksi through wall residual stress was assumed based on References 10 and 11, and added to the membrane and bending stresses. The residual stress is assumed to be pure bending through the reactor vessel wall. This assumption is conservative based on the location of the indications and the residual stress profile specific in Reference 11.

The neutron fluence at Weld BG is conservatively applied to Weld BM which is not in the beltline region. This bounds the material fracture toughness, K_{IC}, for Weld BM.

The clad thickness is not considered in this evaluation.

The service life is assumed to be 40 years.

6 CALCULATIONS

6.1 Stress Intensity Factor Calculation

A linear elastic fracture mechanics and crack growth evaluation is performed for the indications. Each indication was modeled as a subsurface semi-elliptical crack in an infinite plate subjected to membrane and bending stress as illustrated in Figure 3, Reference 8. For this subsurface crack model, the flaw depth is defined as 2a, as shown in Figure 3. Therefore, the crack depth, a, is half of the measured crack depth as reported in Figures 1 and 2.

Using the assumption for applied stress as presented in Section 5, for S_m = 26.7 ksi, the membrane stress is 26.7 ksi and the bending stress is 53.4 ksi.

For the indication G2K-R17-009, the crack parameters were calculated as follows:

Crack depth	2a = 0.39 inch
Crack length	l = 3 inches
Crack aspect ratio:	a/l = 0.065
Eccentricity ratio:	2e/t = 2(6.4375/2-(2.68+0.39/2))/6.4375 = 0.1068

For the indication G2K-R17-013, the crack parameters were calculated as follows:

Crack depth	2a = 0.38 inch
Crack length	l = 3.75 inches
Crack aspect ratio	a/l = 0.05
Eccentricity	2e/t = 2(6.4375/2-(2.78+0.38/2))/6.4375 = 0.0773

The applied stress intensity factors for the two indications above were calculated using **pc-CRACK**, [8]. This minimum crack aspect ratio of 0.1 was used in the evaluation for both indications.

6.2 End of Life Fatigue Crack Growth Calculation

Since the indications are subsurface, the end of life flaw size due to crack growth was calculated using the fatigue crack growth curves for carbon and low alloy ferritic steels exposed to air environments, Figure A-4300-1 of Appendix A of Reference 1:

$$da/dN = C_o(\Delta K_I)^n \text{ (in/cycles)} \quad (1)$$

$n = 3.07$
$C_o = 1.99\times10^{-10}S$
$S = 25.72*(2.88-R)^{-3.07}$ for $0 \le R \le 1$
$R = K_{min}/K_{max}$
$\Delta K_I = K_{max} - K_{min}$ (ksi√in)

6.3 Material Fracture Toughness Calculation

The material fracture toughness due to the neutron embrittlement is calculated based on Subarticle A-4200 of Appendix A of Reference 1. The lower bound K_{Ia} and K_{Ic} versus temperature curves for SA-533 Grade B Class 1 provided in Figure A-4200-1 were used.

7 RESULTS OF ANALYSIS

The applied stress intensity factors, using the subsurface crack model for the two indications, are presented in Figures 4 and 5, for GSK-R17-009 and GSK-R17-013, respectively. It is shown that at the inspected crack depths, the applied stress intensity factor, $K_{applied}$, is 29.43 ksi√in for GSK-R17-009 and 27.47 ksi√in for GSK-R17-013 for the Normal and Upset Conditions.

For the Emergency Condition, the $K_{applied}$ is 38.53 ksi√in for GSK-R17-009 and 37.28 ksi√in for GSK-R17-013. For the Faulted Condition, the $K_{applied}$ is 50.70 ksi√in for GSK-R17-009 and 49.12 ksi√in for GSK-R17-013.

The pc-CRACK output files for the stress intensity factor calculation are listed in Appendix A.

From Reference 4, Tables 4-6a and 4-6b, the highest RT_{ndt}, among all the weld metals, plate and flange materials, is 63 °F at the end of 33.1 EFPY. With a minimum temperature of 168 °F, the vessel would have a fracture toughness, K_{Ic}, higher than the typical value of upper shelf energy of 200 ksi√in. This typical value of low upper shelf energy was used in the evaluation of flaw acceptance criteria for both weld material and base material.

For the Normal and Upset conditions, using a safety factor of √10, per IWB-3612, Reference 1, the allowable fracture toughness is 200/√10 = 63.25 ksi√in, which is higher than the applied stress factor, (29.43 ksi√in and 27.47 ksi√in) for both indications.

For the Emergency and Faulted conditions, using a safety factor of √2, per IWB-3612 of Reference 1, the allowable fracture toughness is 200/√2 = 141.42 ksi√in, which is higher than the applied stress intensity factors for both indications (38.53 ksi√in and 50.7 ksi√in for GSK-R17-009 and 37.28 ksi√in and 49.12 ksi√in for GSK-R17-013).

Conservatively assuming that the stress intensity factor is cycled from zero to positive $K_{applied}$, for the fatigue crack growth calculation, using Equation (1), with $R = K_{min}/K_{max} = 0$ and $\Delta K_I = 29.43$ ksi√in (maximum between GSK-R17-009 and GSK-R17-013), this gives

$S = 25.72*(2.88-(0))^{-3.07} = 0.4005$
$Co = 1.99x10^{-10}*S = 1.99x10^{-10}$
$da/dN = 1.99x10^{-10}*(29.43)^{3.07} = 6.43x10^{-6}$ in/cycle

From Reference 9, it was shown that the worst thermal transient is the SRV blowdown cycle. The number of significant thermal cycles was assumed to 500. Therefore, the total crack growth at the end of the vessel service life is 0.0064 ($2*6.43x10^{-6}*500$) inch, accounting for the crack growth at both ends of the subsurface crack. This amount of crack growth is insignificant compared to the maximum initial crack size of 2a = 0.39 inch. The final crack size at the end of vessel service life is 2a = 0.3964 inch. For this final crack, as shown in Figures 1 and 2, the applied stress intensity factor is about 30 ksi√in, less than the allowable K_{IC} of 63.25 ksi√in.

8 CONCLUSIONS AND DISCUSSIONS

Based on the results of the evaluation presented in this calculation package, the indications found during the inservice inspection of the RPV axial welds are acceptable and meet the requirement of ASME Code, Section XI, IWB-3610 [1]. For the Normal and Upset conditions, the maximum applied stress intensity factor calculated in this analysis is 29.43 ksi√in. This applied stress intensity factor is well below the material fracture toughness of 63.25 ksi√in. The fatigue crack growth at the end of vessel service life is 0.0064 inch which is insignificant compared to the maximum initial crack size of 0.39 inch. The final crack size at the end of vessel service life is 0.3964 inch. The applied stress intensity factor at the end of service life is still less than the allowable fracture toughness.

The indication areas are about 1.17 in^2 and 1.425 in^2 for Welds G2K-R17-009 and G2K-R17-013, respectively. The area of the beltline weld is about 6.4375"x133"=856.19 in^2, assuming a typical axial weld length. The area reduction is less than 0.17% of the original area. This area reduction should have no affect on the vessel hoop stress. Thus, the vessel stress allowable evaluation based on ASME Boiler and Pressure Vessel Code Section III in Reference 2 would not be affected. Therefore, the requirement of IWB-3610 (d) (2) is satisfied.

9 REFERENCES

1. ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition.
2. CBI Nuclear Company, 'Stress Report, 251" BWR Vessel, Hanford II Reactor', May 1976, SI File No. CGS-02Q-204.
3. GE Nuclear Energy, UT Examination Summary Sheets, Summary No G2K-R17-009 and G2K-R17-013, June 28, 2005, SI File CGS-02Q-216.
4. Drawing RPV-101, 'Reactor Pressure Vessel Roll-Out' Rev. 5, SI File CGS-02Q-214.
5. GE document NEDO-33144, 'Fluence Data', SI File CGS-02Q-220.
6. CBI Stress Report, 'Stress Report, 251" BWR Vessel, Hanford II Reactor, Section 21', SI File CGS-02Q-219.
7. ASME Boiler and Pressure Vessel, Code, Section III, Appendices, 1974 Edition.
8. pc-CRACK for Windows, Version 3.1-98348, Structural Integrity Associates, 1998.
9. SI Calculation Package CGS-02Q-303, 'Thermal Transient Stress Analysis of RPV Shell'.
10. EPRI TR-100251, "White Paper on Reactor Vessel Integrity Requirements for Level A and B Conditions,' Electric Power Research Institute, January 1993.
11. EPRI Report, 'BWRVIP-60A: BWR Vessel and Internals Project, Evaluation of Stress Corrosion Crack Growth in Low Alloy Steel Vessel Materials in BWR Environment," EPRI Technical Report 1008871, June 2003.

Table 1: Stress Allowable at 575 °F for SA 533 Grade B Class 1

Stress Categories	Design	Normal and Upset Condition	Emergency Condition	Faulted Condition
P_m	S_m (26.7 ksi)	--	Greater of 1.2 S_m (32.04 ksi) and S_y (42.3 ksi)	Lesser of 2.4 Sm(64.08 ksi) and 0.7 S_u (56 ksi)
P_l+P_b	1.5 S_m (40.05 ksi)	--	Greater of 1.8 S_m (48.06 ksi) and 1.5S_y (63.45 ksi)	1.5 P_m (84 ksi)
$P_l+P_b+P_e+Q$	--	3 S_m (80.1 ksi)	--	--

Note: S_m = Code allowable stress intensity, 26.7ksi
S_y = yield strength, 42.3 ksi
S_u = ultimate tensile strength, 80 ksi
The ultimate tensile strength was obtained from '74 Edition of B&PV Code.

GE Nuclear Energy

GERIS 2000 Indication Evaluation Data Sheet

Project: Columbia Generating Station, R17
Weld ID: BG
Indication: 1

Summary No.: G2K-R17-009
Exam Data Sheet: BG-01
Indication Data Sheet: BG-001

Flaw Through Wall = 0.39
Flaw Length "l" = 3.0
Surface Separation "S" = 2.68

"T" nominal = 6.44
"T" measured = N/A
Clad "T" nominal = 0.2

ASME Section XI, 1989 Edition, No Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	-	-
0.05	2.0	2.2	2.06	2.29 Y
0.10	2.2	2.5	-	-
0.15	2.5	2.9	-	-
0.20	2.8	3.3	-	-
0.25	3.3	3.8	-	-
0.30	3.8	4.4	-	-
0.35	4.4	5.1	-	-
0.40	5.0	5.8	-	-
0.45	5.1	6.7	-	-
0.50	5.2	7.6	-	-
			Allowed 2.06	Allowed 2.29

a = 0.195
a/l value = 0.065
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.29%
a/t = 3.03%

Flaw is unacceptable by Table IWB-3510-1.

Comments: "S" distance measured from bottom of flaw tip to clad base material interface.
"T" nominal (6.44) - bottom flaw tip (3.76) = 2.68. Closest distance to either surface.

Revision 3 - Corrected typo in Surface Separation "S" and corrected "T" nominal.

Analyzed By: Philip Thomas
Level: III Date: 6-28-05

Reviewed By: B/M
Level: III Date: 6-28-05

Figure 1: Indication G2K-R17-009 Data

GE Nuclear Energy

GERIS 2000 Indication Evaluation Data Sheet

Project: Columbia Generating Station, R17
Weld ID: BM
Indication: 1

Summary No.: G2K-R17-013
Exam Data Sheet: BM-01
Indication Data Sheet: BM-001

Flaw Through Wall = 0.38
Flaw Length "l" = 3.75
Surface Separation "S" = 2.78

"T" nominal = 6.56
"T" measured = N/A
Clad "T" nominal = 0.2

ASME Section XI, 1989 Edition, No Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	-	-
0.05	2.0	2.2	2.00	2.20 Y
0.10	2.2	2.5	-	-
0.15	2.5	2.9	-	-
0.20	2.8	3.3	-	-
0.25	3.3	3.8	-	-
0.30	3.8	4.4	-	-
0.35	4.4	5.1	-	-
0.40	5.0	5.8	-	-
0.45	5.1	6.7	-	-
0.50	5.2	7.8	-	-
			Allowed 2.00	Allowed 2.20

a = 0.190
a/l value = 0.051
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.20%
a/t = 2.90%

Flaw is unacceptable by Table IWB-3510-1.

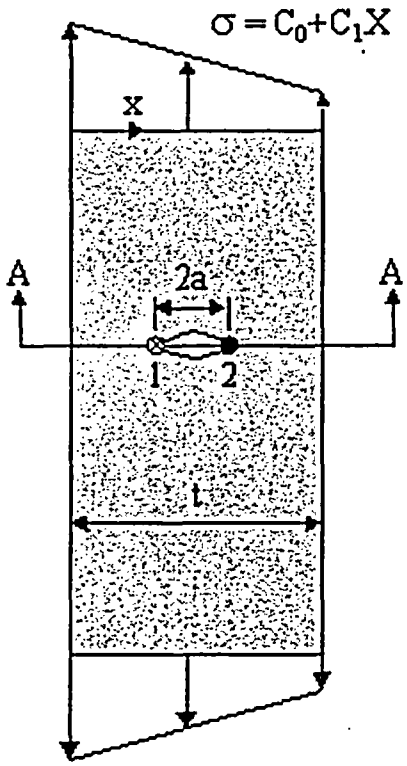
Comments: "S" distance measured from bottom of flaw tip.
"T" nominal (6.56) - bottom flaw tip (3.78) = 2.78. Closest distance to either surface.

Revision 3 - Corrected typo in Surface Separation "S" and corrected "T" nominal.

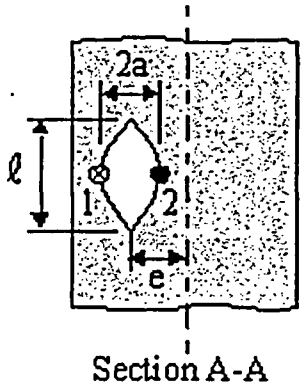
Analyzed By: Philip Shambli
Level: III Date: 6-28-05

Reviewed By: [illegible]
Level: III Date: 6-28-05

Figure 2: Indication G2K-R17-013 Data



- Calculated K is maximum of K at points 1 & 2.
- Model assumes that the center of the crack is positioned at $x \leq t/2$



Section A-A

$C_0 = \sigma_m + \sigma_b$

$C_1 = -2\sigma_b/t$

$\sigma_m = C_0 + C_1(t/2)$ (membrane stress)

$\sigma_b = -C_1(t/2)$ (bending stress)

REQUIRED INPUTS:

t: wall thickness

a: maximum crack depth ($a_{max} \leq \min[(0.95 - 2e/t)t/2, 0.325t]$)

σ_y: material yield stress

a/ℓ: crack aspect ratio ($0.1 \leq a/\ell \leq 0.5$)

2e/t: eccentricity ratio ($0 \leq 2e/t \leq 0.6$)

Figure 3: ASME B&PV Code Section XI Subsurface Crack Model

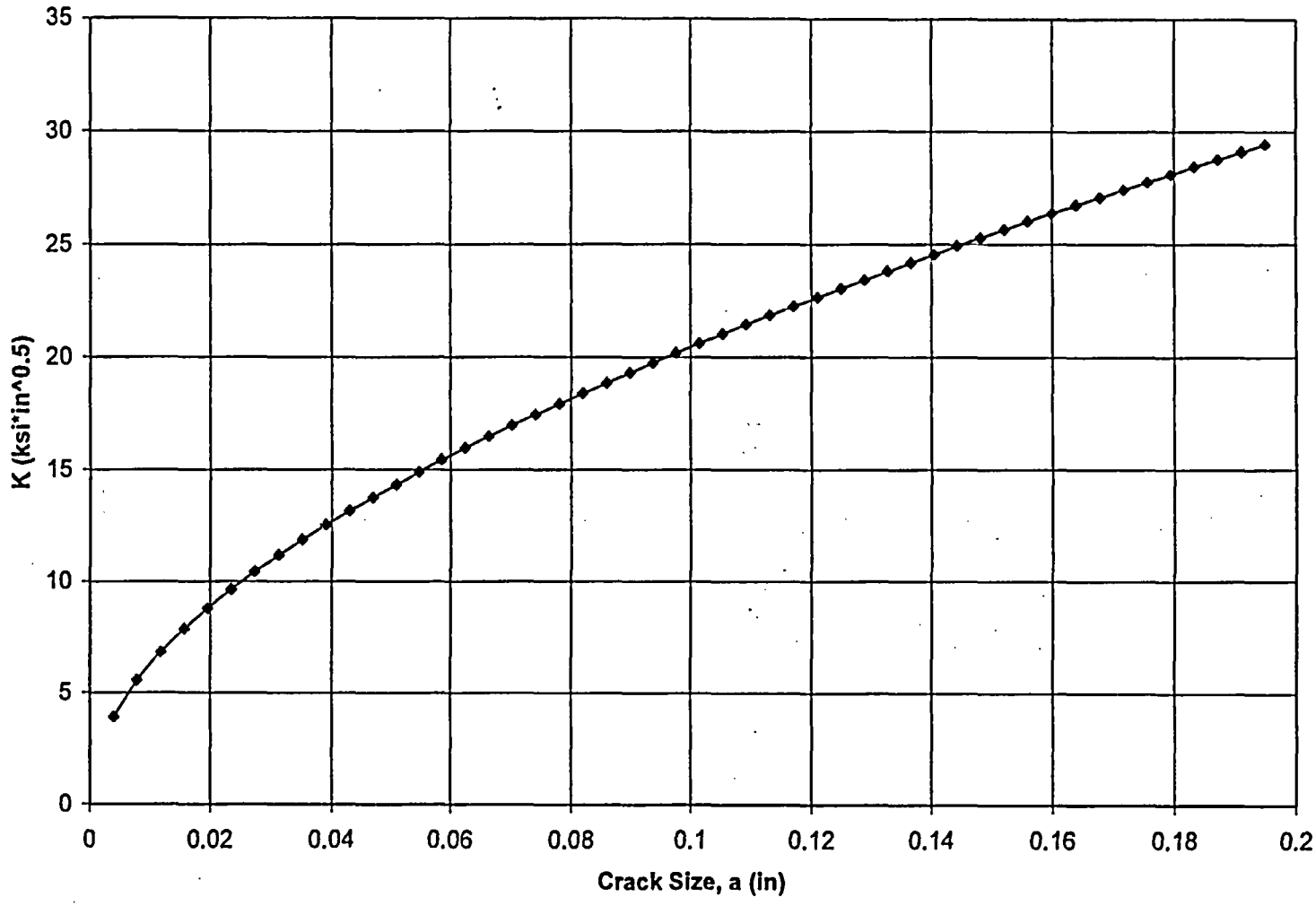


Figure 4: Applied Stress Intensity Factor, Normal and Upset Conditions, Indication G2K-R17-009

A11

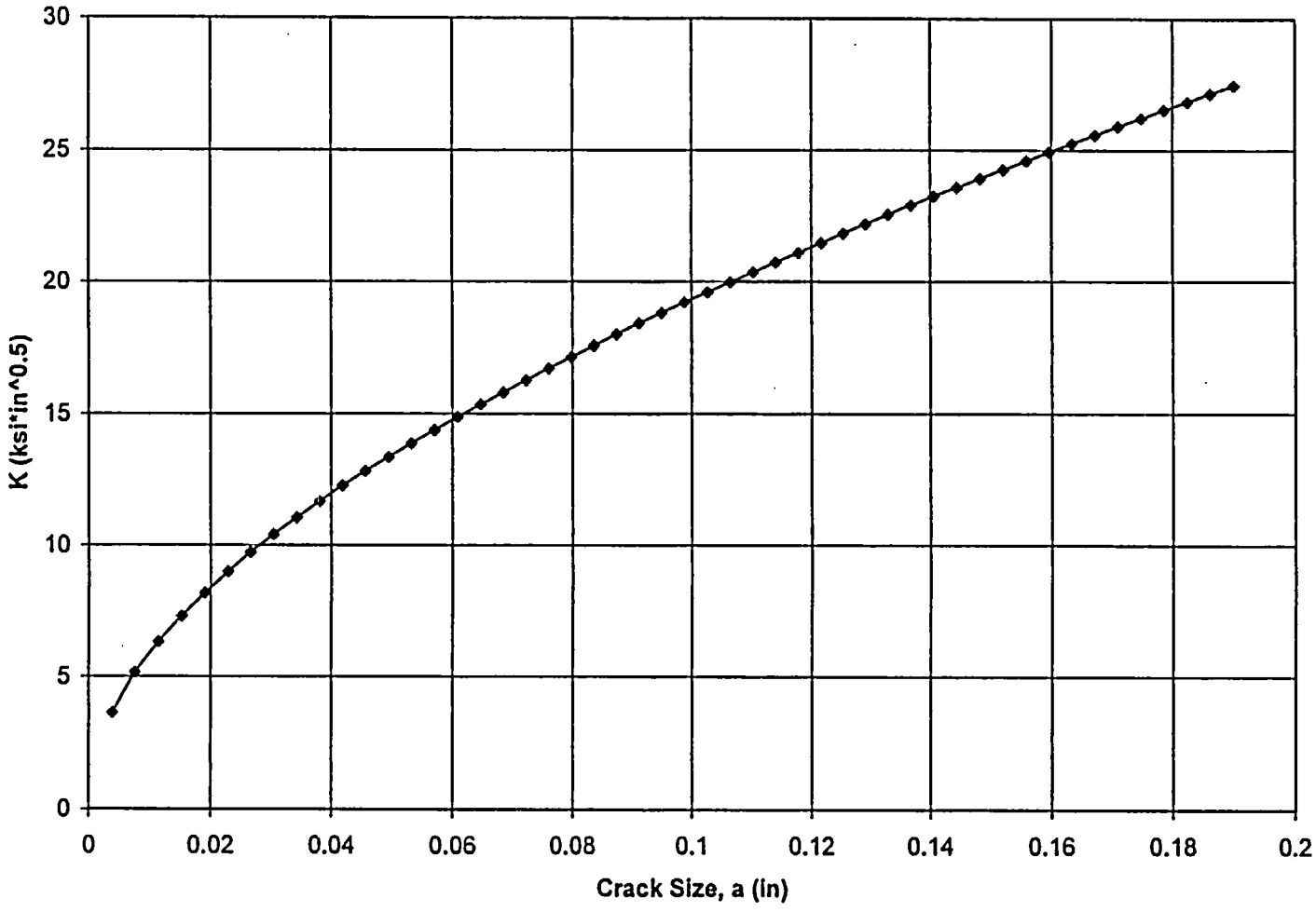


Figure 5: Stress Intensity Factor, Normal and Upset Conditions, Indication G2K-R17-013

A12

APPENDIX A

pc-CRACK OUTPUT FILES

pc-CRACK output file for Indication G2K-R17-009, Normal and Upset Conditions

```
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              Fax:    408-978-8964
          E-mail: pccrack@structint.com


          Linear Elastic Fracture Mechanics

Date: Tue Jul 12 07:00:05 2005
Input Data and Results File: CS3LVLA.LFM

Title: Case 3 / Level A

Load Cases:

                          Stress Coefficients
Case ID                   C0          C1          C2          C3   Type
-------------------------------------------------------------------------
Mem+Bending               88.1     -19.0757        0           0   Coeff


      ------Through Wall Stresses for Load Cases With Stress Coeff-------
     Wall          Case
    Depth    Mem+Bendin
-------------------------

    0.0000         88.1
    0.0195       87.728
    0.0390       87.356
    0.0585      86.9841
    0.0780      86.6121
    0.0975      86.2401
    0.1170      85.8681
    0.1365      85.4962
    0.1560      85.1242
    0.1755      84.7522
    0.1950      84.3802

Crack Model: Elliptical Subsurface Cracked Plate Under Membrane & Bending Stresses

  Reference: ASME Boiler and Pressure Vessel Code, Section XI, '86 Ed.
  WARNING: The stress intensity factor (K) is the maximum of
           K at point 1 and K at point 2 as identified in Section XI.

Crack Parameters:
```

Wall thickness: 6.4375
Max. crack depth: 0.1950
Crack aspect ratio: 0.1000
Eccentricity ratio: 0.1068
Material yield strength: 42.3000
Co = Sigma(membrane) + Sigma(bending)
C1 = -2*Sigma(bending)/thickness

----------Stress Intensity Factor----------

Crack Size	Case Mem+Bendin
0.0039	3.90853
0.0078	5.53481
0.0117	6.78769
0.0156	7.84809
0.0195	8.786
0.0234	9.63725
0.0273	10.4231
0.0312	11.1574
0.0351	11.8497
0.0390	12.5071
0.0429	13.1347
0.0468	13.7366
0.0507	14.3162
0.0546	14.876
0.0585	15.4181
0.0624	15.9444
0.0663	16.4565
0.0702	16.9555
0.0741	17.4427
0.0780	17.919
0.0819	18.3852
0.0858	18.8421
0.0897	19.2904
0.0936	19.7306
0.0975	20.1633
0.1014	20.589
0.1053	21.0081
0.1092	21.4209
0.1131	21.828
0.1170	22.2294
0.1209	22.6257
0.1248	23.017
0.1287	23.4036
0.1326	23.7857
0.1365	24.1635
0.1404	24.5373
0.1443	24.9073
0.1482	25.2735
0.1521	25.6362
0.1560	25.9955
0.1599	26.3515
0.1638	26.7045
0.1677	27.0544

```
0.1716      27.4015
0.1755      27.7458
0.1794      28.0875
0.1833      28.4266
0.1872      28.7633
0.1911      29.0976
0.1950      29.4296

                    End of pc-CRACK Output
```

pc-CRACK output file for Indication G2K-R17-013, Normal and Upset Conditions

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            E-mail: pccrack@structint.com


            Linear Elastic Fracture Mechanics


Date: Tue Jul 12 07:02:42 2005
Input Data and Results File: C375LVLB.LFM

Title: Case 375 / Level B

Load Cases:

                          Stress Coefficients
Case ID                  C0          C1          C2          C3   Type
-------------------------------------------------------------------------
Mem+Bending              88.1     -19.0757        0           0   Coeff


      ------Through Wall Stresses for Load Cases With Stress Coeff-------
     Wall        Case
    Depth   Mem+Bendin
-------------------------
    0.0000        88.1
    0.0190     87.7376
    0.0380     87.3751
    0.0570     87.0127
    0.0760     86.6502
    0.0950     86.2878
    0.1140     85.9254
    0.1330     85.5629
    0.1520     85.2005
    0.1710     84.8381
    0.1900     84.4756

Crack Model: Elliptical Subsurface Cracked Plate Under Membrane & Bending Stresses

  Reference: ASME Boiler and Pressure Vessel Code, Section XI, '86 Ed.
  WARNING: The stress intensity factor (K) is the maximum of
           K at point 1 and K at point 2 as identified in Section XI.

Crack Parameters:
Wall thickness:       6.4375
```

Max. crack depth: 0.1900
Crack aspect ratio: 0.1000
Eccentricity ratio: 0.0773
Material yield strength: 42.3000
Co = Sigma(membrane) + Sigma(bending)
C1 = -2*Sigma(bending)/thickness

Crack Size	Stress Intensity Factor Case Mem+Bendin
0.0038	3.64306
0.0076	5.15905
0.0114	6.32708
0.0152	7.31577
0.0190	8.19033
0.0228	8.98416
0.0266	9.71707
0.0304	10.402
0.0342	11.0478
0.0380	11.661
0.0418	12.2465
0.0456	12.8082
0.0494	13.349
0.0532	13.8714
0.0570	14.3774
0.0608	14.8687
0.0646	15.3467
0.0684	15.8126
0.0722	16.2674
0.0760	16.7121
0.0798	17.1475
0.0836	17.5742
0.0874	17.9928
0.0912	18.404
0.0950	18.8082
0.0988	19.2059
0.1026	19.5975
0.1064	19.9832
0.1102	20.3635
0.1140	20.7387
0.1178	21.109
0.1216	21.4748
0.1254	21.8361
0.1292	22.1933
0.1330	22.5465
0.1368	22.896
0.1406	23.2419
0.1444	23.5843
0.1482	23.9235
0.1520	24.2595
0.1558	24.5925
0.1596	24.9227
0.1634	25.25
0.1672	25.5747

A18

0.1710	25.8968
0.1748	26.2165
0.1786	26.5338
0.1824	26.8488
0.1862	27.1617
0.1900	27.4724

End of pc-CRACK Output

pc-CRACK output file for Indication G2K-R17-009, Emergency Condition

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          E-mail: pccrack@structint.com


          Linear Elastic Fracture Mechanics

Date: Tue Jul 12 07:06:36 2005
Input Data and Results File: CS3LVLC.LFM

Title: Level C3

Load Cases:

                          Stress Coefficients
Case ID                  C0          C1          C2          C3   Type
-------------------------------------------------------------------------
Mem+Bending             71.45     -9.05631        0           0   Coeff


      ------Through Wall Stresses for Load Cases With Stress Coeff-------
     Wall        Case
    Depth   Mem+Bendin
-------------------------
    0.0000       71.45
    0.0195     71.2734
    0.0390     71.0968
    0.0585     70.9202
    0.0780     70.7436
    0.0975      70.567
    0.1170     70.3904
    0.1365     70.2138
    0.1560     70.0372
    0.1755     69.8606
    0.1950      69.684

Crack Model: Elliptical Subsurface Cracked Plate Under Membrane & Bending Stresses

  Reference: ASME Boiler and Pressure Vessel Code, Section XI, '86 Ed.
  WARNING: The stress intensity factor (K) is the maximum of
           K at point 1 and K at point 2 as identified in Section XI.
```

Crack Parameters:
Wall thickness: 6.4375
Max. crack depth: 0.1950
Crack aspect ratio: 0.1000
Eccentricity ratio: 0.1068
Material yield strength: 42.3000
Co = Sigma(membrane) + Sigma(bending)
C1 = -2*Sigma(bending)/thickness

----------Stress Intensity Factor----------

Crack Size	Case Mem+Bendin
0.0039	5.31238
0.0078	7.51679
0.0117	9.21099
0.0156	10.6415
0.0195	11.9038
0.0234	13.0468
0.0273	14.0996
0.0312	15.081
0.0351	16.0042
0.0390	16.8787
0.0429	17.7118
0.0468	18.5091
0.0507	19.275
0.0546	20.013
0.0585	20.7263
0.0624	21.4172
0.0663	22.0878
0.0702	22.7401
0.0741	23.3754
0.0780	23.9951
0.0819	24.6005
0.0858	25.1925
0.0897	25.7721
0.0936	26.3401
0.0975	26.8972
0.1014	27.4441
0.1053	27.9814
0.1092	28.5097
0.1131	29.0294
0.1170	29.541
0.1209	30.0448
0.1248	30.5414
0.1287	31.031
0.1326	31.5139
0.1365	31.9905
0.1404	32.4611
0.1443	32.9259
0.1482	33.3851
0.1521	33.8389
0.1560	34.2877
0.1599	34.7315
0.1638	35.1706

0.1677	35.6052
0.1716	36.0354
0.1755	36.4613
0.1794	36.8832
0.1833	37.3011
0.1872	37.7152
0.1911	38.1256
0.1950	38.5324

End of pc-CRACK Output

pc-CRACK output file for Indication G2K-R17-009, Faulted Condition

```
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        Linear Elastic Fracture Mechanics


Date: Tue Jul 12 07:09:05 2005
Input Data and Results File: LEVEL_D3.LFM

Title: Level D3

Load Cases:

                          Stress Coefficients
Case ID                  C0          C1          C2          C3   Type
-------------------------------------------------------------------------
Mem+Bending              92     -11.1845          0           0   Coeff


      ------Through Wall Stresses for Load Cases With Stress Coeff-------
     Wall          Case
    Depth    Mem+Bending
-------------------------
    0.0000           92
    0.0195      91.7819
    0.0390      91.5638
    0.0585      91.3457
    0.0780      91.1276
    0.0975      90.9095
    0.1170      90.6914
    0.1365      90.4733
    0.1560      90.2552
    0.1755      90.0371
    0.1950       89.819

Crack Model: Elliptical Subsurface Cracked Plate Under Membrane & Bending Stresses

  Reference: ASME Boiler and Pressure Vessel Code, Section XI, '86 Ed.
  WARNING: The stress intensity factor (K) is the maximum of
           K at point 1 and K at point 2 as identified in Section XI.

Crack Parameters:
```

Wall thickness: 6.4375
Max. crack depth: 0.1950
Crack aspect ratio: 0.1000
Eccentricity ratio: 0.1068
Material yield strength: 42.3000
C0 = Sigma(membrane) + Sigma(bending)
C1 = -2*Sigma(bending)/thickness

----------Stress Intensity Factor----------

Crack Size	Case Mem+Bending
0.0039	6.99946
0.0078	9.90368
0.0117	12.1355
0.0156	14.0199
0.0195	15.6825
0.0234	17.1879
0.0273	18.5743
0.0312	19.8667
0.0351	21.0823
0.0390	22.2337
0.0429	23.3305
0.0468	24.38
0.0507	25.3881
0.0546	26.3596
0.0585	27.2983
0.0624	28.2075
0.0663	29.09
0.0702	29.9482
0.0741	30.7841
0.0780	31.5994
0.0819	32.3958
0.0858	33.1746
0.0897	33.9369
0.0936	34.6839
0.0975	35.4166
0.1014	36.1358
0.1053	36.8423
0.1092	37.5369
0.1131	38.2201
0.1170	38.8926
0.1209	39.555
0.1248	40.2077
0.1287	40.8512
0.1326	41.4859
0.1365	42.1122
0.1404	42.7305
0.1443	43.3412
0.1482	43.9445
0.1521	44.5408
0.1560	45.1303
0.1599	45.7134
0.1638	46.2901
0.1677	46.8609

0.1716	47.4258
0.1755	47.9851
0.1794	48.5391
0.1833	49.0878
0.1872	49.6315
0.1911	50.1703
0.1950	50.7043

End of pc-CRACK Output

pc-CRACK output file for Indication G2K-R17-013, Emergency Condition

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     E-mail: pccrack@structint.com

          Linear Elastic Fracture Mechanics

Date: Thu Jul 14 06:35:28 2005
Input Data and Results File: C375LVLC.LFM

Title: Level-C

Load Cases:
```

Case ID	Stress Coefficients C0	C1	C2	C3	Type
Mem+Bending	71.45	-9.05631	0	0	Coeff

------Through Wall Stresses for Load Cases With Stress Coeff-------

Wall Depth	Case Mem+Bendin
0.0000	71.45
0.0190	71.2779
0.0380	71.1059
0.0570	70.9338
0.0760	70.7617
0.0950	70.5896
0.1140	70.4176
0.1330	70.2455
0.1520	70.0734
0.1710	69.9014
0.1900	69.7293

Crack Model: Elliptical Subsurface Cracked Plate Under Membrane & Bending Stresses

Reference: ASME Boiler and Pressure Vessel Code, Section XI, '86 Ed.
WARNING: The stress intensity factor (K) is the maximum of
K at point 1 and K at point 2 as identified in Section XI.

```
Crack Parameters:
Wall thickness:        6.4375
Max. crack depth:      0.1900
Crack aspect ratio:           0.1000
Eccentricity ratio:           0.0773
Material yield strength:     42.3000
Co = Sigma(membrane) + Sigma(bending)
C1 = -2*Sigma(bending)/thickness
```

----------Stress Intensity Factor----------

Crack Size	Case Mem+Bendin
0.0038	5.14172
0.0076	7.27526
0.0114	8.91495
0.0152	10.2994
0.0190	11.5211
0.0228	12.6272
0.0266	13.646
0.0304	14.5957
0.0342	15.4891
0.0380	16.3353
0.0418	17.1415
0.0456	17.9129
0.0494	18.6539
0.0532	19.368
0.0570	20.0581
0.0608	20.7266
0.0646	21.3755
0.0684	22.0065
0.0722	22.6211
0.0760	23.2207
0.0798	23.8063
0.0836	24.379
0.0874	24.9397
0.0912	25.4891
0.0950	26.0281
0.0988	26.5571
0.1026	27.0768
0.1064	27.5878
0.1102	28.0904
0.1140	28.5852
0.1178	29.0725
0.1216	29.5528
0.1254	30.0263
0.1292	30.4934
0.1330	30.9543
0.1368	31.4094
0.1406	31.8588
0.1444	32.3029
0.1482	32.7418
0.1520	33.1757
0.1558	33.6049
0.1596	34.0295

0.1634	34.4497
0.1672	34.8656
0.1710	35.2774
0.1748	35.6853
0.1786	36.0894
0.1824	36.4897
0.1862	36.8865
0.1900	37.2798

End of pc-CRACK Output

pc-CRACK output file for Indication G2K-R17-013, Faulted Condition

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              Fax:    408-978-8964
          E-mail: pccrack@structint.com


          Linear Elastic Fracture Mechanics


Date: Thu Jul 14 06:47:20 2005
Input Data and Results File: C375LVLD.LFM

Title: Level-D, Case 375

Load Cases:
```

Case ID	Stress Coefficients C0	C1	C2	C3	Type
Mem+Bending	92	-11.1845	0	0	Coeff

------Through Wall Stresses for Load Cases With Stress Coeff-------

Wall Depth	Case Mem+Bendin
0.0000	92
0.0190	91.7875
0.0380	91.575
0.0570	91.3625
0.0760	91.15
0.0950	90.9375
0.1140	90.725
0.1330	90.5125
0.1520	90.3
0.1710	90.0875
0.1900	89.8749

```
Crack Model: Elliptical Subsurface Cracked Plate Under Membrane & Bending Stresses

  Reference: ASME Boiler and Pressure Vessel Code, Section XI, '86 Ed.
  WARNING: The stress intensity factor (K) is the maximum of
           K at point 1 and K at point 2 as identified in Section XI.

Crack Parameters:
```

Wall thickness: 6.4375
Max. crack depth: 0.1900
Crack aspect ratio: 0.1000
Eccentricity ratio: 0.0773
Material yield strength: 42.3000
Co = Sigma(membrane) + Sigma(bending)
C1 = -2*Sigma(bending)/thickness

----------Stress Intensity Factor----------

Crack Size	Case Mem+Bendin
0.0038	6.78304
0.0076	9.59738
0.0114	11.7601
0.0152	13.5861
0.0190	15.1971
0.0228	16.6557
0.0266	17.9991
0.0304	19.2512
0.0342	20.429
0.0380	21.5446
0.0418	22.6072
0.0456	23.6239
0.0494	24.6006
0.0532	25.5417
0.0570	26.451
0.0608	27.3318
0.0646	28.1867
0.0684	29.018
0.0722	29.8277
0.0760	30.6174
0.0798	31.3888
0.0836	32.1431
0.0874	32.8814
0.0912	33.6049
0.0950	34.3145
0.0988	35.0111
0.1026	35.6953
0.1064	36.3679
0.1102	37.0296
0.1140	37.6808
0.1178	38.3222
0.1216	38.9542
0.1254	39.5773
0.1292	40.1919
0.1330	40.7984
0.1368	41.3971
0.1406	41.9883
0.1444	42.5725
0.1482	43.1498
0.1520	43.7205
0.1558	44.285
0.1596	44.8433
0.1634	45.3959

0.1672	45.9428
0.1710	46.4842
0.1748	47.0204
0.1786	47.5516
0.1824	48.0779
0.1862	48.5994
0.1900	49.1163

End of pc-CRACK Output

Structural Integrity Associates, Inc.	CALCULATION PACKAGE	File No.: CGS-02Q-303 Project No.: CGS-02Q

PROJECT NAME: Development of Dissimilar Metal Weld Overlay Repair Designs for Columbia Generating Station

Contract No.: 00318201

CLIENT: Energy Northwest

PLANT: Columbia Generating Station

CALCULATION TITLE: Thermal Transient Stress Analysis of RPV Shell

Document Revision	Affected Pages	Revision Description	Project Mgr. Approval Signature & Date	Preparer(s) & Checker(s) Signatures & Date
0	1- 8 A1 – A5	Original Issue	HLG 5/26/05	GAM 5/25/05 SST 5/25/05
1	1- 8 B1 – B181	Incorporated client comments. No affect on Appendix A. New Appendix B (PIPE-TS2 Output) added.	H. L. GUSTIN 5/27/05	H. L. GUSTIN 5/27/05 G. A. MIESSI 5/27/05

ENERGY NORTHWEST
APPENDIX: B
TOTAL NUMBER OF PAGES: 194
CALC: ME-02-05-07 REV: 0
PAGE: B1 CONT'D ON: B2
BY: DATE: 5/27/05
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Table of Contents

1 INTRODUCTION 3
2 TECHNICAL APPROACH 3
3 DESIGN INPUTS 3
3.1 Dimensions 3
3.2 Material Properties 3
3.3 Thermal Transients 3
3.4 Heat Transfer Coefficients 3
4 CALCULATIONS 4
4.1 SRV Blowdown Transient 4
4.2 Pipe Rupture & Blowdown Transient 4
5 RESULTS OF ANALYSIS 4
6 REFERENCES 8
APPENDIX A PIPE-TS2 ANALYSIS INPUT FILES A1
APPENDIX B PIPE-TS2 OUTPUT FILES CGS-RPV.OUT AND CGS-RPV2.OUT B1

List of Tables

Table 1: RPV Material Properties 5
Table 2: Stress Analysis Result Summary SRV Blowdown Transient 6
Table 3: Stress Analysis Result Summary Pipe Rupture & Blowdown Transient 7

1 INTRODUCTION

Two indications were discovered during the Spring 2005 in-service inspection of the Columbia Generating Station (CGS) reactor pressure vessel (RPV) intermediate shells. The indications were found unacceptable per the rules of the ASME Code, Section XI, IWB-3510 [3]. Consequently, the indications are to be evaluated as physical flaws per the guidelines of ASME Code, Section XI, IWB-3610, which include acceptance criteria based on the applied stress intensity factors. Stress analyses are performed in this calculation to determine the bounding thermal transient through-wall stress distributions in the vessel shell. The governing through-wall stress distributions will be compared to the conservative stress values used in the ASME Code evaluations.

2 TECHNICAL APPROACH

The thermal stress analysis is performed with PIPE-TS2 [1], a software program that allows the computation of transient thermal and stress responses of an axisymmetric cylinder. The analysis will be performed for one bounding Normal &Upset condition and one bounding Emergency & Faulted condition.

3 DESIGN INPUTS

3.1 Dimensions

The dimensions of the Columbia RPV are obtained from Reference 2 as follows:

- Vessel inside radius (base metal): 126-11/16"
- Vessel outside radius: 133-1/8"
- Vessel Clad Thickness: 1/8"

3.2 Material Properties

Per Reference 2, the RPV shell material is SA-533 Grade B Class 1. For the purpose of this evaluation, the vessel inside surface cladding is assumed to be fabricated from Type 304L stainless steel.

The material properties of the RPV shell and cladding are obtained from the ASME Code [3] at an average temperature of 300°F and listed in Table 1.

3.3 Thermal Transients

The plant design operating conditions are provided by the thermal cycle diagrams of Reference 4. Based on the temperature ranges and transient rates presented in those diagrams, the following transients were selected as governing:

- Normal& Upset Conditions: Safety Relief Valve Blowdown
- Emergency & Upset Conditions: Pipe Rupture & Blowdown

3.4 Heat Transfer Coefficients

A heat transfer film coefficient of 500 Btu/hr-ft^2-°F is assumed on the inside surface of the vessel for all the thermal transients analyzed. The outside surface of the vessel is assumed to be insulated.

4 CALCULATIONS

Using PIPE-TS2, a thermal transient analysis is performed with the design input described in Section 3 for each of the governing thermal transients described in the Paragraphs 4.1 and 4.2 below. A vessel outside radius of 133.25" instead of 133.125" is used in the analyses. This discrepancy is not expected to significantly affect the results of the analyses.

The PIPE-TS2 model for this analysis consists of 9 nodes through the thickness of the vessel wall including the cladding. The stress components throughout the transients are computed at each of the nodes. The input files for the analyses are presented in Appendix A.

4.1 SRV Blowdown Transient

The SRV Blowdown thermal transient is defined as a cooldown from 552°F to 375°F in 10 minutes followed by a cooldown from 375°F to 100°F at a rate of 100°F/Hr. The design number of lifetime occurrences of this transient is 8.

4.2 Pipe Rupture & Blowdown Transient

The Pipe Rupture & Blowdown thermal transient is defined as a rapid cooldown from 552°F to 281°F in 15 seconds followed by a steady state condition at 281°F. The design number of lifetime occurrences of this transient is 1.

5 RESULTS OF ANALYSIS

A summary of the results of the stress analysis is shown in Table 2 for the SRV Blowdown transient and Table 3 for the Pipe Rupture & Blowdown transient. The maximum peak hoop stress in the RPV shell is equal to 26.1 ksi for the SRV Blowdown transient and 43.2 ksi for the Pipe Rupture & Blowdown transient. The corresponding maximum membrane-plus-bending hoop stress for the SRV Blowdown transient is 17.63 ksi. Similarly, for the Pipe Rupture & Blowdown transient, the maximum membrane-plus-bending hoop stress is 26.67 ksi.
The detailed output files from the PIPE-TS2 analyses are included in Appendix B (CGS-RPV.OUT and CGS-RPV2.OUT for the SRV Blowdown transient and the Pipe Rupture & Blowdown transient, respectively).

Table 1: RPV Material Properties at 300°F

Material Property	Vessel Shell	Vessel Cladding
Thermal conductivity, k (Btu/hr-ft-°F)	23.8	9.8
Specific heat, c (Btu/lb-°F)	0.120	0.125
Density, ρ (lb/in^3)	0.283	0.283
Modulus of Elasticity (10^6 psi)	28.0	27.0
Thermal Coefficient of Expansion (in/in/°F)	7.43	9.0
Poisson's Ratio	0.3	0.3

Table 2: Stress Analysis Result Summary
SRV Blowdown Transient

Date: 05-24-2005 Time: 16:08:13 PAGE 68

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 640.00 SECONDS.....

N	Grid	Node	hoop	axial	radial	Grid	Node
-- Radii, inches -			---- Grid Stress, ksi ------			Temperature, F	
			(Inside fluid) 373.9				
1	126.5625	126.5938	+9.18	+9.18	-0.00	400.8	404.4
2	126.6250	126.6563	+6.70	+6.70	+0.00	407.9	411.5
3	126.6875	127.1563	Interface (below)		+0.01	415.0	436.6
4	127.6250	128.0938	+14.27	+14.42	+0.15	454.2	471.7
5	128.5625	129.0313	+5.13	+5.35	+0.22	484.7	497.7
6	129.5000	129.9688	-1.45	-1.22	+0.23	506.8	515.9
7	130.4375	130.9063	-5.92	-5.72	+0.20	522.0	528.0
8	131.3750	131.8438	-8.74	-8.60	+0.14	531.6	535.3
9	132.3125	132.7813	-10.26	-10.18	+0.08	537.0	538.7
10	133.2500	133.7188	-10.69	-10.69	+0.00	538.7	120.0
			(Above node is outside fluid)				

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL +4.25 +4.25 +0.01

FOR OUTER MATERIAL +26.07 +26.07 +0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.37
HOOP MEMBRANE	N/A	+0.23
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-17.14	-17.20
INSIDE BENDING	+17.51	+17.57
OUTSIDE BENDING	-16.77	-16.83
HOOP BENDING	N/A	-17.17
INSIDE BENDING	N/A	+17.40
OUTSIDE BENDING	N/A	-16.95

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	501.4	500.9
DELTA T1 (Total Section Delta T)	+122.5	+123.0
LINEAR INSIDE TEMPERATURE	439.6	439.4
LINEAR OUTSIDE TEMPERATURE	562.1	562.4
DELTA T2 (Absolute of Maximum)	38.8	38.6

Table 3: Stress Analysis Result Summary
Pipe Rupture & Blowdown Transient

Date: 05-24-2005 Time: 16:21:06 PAGE 74

****

* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 160.00 SECONDS.....

N	Grid	Node	hoop	axial	radial	Grid	Node
	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
			(Inside fluid)		281.0		
1	126.5625	126.5938	+33.52	+33.52	-0.00	332.3	339.2
2	126.6250	126.6563	+28.79	+28.81	+0.02	345.9	352.7
3	126.6875	127.1563	Interface (below)		+0.03	359.4	400.8
4	127.6250	128.0938	+21.00	+21.26	+0.26	433.2	465.5
5	128.5625	129.0313	+4.94	+5.29	+0.35	487.0	508.3
6	129.5000	129.9688	-4.99	-4.65	+0.34	520.4	532.5
7	130.4375	130.9063	-10.26	-9.98	+0.28	538.3	544.2
8	131.3750	131.8438	-12.65	-12.46	+0.19	546.7	549.1
9	132.3125	132.7813	-13.54	-13.44	+0.10	550.0	550.8
10	133.2500	133.7188	-13.69	-13.69	+0.00	550.8	120.0
			(Above node is outside fluid)				

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+24.10	+24.13	+0.03
FOR OUTER MATERIAL	+43.17	+43.20	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.42	+0.65
HOOP MEMBRANE	N/A	+0.43
AVERAGE RADIAL	N/A	+0.21
AXIAL BENDING	-25.74	-25.88
INSIDE BENDING	+26.38	+26.53
OUTSIDE BENDING	-25.09	-25.24
HOOP BENDING	N/A	-25.81
INSIDE BENDING	N/A	+26.24
OUTSIDE BENDING	N/A	-25.38

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	503.6	502.9
DELTA T1 (Total Section Delta T)	+177.2	+178.3
LINEAR INSIDE TEMPERATURE	414.3	413.7
LINEAR OUTSIDE TEMPERATURE	591.5	592.0
DELTA T2 (Absolute of Maximum)	81.9	81.4

6 REFERENCES

1. PIPE-TS2, Program to Compute the Transient Thermal and Stress Response of an Axisymmetric Two-Material Cylinder, Version 1.01, Structural Integrity Associates, April 1991.

2. CBI Stress Report, S21, SI File CGS-02Q-219.

3. ASME Boiler and Pressure Vessel Code, Section III Appendices, 1989 Edition.

4. General Electric Drawing No. 762E120, "Reactor Vessel Thermal Cycles", SI File No. CGS-02Q-221.

APPENDIX A

PIPE-TS2 ANALYSIS INPUT FILES

PIPE-TS2 Input File for SRV Blowdown Transient

```
***************** TOP OF FILE = ***************
" Note that a blank line must preceed each line with ==> at start"

"==> Next 3 lines are CASE DESCRIPTIONS (or blanks) in parentheses"
" Columbia Generating Station RPV Shell Welds"
" "
" "

"==> Next information is the pipe geometry"
"  First line is number of pipe nodes - 40 max"
"  Next line is inside radius (in.) and outside radius(in.)"
"  Next line is interface rad. (in.) / nodes in first material"
        9
        126.5625     133.25
        126.6875     2

"==> Next line is initial pipe wall temperature"
        552

"==> Next series of lines is Inside Temperature history"
"  First entry is number of input data pairs - 40 Max"
"  Data pairs follow as  Time(sec)  Temperature(F)"
        4
        0     552
        600   375
        10500  100
        20000  100

"==> Next series of lines is Inside Ht. Tx. Coefficient history"
"  First entry is number of input data pairs - 40 max"
"  Data pairs:  Time(sec)  Ht. Tx. Coefficient(Btu/hr-ft2-F)"
        2
        0     500
        20000  500

"==> Next series of lines is Outside Temperature history"
"  First entry is number of input data pairs - 40 Max"
"  Data pairs follow as  Time(sec)  Temperature(F)"
        2
        0     120
        20000  120

"==> Next series of lines is Outside Ht. Tx. Coefficient history"
"  First entry is number of input data pairs - 40 max"
"  Data pairs:  Time(sec)  Ht. Tx. Coefficient(Btu/hr-ft2-F)"
```

```
        2
        0     0.00001
        20000  0.00001

"==> Following are inner material properties"
"   Thermal conductivity (Btu/Hr-ft-F)"
        9.8
"   Density * Specific Heat (Btu/ft3-F)"
        61.1
"   Modulus of Elasticity (ksi)"
        27000
"   Coefficient of Thermal Expansion (per F)"
        9.0E-6
"   Poissons Ratio"
        0.3

"==> Following are outer material properties"
"   Thermal conductivity (Btu/Hr-Ft-F)"
        23.8
"   Density * Specific Heat (Btu/ft3-F)"
        58.7
"   Modulus of Elasticity (ksi)"
        28000
"   Coefficient of Thermal Expansion (per F)"
        7.43e-6
"   Poissons Ratio"
        0.3

"==> Value of uniform temperature which is stress free in cyclinder"
"   Stress-free temperature (F) may be any value"
        70

"==> Timestep and time control information (seconds)"
"    Timestep Max <= 0.5*{[(Ro-Ri)/nodes]^2/[k/RhoCp]}*3600"
"    Next line is number of time control intervals "
        2
"  end of interval - time step - print interval"
        700    0.1    10
        11000  0.1    100

********************** END OF FILE ********************
```

PIPE-TS2 Input File for Pipe Rupture & Blowdown Transient

```
***************** TOP OF FILE = ***************
" Note that a blank line must preceed each line with ==> at start"

"==> Next 3 lines are CASE DESCRIPTIONS (or blanks) in parentheses"
" Columbia Generating Station RPV Shell Welds"
" "
" "

"==> Next information is the pipe geometry"
"  First line is number of pipe nodes - 40 max"
"  Next line is inside radius (in.) and outside radius(in.)"
"  Next line is interface rad. (in.) / nodes in first material"
        9
        126.5625     133.25
        126.6875     2

"==> Next line is initial pipe wall temperature"
        552

"==> Next series of lines is Inside Temperature history"
"   First entry is number of input data pairs - 40 Max"
"   Data pairs follow as   Time(sec)   Temperature(F)"
        3
        0     552
        15    281
        10000  281

"==> Next series of lines is Inside Ht. Tx. Coefficient history"
"   First entry is number of input data pairs - 40 max"
"   Data pairs:  Time(sec)   Ht. Tx. Coefficient(Btu/hr-ft2-F)"
        2
        0     500
        20000  500

"==> Next series of lines is Outside Temperature history"
"   First entry is number of input data pairs - 40 Max"
"   Data pairs follow as   Time(sec)   Temperature(F)"
        2
        0     120
        20000  120

"==> Next series of lines is Outside Ht. Tx. Coefficient history"
"   First entry is number of input data pairs - 40 max"
"   Data pairs:  Time(sec)   Ht. Tx. Coefficient(Btu/hr-ft2-F)"
        2
```

```
        0     0.00001
        20000  0.00001

"==> Following are inner material properties"
"   Thermal conductivity (Btu/Hr-ft-F)"
        9.8
"   Density * Specific Heat (Btu/ft3-F)"
        61.1
"   Modulus of Elasticity (ksi)"
        27000
"   Coefficient of Thermal Expansion (per F)"
        9.0E-6
"   Poissons Ratio"
        0.3

"==> Following are outer material properties"
"   Thermal conductivity (Btu/Hr-Ft-F)"
        23.8
"   Density * Specific Heat (Btu/ft3-F)"
        58.7
"   Modulus of Elasticity (ksi)"
        28000
"   Coefficient of Thermal Expansion (per F)"
        7.43e-6
"   Poissons Ratio"
        0.3

"==> Value of uniform temperature which is stress free in cyclinder"
"   Stress-free temperature (F) may be any value"
        70

"==> Timestep and time control information (seconds)"
"    Timestep Max <= 0.5*{[(Ro-Ri)/nodes]^2/[k/RhoCp]}*3600"
"    Next line is number of time control intervals "
        3
"   end of interval - time step - print interval"
        60     0.1    1
        200    0.1    10
        1000   0.1    100

********************** END OF FILE ********************
```

APPENDIX B
PIPE-TS2 OUTPUT FILES CGS-RPV.OUT AND CGS-RPV2.OUT

```
 Date: 05-24-2005          Time: 16:06:53                          PAGE   1
*************************************************************************
        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *

================= START OF INPUT =========================

INPUT FILE  => CGS-RPV.IN
THIS FILE IS => CGS-RPV.OUT

CASE INFORMATION.................................
    Columbia Generating Station RPV Shell Welds


MODEL INFORMATION.....................................
  INSIDE RADIUS(INCHES) =  126.5625
  OUTSIDE RADIUS(IN.) =  133.25

  NUMBER OF NODES IN PIPE MODEL =  9
  NUMBER OF NODES IN INNER MATERIAL =  2
  RADIUS TO MATERIAL INTERFACE(INCHES) =  126.6875


 Date: 05-24-2005          Time: 16:06:53                          PAGE   2
*************************************************************************
        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *

TEMPERATURE INFORMATION..............................

  INITIAL  PIPE WALL TEMPERATURE (F) =  552

  INSIDE FLUID TEMPERATURE HISTORY - TIME (sec)/TEMPERATURE (F) =
  TIME (SEC) =          0.00    T (F)   =  +552.0
  TIME (SEC) =        600.00    T (F)   =  +375.0
  TIME (SEC) =      10500.00    T (F)   =  +100.0
  TIME (SEC) =      20000.00    T (F)   =  +100.0

  INSIDE FLUID HT TRANSFER COEFFICIENT HISTORY BTU/HR-FT2-F
  TIME (SEC) =          0.00    H (BTU/HR-FT2-F) = +5.0000E+02
  TIME (SEC) =      20000.00    H (BTU/HR-FT2-F) = +5.0000E+02

  OUTSIDE FLUID TEMPERATURE HISTORY - TIME (sec)/TEMPERATURE (F) =
  TIME (SEC) =          0.00    T (F)   =  +120.0
  TIME (SEC) =      20000.00    T (F)   =  +120.0

  OUTSIDE HT TRANSFER COEFFICIENT HISTORY BTU/HR-FT2-F
  TIME (SEC) =          0.00    H (BTU/HR-FT2-F) = +1.0000E-05
  TIME (SEC) =      20000.00    H (BTU/HR-FT2-F) = +1.0000E-05


 Date: 05-24-2005          Time: 16:06:53                          PAGE   3
*************************************************************************
        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *

MATERIAL PROPERTIES(INNER MATERIAL)................

  CONDUCTIVITY(BTU/HR-FT-F)= 9.8
  RHOCP(BTU/FT3-F)= 61.1
  E - MODULUS OF ELASTICITY(KSI)= 27000
```


315

ALPHA - COEFFICIENT OF THERMAL EXPANSION(IN/IN-F)= .000009
NU - POISSONS RATIO= .3

MATERIAL PROPERTIES(OUTER MATERIAL).....

CONDUCTIVITY(BTU/HR-FT-F)= 23.8
RHOCP(BTU/FT3-F)= 58.7
E - MODULUS OF ELASTICITY(KSI)= 28000
ALPHA - COEFFICIENT OF THERMAL EXPANSION(IN/IN-F)= 7.43E-06
NU - POISSONS RATIO= .3

STRESS-FREE TEMPERATURE FOR BIMETALLIC CYLINDER (F)
May be any value for single material T = 70

TIME CONTROL INFORMATION.....

MAXIMUM STABLE TIME STEP IS APPROXIMATELY 0.29 SECONDS

NUMBER OF TIME STEP CONTROL INTERVALS = 2

FOR INTERVAL 1
END OF INTERVAL TIME (SEC) = 700 TIME STEP(SEC) = .1
PRINT/EVALUATION INTERVAL(SEC) = 10

FOR INTERVAL 2
END OF INTERVAL TIME (SEC) = 11000 TIME STEP(SEC) = .1
PRINT/EVALUATION INTERVAL(SEC) = 100

==========END OF INPUT==========

DATE = 05-24-2005 TIME = 16:06:53

Date: 05-24-2005 Time: 16:06:54 PAGE 4
****
* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *
.....OUTPUT FOR TIME= 0.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	552.0	
1	126.5625	126.5938	-28.68	-28.68	+0.00	552.0	552.0
2	126.6250	126.6563	-28.66	-28.68	-0.01	552.0	552.0
3	126.6875	127.1563	Interface (below)		-0.03	552.0	552.0
4	127.6250	128.0938	+0.56	+0.53	-0.02	552.0	552.0
5	128.5625	129.0313	+0.55	+0.53	-0.02	552.0	552.0
6	129.5000	129.9688	+0.55	+0.53	-0.02	552.0	552.0
7	130.4375	130.9063	+0.54	+0.53	-0.01	552.0	552.0
8	131.3750	131.8438	+0.54	+0.53	-0.01	552.0	552.0
9	132.3125	132.7813	+0.54	+0.53	-0.00	552.0	552.0
10	133.2500	133.7188	+0.53	+0.53	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3
FOR INNER MATERIAL -28.65 -28.68 -0.03
FOR OUTER MATERIAL +0.56 +0.53 -0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	-0.00	-0.01
HOOP MEMBRANE	N/A	-0.00

B16

AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+1.58	+1.61
INSIDE BENDING	-1.59	-1.62
OUTSIDE BENDING	+1.57	+1.59
HOOP BENDING	N/A	+1.59
INSIDE BENDING	N/A	-1.59
OUTSIDE BENDING	N/A	+1.59

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	552.0	552.0
DELTA T1 (Total Section Delta T)	-0.0	+0.0
LINEAR INSIDE TEMPERATURE	552.0	552.0
LINEAR OUTSIDE TEMPERATURE	552.0	552.0
DELTA T2 (Absolute of Maximum)	0.0	0.0

Date: 05-24-2005 Time: 16:06:55 PAGE 5

****

* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 10.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	549.0	
1	126.5625	126.5938	-28.19	-28.19	+0.00	550.6	550.8
2	126.6250	126.6563	-28.30	-28.32	-0.01	550.9	551.1
3	126.6875	127.1563	Interface (below)		-0.03	551.2	551.9
4	127.6250	128.0938	+0.55	+0.53	-0.02	551.9	552.0
5	128.5625	129.0313	+0.53	+0.51	-0.02	552.0	552.0
6	129.5000	129.9688	+0.53	+0.51	-0.02	552.0	552.0
7	130.4375	130.9063	+0.52	+0.51	-0.01	552.0	552.0
8	131.3750	131.8438	+0.52	+0.51	-0.01	552.0	552.0
9	132.3125	132.7813	+0.52	+0.51	-0.00	552.0	552.0
10	133.2500	133.7188	+0.51	+0.51	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-28.33	-28.41	-0.03
FOR OUTER MATERIAL	+0.78	+0.76	-0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.01	-0.01
HOOP MEMBRANE	N/A	+0.01
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+1.51	+1.54
INSIDE BENDING	-1.52	-1.54
OUTSIDE BENDING	+1.51	+1.53
HOOP BENDING	N/A	+1.52
INSIDE BENDING	N/A	-1.52
OUTSIDE BENDING	N/A	+1.53

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.9	551.9
DELTA T1 (Total Section Delta T)	+0.3	+0.3
LINEAR INSIDE TEMPERATURE	551.8	551.8
LINEAR OUTSIDE TEMPERATURE	552.1	552.1
DELTA T2 (Absolute of Maximum)	1.2	1.2

Date: 05-24-2005 Time: 16:06:57 PAGE 6

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 20.00 SECONDS.....

B17

CGS-RPV

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	546.1	
1	126.5625	126.5938	-27.60	-27.59	+0.00	548.7	549.1
2	126.6250	126.6563	-27.81	-27.82	-0.01	549.4	549.7
3	126.6875	127.1563	Interface (below)		-0.03	549.9	551.5
4	127.6250	128.0938	+0.58	+0.56	-0.02	551.7	552.0
5	128.5625	129.0313	+0.50	+0.49	-0.02	552.0	552.0
6	129.5000	129.9688	+0.49	+0.48	-0.01	552.0	552.0
7	130.4375	130.9063	+0.49	+0.48	-0.01	552.0	552.0
8	131.3750	131.8438	+0.48	+0.48	-0.01	552.0	552.0
9	132.3125	132.7813	+0.48	+0.48	-0.00	552.0	552.0
10	133.2500	133.7188	+0.48	+0.48	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-27.99	-28.01	-0.03
FOR OUTER MATERIAL	+1.12	+1.09	-0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.02	+0.00
HOOP MEMBRANE	N/A	+0.02
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+1.40	+1.42
INSIDE BENDING	-1.39	-1.42
OUTSIDE BENDING	+1.40	+1.43
HOOP BENDING	N/A	+1.41
INSIDE BENDING	N/A	-1.39
OUTSIDE BENDING	N/A	+1.42

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.8	551.8
DELTA T1 (Total Section Delta T)	+0.9	+0.9
LINEAR INSIDE TEMPERATURE	551.4	551.4
LINEAR OUTSIDE TEMPERATURE	552.3	552.3
DELTA T2 (Absolute of Maximum)	2.6	2.6

Date: 05-24-2005 Time: 16:06:58 PAGE 7

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 30.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	543.2	
1	126.5625	126.5938	-26.97	-26.97	+0.00	546.8	547.3
2	126.6250	126.6563	-27.28	-27.29	-0.01	547.7	548.2
3	126.6875	127.1563	Interface (below)		-0.03	548.5	550.9
4	127.6250	128.0938	+0.63	+0.61	-0.02	551.4	551.8
5	128.5625	129.0313	+0.47	+0.46	-0.02	551.9	552.0
6	129.5000	129.9688	+0.44	+0.43	-0.01	552.0	552.0
7	130.4375	130.9063	+0.44	+0.43	-0.01	552.0	552.0
8	131.3750	131.8438	+0.44	+0.43	-0.01	552.0	552.0
9	132.3125	132.7813	+0.43	+0.43	-0.00	552.0	552.0
10	133.2500	133.7188	+0.43	+0.43	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-27.55	-27.58	-0.03
FOR OUTER MATERIAL	+1.48	+1.46	-0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

B18

CGS-RPV

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.02	+0.01
HOOP MEMBRANE	N/A	+0.02
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+1.26	+1.28
INSIDE BENDING	-1.24	-1.27
OUTSIDE BENDING	+1.27	+1.29
HOOP BENDING	N/A	+1.27
INSIDE BENDING	N/A	-1.24
OUTSIDE BENDING	N/A	+1.29

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.7	551.7
DELTA T1 (Total Section Delta T)	+1.7	+1.7
LINEAR INSIDE TEMPERATURE	550.8	550.8
LINEAR OUTSIDE TEMPERATURE	552.5	552.5
DELTA T2 (Absolute of Maximum)	4.0	4.0

Date: 05-24-2005 Time: 16:06:59 PAGE 8

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 40.00 SECONDS.....

N	Radii, inches Grid	Node	Grid Stress, ksi hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	540.2	
1	126.5625	126.5938	-26.33	-26.33	+0.00	544.8	545.4
2	126.6250	126.6563	-26.73	-26.74	-0.01	546.0	546.5
3	126.6875	127.1563	Interface (below)		-0.03	547.0	550.1
4	127.6250	128.0938	+0.72	+0.70	-0.02	550.9	551.7
5	128.5625	129.0313	+0.44	+0.43	-0.01	551.8	551.9
6	129.5000	129.9688	+0.39	+0.38	-0.01	552.0	552.0
7	130.4375	130.9063	+0.38	+0.37	-0.01	552.0	552.0
8	131.3750	131.8438	+0.38	+0.37	-0.01	552.0	552.0
9	132.3125	132.7813	+0.37	+0.37	-0.00	552.0	552.0
10	133.2500	133.7188	+0.37	+0.37	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-27.08	-27.11	-0.03
FOR OUTER MATERIAL	+1.87	+1.85	-0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.03	+0.02
HOOP MEMBRANE	N/A	+0.03
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+1.10	+1.12
INSIDE BENDING	-1.07	-1.09
OUTSIDE BENDING	+1.12	+1.14
HOOP BENDING	N/A	+1.11
INSIDE BENDING	N/A	-1.07
OUTSIDE BENDING	N/A	+1.14

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.5	551.5
DELTA T1 (Total Section Delta T)	+2.7	+2.7
LINEAR INSIDE TEMPERATURE	550.1	550.1
LINEAR OUTSIDE TEMPERATURE	552.8	552.8
DELTA T2 (Absolute of Maximum)	5.3	5.3

Date: 05-24-2005 Time: 16:07:00 PAGE 9

619

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=   50.00  SECONDS...................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node       hoop       axial      radial          Grid   Node
                                                  (Inside fluid)   537.3
  1  126.5625  126.5938     -25.68     -25.68     +0.00          542.7   543.5
  2  126.6250  126.6563     -26.15     -26.17     -0.01          544.1   544.8
  3  126.6875  127.1563   Interface (below)       -0.03          545.4   549.2
  4  127.6250  128.0938     +0.82      +0.80     -0.02          550.3   551.4
  5  128.5625  129.0313     +0.42      +0.41     -0.01          551.6   551.9
  6  129.5000  129.9688     +0.33      +0.32     -0.01          551.9   552.0
  7  130.4375  130.9063     +0.31      +0.30     -0.01          552.0   552.0
  8  131.3750  131.8438     +0.30      +0.30     -0.00          552.0   552.0
  9  132.3125  132.7813     +0.30      +0.30     -0.00          552.0   552.0
 10  133.2500  133.7188     +0.30      +0.30     +0.00          552.0   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL      -26.59     -26.61     -0.03
    FOR OUTER MATERIAL       +2.28      +2.26     -0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.04                       +0.03
  HOOP MEMBRANE                        N/A                        +0.04
  AVERAGE RADIAL                       N/A                        -0.01
  AXIAL BENDING                       +0.92                       +0.93
    INSIDE BENDING                    -0.88                       -0.90
    OUTSIDE BENDING                   +0.95                       +0.96
  HOOP BENDING                         N/A                        +0.92
      INSIDE BENDING                    N/A                       -0.88
      OUTSIDE BENDING                   N/A                        +0.96

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AVERAGE TEMPERATURE                 551.2                       551.2
  DELTA T1 (Total Section Delta T)     +3.8                        +3.8
  LINEAR INSIDE TEMPERATURE           549.3                       549.3
  LINEAR OUTSIDE TEMPERATURE          553.1                       553.1
  DELTA T2 (Absolute of Maximum)        6.6                         6.6

 Date: 05-24-2005          Time: 16:07:02                        PAGE  10
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=   60.00  SECONDS...................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node       hoop       axial      radial          Grid   Node
                                                  (Inside fluid)   534.3
  1  126.5625  126.5938     -25.02     -25.02     +0.00          540.6   541.4
  2  126.6250  126.6563     -25.57     -25.58     -0.01          542.2   543.0
  3  126.6875  127.1563   Interface (below)       -0.03          543.7   548.2
  4  127.6250  128.0938     +0.94      +0.93     -0.01          549.6   551.0
  5  128.5625  129.0313     +0.40      +0.39     -0.01          551.4   551.8
  6  129.5000  129.9688     +0.26      +0.25     -0.01          551.9   552.0
  7  130.4375  130.9063     +0.23      +0.22     -0.00          552.0   552.0
  8  131.3750  131.8438     +0.22      +0.22     -0.00          552.0   552.0
  9  132.3125  132.7813     +0.22      +0.22     -0.00          552.0   552.0
 10  133.2500  133.7188     +0.22      +0.22     +0.00          552.0   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL      -26.08     -26.10     -0.03
    FOR OUTER MATERIAL       +2.71      +2.68     -0.03
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520

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.05	+0.04
HOOP MEMBRANE	N/A	+0.05
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+0.72	+0.73
INSIDE BENDING	-0.68	-0.69
OUTSIDE BENDING	+0.76	+0.77
HOOP BENDING	N/A	+0.72
INSIDE BENDING	N/A	-0.68
OUTSIDE BENDING	N/A	+0.77

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.0	551.0
DELTA T1 (Total Section Delta T)	+5.0	+5.0
LINEAR INSIDE TEMPERATURE	548.5	548.4
LINEAR OUTSIDE TEMPERATURE	553.4	553.5
DELTA T2 (Absolute of Maximum)	7.9	7.8

Date: 05-24-2005 Time: 16:07:03 PAGE 11

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 70.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	531.3	
1	126.5625	126.5938	-24.35	-24.35	+0.00	538.4	539.4
2	126.6250	126.6563	-24.97	-24.98	-0.01	540.2	541.1
3	126.6875	127.1563	Interface (below)		-0.02	541.9	547.0
4	127.6250	128.0938	+1.09	+1.08	-0.01	548.8	550.6
5	128.5625	129.0313	+0.39	+0.38	-0.01	551.1	551.7
6	129.5000	129.9688	+0.19	+0.19	-0.00	551.8	551.9
7	130.4375	130.9063	+0.14	+0.14	-0.00	552.0	552.0
8	131.3750	131.8438	+0.13	+0.13	-0.00	552.0	552.0
9	132.3125	132.7813	+0.13	+0.13	-0.00	552.0	552.0
10	133.2500	133.7188	+0.13	+0.13	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-25.55	-25.57	-0.02
FOR OUTER MATERIAL	+3.14	+3.12	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.05	+0.05
HOOP MEMBRANE	N/A	+0.05
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+0.50	+0.52
INSIDE BENDING	-0.46	-0.47
OUTSIDE BENDING	+0.55	+0.57
HOOP BENDING	N/A	+0.51
INSIDE BENDING	N/A	-0.46
OUTSIDE BENDING	N/A	+0.56

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	550.7	550.7
DELTA T1 (Total Section Delta T)	+6.3	+6.4
LINEAR INSIDE TEMPERATURE	547.5	547.5
LINEAR OUTSIDE TEMPERATURE	553.8	553.8
DELTA T2 (Absolute of Maximum)	9.1	9.0

B21

Date: 05-24-2005 Time: 16:07:04 PAGE 12

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 80.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	528.4	
1	126.5625	126.5938	-23.68	-23.68	+0.00	536.2	537.2
2	126.6250	126.6563	-24.37	-24.38	-0.01	538.2	539.2
3	126.6875	127.1563	Interface (below)		-0.02	540.1	545.8
4	127.6250	128.0938	+1.24	+1.24	-0.01	547.9	550.1
5	128.5625	129.0313	+0.39	+0.38	-0.00	550.8	551.5
6	129.5000	129.9688	+0.12	+0.12	-0.00	551.7	551.9
7	130.4375	130.9063	+0.05	+0.05	-0.00	551.9	552.0
8	131.3750	131.8438	+0.03	+0.03	-0.00	552.0	552.0
9	132.3125	132.7813	+0.03	+0.03	-0.00	552.0	552.0
10	133.2500	133.7188	+0.03	+0.03	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-25.01	-25.04	-0.02
FOR OUTER MATERIAL	+3.58	+3.56	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.06
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	-0.00
AXIAL BENDING	+0.28	+0.29
INSIDE BENDING	-0.22	-0.23
OUTSIDE BENDING	+0.33	+0.34
HOOP BENDING	N/A	+0.28
INSIDE BENDING	N/A	-0.22
OUTSIDE BENDING	N/A	+0.34

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	550.4	550.3
DELTA T1 (Total Section Delta T)	+7.8	+7.8
LINEAR INSIDE TEMPERATURE	546.4	546.4
LINEAR OUTSIDE TEMPERATURE	554.2	554.2
DELTA T2 (Absolute of Maximum)	10.2	10.2

Date: 05-24-2005 Time: 16:07:05 PAGE 13

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 90.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	525.5	
1	126.5625	126.5938	-23.01	-23.00	+0.00	534.0	535.1
2	126.6250	126.6563	-23.76	-23.77	-0.01	536.2	537.2
3	126.6875	127.1563	Interface (below)		-0.02	538.2	544.5
4	127.6250	128.0938	+1.41	+1.41	-0.01	547.0	549.5
5	128.5625	129.0313	+0.39	+0.39	+0.00	550.4	551.3
6	129.5000	129.9688	+0.05	+0.05	+0.00	551.6	551.8
7	130.4375	130.9063	-0.05	-0.05	+0.00	551.9	552.0
8	131.3750	131.8438	-0.07	-0.07	+0.00	552.0	552.0
9	132.3125	132.7813	-0.08	-0.08	+0.00	552.0	552.0
10	133.2500	133.7188	-0.08	-0.08	+0.00	552.0	120.0
					(Above node is outside fluid)		

B22

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-24.47	-24.49	-0.02
FOR OUTER MATERIAL	+4.03	+4.01	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.06
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	-0.00
AXIAL BENDING	+0.04	+0.05
INSIDE BENDING	+0.03	+0.02
OUTSIDE BENDING	+0.10	+0.11
HOOP BENDING	N/A	+0.04
INSIDE BENDING	N/A	+0.02
OUTSIDE BENDING	N/A	+0.11

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	550.0	550.0
DELTA T1 (Total Section Delta T)	+9.3	+9.3
LINEAR INSIDE TEMPERATURE	545.3	545.3
LINEAR OUTSIDE TEMPERATURE	554.6	554.6
DELTA T2 (Absolute of Maximum)	11.4	11.3

Date: 05-24-2005 Time: 16:07:07 PAGE 14

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 100.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	522.5	
1	126.5625	126.5938	-22.33	-22.33	+0.00	531.7	532.9
2	126.6250	126.6563	-23.14	-23.15	-0.01	534.1	535.2
3	126.6875	127.1563	Interface (below)		-0.02	536.3	543.1
4	127.6250	128.0938	+1.59	+1.59	-0.00	546.0	548.9
5	128.5625	129.0313	+0.40	+0.41	+0.00	550.0	551.1
6	129.5000	129.9688	-0.02	-0.02	+0.00	551.4	551.7
7	130.4375	130.9063	-0.15	-0.15	+0.00	551.8	551.9
8	131.3750	131.8438	-0.19	-0.18	+0.00	552.0	552.0
9	132.3125	132.7813	-0.19	-0.19	+0.00	552.0	552.0
10	133.2500	133.7188	-0.19	-0.19	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-23.91	-23.94	-0.02
FOR OUTER MATERIAL	+4.49	+4.46	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.07
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.00
AXIAL BENDING	-0.21	-0.21
INSIDE BENDING	+0.29	+0.28
OUTSIDE BENDING	-0.14	-0.14
HOOP BENDING	N/A	-0.21
INSIDE BENDING	N/A	+0.28
OUTSIDE BENDING	N/A	-0.14

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	549.6	549.6
DELTA T1 (Total Section Delta T)	+10.8	+11.0

B23

LINEAR INSIDE TEMPERATURE	544.1	544.1
LINEAR OUTSIDE TEMPERATURE	555.0	555.0
DELTA T2 (Absolute of Maximum)	12.5	12.4

Date: 05-24-2005 Time: 16:07:08 PAGE 15

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 110.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	519.5	
1	126.5625	126.5938	-21.65	-21.65	+0.00	529.4	530.7
2	126.6250	126.6563	-22.52	-22.53	-0.01	531.9	533.2
3	126.6875	127.1563	Interface (below)		-0.02	534.4	541.6
4	127.6250	128.0938	+1.78	+1.78	+0.00	544.9	548.2
5	128.5625	129.0313	+0.42	+0.43	+0.01	549.5	550.8
6	129.5000	129.9688	-0.09	-0.08	+0.01	551.2	551.6
7	130.4375	130.9063	-0.26	-0.25	+0.01	551.8	551.9
8	131.3750	131.8438	-0.31	-0.30	+0.00	551.9	552.0
9	132.3125	132.7813	-0.32	-0.32	+0.00	552.0	552.0
10	133.2500	133.7188	-0.32	-0.32	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-23.35	-23.38	-0.02
FOR OUTER MATERIAL	+4.94	+4.92	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 - +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.08
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.00
AXIAL BENDING	-0.48	-0.47
INSIDE BENDING	+0.55	+0.55
OUTSIDE BENDING	-0.40	-0.39
HOOP BENDING	N/A	-0.47
INSIDE BENDING	N/A	+0.55
OUTSIDE BENDING	N/A	-0.40

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	549.2	549.1
DELTA T1 (Total Section Delta T)	+12.5	+12.6
LINEAR INSIDE TEMPERATURE	542.9	542.8
LINEAR OUTSIDE TEMPERATURE	555.4	555.5
DELTA T2 (Absolute of Maximum)	13.5	13.4

Date: 05-24-2005 Time: 16:07:09 PAGE 16

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 120.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	516.6	
1	126.5625	126.5938	-20.97	-20.97	+0.00	527.1	528.5
2	126.6250	126.6563	-21.90	-21.91	-0.01	529.8	531.1
3	126.6875	127.1563	Interface (below)		-0.02	532.4	540.1
4	127.6250	128.0938	+1.98	+1.99	+0.00	543.8	547.4
5	128.5625	129.0313	+0.45	+0.46	+0.01	548.9	550.4
6	129.5000	129.9688	-0.16	-0.15	+0.01	551.0	551.5
7	130.4375	130.9063	-0.37	-0.36	+0.01	551.7	551.9
8	131.3750	131.8438	-0.43	-0.43	+0.01	551.9	552.0

B24

9	132.3125	132.7813	-0.45	-0.44	+0.00	552.0	552.0
10	133.2500	133.7188	-0.45	-0.45	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-22.79	-22.81	-0.02
FOR OUTER MATERIAL	+5.40	+5.38	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.09
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.00
AXIAL BENDING	-0.75	-0.74
INSIDE BENDING	+0.83	+0.83
OUTSIDE BENDING	-0.66	-0.66
HOOP BENDING	N/A	-0.75
INSIDE BENDING	N/A	+0.83
OUTSIDE BENDING	N/A	-0.66

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	548.8	548.7
DELTA T1 (Total Section Delta T)	+14.2	+14.4
LINEAR INSIDE TEMPERATURE	541.6	541.5
LINEAR OUTSIDE TEMPERATURE	555.8	555.9
DELTA T2 (Absolute of Maximum)	14.5	14.4

Date: 05-24-2005 Time: 16:07:10 PAGE 17

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 130.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	513.7	
1	126.5625	126.5938	-20.29	-20.29	+0.00	524.7	526.2
2	126.6250	126.6563	-21.28	-21.29	-0.01	527.6	529.0
3	126.6875	127.1563	Interface (below)		-0.02	530.4	538.6
4	127.6250	128.0938	+2.19	+2.19	+0.01	542.6	546.6
5	128.5625	129.0313	+0.48	+0.49	+0.01	548.3	550.1
6	129.5000	129.9688	-0.23	-0.21	+0.02	550.7	551.4
7	130.4375	130.9063	-0.48	-0.47	+0.01	551.6	551.8
8	131.3750	131.8438	-0.56	-0.56	+0.01	551.9	551.9
9	132.3125	132.7813	-0.58	-0.58	+0.00	552.0	552.0
10	133.2500	133.7188	-0.59	-0.59	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-22.22	-22.24	-0.02
FOR OUTER MATERIAL	+5.86	+5.84	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.09
HOOP MEMBRANE	N/A	+0.09
AVERAGE RADIAL	N/A	+0.01
AXIAL BENDING	-1.02	-1.02
INSIDE BENDING	+1.12	+1.11
OUTSIDE BENDING	-0.93	-0.93
HOOP BENDING	N/A	-1.02
INSIDE BENDING	N/A	+1.11
OUTSIDE BENDING	N/A	-0.94

B25

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	548.3	548.2
DELTA T1 (Total Section Delta T)	+16.1	+16.2
LINEAR INSIDE TEMPERATURE	540.2	540.1
LINEAR OUTSIDE TEMPERATURE	556.3	556.3
DELTA T2 (Absolute of Maximum)	15.5	15.4

Date: 05-24-2005 Time: 16:07:11 PAGE 18

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 140.00 SECONDS.....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	510.7	
1	126.5625	126.5938	-19.61	-19.61	+0.00	522.4	523.9
2	126.6250	126.6563	-20.66	-20.66	-0.01	525.4	526.9
3	126.6875	127.1563	Interface (below)		-0.02	528.3	537.0
4	127.6250	128.0938	+2.40	+2.41	+0.01	541.4	545.8
5	128.5625	129.0313	+0.52	+0.54	+0.02	547.7	549.7
6	129.5000	129.9688	-0.29	-0.27	+0.02	550.4	551.2
7	130.4375	130.9063	-0.60	-0.58	+0.02	551.5	551.8
8	131.3750	131.8438	-0.70	-0.69	+0.01	551.8	551.9
9	132.3125	132.7813	-0.73	-0.72	+0.01	552.0	552.0
10	133.2500	133.7188	-0.73	-0.73	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-21.65	-21.67	-0.02
FOR OUTER MATERIAL	+6.33	+6.31	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.09	+0.10
HOOP MEMBRANE	N/A	+0.09
AVERAGE RADIAL	N/A	+0.01
AXIAL BENDING	-1.31	-1.31
INSIDE BENDING	+1.41	+1.41
OUTSIDE BENDING	-1.21	-1.21
HOOP BENDING	N/A	-1.31
INSIDE BENDING	N/A	+1.40
OUTSIDE BENDING	N/A	-1.22

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	547.8	547.7
DELTA T1 (Total Section Delta T)	+17.9	+18.0
LINEAR INSIDE TEMPERATURE	538.8	538.7
LINEAR OUTSIDE TEMPERATURE	556.7	556.8
DELTA T2 (Absolute of Maximum)	16.4	16.4

Date: 05-24-2005 Time: 16:07:13 PAGE 19

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 150.00 SECONDS.....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	507.8	
1	126.5625	126.5938	-18.93	-18.93	+0.00	520.0	521.6
2	126.6250	126.6563	-20.03	-20.04	-0.01	523.2	524.7
3	126.6875	127.1563	Interface (below)		-0.02	526.2	535.4
4	127.6250	128.0938	+2.62	+2.63	+0.01	540.1	544.9
5	128.5625	129.0313	+0.56	+0.58	+0.02	547.0	549.2

B20

6	129.5000	129.9688	-0.35	-0.33	+0.02	550.1	551.0
7	130.4375	130.9063	-0.71	-0.70	+0.02	551.3	551.7
8	131.3750	131.8438	-0.84	-0.83	+0.01	551.8	551.9
9	132.3125	132.7813	-0.88	-0.87	+0.01	551.9	552.0
10	133.2500	133.7188	-0.88	-0.88	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-21.08	-21.10	-0.02
FOR OUTER MATERIAL	+6.79	+6.77	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.09	+0.11
HOOP MEMBRANE	N/A	+0.10
AVERAGE RADIAL	N/A	+0.01
AXIAL BENDING	-1.60	-1.60
INSIDE BENDING	+1.71	+1.71
OUTSIDE BENDING	-1.49	-1.50
HOOP BENDING	N/A	-1.61
INSIDE BENDING	N/A	+1.70
OUTSIDE BENDING	N/A	-1.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	547.3	547.2
DELTA T1 (Total Section Delta T)	+19.8	+20.0
LINEAR INSIDE TEMPERATURE	537.3	537.2
LINEAR OUTSIDE TEMPERATURE	557.1	557.2
DELTA T2 (Absolute of Maximum)	17.3	17.3

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 160.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	504.8	
1	126.5625	126.5938	-18.26	-18.26	+0.00	517.6	519.3
2	126.6250	126.6563	-19.40	-19.41	-0.01	520.9	522.6
3	126.6875	127.1563	Interface (below)		-0.02	524.1	533.8
4	127.6250	128.0938	+2.84	+2.86	+0.02	538.8	543.9
5	128.5625	129.0313	+0.61	+0.64	+0.03	546.3	548.7
6	129.5000	129.9688	-0.41	-0.38	+0.03	549.8	550.8
7	130.4375	130.9063	-0.83	-0.81	+0.02	551.2	551.6
8	131.3750	131.8438	-0.99	-0.97	+0.01	551.7	551.9
9	132.3125	132.7813	-1.03	-1.02	+0.01	551.9	552.0
10	133.2500	133.7188	-1.04	-1.04	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-20.50	-20.52	-0.02
FOR OUTER MATERIAL	+7.26	+7.24	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.10	+0.12
HOOP MEMBRANE	N/A	+0.10
AVERAGE RADIAL	N/A	+0.01
AXIAL BENDING	-1.90	-1.90
INSIDE BENDING	+2.02	+2.02
OUTSIDE BENDING	-1.79	-1.79
HOOP BENDING	N/A	-1.91

B27

INSIDE BENDING	N/A	+2.01
OUTSIDE BENDING	N/A	-1.80

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	546.8	546.7
DELTA T1 (Total Section Delta T)	+21.7	+21.9
LINEAR INSIDE TEMPERATURE	535.8	535.7
LINEAR OUTSIDE TEMPERATURE	557.5	557.6
DELTA T2 (Absolute of Maximum)	18.2	18.1

Date: 05-24-2005 Time: 16:07:15 PAGE 21

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 170.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	501.9	
1	126.5625	126.5938	-17.58	-17.58	+0.00	515.2	517.0
2	126.6250	126.6563	-18.78	-18.79	-0.01	518.7	520.4
3	126.6875	127.1563	Interface (below)		-0.02	522.0	532.1
4	127.6250	128.0938	+3.07	+3.09	+0.02	537.5	542.9
5	128.5625	129.0313	+0.66	+0.70	+0.03	545.6	548.2
6	129.5000	129.9688	-0.47	-0.44	+0.03	549.4	550.5
7	130.4375	130.9063	-0.95	-0.93	+0.02	551.0	551.5
8	131.3750	131.8438	-1.13	-1.12	+0.02	551.7	551.8
9	132.3125	132.7813	-1.19	-1.18	+0.01	551.9	551.9
10	133.2500	133.7188	-1.20	-1.20	+0.00	551.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-19.93	-19.95	-0.02
FOR OUTER MATERIAL	+7.72	+7.70	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.10	+0.12
HOOP MEMBRANE	N/A	+0.11
AVERAGE RADIAL	N/A	+0.02
AXIAL BENDING	-2.21	-2.21
INSIDE BENDING	+2.33	+2.33
OUTSIDE BENDING	-2.08	-2.09
HOOP BENDING	N/A	-2.21
INSIDE BENDING	N/A	+2.32
OUTSIDE BENDING	N/A	-2.10

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	546.2	546.1
DELTA T1 (Total Section Delta T)	+23.7	+23.9
LINEAR INSIDE TEMPERATURE	534.3	534.2
LINEAR OUTSIDE TEMPERATURE	558.0	558.1
DELTA T2 (Absolute of Maximum)	19.1	19.0

Date: 05-24-2005 Time: 16:07:16 PAGE 22

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 180.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	498.9	
1	126.5625	126.5938	-16.91	-16.91	+0.00	512.8	514.6
2	126.6250	126.6563	-18.15	-18.16	-0.01	516.4	518.1

B25

3	126.6875	127.1563	Interface (below)		-0.02	519.8	530.4
4	127.6250	128.0938	+3.30	+3.33	+0.02	536.1	541.9
5	128.5625	129.0313	+0.72	+0.76	+0.03	544.8	547.6
6	129.5000	129.9688	-0.52	-0.49	+0.03	549.0	550.3
7	130.4375	130.9063	-1.07	-1.04	+0.03	550.8	551.4
8	131.3750	131.8438	-1.28	-1.27	+0.02	551.6	551.8
9	132.3125	132.7813	-1.36	-1.35	+0.01	551.8	551.9
10	133.2500	133.7188	-1.37	-1.37	+0.00	551.9	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-19.35	-19.37	-0.02
FOR OUTER MATERIAL	+8.18	+8.16	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.11	+0.13
HOOP MEMBRANE	N/A	+0.11
AVERAGE RADIAL	N/A	+0.02
AXIAL BENDING	-2.52	-2.52
INSIDE BENDING	+2.64	+2.65
OUTSIDE BENDING	-2.39	-2.39
HOOP BENDING	N/A	-2.52
INSIDE BENDING	N/A	+2.63
OUTSIDE BENDING	N/A	-2.41

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	545.6	545.5
DELTA T1 (Total Section Delta T)	+25.7	+25.9
LINEAR INSIDE TEMPERATURE	532.7	532.6
LINEAR OUTSIDE TEMPERATURE	558.4	558.5
DELTA T2 (Absolute of Maximum)	19.9	19.8

Date: 05-24-2005 Time: 16:07:17 PAGE 23

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 190.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	496.0	
1	126.5625	126.5938	-16.24	-16.24	+0.00	510.3	512.2
2	126.6250	126.6563	-17.53	-17.54	-0.01	514.1	515.9
3	126.6875	127.1563	Interface (below)		-0.02	517.7	528.6
4	127.6250	128.0938	+3.54	+3.56	+0.02	534.7	540.8
5	128.5625	129.0313	+0.79	+0.82	+0.04	543.9	547.1
6	129.5000	129.9688	-0.58	-0.54	+0.04	548.5	550.0
7	130.4375	130.9063	-1.19	-1.16	+0.03	550.6	551.2
8	131.3750	131.8438	-1.44	-1.42	+0.02	551.5	551.7
9	132.3125	132.7813	-1.52	-1.51	+0.01	551.8	551.9
10	133.2500	133.7188	-1.54	-1.54	+0.00	551.9	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-18.77	-18.79	-0.02
FOR OUTER MATERIAL	+8.64	+8.63	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.11	+0.14
HOOP MEMBRANE	N/A	+0.11
AVERAGE RADIAL	N/A	+0.02
AXIAL BENDING	-2.83	-2.84

B29

INSIDE BENDING	+2.97	+2.97
OUTSIDE BENDING	-2.69	-2.70
HOOP BENDING	N/A	-2.84
INSIDE BENDING	N/A	+2.95
OUTSIDE BENDING	N/A	-2.72

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	545.0	544.9
DELTA T1 (Total Section Delta T)	+27.8	+28.0
LINEAR INSIDE TEMPERATURE	531.0	530.9
LINEAR OUTSIDE TEMPERATURE	558.8	558.9
DELTA T2 (Absolute of Maximum)	20.7	20.6

Date: 05-24-2005 Time: 16:07:19 PAGE 24

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	493.0	
1	126.5625	126.5938	-15.57	-15.57	+0.00	507.9	509.9
2	126.6250	126.6563	-16.91	-16.91	-0.01	511.8	513.7
3	126.6875	127.1563	Interface (below)		-0.02	515.5	526.8
4	127.6250	128.0938	+3.78	+3.81	+0.03	533.3	539.7
5	128.5625	129.0313	+0.85	+0.90	+0.04	543.1	546.4
6	129.5000	129.9688	-0.63	-0.58	+0.04	548.1	549.7
7	130.4375	130.9063	-1.31	-1.28	+0.03	550.4	551.1
8	131.3750	131.8438	-1.60	-1.57	+0.02	551.4	551.7
9	132.3125	132.7813	-1.70	-1.68	+0.01	551.8	551.9
10	133.2500	133.7188	-1.71	-1.71	+0.00	551.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-18.20	-18.21	-0.02
FOR OUTER MATERIAL	+9.11	+9.09	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.12	+0.14
HOOP MEMBRANE	N/A	+0.12
AVERAGE RADIAL	N/A	+0.02
AXIAL BENDING	-3.15	-3.16
INSIDE BENDING	+3.29	+3.30
OUTSIDE BENDING	-3.00	-3.01
HOOP BENDING	N/A	-3.15
INSIDE BENDING	N/A	+3.27
OUTSIDE BENDING	N/A	-3.04

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	544.4	544.3
DELTA T1 (Total Section Delta T)	+29.8	+30.1
LINEAR INSIDE TEMPERATURE	529.4	529.3
LINEAR OUTSIDE TEMPERATURE	559.2	559.3
DELTA T2 (Absolute of Maximum)	21.5	21.4

Date: 05-24-2005 Time: 16:07:20 PAGE 25

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 210.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node

B30

					(Inside fluid)	490.0	
1	126.5625	126.5938	-14.90	-14.90	+0.00	505.4	507.5
2	126.6250	126.6563	-16.28	-16.29	-0.01	509.4	511.4
3	126.6875	127.1563	Interface (below)		-0.02	513.3	525.0
4	127.6250	128.0938	+4.02	+4.05	+0.03	531.8	538.6
5	128.5625	129.0313	+0.92	+0.97	+0.05	542.2	545.8
6	129.5000	129.9688	-0.67	-0.63	+0.05	547.6	549.3
7	130.4375	130.9063	-1.43	-1.39	+0.04	550.1	550.9
8	131.3750	131.8438	-1.75	-1.73	+0.03	551.3	551.6
9	132.3125	132.7813	-1.87	-1.86	+0.01	551.7	551.8
10	133.2500	133.7188	-1.89	-1.89	+0.00	551.8	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-17.62	-17.64	-0.02
FOR OUTER MATERIAL	+9.57	+9.55	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.12	+0.15
HOOP MEMBRANE	N/A	+0.12
AVERAGE RADIAL	N/A	+0.03
AXIAL BENDING	-3.47	-3.48
INSIDE BENDING	+3.62	+3.63
OUTSIDE BENDING	-3.32	-3.33
HOOP BENDING	N/A	-3.48
INSIDE BENDING	N/A	+3.60
OUTSIDE BENDING	N/A	-3.35

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	543.8	543.6
DELTA T1 (Total Section Delta T)	+31.9	+32.2
LINEAR INSIDE TEMPERATURE	527.7	527.6
LINEAR OUTSIDE TEMPERATURE	559.6	559.7
DELTA T2 (Absolute of Maximum)	22.3	22.1

Date: 05-24-2005 Time: 16:07:21 PAGE 26

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 220.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	487.1	
1	126.5625	126.5938	-14.23	-14.23	+0.00	503.0	505.1
2	126.6250	126.6563	-15.66	-15.67	-0.01	507.1	509.1
3	126.6875	127.1563	Interface (below)		-0.02	511.1	523.2
4	127.6250	128.0938	+4.26	+4.30	+0.03	530.3	537.4
5	128.5625	129.0313	+0.99	+1.05	+0.05	541.3	545.1
6	129.5000	129.9688	-0.72	-0.67	+0.05	547.0	549.0
7	130.4375	130.9063	-1.55	-1.51	+0.04	549.9	550.7
8	131.3750	131.8438	-1.92	-1.89	+0.03	551.1	551.5
9	132.3125	132.7813	-2.05	-2.04	+0.01	551.6	551.8
10	133.2500	133.7188	-2.08	-2.08	+0.00	551.8	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-17.04	-17.06	-0.02
FOR OUTER MATERIAL	+10.03	+10.01	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.12	+0.16

831

HOOP MEMBRANE	N/A	+0.13
AVERAGE RADIAL	N/A	+0.03
AXIAL BENDING	-3.79	-3.81
INSIDE BENDING	+3.95	+3.96
OUTSIDE BENDING	-3.64	-3.65
HOOP BENDING	N/A	-3.80
INSIDE BENDING	N/A	+3.93
OUTSIDE BENDING	N/A	-3.67

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	543.1	543.0
DELTA T1 (Total Section Delta T)	+34.1	+34.3
LINEAR INSIDE TEMPERATURE	526.0	525.8
LINEAR OUTSIDE TEMPERATURE	560.0	560.1
DELTA T2 (Absolute of Maximum)	23.0	22.9

Date: 05-24-2005 Time: 16:07:22 PAGE 27

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 230.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	484.1	
1	126.5625	126.5938	-13.57	-13.57	+0.00	500.5	502.6
2	126.6250	126.6563	-15.04	-15.05	-0.01	504.7	506.8
3	126.6875	127.1563	Interface (below)		-0.01	508.9	521.4
4	127.6250	128.0938	+4.51	+4.55	+0.04	528.8	536.2
5	128.5625	129.0313	+1.07	+1.13	+0.06	540.3	544.4
6	129.5000	129.9688	-0.76	-0.71	+0.06	546.5	548.6
7	130.4375	130.9063	-1.67	-1.63	+0.05	549.6	550.5
8	131.3750	131.8438	-2.08	-2.05	+0.03	551.0	551.4
9	132.3125	132.7813	-2.24	-2.22	+0.02	551.6	551.7
10	133.2500	133.7188	-2.27	-2.27	+0.00	551.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-16.47	-16.48	-0.01
FOR OUTER MATERIAL	+10.48	+10.47	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.13	+0.16
HOOP MEMBRANE	N/A	+0.13
AVERAGE RADIAL	N/A	+0.03
AXIAL BENDING	-4.12	-4.14
INSIDE BENDING	+4.28	+4.30
OUTSIDE BENDING	-3.96	-3.97
HOOP BENDING	N/A	-4.13
INSIDE BENDING	N/A	+4.26
OUTSIDE BENDING	N/A	-4.00

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	542.5	542.3
DELTA T1 (Total Section Delta T)	+36.2	+36.5
LINEAR INSIDE TEMPERATURE	524.2	524.1
LINEAR OUTSIDE TEMPERATURE	560.4	560.5
DELTA T2 (Absolute of Maximum)	23.7	23.6

Date: 05-24-2005 Time: 16:07:24 PAGE 28

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

B32

CGS-RPV

.....OUTPUT FOR TIME= 240.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	481.2	
1	126.5625	126.5938	-12.91	-12.91	+0.00	498.0	500.2
2	126.6250	126.6563	-14.43	-14.43	-0.01	502.4	504.5
3	126.6875	127.1563	Interface (below)		-0.01	506.6	519.5
4	127.6250	128.0938	+4.75	+4.80	+0.04	527.3	535.0
5	128.5625	129.0313	+1.15	+1.21	+0.06	539.3	543.6
6	129.5000	129.9688	-0.81	-0.75	+0.06	545.9	548.2
7	130.4375	130.9063	-1.79	-1.74	+0.05	549.2	550.3
8	131.3750	131.8438	-2.24	-2.21	+0.03	550.8	551.3
9	132.3125	132.7813	-2.42	-2.40	+0.02	551.5	551.7
10	133.2500	133.7188	-2.46	-2.46	+0.00	551.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-15.89	-15.91	-0.01
FOR OUTER MATERIAL	+10.94	+10.92	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.13	+0.17
HOOP MEMBRANE	N/A	+0.13
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-4.45	-4.47
INSIDE BENDING	+4.62	+4.64
OUTSIDE BENDING	-4.28	-4.30
HOOP BENDING	N/A	-4.46
INSIDE BENDING	N/A	+4.59
OUTSIDE BENDING	N/A	-4.32

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	541.8	541.6
DELTA T1 (Total Section Delta T)	+38.4	+38.6
LINEAR INSIDE TEMPERATURE	522.4	522.3
LINEAR OUTSIDE TEMPERATURE	560.8	560.9
DELTA T2 (Absolute of Maximum)	24.4	24.3

Date: 05-24-2005 Time: 16:07:25 PAGE 29

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 250.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	478.3	
1	126.5625	126.5938	-12.25	-12.25	+0.00	495.5	497.8
2	126.6250	126.6563	-13.81	-13.82	-0.01	500.0	502.2
3	126.6875	127.1563	Interface (below)		-0.01	504.4	517.6
4	127.6250	128.0938	+5.00	+5.05	+0.04	525.7	533.7
5	128.5625	129.0313	+1.23	+1.30	+0.06	538.3	542.9
6	129.5000	129.9688	-0.85	-0.78	+0.06	545.3	547.7
7	130.4375	130.9063	-1.91	-1.86	+0.05	548.9	550.1
8	131.3750	131.8438	-2.41	-2.37	+0.04	550.6	551.2
9	132.3125	132.7813	-2.61	-2.59	+0.02	551.4	551.6
10	133.2500	133.7188	-2.65	-2.65	+0.00	551.6	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-15.32	-15.33	-0.01
FOR OUTER MATERIAL	+11.39	+11.38	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

B33

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.14	+0.18
HOOP MEMBRANE	N/A	+0.14
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-4.78	-4.80
INSIDE BENDING	+4.96	+4.98
OUTSIDE BENDING	-4.60	-4.62
HOOP BENDING	N/A	-4.79
INSIDE BENDING	N/A	+4.93
OUTSIDE BENDING	N/A	-4.65

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	541.0	540.9
DELTA T1 (Total Section Delta T)	+40.6	+40.8
LINEAR INSIDE TEMPERATURE	520.6	520.5
LINEAR OUTSIDE TEMPERATURE	561.1	561.3
DELTA T2 (Absolute of Maximum)	25.1	25.0

Date: 05-24-2005 Time: 16:07:26 PAGE 30

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 260.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	475.3	
1	126.5625	126.5938	-11.59	-11.59	+0.00	493.0	495.3
2	126.6250	126.6563	-13.19	-13.20	-0.01	497.6	499.9
3	126.6875	127.1563	Interface (below)		-0.01	502.1	515.7
4	127.6250	128.0938	+5.25	+5.30	+0.05	524.1	532.4
5	128.5625	129.0313	+1.32	+1.38	+0.07	537.3	542.1
6	129.5000	129.9688	-0.88	-0.82	+0.07	544.7	547.3
7	130.4375	130.9063	-2.03	-1.97	+0.06	548.6	549.9
8	131.3750	131.8438	-2.58	-2.54	+0.04	550.5	551.1
9	132.3125	132.7813	-2.80	-2.78	+0.02	551.3	551.5
10	133.2500	133.7188	-2.85	-2.85	+0.00	551.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-14.74	-14.76	-0.01
FOR OUTER MATERIAL	+11.85	+11.83	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.14	+0.18
HOOP MEMBRANE	N/A	+0.14
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-5.11	-5.14
INSIDE BENDING	+5.30	+5.32
OUTSIDE BENDING	-4.93	-4.95
HOOP BENDING	N/A	-5.13
INSIDE BENDING	N/A	+5.27
OUTSIDE BENDING	N/A	-4.98

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	540.3	540.1
DELTA T1 (Total Section Delta T)	+42.7	+43.0
LINEAR INSIDE TEMPERATURE	518.8	518.6
LINEAR OUTSIDE TEMPERATURE	561.5	561.6
DELTA T2 (Absolute of Maximum)	25.8	25.6

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=  270.00  SECONDS...................
     -- Radii, inches -   ---- Grid Stress, ksi ------      Temperature, F
  N    Grid       Node       hoop       axial      radial        Grid    Node
                                                  (Inside fluid)  472.4
  1  126.5625  126.5938     -10.94     -10.94     +0.00        490.5   492.9
  2  126.6250  126.6563     -12.58     -12.59     -0.01        495.2   497.6
  3  126.6875  127.1563   Interface (below)       -0.01        499.8   513.8
  4  127.6250  128.0938      +5.50      +5.55     +0.05        522.5   531.1
  5  128.5625  129.0313      +1.40      +1.47     +0.07        536.2   541.2
  6  129.5000  129.9688      -0.92      -0.85     +0.07        544.0   546.8
  7  130.4375  130.9063      -2.15      -2.09     +0.06        548.2   549.6
  8  131.3750  131.8438      -2.74      -2.70     +0.04        550.3   550.9
  9  132.3125  132.7813      -2.99      -2.97     +0.02        551.2   551.4
 10  133.2500  133.7188      -3.05      -3.05     +0.00        551.4   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL      -14.17     -14.18     -0.01
    FOR OUTER MATERIAL      +12.30     +12.28     -0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING      LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.14                        +0.19
  HOOP MEMBRANE                        N/A                         +0.15
  AVERAGE RADIAL                       N/A                         +0.04
  AXIAL BENDING                       -5.45                        -5.47
     INSIDE BENDING                    +5.64                        +5.66
     OUTSIDE BENDING                   -5.26                        -5.28
  HOOP BENDING                         N/A                         -5.46
     INSIDE BENDING                     N/A                         +5.61
     OUTSIDE BENDING                    N/A                         -5.32

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING      LINEAR AVERAGING
  AVERAGE TEMPERATURE                 539.6                        539.4
  DELTA T1 (Total Section Delta T)    +44.9                        +45.2
  LINEAR INSIDE TEMPERATURE           516.9                        516.7
  LINEAR OUTSIDE TEMPERATURE          561.8                        562.0
  DELTA T2 (Absolute of Maximum)       26.4                         26.3
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=  280.00  SECONDS...................
     -- Radii, inches -   ---- Grid Stress, ksi ------      Temperature, F
  N    Grid       Node       hoop       axial      radial        Grid    Node
                                                  (Inside fluid)  469.4
  1  126.5625  126.5938     -10.29     -10.29     +0.00        488.0   490.4
  2  126.6250  126.6563     -11.97     -11.98     -0.01        492.8   495.2
  3  126.6875  127.1563   Interface (below)       -0.01        497.5   511.9
  4  127.6250  128.0938      +5.75      +5.81     +0.05        520.8   529.8
  5  128.5625  129.0313      +1.49      +1.57     +0.08        535.1   540.4
  6  129.5000  129.9688      -0.96      -0.88     +0.08        543.3   546.3
  7  130.4375  130.9063      -2.27      -2.20     +0.06        547.8   549.3
  8  131.3750  131.8438      -2.91      -2.87     +0.05        550.0   550.8
  9  132.3125  132.7813      -3.19      -3.17     +0.02        551.0   551.3
 10  133.2500  133.7188      -3.25      -3.25     +0.00        551.3   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL      -13.60     -13.61     -0.01
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535

FOR OUTER MATERIAL +12.74 +12.73 -0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.15	+0.20
HOOP MEMBRANE	N/A	+0.15
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.79	-5.81
INSIDE BENDING	+5.98	+6.01
OUTSIDE BENDING	-5.59	-5.61
HOOP BENDING	N/A	-5.80
INSIDE BENDING	N/A	+5.95
OUTSIDE BENDING	N/A	-5.65

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	538.8	538.6
DELTA T1 (Total Section Delta T)	+47.2	+47.4
LINEAR INSIDE TEMPERATURE	515.0	514.9
LINEAR OUTSIDE TEMPERATURE	562.2	562.3
DELTA T2 (Absolute of Maximum)	27.0	26.9

Date: 05-24-2005 Time: 16:07:30 PAGE 33

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 290.00 SECONDS.....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	466.5	
1	126.5625	126.5938	-9.64	-9.64	+0.00	485.4	488.0
2	126.6250	126.6563	-11.36	-11.37	-0.01	490.4	492.9
3	126.6875	127.1563	Interface (below)		-0.01	495.2	509.9
4	127.6250	128.0938	+6.00	+6.06	+0.06	519.2	528.5
5	128.5625	129.0313	+1.58	+1.66	+0.08	534.0	539.5
6	129.5000	129.9688	-0.99	-0.91	+0.08	542.6	545.7
7	130.4375	130.9063	-2.38	-2.32	+0.07	547.4	549.0
8	131.3750	131.8438	-3.08	-3.04	+0.05	549.8	550.6
9	132.3125	132.7813	-3.39	-3.36	+0.02	550.9	551.2
10	133.2500	133.7188	-3.45	-3.45	+0.00	551.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL -13.03 -13.04 -0.01

FOR OUTER MATERIAL +13.19 +13.18 -0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.15	+0.20
HOOP MEMBRANE	N/A	+0.15
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.12	-6.15
INSIDE BENDING	+6.33	+6.35
OUTSIDE BENDING	-5.92	-5.95
HOOP BENDING	N/A	-6.14
INSIDE BENDING	N/A	+6.29
OUTSIDE BENDING	N/A	-5.98

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	538.0	537.8
DELTA T1 (Total Section Delta T)	+49.4	+49.7
LINEAR INSIDE TEMPERATURE	513.1	512.9
LINEAR OUTSIDE TEMPERATURE	562.5	562.6

B3b

DELTA T2 (Absolute of Maximum) 27.7 27.5

Date: 05-24-2005 Time: 16:07:31 PAGE 34

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	463.5	
1	126.5625	126.5938	-9.00	-9.00	+0.00	482.9	485.5
2	126.6250	126.6563	-10.76	-10.76	-0.00	488.0	490.5
3	126.6875	127.1563	Interface (below)		-0.01	492.9	507.9
4	127.6250	128.0938	+6.26	+6.32	+0.06	517.5	527.1
5	128.5625	129.0313	+1.67	+1.76	+0.09	532.9	538.6
6	129.5000	129.9688	-1.02	-0.93	+0.09	541.9	545.2
7	130.4375	130.9063	-2.50	-2.43	+0.07	546.9	548.7
8	131.3750	131.8438	-3.25	-3.20	+0.05	549.5	550.4
9	132.3125	132.7813	-3.58	-3.56	+0.03	550.7	551.1
10	133.2500	133.7188	-3.66	-3.66	+0.00	551.1	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-12.46	-12.47	-0.01
FOR OUTER MATERIAL	+13.63	+13.62	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.15	+0.21
HOOP MEMBRANE	N/A	+0.16
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.46	-6.49
INSIDE BENDING	+6.67	+6.70
OUTSIDE BENDING	-6.25	-6.28
HOOP BENDING	N/A	-6.48
INSIDE BENDING	N/A	+6.63
OUTSIDE BENDING	N/A	-6.32

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	537.2	537.0
DELTA T1 (Total Section Delta T)	+51.6	+51.9
LINEAR INSIDE TEMPERATURE	511.2	511.0
LINEAR OUTSIDE TEMPERATURE	562.8	562.9
DELTA T2 (Absolute of Maximum)	28.3	28.1

Date: 05-24-2005 Time: 16:07:32 PAGE 35

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 310.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	460.6	
1	126.5625	126.5938	-8.35	-8.35	+0.00	480.4	483.0
2	126.6250	126.6563	-10.15	-10.16	-0.00	485.6	488.1
3	126.6875	127.1563	Interface (below)		-0.01	490.6	505.9
4	127.6250	128.0938	+6.51	+6.57	+0.06	515.8	525.7
5	128.5625	129.0313	+1.76	+1.85	+0.09	531.7	537.7
6	129.5000	129.9688	-1.05	-0.96	+0.09	541.2	544.6
7	130.4375	130.9063	-2.62	-2.54	+0.08	546.5	548.4
8	131.3750	131.8438	-3.42	-3.37	+0.05	549.3	550.2
9	132.3125	132.7813	-3.78	-3.76	+0.03	550.6	551.0
10	133.2500	133.7188	-3.87	-3.87	+0.00	551.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-11.90	-11.91	-0.01
FOR OUTER MATERIAL	+14.08	+14.07	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.16	+0.22
HOOP MEMBRANE	N/A	+0.16
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-6.80	-6.83
INSIDE BENDING	+7.02	+7.04
OUTSIDE BENDING	-6.59	-6.61
HOOP BENDING	N/A	-6.82
INSIDE BENDING	N/A	+6.98
OUTSIDE BENDING	N/A	-6.66

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	536.4	536.1
DELTA T1 (Total Section Delta T)	+53.8	+54.2
LINEAR INSIDE TEMPERATURE	509.2	509.1
LINEAR OUTSIDE TEMPERATURE	563.1	563.2
DELTA T2 (Absolute of Maximum)	28.8	28.7

Date: 05-24-2005 Time: 16:07:33 PAGE 36

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 320.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	457.6	
1	126.5625	126.5938	-7.71	-7.71	+0.00	477.8	480.5
2	126.6250	126.6563	-9.55	-9.55	-0.00	483.1	485.7
3	126.6875	127.1563	Interface (below)		-0.01	488.3	503.9
4	127.6250	128.0938	+6.76	+6.83	+0.07	514.1	524.3
5	128.5625	129.0313	+1.86	+1.95	+0.09	530.5	536.8
6	129.5000	129.9688	-1.08	-0.98	+0.10	540.4	544.0
7	130.4375	130.9063	-2.73	-2.65	+0.08	546.0	548.0
8	131.3750	131.8438	-3.60	-3.54	+0.06	549.0	550.0
9	132.3125	132.7813	-3.99	-3.96	+0.03	550.4	550.8
10	133.2500	133.7188	-4.08	-4.08	+0.00	550.8	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-11.33	-11.34	-0.01
FOR OUTER MATERIAL	+14.52	+14.51	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.16	+0.22
HOOP MEMBRANE	N/A	+0.16
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.14	-7.17
INSIDE BENDING	+7.36	+7.39
OUTSIDE BENDING	-6.92	-6.95
HOOP BENDING	N/A	-7.16
INSIDE BENDING	N/A	+7.32
OUTSIDE BENDING	N/A	-6.99

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	535.5	535.3

B28

DELTA T1 (Total Section Delta T)	+56.1	+56.4
LINEAR INSIDE TEMPERATURE	507.3	507.1
LINEAR OUTSIDE TEMPERATURE	563.3	563.5
DELTA T2 (Absolute of Maximum)	29.4	29.3

Date: 05-24-2005 Time: 16:07:35 PAGE 37

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 330.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	454.6	
1	126.5625	126.5938	-7.08	-7.07	+0.00	475.3	478.0
2	126.6250	126.6563	-8.95	-8.95	-0.00	480.7	483.4
3	126.6875	127.1563	Interface (below)		-0.01	486.0	501.9
4	127.6250	128.0938	+7.01	+7.08	+0.07	512.4	522.8
5	128.5625	129.0313	+1.95	+2.05	+0.10	529.3	535.8
6	129.5000	129.9688	-1.11	-1.01	+0.10	539.6	543.4
7	130.4375	130.9063	-2.85	-2.76	+0.08	545.5	547.6
8	131.3750	131.8438	-3.77	-3.71	+0.06	548.7	549.8
9	132.3125	132.7813	-4.19	-4.16	+0.03	550.2	550.7
10	133.2500	133.7188	-4.29	-4.29	+0.00	550.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-10.77	-10.78	-0.01
FOR OUTER MATERIAL	+14.95	+14.94	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.16	+0.23
HOOP MEMBRANE	N/A	+0.17
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.48	-7.51
INSIDE BENDING	+7.71	+7.74
OUTSIDE BENDING	-7.25	-7.28
HOOP BENDING	N/A	-7.50
INSIDE BENDING	N/A	+7.66
OUTSIDE BENDING	N/A	-7.33

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	534.7	534.4
DELTA T1 (Total Section Delta T)	+58.3	+58.7
LINEAR INSIDE TEMPERATURE	505.3	505.1
LINEAR OUTSIDE TEMPERATURE	563.6	563.7
DELTA T2 (Absolute of Maximum)	30.0	29.8

Date: 05-24-2005 Time: 16:07:36 PAGE 38

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 340.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	451.7	
1	126.5625	126.5938	-6.44	-6.44	+0.00	472.7	475.5
2	126.6250	126.6563	-8.35	-8.35	-0.00	478.2	481.0
3	126.6875	127.1563	Interface (below)		-0.01	483.6	499.9
4	127.6250	128.0938	+7.26	+7.33	+0.07	510.7	521.4
5	128.5625	129.0313	+2.05	+2.15	+0.10	528.1	534.8
6	129.5000	129.9688	-1.13	-1.03	+0.10	538.8	542.8
7	130.4375	130.9063	-2.96	-2.87	+0.09	545.0	547.2

8	131.3750	131.8438	-3.94	-3.88	+0.06	548.4	549.5
9	132.3125	132.7813	-4.39	-4.36	+0.03	550.0	550.5
10	133.2500	133.7188	-4.50	-4.50	+0.00	550.5	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-10.21	-10.22	-0.01
FOR OUTER MATERIAL	+15.39	+15.38	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.17	+0.23
HOOP MEMBRANE	N/A	+0.17
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.82	-7.85
INSIDE BENDING	+8.05	+8.09
OUTSIDE BENDING	-7.59	-7.62
HOOP BENDING	N/A	-7.84
INSIDE BENDING	N/A	+8.01
OUTSIDE BENDING	N/A	-7.67

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	533.8	533.5
DELTA T1 (Total Section Delta T)	+60.5	+60.9
LINEAR INSIDE TEMPERATURE	503.3	503.1
LINEAR OUTSIDE TEMPERATURE	563.8	564.0
DELTA T2 (Absolute of Maximum)	30.5	30.4

Date: 05-24-2005 Time: 16:07:37 PAGE 39

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 350.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	448.8	
1	126.5625	126.5938	-5.81	-5.81	+0.00	470.2	473.0
2	126.6250	126.6563	-7.76	-7.76	-0.00	475.8	478.6
3	126.6875	127.1563	Interface (below)		-0.01	481.3	497.9
4	127.6250	128.0938	+7.51	+7.59	+0.08	508.9	519.9
5	128.5625	129.0313	+2.14	+2.25	+0.11	526.9	533.8
6	129.5000	129.9688	-1.16	-1.05	+0.11	538.0	542.1
7	130.4375	130.9063	-3.08	-2.98	+0.09	544.5	546.8
8	131.3750	131.8438	-4.11	-4.05	+0.06	548.1	549.3
9	132.3125	132.7813	-4.59	-4.56	+0.03	549.8	550.3
10	133.2500	133.7188	-4.71	-4.71	+0.00	550.3	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-9.65	-9.66	-0.01
FOR OUTER MATERIAL	+15.82	+15.81	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.17	+0.24
HOOP MEMBRANE	N/A	+0.17
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-8.16	-8.19
INSIDE BENDING	+8.40	+8.43
OUTSIDE BENDING	-7.92	-7.95
HOOP BENDING	N/A	-8.18
INSIDE BENDING	N/A	+8.35
OUTSIDE BENDING	N/A	-8.00

B 40

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	532.9	532.6
DELTA T1 (Total Section Delta T)	+62.8	+63.1
LINEAR INSIDE TEMPERATURE	501.3	501.1
LINEAR OUTSIDE TEMPERATURE	564.0	564.2
DELTA T2 (Absolute of Maximum)	31.1	30.9

Date: 05-24-2005 Time: 16:07:38 PAGE 40

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 360.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	445.8	
1	126.5625	126.5938	-5.18	-5.18	+0.00	467.6	470.5
2	126.6250	126.6563	-7.16	-7.17	-0.00	473.3	476.1
3	126.6875	127.1563	Interface (below)		-0.01	478.9	495.8
4	127.6250	128.0938	+7.77	+7.84	+0.08	507.2	518.4
5	128.5625	129.0313	+2.24	+2.35	+0.11	525.6	532.8
6	129.5000	129.9688	-1.18	-1.07	+0.11	537.1	541.5
7	130.4375	130.9063	-3.19	-3.09	+0.10	544.0	546.4
8	131.3750	131.8438	-4.28	-4.21	+0.07	547.7	549.0
9	132.3125	132.7813	-4.80	-4.76	+0.03	549.6	550.1
10	133.2500	133.7188	-4.92	-4.92	+0.00	550.1	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-9.09	-9.10	-0.01
FOR OUTER MATERIAL	+16.25	+16.24	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.17	+0.25
HOOP MEMBRANE	N/A	+0.18
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-8.50	-8.53
INSIDE BENDING	+8.75	+8.78
OUTSIDE BENDING	-8.25	-8.29
HOOP BENDING	N/A	-8.52
INSIDE BENDING	N/A	+8.70
OUTSIDE BENDING	N/A	-8.34

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	532.0	531.7
DELTA T1 (Total Section Delta T)	+65.0	+65.4
LINEAR INSIDE TEMPERATURE	499.2	499.0
LINEAR OUTSIDE TEMPERATURE	564.2	564.4
DELTA T2 (Absolute of Maximum)	31.6	31.4

Date: 05-24-2005 Time: 16:07:40 PAGE 41

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 370.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	442.9	
1	126.5625	126.5938	-4.55	-4.55	+0.00	465.0	468.0
2	126.6250	126.6563	-6.57	-6.57	-0.00	470.9	473.7
3	126.6875	127.1563	Interface (below)		-0.01	476.5	493.8
4	127.6250	128.0938	+8.02	+8.10	+0.08	505.4	516.9

5	128.5625	129.0313	+2.34	+2.46	+0.12	524.4	531.8
6	129.5000	129.9688	-1.21	-1.09	+0.12	536.3	540.8
7	130.4375	130.9063	-3.30	-3.20	+0.10	543.4	546.0
8	131.3750	131.8438	-4.45	-4.38	+0.07	547.4	548.7
9	132.3125	132.7813	-5.00	-4.96	+0.04	549.3	549.9
10	133.2500	133.7188	-5.14	-5.14	+0.00	549.9	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-8.54	-8.54	-0.01
FOR OUTER MATERIAL	+16.68	+16.67	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.18	+0.25
HOOP MEMBRANE	N/A	+0.18
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-8.84	-8.87
INSIDE BENDING	+9.09	+9.13
OUTSIDE BENDING	-8.59	-8.62
HOOP BENDING	N/A	-8.86
INSIDE BENDING	N/A	+9.04
OUTSIDE BENDING	N/A	-8.68

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	531.1	530.8
DELTA T1 (Total Section Delta T)	+67.3	+67.6
LINEAR INSIDE TEMPERATURE	497.2	497.0
LINEAR OUTSIDE TEMPERATURE	564.4	564.6
DELTA T2 (Absolute of Maximum)	32.1	32.0

Date: 05-24-2005 Time: 16:07:41 PAGE 42

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 380.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	439.9	
1	126.5625	126.5938	-3.93	-3.93	+0.00	462.5	465.5
2	126.6250	126.6563	-5.98	-5.99	-0.00	468.4	471.3
3	126.6875	127.1563	Interface (below)		-0.01	474.1	491.7
4	127.6250	128.0938	+8.27	+8.35	+0.08	503.6	515.4
5	128.5625	129.0313	+2.44	+2.56	+0.12	523.1	530.7
6	129.5000	129.9688	-1.23	-1.11	+0.12	535.4	540.1
7	130.4375	130.9063	-3.41	-3.31	+0.10	542.8	545.5
8	131.3750	131.8438	-4.62	-4.55	+0.07	547.0	548.4
9	132.3125	132.7813	-5.21	-5.17	+0.04	549.1	549.7
10	133.2500	133.7188	-5.35	-5.35	+0.00	549.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-7.98	-7.99	-0.01
FOR OUTER MATERIAL	+17.10	+17.10	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.18	+0.26
HOOP MEMBRANE	N/A	+0.18
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-9.18	-9.21
INSIDE BENDING	+9.44	+9.47
OUTSIDE BENDING	-8.92	-8.96

HOOP BENDING	N/A	-9.20
INSIDE BENDING	N/A	+9.38
OUTSIDE BENDING	N/A	-9.01

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	530.2	529.9
DELTA T1 (Total Section Delta T)	+69.5	+69.9
LINEAR INSIDE TEMPERATURE	495.1	494.9
LINEAR OUTSIDE TEMPERATURE	564.6	564.8
DELTA T2 (Absolute of Maximum)	32.6	32.5

Date: 05-24-2005 Time: 16:07:42 PAGE 43

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 390.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	437.0	
1	126.5625	126.5938	-3.31	-3.31	+0.00	459.9	462.9
2	126.6250	126.6563	-5.40	-5.40	-0.00	465.9	468.9
3	126.6875	127.1563	Interface (below)		-0.01	471.8	489.6
4	127.6250	128.0938	+8.52	+8.60	+0.09	501.8	513.9
5	128.5625	129.0313	+2.54	+2.66	+0.12	521.8	529.6
6	129.5000	129.9688	-1.25	-1.12	+0.13	534.5	539.4
7	130.4375	130.9063	-3.52	-3.42	+0.11	542.2	545.1
8	131.3750	131.8438	-4.80	-4.72	+0.08	546.6	548.1
9	132.3125	132.7813	-5.41	-5.37	+0.04	548.8	549.4
10	133.2500	133.7188	-5.57	-5.57	+0.00	549.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-7.43	-7.44	-0.01
FOR OUTER MATERIAL	+17.52	+17.52	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.18	+0.27
HOOP MEMBRANE	N/A	+0.19
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-9.52	-9.55
INSIDE BENDING	+9.78	+9.82
OUTSIDE BENDING	-9.25	-9.29
HOOP BENDING	N/A	-9.54
INSIDE BENDING	N/A	+9.72
OUTSIDE BENDING	N/A	-9.35

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	529.2	528.9
DELTA T1 (Total Section Delta T)	+71.7	+72.1
LINEAR INSIDE TEMPERATURE	493.0	492.8
LINEAR OUTSIDE TEMPERATURE	564.8	564.9
DELTA T2 (Absolute of Maximum)	33.2	33.0

Date: 05-24-2005 Time: 16:07:43 PAGE 44

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	434.0	
1	126.5625	126.5938	-2.69	-2.69	+0.00	457.3	460.4

B43

2	126.6250	126.6563	-4.81	-4.82	-0.00	463.4	466.4
3	126.6875	127.1563	Interface (below)		-0.00	469.4	487.5
4	127.6250	128.0938	+8.76	+8.85	+0.09	500.0	512.3
5	128.5625	129.0313	+2.64	+2.77	+0.13	520.4	528.5
6	129.5000	129.9688	-1.27	-1.14	+0.13	533.6	538.6
7	130.4375	130.9063	-3.63	-3.52	+0.11	541.6	544.6
8	131.3750	131.8438	-4.97	-4.89	+0.08	546.2	547.8
9	132.3125	132.7813	-5.62	-5.58	+0.04	548.5	549.2
10	133.2500	133.7188	-5.78	-5.78	+0.00	549.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-6.88	-6.89	-0.00
FOR OUTER MATERIAL	+17.94	+17.94	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.19	+0.27
HOOP MEMBRANE	N/A	+0.19
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-9.85	-9.89
INSIDE BENDING	+10.12	+10.16
OUTSIDE BENDING	-9.58	-9.62
HOOP BENDING	N/A	-9.87
INSIDE BENDING	N/A	+10.06
OUTSIDE BENDING	N/A	-9.68

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	528.2	527.9
DELTA T1 (Total Section Delta T)	+73.9	+74.3
LINEAR INSIDE TEMPERATURE	491.0	490.8
LINEAR OUTSIDE TEMPERATURE	564.9	565.1
DELTA T2 (Absolute of Maximum)	33.7	33.5

Date: 05-24-2005 Time: 16:07:44 PAGE 45

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 410.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	431.1	
1	126.5625	126.5938	-2.08	-2.08	+0.00	454.7	457.9
2	126.6250	126.6563	-4.23	-4.23	-0.00	460.9	464.0
3	126.6875	127.1563	Interface (below)		-0.00	467.0	485.4
4	127.6250	128.0938	+9.01	+9.11	+0.09	498.1	510.8
5	128.5625	129.0313	+2.74	+2.87	+0.13	519.1	527.4
6	129.5000	129.9688	-1.29	-1.15	+0.14	532.6	537.8
7	130.4375	130.9063	-3.74	-3.63	+0.12	541.0	544.1
8	131.3750	131.8438	-5.14	-5.06	+0.08	545.8	547.5
9	132.3125	132.7813	-5.82	-5.78	+0.04	548.2	548.9
10	133.2500	133.7188	-6.00	-6.00	+0.00	548.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-6.33	-6.34	-0.00
FOR OUTER MATERIAL	+18.36	+18.36	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.19	+0.28
HOOP MEMBRANE	N/A	+0.19
AVERAGE RADIAL	N/A	+0.08

B44

AXIAL BENDING	-10.19	-10.23
INSIDE BENDING	+10.47	+10.51
OUTSIDE BENDING	-9.91	-9.95
HOOP BENDING	N/A	-10.21
INSIDE BENDING	N/A	+10.40
OUTSIDE BENDING	N/A	-10.02

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	527.3	526.9
DELTA T1 (Total Section Delta T)	+76.2	+76.6
LINEAR INSIDE TEMPERATURE	488.9	488.6
LINEAR OUTSIDE TEMPERATURE	565.0	565.2
DELTA T2 (Absolute of Maximum)	34.1	33.9

Date: 05-24-2005 Time: 16:07:46 PAGE 46

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 420.00 SECONDS.....

-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	428.1	
1	126.5625	126.5938	-1.47	-1.47	+0.00	452.1	455.3
2	126.6250	126.6563	-3.65	-3.65	-0.00	458.4	461.5
3	126.6875	127.1563	Interface (below)		-0.00	464.6	483.3
4	127.6250	128.0938	+9.26	+9.36	+0.10	496.3	509.2
5	128.5625	129.0313	+2.84	+2.98	+0.14	517.7	526.3
6	129.5000	129.9688	-1.31	-1.17	+0.14	531.7	537.1
7	130.4375	130.9063	-3.85	-3.73	+0.12	540.3	543.5
8	131.3750	131.8438	-5.31	-5.22	+0.09	545.3	547.1
9	132.3125	132.7813	-6.03	-5.98	+0.04	547.9	548.7
10	133.2500	133.7188	-6.21	-6.21	+0.00	548.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-5.79	-5.79	-0.00
FOR OUTER MATERIAL	+18.78	+18.77	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.19	+0.28
HOOP MEMBRANE	N/A	+0.20
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-10.53	-10.57
INSIDE BENDING	+10.81	+10.85
OUTSIDE BENDING	-10.24	-10.28
HOOP BENDING	N/A	-10.55
INSIDE BENDING	N/A	+10.74
OUTSIDE BENDING	N/A	-10.35

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	526.3	525.9
DELTA T1 (Total Section Delta T)	+78.4	+78.8
LINEAR INSIDE TEMPERATURE	486.7	486.5
LINEAR OUTSIDE TEMPERATURE	565.1	565.3
DELTA T2 (Absolute of Maximum)	34.6	34.4

Date: 05-24-2005 Time: 16:07:47 PAGE 47

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 430.00 SECONDS.....

-- Radii, inches - ---- Grid Stress, ksi ------ Temperature, F

1345

CGS-RPV

N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	425.1	
1	126.5625	126.5938	-0.86	-0.86	+0.00	449.5	452.8
2	126.6250	126.6563	-3.08	-3.08	-0.00	455.9	459.1
3	126.6875	127.1563	Interface (below)		-0.00	462.2	481.2
4	127.6250	128.0938	+9.51	+9.60	+0.10	494.4	507.6
5	128.5625	129.0313	+2.94	+3.08	+0.14	516.4	525.1
6	129.5000	129.9688	-1.33	-1.18	+0.14	530.7	536.3
7	130.4375	130.9063	-3.96	-3.84	+0.12	539.6	543.0
8	131.3750	131.8438	-5.48	-5.39	+0.09	544.9	546.7
9	132.3125	132.7813	-6.23	-6.19	+0.05	547.5	548.4
10	133.2500	133.7188	-6.43	-6.43	+0.00	548.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-5.24	-5.25	-0.00
FOR OUTER MATERIAL	+19.19	+19.19	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.20	+0.29
HOOP MEMBRANE	N/A	+0.20
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-10.86	-10.90
INSIDE BENDING	+11.15	+11.19
OUTSIDE BENDING	-10.57	-10.62
HOOP BENDING	N/A	-10.88
INSIDE BENDING	N/A	+11.08
OUTSIDE BENDING	N/A	-10.68

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	525.3	524.9
DELTA T1 (Total Section Delta T)	+80.6	+81.0
LINEAR INSIDE TEMPERATURE	484.6	484.4
LINEAR OUTSIDE TEMPERATURE	565.2	565.4
DELTA T2 (Absolute of Maximum)	35.1	34.9

Date: 05-24-2005 Time: 16:07:48 PAGE 48

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 440.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	422.2	
1	126.5625	126.5938	-0.25	-0.25	+0.00	446.9	450.2
2	126.6250	126.6563	-2.50	-2.50	-0.00	453.4	456.6
3	126.6875	127.1563	Interface (below)		-0.00	459.8	479.1
4	127.6250	128.0938	+9.75	+9.85	+0.10	492.5	506.0
5	128.5625	129.0313	+3.04	+3.19	+0.15	515.0	524.0
6	129.5000	129.9688	-1.34	-1.19	+0.15	529.7	535.5
7	130.4375	130.9063	-4.07	-3.94	+0.13	539.0	542.4
8	131.3750	131.8438	-5.65	-5.56	+0.09	544.4	546.3
9	132.3125	132.7813	-6.44	-6.39	+0.05	547.2	548.1
10	133.2500	133.7188	-6.64	-6.64	+0.00	548.1	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.70	-4.71	-0.00
FOR OUTER MATERIAL	+19.60	+19.60	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON: AREA WEIGHTED AVERAGING LINEAR AVERAGING

1344

AXIAL MEMBRANE	+0.20	+0.29
HOOP MEMBRANE	N/A	+0.20
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-11.19	-11.24
INSIDE BENDING	+11.49	+11.53
OUTSIDE BENDING	-10.90	-10.94
HOOP BENDING	N/A	-11.22
INSIDE BENDING	N/A	+11.42
OUTSIDE BENDING	N/A	-11.02

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	524.2	523.9
DELTA T1 (Total Section Delta T)	+82.8	+83.2
LINEAR INSIDE TEMPERATURE	482.5	482.3
LINEAR OUTSIDE TEMPERATURE	565.3	565.5
DELTA T2 (Absolute of Maximum)	35.6	35.3

Date: 05-24-2005 Time: 16:07:49 PAGE 49

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 450.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	419.3	
1	126.5625	126.5938	+0.35	+0.35	-0.00	444.3	447.7
2	126.6250	126.6563	-1.93	-1.93	-0.00	450.9	454.2
3	126.6875	127.1563	Interface (below)		-0.00	457.3	476.9
4	127.6250	128.0938	+9.99	+10.10	+0.11	490.7	504.4
5	128.5625	129.0313	+3.14	+3.29	+0.15	513.6	522.8
6	129.5000	129.9688	-1.36	-1.21	+0.15	528.7	534.6
7	130.4375	130.9063	-4.17	-4.04	+0.13	538.3	541.9
8	131.3750	131.8438	-5.82	-5.72	+0.09	543.9	545.9
9	132.3125	132.7813	-6.64	-6.59	+0.05	546.8	547.7
10	133.2500	133.7188	-6.86	-6.86	+0.00	547.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.16	-4.17	-0.00
FOR OUTER MATERIAL	+20.01	+20.00	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.20	+0.30
HOOP MEMBRANE	N/A	+0.21
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-11.53	-11.57
INSIDE BENDING	+11.83	+11.87
OUTSIDE BENDING	-11.23	-11.27
HOOP BENDING	N/A	-11.55
INSIDE BENDING	N/A	+11.76
OUTSIDE BENDING	N/A	-11.35

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	523.2	522.8
DELTA T1 (Total Section Delta T)	+85.0	+85.4
LINEAR INSIDE TEMPERATURE	480.3	480.1
LINEAR OUTSIDE TEMPERATURE	565.3	565.5
DELTA T2 (Absolute of Maximum)	36.0	35.8

Date: 05-24-2005 Time: 16:07:51 PAGE 50

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1547

CGS-RPV

* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 460.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	416.3	
1	126.5625	126.5938	+0.95	+0.95	-0.00	441.7	445.1
2	126.6250	126.6563	-1.36	-1.36	-0.00	448.4	451.7
3	126.6875	127.1563	Interface (below)		-0.00	454.9	474.8
4	127.6250	128.0938	+10.24	+10.35	+0.11	488.8	502.7
5	128.5625	129.0313	+3.24	+3.40	+0.15	512.2	521.6
6	129.5000	129.9688	-1.38	-1.22	+0.16	527.7	533.8
7	130.4375	130.9063	-4.28	-4.15	+0.14	537.5	541.3
8	131.3750	131.8438	-5.98	-5.89	+0.10	543.4	545.5
9	132.3125	132.7813	-6.84	-6.79	+0.05	546.5	547.4
10	133.2500	133.7188	-7.07	-7.07	+0.00	547.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.63	-3.63	-0.00
FOR OUTER MATERIAL	+20.41	+20.41	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.20	+0.31
HOOP MEMBRANE	N/A	+0.21
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-11.86	-11.91
INSIDE BENDING	+12.16	+12.21
OUTSIDE BENDING	-11.55	-11.60
HOOP BENDING	N/A	-11.88
INSIDE BENDING	N/A	+12.09
OUTSIDE BENDING	N/A	-11.68

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	522.1	521.8
DELTA T1 (Total Section Delta T)	+87.1	+87.6
LINEAR INSIDE TEMPERATURE	478.2	478.0
LINEAR OUTSIDE TEMPERATURE	565.3	565.6
DELTA T2 (Absolute of Maximum)	36.5	36.2

Date: 05-24-2005 Time: 16:07:52 PAGE 51

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 470.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	413.4	
1	126.5625	126.5938	+1.55	+1.55	-0.00	439.1	442.5
2	126.6250	126.6563	-0.80	-0.80	+0.00	445.9	449.2
3	126.6875	127.1563	Interface (below)		-0.00	452.5	472.6
4	127.6250	128.0938	+10.48	+10.59	+0.11	486.9	501.1
5	128.5625	129.0313	+3.34	+3.50	+0.16	510.7	520.4
6	129.5000	129.9688	-1.39	-1.23	+0.16	526.7	532.9
7	130.4375	130.9063	-4.39	-4.25	+0.14	536.8	540.7
8	131.3750	131.8438	-6.15	-6.05	+0.10	542.9	545.1
9	132.3125	132.7813	-7.05	-7.00	+0.05	546.1	547.0
10	133.2500	133.7188	-7.29	-7.29	+0.00	547.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.09	-3.09	-0.00
FOR OUTER MATERIAL	+20.81	+20.81	-0.00

208

CGS-RPV

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.21	+0.31
HOOP MEMBRANE	N/A	+0.21
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-12.19	-12.24
INSIDE BENDING	+12.50	+12.55
OUTSIDE BENDING	-11.88	-11.93
HOOP BENDING	N/A	-12.21
INSIDE BENDING	N/A	+12.43
OUTSIDE BENDING	N/A	-12.00

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	521.1	520.7
DELTA T1 (Total Section Delta T)	+89.3	+89.8
LINEAR INSIDE TEMPERATURE	476.0	475.8
LINEAR OUTSIDE TEMPERATURE	565.4	565.6
DELTA T2 (Absolute of Maximum)	36.9	36.7

Date: 05-24-2005 Time: 16:07:53 PAGE 52

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 480.00 SECONDS.....

N	-- Radii, inches - Grid	Node	----Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	-410.4	
1	126.5625	126.5938	+2.15	+2.15	-0.00	436.5	440.0
2	126.6250	126.6563	-0.23	-0.23	+0.00	443.3	446.7
3	126.6875	127.1563	Interface (below)		-0.00	450.1	470.5
4	127.6250	128.0938	+10.72	+10.84	+0.11	485.0	499.4
5	128.5625	129.0313	+3.45	+3.61	+0.16	509.3	519.1
6	129.5000	129.9688	-1.41	-1.24	+0.17	525.6	532.0
7	130.4375	130.9063	-4.49	-4.35	+0.14	536.1	540.1
8	131.3750	131.8438	-6.32	-6.22	+0.10	542.3	544.6
9	132.3125	132.7813	-7.25	-7.20	+0.05	545.6	546.7
10	133.2500	133.7188	-7.50	-7.50	+0.00	546.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.56	-2.56	-0.00
FOR OUTER MATERIAL	+21.21	+21.21	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.21	+0.32
HOOP MEMBRANE	N/A	+0.21
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-12.52	-12.57
INSIDE BENDING	+12.84	+12.89
OUTSIDE BENDING	-12.20	-12.25
HOOP BENDING	N/A	-12.54
INSIDE BENDING	N/A	+12.76
OUTSIDE BENDING	N/A	-12.33

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	520.0	519.6
DELTA T1 (Total Section Delta T)	+91.5	+92.0
LINEAR INSIDE TEMPERATURE	473.8	473.6
LINEAR OUTSIDE TEMPERATURE	565.4	565.6
DELTA T2 (Absolute of Maximum)	37.3	37.1

349

Date: 05-24-2005 Time: 16:07:54 PAGE 53

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 490.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	407.5	
1	126.5625	126.5938	+2.74	+2.74	-0.00	433.9	437.4
2	126.6250	126.6563	+0.33	+0.33	+0.00	440.8	444.3
3	126.6875	127.1563	Interface (below)		+0.00	447.6	468.3
4	127.6250	128.0938	+10.96	+11.08	+0.12	483.0	497.7
5	128.5625	129.0313	+3.55	+3.71	+0.17	507.8	517.9
6	129.5000	129.9688	-1.42	-1.25	+0.17	524.5	531.1
7	130.4375	130.9063	-4.59	-4.45	+0.15	535.3	539.4
8	131.3750	131.8438	-6.49	-6.38	+0.11	541.8	544.2
9	132.3125	132.7813	-7.45	-7.40	+0.05	545.2	546.3
10	133.2500	133.7188	-7.72	-7.72	+0.00	546.3	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.03	-2.03	+0.00
FOR OUTER MATERIAL	+21.61	+21.61	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.21	+0.32
HOOP MEMBRANE	N/A	+0.22
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-12.85	-12.90
INSIDE BENDING	+13.17	+13.22
OUTSIDE BENDING	-12.52	-12.57
HOOP BENDING	N/A	-12.87
INSIDE BENDING	N/A	+13.09
OUTSIDE BENDING	N/A	-12.66

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	518.9	518.5
DELTA T1 (Total Section Delta T)	+93.7	+94.2
LINEAR INSIDE TEMPERATURE	471.7	471.4
LINEAR OUTSIDE TEMPERATURE	565.3	565.6
DELTA T2 (Absolute of Maximum)	37.8	37.5

Date: 05-24-2005 Time: 16:07:56 PAGE 54

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	404.5	
1	126.5625	126.5938	+3.33	+3.33	-0.00	431.3	434.8
2	126.6250	126.6563	+0.89	+0.89	+0.00	438.3	441.8
3	126.6875	127.1563	Interface (below)		+0.00	445.2	466.1
4	127.6250	128.0938	+11.20	+11.32	+0.12	481.1	496.1
5	128.5625	129.0313	+3.65	+3.82	+0.17	506.4	516.6
6	129.5000	129.9688	-1.43	-1.26	+0.18	523.4	530.2
7	130.4375	130.9063	-4.70	-4.55	+0.15	534.5	538.8
8	131.3750	131.8438	-6.65	-6.54	+0.11	541.2	543.7
9	132.3125	132.7813	-7.66	-7.60	+0.06	544.8	545.9
10	133.2500	133.7188	-7.93	-7.93	+0.00	545.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

350

FOR INNER MATERIAL	-1.50	-1.50	+0.00
FOR OUTER MATERIAL	+22.00	+22.01	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.33
HOOP MEMBRANE	N/A	+0.22
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-13.17	-13.23
INSIDE BENDING	+13.50	+13.55
OUTSIDE BENDING	-12.84	-12.90
HOOP BENDING	N/A	-13.20
INSIDE BENDING	N/A	+13.42
OUTSIDE BENDING	N/A	-12.98

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	517.8	517.4
DELTA T1 (Total Section Delta T)	+95.8	+96.3
LINEAR INSIDE TEMPERATURE	469.5	469.2
LINEAR OUTSIDE TEMPERATURE	565.3	565.5
DELTA T2 (Absolute of Maximum)	38.2	38.0

Date: 05-24-2005 Time: 16:07:57 PAGE 55

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 510.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	401.6	
1	126.5625	126.5938	+3.92	+3.92	-0.00	428.6	432.2
2	126.6250	126.6563	+1.44	+1.44	+0.00	435.8	439.3
3	126.6875	127.1563	Interface (below)		+0.00	442.7	463.9
4	127.6250	128.0938	+11.44	+11.56	+0.12	479.2	494.4
5	128.5625	129.0313	+3.75	+3.92	+0.17	504.9	515.4
6	129.5000	129.9688	-1.45	-1.27	+0.18	522.3	529.3
7	130.4375	130.9063	-4.80	-4.65	+0.15	533.7	538.1
8	131.3750	131.8438	-6.82	-6.71	+0.11	540.6	543.2
9	132.3125	132.7813	-7.86	-7.80	+0.06	544.3	545.5
10	133.2500	133.7188	-8.14	-8.14	+0.00	545.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.97	-0.97	+0.00
FOR OUTER MATERIAL	+22.40	+22.40	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.33
HOOP MEMBRANE	N/A	+0.22
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-13.50	-13.55
INSIDE BENDING	+13.83	+13.89
OUTSIDE BENDING	-13.16	-13.22
HOOP BENDING	N/A	-13.53
INSIDE BENDING	N/A	+13.75
OUTSIDE BENDING	N/A	-13.30

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	516.7	516.2
DELTA T1 (Total Section Delta T)	+98.0	+98.4
LINEAR INSIDE TEMPERATURE	467.3	467.0

B51

LINEAR OUTSIDE TEMPERATURE	565.2	565.5
DELTA T2 (Absolute of Maximum)	38.6	38.4

Date: 05-24-2005 Time: 16:07:58 PAGE 56

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 520.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	398.6	
1	126.5625	126.5938	+4.50	+4.50	-0.00	426.0	429.6
2	126.6250	126.6563	+2.00	+2.00	+0.00	433.2	436.8
3	126.6875	127.1563	Interface (below)		+0.00	440.3	461.8
4	127.6250	128.0938	+11.67	+11.80	+0.13	477.2	492.6
5	128.5625	129.0313	+3.85	+4.03	+0.18	503.4	514.1
6	129.5000	129.9688	-1.46	-1.28	+0.18	521.2	528.4
7	130.4375	130.9063	-4.90	-4.74	+0.16	532.9	537.4
8	131.3750	131.8438	-6.98	-6.87	+0.11	540.0	542.7
9	132.3125	132.7813	-8.06	-8.00	+0.06	543.9	545.0
10	133.2500	133.7188	-8.35	-8.35	+0.00	545.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.45	-0.45	+0.00
FOR OUTER MATERIAL	+22.79	+22.79	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.34
HOOP MEMBRANE	N/A	+0.23
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-13.82	-13.88
INSIDE BENDING	+14.16	+14.22
OUTSIDE BENDING	-13.48	-13.54
HOOP BENDING	N/A	-13.85
INSIDE BENDING	N/A	+14.07
OUTSIDE BENDING	N/A	-13.62

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	515.5	515.1
DELTA T1 (Total Section Delta T)	+100.1	+100.6
LINEAR INSIDE TEMPERATURE	465.0	464.8
LINEAR OUTSIDE TEMPERATURE	565.2	565.4
DELTA T2 (Absolute of Maximum)	39.0	38.8

Date: 05-24-2005 Time: 16:07:59 PAGE 57

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 530.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	395.6	
1	126.5625	126.5938	+5.08	+5.08	-0.00	423.4	427.1
2	126.6250	126.6563	+2.55	+2.55	+0.00	430.7	434.3
3	126.6875	127.1563	Interface (below)		+0.00	437.8	459.6
4	127.6250	128.0938	+11.91	+12.04	+0.13	475.3	490.9
5	128.5625	129.0313	+3.95	+4.13	+0.18	501.9	512.8
6	129.5000	129.9688	-1.47	-1.29	+0.19	520.1	527.4
7	130.4375	130.9063	-5.00	-4.84	+0.16	532.1	536.7
8	131.3750	131.8438	-7.14	-7.03	+0.12	539.4	542.1
9	132.3125	132.7813	-8.26	-8.20	+0.06	543.4	544.6

852

10	133.2500	133.7188	-8.57	-8.57	+0.00	544.6	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.07	+0.07	+0.00
FOR OUTER MATERIAL	+23.17	+23.17	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.35
HOOP MEMBRANE	N/A	+0.23
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-14.14	-14.20
INSIDE BENDING	+14.49	+14.54
OUTSIDE BENDING	-13.80	-13.85
HOOP BENDING	N/A	-14.17
INSIDE BENDING	N/A	+14.40
OUTSIDE BENDING	N/A	-13.94

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	514.4	513.9
DELTA T1 (Total Section Delta T)	+102.2	+102.7
LINEAR INSIDE TEMPERATURE	462.8	462.6
LINEAR OUTSIDE TEMPERATURE	565.1	565.3
DELTA T2 (Absolute of Maximum)	39.4	39.2

Date: 05-24-2005 Time: 16:08:00 PAGE 58

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 540.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	392.7	
1	126.5625	126.5938	+5.66	+5.66	-0.00	420.7	424.5
2	126.6250	126.6563	+3.10	+3.10	+0.00	428.1	431.8
3	126.6875	127.1563	Interface (below)		+0.00	435.3	457.3
4	127.6250	128.0938	+12.14	+12.28	+0.13	473.3	489.2
5	128.5625	129.0313	+4.05	+4.24	+0.19	500.4	511.5
6	129.5000	129.9688	-1.49	-1.29	+0.19	519.0	526.4
7	130.4375	130.9063	-5.10	-4.94	+0.17	531.2	536.0
8	131.3750	131.8438	-7.31	-7.19	+0.12	538.8	541.6
9	132.3125	132.7813	-8.46	-8.40	+0.06	542.9	544.1
10	133.2500	133.7188	-8.78	-8.78	+0.00	544.1	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.59	+0.59	+0.00
FOR OUTER MATERIAL	+23.56	+23.56	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.35
HOOP MEMBRANE	N/A	+0.23
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-14.46	-14.52
INSIDE BENDING	+14.82	+14.87
OUTSIDE BENDING	-14.11	-14.17
HOOP BENDING	N/A	-14.49
INSIDE BENDING	N/A	+14.72
OUTSIDE BENDING	N/A	-14.26

TEMPERATURES (F) BASED ON: AREA WEIGHTED AVERAGING LINEAR AVERAGING

B53

AVERAGE TEMPERATURE	513.2	512.8
DELTA T1 (Total Section Delta T)	+104.3	+104.8
LINEAR INSIDE TEMPERATURE	460.6	460.3
LINEAR OUTSIDE TEMPERATURE	564.9	565.2
DELTA T2 (Absolute of Maximum)	39.9	39.6

Date: 05-24-2005 Time: 16:08:02 PAGE 59

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 550.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	389.8	
1	126.5625	126.5938	+6.24	+6.24	-0.00	418.1	421.9
2	126.6250	126.6563	+3.64	+3.65	+0.00	425.6	429.3
3	126.6875	127.1563	Interface (below)		+0.00	432.9	455.1
4	127.6250	128.0938	+12.38	+12.51	+0.13	471.3	487.5
5	128.5625	129.0313	+4.15	+4.34	+0.19	498.8	510.1
6	129.5000	129.9688	-1.50	-1.30	+0.20	517.8	525.4
7	130.4375	130.9063	-5.20	-5.03	+0.17	530.4	535.3
8	131.3750	131.8438	-7.47	-7.35	+0.12	538.1	541.0
9	132.3125	132.7813	-8.66	-8.59	+0.06	542.3	543.7
10	133.2500	133.7188	-8.99	-8.99	+0.00	543.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.11	+1.11	+0.00
FOR OUTER MATERIAL	+23.94	+23.94	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.36
HOOP MEMBRANE	N/A	+0.23
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-14.78	-14.84
INSIDE BENDING	+15.14	+15.20
OUTSIDE BENDING	-14.43	-14.49
HOOP BENDING	N/A	-14.81
INSIDE BENDING	N/A	+15.05
OUTSIDE BENDING	N/A	-14.58

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	512.0	511.6
DELTA T1 (Total Section Delta T)	+106.5	+107.0
LINEAR INSIDE TEMPERATURE	458.4	458.1
LINEAR OUTSIDE TEMPERATURE	564.8	565.1
DELTA T2 (Absolute of Maximum)	40.3	40.0

Date: 05-24-2005 Time: 16:08:03 PAGE 60

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 560.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	386.8	
1	126.5625	126.5938	+6.81	+6.81	-0.00	415.5	419.3
2	126.6250	126.6563	+4.19	+4.19	+0.00	423.0	426.7
3	126.6875	127.1563	Interface (below)		+0.00	430.4	452.9
4	127.6250	128.0938	+12.61	+12.74	+0.14	469.3	485.7
5	128.5625	129.0313	+4.25	+4.44	+0.19	497.3	508.8
6	129.5000	129.9688	-1.51	-1.31	+0.20	516.6	524.4

B-54

7	130.4375	130.9063	-5.30	-5.13	+0.17	529.5	534.5
8	131.3750	131.8438	-7.63	-7.51	+0.12	537.5	540.4
9	132.3125	132.7813	-8.86	-8.79	+0.06	541.8	543.2
10	133.2500	133.7188	-9.19	-9.19	+0.00	543.2	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.62	+1.63	+0.00
FOR OUTER MATERIAL	+24.32	+24.32	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.36
HOOP MEMBRANE	N/A	+0.24
AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-15.10	-15.16
INSIDE BENDING	+15.46	+15.52
OUTSIDE BENDING	-14.74	-14.80
HOOP BENDING	N/A	-15.13
INSIDE BENDING	N/A	+15.37
OUTSIDE BENDING	N/A	-14.90

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	510.9	510.4
DELTA T1 (Total Section Delta T)	+108.5	+109.1
LINEAR INSIDE TEMPERATURE	456.1	455.9
LINEAR OUTSIDE TEMPERATURE	564.7	564.9
DELTA T2 (Absolute of Maximum)	40.7	40.4

Date: 05-24-2005 Time: 16:08:04 PAGE 61

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 570.00 SECONDS.....

N	-- Radii, inches - Grid	Node	--- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	383.9	
1	126.5625	126.5938	+7.38	+7.38	-0.00	412.8	416.7
2	126.6250	126.6563	+4.73	+4.73	+0.00	420.4	424.2
3	126.6875	127.1563	Interface (below)		+0.00	427.9	450.7
4	127.6250	128.0938	+12.84	+12.98	+0.14	467.4	484.0
5	128.5625	129.0313	+4.35	+4.55	+0.20	495.7	507.4
6	129.5000	129.9688	-1.52	-1.32	+0.20	515.4	523.4
7	130.4375	130.9063	-5.40	-5.22	+0.18	528.6	533.8
8	131.3750	131.8438	-7.79	-7.66	+0.13	536.8	539.8
9	132.3125	132.7813	-9.05	-8.99	+0.07	541.3	542.7
10	133.2500	133.7188	-9.40	-9.40	+0.00	542.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+2.14	+2.14	+0.00
FOR OUTER MATERIAL	+24.69	+24.70	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.37
HOOP MEMBRANE	N/A	+0.24
AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-15.42	-15.48
INSIDE BENDING	+15.78	+15.84
OUTSIDE BENDING	-15.05	-15.11
HOOP BENDING	N/A	-15.45
INSIDE BENDING	N/A	+15.69

B55

OUTSIDE BENDING	N/A	-15.21

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	509.7	509.2
DELTA T1 (Total Section Delta T)	+110.6	+111.1
LINEAR INSIDE TEMPERATURE	453.9	453.6
LINEAR OUTSIDE TEMPERATURE	564.5	564.7
DELTA T2 (Absolute of Maximum)	41.0	40.8

Date: 05-24-2005 Time: 16:08:05 PAGE 62

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 580.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	380.9	
1	126.5625	126.5938	+7.95	+7.95	-0.00	410.2	414.1
2	126.6250	126.6563	+5.27	+5.27	+0.00	417.9	421.7
3	126.6875	127.1563	Interface (below)		+0.01	425.4	448.5
4	127.6250	128.0938	+13.07	+13.21	+0.14	465.3	482.2
5	128.5625	129.0313	+4.45	+4.65	+0.20	494.1	506.1
6	129.5000	129.9688	-1.53	-1.32	+0.21	514.2	522.4
7	130.4375	130.9063	-5.50	-5.32	+0.18	527.7	533.0
8	131.3750	131.8438	-7.95	-7.82	+0.13	536.1	539.2
9	132.3125	132.7813	-9.25	-9.18	+0.07	540.7	542.1
10	133.2500	133.7188	-9.61	-9.61	+0.00	542.1	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	+2.65	+2.65	+0.01
FOR OUTER MATERIAL	+25.07	+25.07	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.24	+0.37
HOOP MEMBRANE	N/A	+0.24
AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-15.73	-15.79
INSIDE BENDING	+16.10	+16.16
OUTSIDE BENDING	-15.36	-15.42
HOOP BENDING	N/A	-15.76
INSIDE BENDING	N/A	+16.00
OUTSIDE BENDING	N/A	-15.52

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	508.4	508.0
DELTA T1 (Total Section Delta T)	+112.7	+113.2
LINEAR INSIDE TEMPERATURE	451.6	451.3
LINEAR OUTSIDE TEMPERATURE	564.3	564.6
DELTA T2 (Absolute of Maximum)	41.4	41.2

Date: 05-24-2005 Time: 16:08:06 PAGE 63

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 590.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	378.0	
1	126.5625	126.5938	+8.51	+8.51	-0.00	407.5	411.5
2	126.6250	126.6563	+5.81	+5.81	+0.00	415.3	419.2
3	126.6875	127.1563	Interface (below)		+0.01	422.9	446.2

1356

4	127.6250	128.0938	+13.30	+13.44	+0.14	463.3	480.4
5	128.5625	129.0313	+4.55	+4.75	+0.21	492.6	504.7
6	129.5000	129.9688	-1.54	-1.33	+0.21	513.0	521.3
7	130.4375	130.9063	-5.60	-5.41	+0.18	526.8	532.2
8	131.3750	131.8438	-8.11	-7.98	+0.13	535.4	538.6
9	132.3125	132.7813	-9.44	-9.37	+0.07	540.1	541.6
10	133.2500	133.7188	-9.82	-9.82	+0.00	541.6	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.16	+3.16	+0.01
FOR OUTER MATERIAL	+25.44	+25.44	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.24	+0.38
HOOP MEMBRANE	N/A	+0.24
AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-16.04	-16.11
INSIDE BENDING	+16.42	+16.48
OUTSIDE BENDING	-15.67	-15.73
HOOP BENDING	N/A	-16.08
INSIDE BENDING	N/A	+16.32
OUTSIDE BENDING	N/A	-15.83

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	507.2	506.7
DELTA T1 (Total Section Delta T)	+114.8	+115.3
LINEAR INSIDE TEMPERATURE	449.3	449.1
LINEAR OUTSIDE TEMPERATURE	564.1	564.4
DELTA T2 (Absolute of Maximum)	41.8	41.5

Date: 05-24-2005 Time: 16:08:08 PAGE 64

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 600.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	375.0	
1	126.5625	126.5938	+9.07	+9.07	-0.00	404.9	408.9
2	126.6250	126.6563	+6.34	+6.34	+0.00	412.8	416.6
3	126.6875	127.1563	Interface (below)		+0.01	420.5	444.0
4	127.6250	128.0938	+13.52	+13.67	+0.15	461.3	478.6
5	128.5625	129.0313	+4.65	+4.85	+0.21	491.0	503.3
6	129.5000	129.9688	-1.55	-1.34	+0.22	511.8	520.3
7	130.4375	130.9063	-5.69	-5.50	+0.19	525.8	531.4
8	131.3750	131.8438	-8.27	-8.13	+0.14	534.7	538.0
9	132.3125	132.7813	-9.64	-9.57	+0.07	539.5	541.0
10	133.2500	133.7188	-10.02	-10.02	+0.00	541.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.66	+3.67	+0.01
FOR OUTER MATERIAL	+25.81	+25.81	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.24	+0.38
HOOP MEMBRANE	N/A	+0.25
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-16.36	-16.42
INSIDE BENDING	+16.74	+16.80

357

OUTSIDE BENDING	-15.97	-16.04
HOOP BENDING	N/A	-16.39
INSIDE BENDING	N/A	+16.63
OUTSIDE BENDING	N/A	-16.14

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	506.0	505.5
DELTA T1 (Total Section Delta T)	+116.8	+117.3
LINEAR INSIDE TEMPERATURE	447.1	446.8
LINEAR OUTSIDE TEMPERATURE	563.9	564.1
DELTA T2 (Absolute of Maximum)	42.2	41.9

Date: 05-24-2005 Time: 16:08:09 PAGE 65

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 610.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	374.7	
1	126.5625	126.5938	+9.20	+9.20	-0.00	403.5	407.4
2	126.6250	126.6563	+6.55	+6.55	+0.00	411.2	415.0
3	126.6875	127.1563	Interface (below)		+0.01	418.7	441.8
4	127.6250	128.0938	+13.75	+13.90	+0.15	459.3	476.8
5	128.5625	129.0313	+4.76	+4.97	+0.21	489.4	501.9
6	129.5000	129.9688	-1.55	-1.32	+0.22	510.6	519.2
7	130.4375	130.9063	-5.77	-5.58	+0.19	524.9	530.5
8	131.3750	131.8438	-8.41	-8.27	+0.14	533.9	537.3
9	132.3125	132.7813	-9.81	-9.74	+0.07	538.9	540.5
10	133.2500	133.7188	-10.21	-10.21	+0.00	540.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.93	+3.93	+0.01
FOR OUTER MATERIAL	+25.97	+25.98	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.24	+0.38
HOOP MEMBRANE	N/A	+0.24
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-16.60	-16.66
INSIDE BENDING	+16.98	+17.05
OUTSIDE BENDING	-16.22	-16.28
HOOP BENDING	N/A	-16.63
INSIDE BENDING	N/A	+16.88
OUTSIDE BENDING	N/A	-16.39

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	504.8	504.3
DELTA T1 (Total Section Delta T)	+118.6	+119.1
LINEAR INSIDE TEMPERATURE	445.0	444.7
LINEAR OUTSIDE TEMPERATURE	563.6	563.8
DELTA T2 (Absolute of Maximum)	41.5	41.2

Date: 05-24-2005 Time: 16:08:10 PAGE 66

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 620.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	374.4	

658

1	126.5625	126.5938	+9.21	+9.21	-0.00	402.5	406.3
2	126.6250	126.6563	+6.63	+6.63	+0.00	410.0	413.7
3	126.6875	127.1563	Interface (below)		+0.01	417.3	439.9
4	127.6250	128.0938	+13.95	+14.10	+0.15	457.5	475.0
5	128.5625	129.0313	+4.88	+5.10	+0.22	487.8	500.5
6	129.5000	129.9688	-1.52	-1.30	+0.22	509.3	518.1
7	130.4375	130.9063	-5.83	-5.64	+0.19	523.9	529.7
8	131.3750	131.8438	-8.53	-8.39	+0.14	533.2	536.6
9	132.3125	132.7813	-9.97	-9.90	+0.07	538.3	539.9
10	133.2500	133.7188	-10.38	-10.38	+0.00	539.9	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.07	+4.08	+0.01
FOR OUTER MATERIAL	+26.03	+26.04	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.38
HOOP MEMBRANE	N/A	+0.24
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-16.81	-16.87
INSIDE BENDING	+17.18	+17.25
OUTSIDE BENDING	-16.43	-16.49
HOOP BENDING	N/A	-16.84
INSIDE BENDING	N/A	+17.07
OUTSIDE BENDING	N/A	-16.60

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	503.6	503.1
DELTA T1 (Total Section Delta T)	+120.0	+120.6
LINEAR INSIDE TEMPERATURE	443.1	442.8
LINEAR OUTSIDE TEMPERATURE	563.1	563.4
DELTA T2 (Absolute of Maximum)	40.6	40.3

Date: 05-24-2005 Time: 16:08:11 PAGE 67

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 630.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	374.2	
1	126.5625	126.5938	+9.20	+9.20	-0.00	401.6	405.3
2	126.6250	126.6563	+6.68	+6.68	+0.00	408.9	412.5
3	126.6875	127.1563	Interface (below)		+0.01	416.1	438.2
4	127.6250	128.0938	+14.12	+14.27	+0.15	455.8	473.3
5	128.5625	129.0313	+5.01	+5.23	+0.22	486.2	499.1
6	129.5000	129.9688	-1.49	-1.26	+0.23	508.1	517.0
7	130.4375	130.9063	-5.88	-5.69	+0.20	522.9	528.9
8	131.3750	131.8438	-8.64	-8.50	+0.14	532.4	536.0
9	132.3125	132.7813	-10.12	-10.05	+0.07	537.6	539.3
10	133.2500	133.7188	-10.54	-10.54	+0.00	539.3	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.17	+4.18	+0.01
FOR OUTER MATERIAL	+26.06	+26.07	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.37
HOOP MEMBRANE	N/A	+0.23

135-9

AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-16.99	-17.05
INSIDE BENDING	+17.36	+17.42
OUTSIDE BENDING	-16.61	-16.67
HOOP BENDING	N/A	-17.02
INSIDE BENDING	N/A	+17.25
OUTSIDE BENDING	N/A	-16.78

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	502.5	502.0
DELTA T1 (Total Section Delta T)	+121.3	+121.9
LINEAR INSIDE TEMPERATURE	441.3	441.0
LINEAR OUTSIDE TEMPERATURE	562.6	562.9
DELTA T2 (Absolute of Maximum)	39.7	39.4

Date: 05-24-2005 Time: 16:08:13 PAGE 68

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 640.00 SECONDS.....

	--Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	373.9	
1	126.5625	126.5938	+9.18	+9.18	-0.00	400.8	404.4
2	126.6250	126.6563	+6.70	+6.70	+0.00	407.9	411.5
3	126.6875	127.1563	Interface (below)		+0.01	415.0	436.6
4	127.6250	128.0938	+14.27	+14.42	+0.15	454.2	471.7
5	128.5625	129.0313	+5.13	+5.35	+0.22	484.7	497.7
6	129.5000	129.9688	-1.45	-1.22	+0.23	506.8	515.9
7	130.4375	130.9063	-5.92	-5.72	+0.20	522.0	528.0
8	131.3750	131.8438	-8.74	-8.60	+0.14	531.6	535.3
9	132.3125	132.7813	-10.26	-10.18	+0.08	537.0	538.7
10	133.2500	133.7188	-10.69	-10.69	+0.00	538.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.25	+4.25	+0.01
FOR OUTER MATERIAL	+26.07	+26.07	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.37
HOOP MEMBRANE	N/A	+0.23
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-17.14	-17.20
INSIDE BENDING	+17.51	+17.57
OUTSIDE BENDING	-16.77	-16.83
HOOP BENDING	N/A	-17.17
INSIDE BENDING	N/A	+17.40
OUTSIDE BENDING	N/A	-16.95

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	501.4	500.9
DELTA T1 (Total Section Delta T)	+122.5	+123.0
LINEAR INSIDE TEMPERATURE	439.6	439.4
LINEAR OUTSIDE TEMPERATURE	562.1	562.4
DELTA T2 (Absolute of Maximum)	38.8	38.6

Date: 05-24-2005 Time: 16:08:14 PAGE 69

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 650.00 SECONDS.....

B60

CGS-RPV

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	373.6	
1	126.5625	126.5938	+9.13	+9.13	-0.00	400.0	403.5
2	126.6250	126.6563	+6.70	+6.71	+0.00	407.0	410.5
3	126.6875	127.1563	Interface (below)		+0.01	413.9	435.2
4	127.6250	128.0938	+14.39	+14.55	+0.15	452.7	470.1
5	128.5625	129.0313	+5.25	+5.47	+0.22	483.2	496.3
6	129.5000	129.9688	-1.40	-1.17	+0.23	505.5	514.8
7	130.4375	130.9063	-5.95	-5.75	+0.20	521.0	527.1
8	131.3750	131.8438	-8.83	-8.68	+0.15	530.8	534.5
9	132.3125	132.7813	-10.38	-10.31	+0.08	536.3	538.0
10	133.2500	133.7188	-10.82	-10.82	+0.00	538.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.30	+4.30	+0.01
FOR OUTER MATERIAL	+26.05	+26.06	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.37
HOOP MEMBRANE	N/A	+0.22
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-17.28	-17.34
INSIDE BENDING	+17.65	+17.71
OUTSIDE BENDING	-16.91	-16.97
HOOP BENDING	N/A	-17.31
INSIDE BENDING	N/A	+17.53
OUTSIDE BENDING	N/A	-17.09

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	500.3	499.8
DELTA T1 (Total Section Delta T)	+123.5	+124.0
LINEAR INSIDE TEMPERATURE	438.0	437.8
LINEAR OUTSIDE TEMPERATURE	561.5	561.8
DELTA T2 (Absolute of Maximum)	38.0	37.8

Date: 05-24-2005 Time: 16:08:15 PAGE 70

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 660.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	373.3	
1	126.5625	126.5938	+9.08	+9.08	-0.00	399.3	402.7
2	126.6250	126.6563	+6.69	+6.70	+0.00	406.1	409.6
3	126.6875	127.1563	Interface (below)		+0.01	413.0	433.9
4	127.6250	128.0938	+14.50	+14.65	+0.15	451.2	468.5
5	128.5625	129.0313	+5.36	+5.59	+0.22	481.7	494.9
6	129.5000	129.9688	-1.35	-1.12	+0.23	504.3	513.7
7	130.4375	130.9063	-5.97	-5.77	+0.20	519.9	526.2
8	131.3750	131.8438	-8.91	-8.76	+0.15	530.0	533.8
9	132.3125	132.7813	-10.50	-10.42	+0.08	535.6	537.4
10	133.2500	133.7188	-10.95	-10.95	+0.00	537.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.33	+4.33	+0.01
FOR OUTER MATERIAL	+26.02	+26.03	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

B61

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STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.22	+0.37
HOOP MEMBRANE	N/A	+0.22
AVERAGE RADIAL	N/A	+0.15
AXIAL BENDING	-17.40	-17.46
INSIDE BENDING	+17.77	+17.83
OUTSIDE BENDING	-17.04	-17.10
HOOP BENDING	N/A	-17.43
INSIDE BENDING	N/A	+17.65
OUTSIDE BENDING	N/A	-17.21

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	499.2	498.7
DELTA T1 (Total Section Delta T)	+124.4	+124.9
LINEAR INSIDE TEMPERATURE	436.5	436.3
LINEAR OUTSIDE TEMPERATURE	560.9	561.1
DELTA T2 (Absolute of Maximum)	37.2	37.0

Date: 05-24-2005 Time: 16:08:16 PAGE 71

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 670.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	373.1	
1	126.5625	126.5938	+9.02	+9.02	-0.00	398.6	402.0
2	126.6250	126.6563	+6.67	+6.68	+0.00	405.3	408.7
3	126.6875	127.1563	Interface (below)		+0.01	412.0	432.6
4	127.6250	128.0938	+14.59	+14.74	+0.15	449.9	467.1
5	128.5625	129.0313	+5.47	+5.69	+0.22	480.3	493.5
6	129.5000	129.9688	-1.30	-1.06	+0.23	503.1	512.5
7	130.4375	130.9063	-5.99	-5.78	+0.21	518.9	525.3
8	131.3750	131.8438	-8.98	-8.83	+0.15	529.2	533.1
9	132.3125	132.7813	-10.60	-10.53	+0.08	534.9	536.7
10	133.2500	133.7188	-11.07	-11.07	+0.00	536.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.34	+4.35	+0.01
FOR OUTER MATERIAL	+25.98	+25.99	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.21	+0.36
HOOP MEMBRANE	N/A	+0.22
AVERAGE RADIAL	N/A	+0.15
AXIAL BENDING	-17.51	-17.57
INSIDE BENDING	+17.87	+17.93
OUTSIDE BENDING	-17.15	-17.20
HOOP BENDING	N/A	-17.54
INSIDE BENDING	N/A	+17.75
OUTSIDE BENDING	N/A	-17.32

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	498.2	497.6
DELTA T1 (Total Section Delta T)	+125.1	+125.6
LINEAR INSIDE TEMPERATURE	435.1	434.8
LINEAR OUTSIDE TEMPERATURE	560.2	560.4
DELTA T2 (Absolute of Maximum)	36.5	36.3

Date: 05-24-2005 Time: 16:08:17 PAGE 72

B62

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=  680.00  SECONDS....................
     -- Radii, inches -    ---- Grid Stress, ksi ------      Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                  (Inside fluid)   372.8
  1  126.5625  126.5938      +8.95      +8.95     -0.00          397.9   401.2
  2  126.6250  126.6563      +6.64      +6.64     +0.00          404.6   407.9
  3  126.6875  127.1563   Interface (below)       +0.01          411.2   431.5
  4  127.6250  128.0938     +14.66     +14.81     +0.15          448.6   465.7
  5  128.5625  129.0313      +5.57      +5.79     +0.22          479.0   492.2
  6  129.5000  129.9688      -1.24      -1.00     +0.24          501.8   511.4
  7  130.4375  130.9063      -5.99      -5.79     +0.21          517.9   524.4
  8  131.3750  131.8438      -9.04      -8.89     +0.15          528.4   532.3
  9  132.3125  132.7813     -10.70     -10.62     +0.08          534.2   536.0
 10  133.2500  133.7188     -11.17     -11.17     +0.00          536.0   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       +4.34      +4.35     +0.01
    FOR OUTER MATERIAL      +25.93     +25.94     +0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.21                       +0.36
  HOOP MEMBRANE                        N/A                        +0.21
  AVERAGE RADIAL                       N/A                        +0.15
  AXIAL BENDING                      -17.60                      -17.66
      INSIDE BENDING                  +17.96                      +18.02
      OUTSIDE BENDING                 -17.24                      -17.30
  HOOP BENDING                         N/A                       -17.63
      INSIDE BENDING                    N/A                       +17.84
      OUTSIDE BENDING                   N/A                       -17.41

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AVERAGE TEMPERATURE                 497.1                       496.6
  DELTA T1 (Total Section Delta T)   +125.8                      +126.3
  LINEAR INSIDE TEMPERATURE           433.7                       433.5
  LINEAR OUTSIDE TEMPERATURE          559.5                       559.7
  DELTA T2 (Absolute of Maximum)       35.8                        35.6

 Date: 05-24-2005          Time: 16:08:19                      PAGE  73
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=  690.00  SECONDS....................
     -- Radii, inches -    ---- Grid Stress, ksi ------      Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                  (Inside fluid)   372.5
  1  126.5625  126.5938      +8.88      +8.88     -0.00          397.3   400.6
  2  126.6250  126.6563      +6.60      +6.60     +0.00          403.8   407.1
  3  126.6875  127.1563   Interface (below)       +0.01          410.3   430.3
  4  127.6250  128.0938     +14.72     +14.87     +0.15          447.4   464.3
  5  128.5625  129.0313      +5.66      +5.88     +0.23          477.6   490.9
  6  129.5000  129.9688      -1.18      -0.95     +0.24          500.6   510.3
  7  130.4375  130.9063      -5.99      -5.79     +0.21          516.9   523.5
  8  131.3750  131.8438      -9.10      -8.94     +0.15          527.5   531.5
  9  132.3125  132.7813     -10.79     -10.71     +0.08          533.4   535.3
 10  133.2500  133.7188     -11.27     -11.27     +0.00          535.3   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       +4.34      +4.34     +0.01
    FOR OUTER MATERIAL      +25.87     +25.88     +0.01
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B63

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.21	+0.36
HOOP MEMBRANE	N/A	+0.21
AVERAGE RADIAL	N/A	+0.15
AXIAL BENDING	-17.68	-17.73
INSIDE BENDING	+18.03	+18.09
OUTSIDE BENDING	-17.32	-17.38
HOOP BENDING	N/A	-17.70
INSIDE BENDING	N/A	+17.91
OUTSIDE BENDING	N/A	-17.50

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	496.1	495.6
DELTA T1 (Total Section Delta T)	+126.3	+126.8
LINEAR INSIDE TEMPERATURE	432.4	432.2
LINEAR OUTSIDE TEMPERATURE	558.7	559.0
DELTA T2 (Absolute of Maximum)	35.1	34.9

Date: 05-24-2005 Time: 16:08:20 PAGE 74

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	372.2	
1	126.5625	126.5938	+8.80	+8.80	-0.00	396.7	399.9
2	126.6250	126.6563	+6.55	+6.56	+0.00	403.1	406.4
3	126.6875	127.1563	Interface (below)		+0.01	409.6	429.3
4	127.6250	128.0938	+14.77	+14.92	+0.15	446.2	463.0
5	128.5625	129.0313	+5.74	+5.96	+0.23	476.3	489.6
6	129.5000	129.9688	-1.13	-0.89	+0.24	499.4	509.2
7	130.4375	130.9063	-5.99	-5.78	+0.21	515.9	522.5
8	131.3750	131.8438	-9.14	-8.99	+0.15	526.6	530.8
9	132.3125	132.7813	-10.87	-10.79	+0.08	532.7	534.6
10	133.2500	133.7188	-11.36	-11.36	+0.00	534.6	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.32	+4.33	+0.01
FOR OUTER MATERIAL	+25.80	+25.81	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.20	+0.36
HOOP MEMBRANE	N/A	+0.21
AVERAGE RADIAL	N/A	+0.15
AXIAL BENDING	-17.74	-17.80
INSIDE BENDING	+18.10	+18.16
OUTSIDE BENDING	-17.39	-17.44
HOOP BENDING	N/A	-17.77
INSIDE BENDING	N/A	+17.98
OUTSIDE BENDING	N/A	-17.56

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	495.1	494.6
DELTA T1 (Total Section Delta T)	+126.8	+127.3
LINEAR INSIDE TEMPERATURE	431.1	430.9
LINEAR OUTSIDE TEMPERATURE	558.0	558.2
DELTA T2 (Absolute of Maximum)	34.5	34.3

B64

Date: 05-24-2005 Time: 16:08:21 PAGE 75

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	369.4	
1	126.5625	126.5938	+7.91	+7.91	-0.00	391.4	394.3
2	126.6250	126.6563	+5.89	+5.89	+0.00	397.2	400.1
3	126.6875	127.1563	Interface (below)		+0.01	403.0	420.7
4	127.6250	128.0938	+14.84	+14.99	+0.15	436.5	452.1
5	128.5625	129.0313	+6.24	+6.46	+0.22	465.2	478.2
6	129.5000	129.9688	-0.66	-0.42	+0.24	488.3	498.4
7	130.4375	130.9063	-5.81	-5.59	+0.22	505.7	513.0
8	131.3750	131.8438	-9.31	-9.15	+0.16	517.7	522.3
9	132.3125	132.7813	-11.29	-11.21	+0.08	524.6	526.9
10	133.2500	133.7188	-11.88	-11.88	+0.00	526.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.88	+3.89	+0.01
FOR OUTER MATERIAL	+24.93	+24.94	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.18	+0.34
HOOP MEMBRANE	N/A	+0.19
AVERAGE RADIAL	N/A	+0.15
AXIAL BENDING	-17.92	-17.97
INSIDE BENDING	+18.26	+18.31
OUTSIDE BENDING	-17.59	-17.64
HOOP BENDING	N/A	-17.95
INSIDE BENDING	N/A	+18.13
OUTSIDE BENDING	N/A	-17.76

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	485.6	485.1
DELTA T1 (Total Section Delta T)	+128.3	+128.7
LINEAR INSIDE TEMPERATURE	420.9	420.7
LINEAR OUTSIDE TEMPERATURE	549.2	549.4
DELTA T2 (Absolute of Maximum)	29.6	29.3

Date: 05-24-2005 Time: 16:08:23 PAGE 76

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 900.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	366.7	
1	126.5625	126.5938	+6.95	+6.95	-0.00	387.0	389.7
2	126.6250	126.6563	+5.08	+5.09	+0.00	392.3	395.0
3	126.6875	127.1563	Interface (below)		+0.01	397.7	414.1
4	127.6250	128.0938	+14.51	+14.66	+0.15	428.9	443.6
5	128.5625	129.0313	+6.35	+6.57	+0.22	456.1	468.6
6	129.5000	129.9688	-0.37	-0.13	+0.24	478.7	488.7
7	130.4375	130.9063	-5.54	-5.33	+0.21	496.1	503.6
8	131.3750	131.8438	-9.16	-9.00	+0.16	508.5	513.4
9	132.3125	132.7813	-11.25	-11.17	+0.08	515.8	518.2
10	133.2500	133.7188	-11.89	-11.89	+0.00	518.2	120.0
					(Above node is outside fluid)		

B65

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.23	+3.23	+0.01
FOR OUTER MATERIAL	+23.92	+23.93	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.17	+0.32
HOOP MEMBRANE	N/A	+0.17
AVERAGE RADIAL	N/A	+0.15
AXIAL BENDING	-17.58	-17.63
INSIDE BENDING	+17.90	+17.95
OUTSIDE BENDING	-17.26	-17.31
HOOP BENDING	N/A	-17.60
INSIDE BENDING	N/A	+17.78
OUTSIDE BENDING	N/A	-17.43

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	477.0	476.4
DELTA T1 (Total Section Delta T)	+126.0	+126.4
LINEAR INSIDE TEMPERATURE	413.4	413.2
LINEAR OUTSIDE TEMPERATURE	539.4	539.6
DELTA T2 (Absolute of Maximum)	26.4	26.2

Date: 05-24-2005 Time: 16:08:24 PAGE 77

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	363.9	
1	126.5625	126.5938	+6.02	+6.02	-0.00	383.0	385.5
2	126.6250	126.6563	+4.27	+4.27	+0.00	388.0	390.5
3	126.6875	127.1563	Interface (below)		+0.00	393.0	408.5
4	127.6250	128.0938	+14.03	+14.17	+0.14	422.4	436.3
5	128.5625	129.0313	+6.26	+6.47	+0.21	448.3	460.3
6	129.5000	129.9688	-0.21	+0.02	+0.23	470.0	479.8
7	130.4375	130.9063	-5.27	-5.07	+0.21	487.1	494.5
8	131.3750	131.8438	-8.87	-8.72	+0.15	499.4	504.3
9	132.3125	132.7813	-10.99	-10.90	+0.08	506.8	509.2
10	133.2500	133.7188	-11.63	-11.63	+0.00	509.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+2.52	+2.52	+0.00
FOR OUTER MATERIAL	+22.90	+22.90	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.16	+0.31
HOOP MEMBRANE	N/A	+0.16
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-17.01	-17.05
INSIDE BENDING	+17.31	+17.35
OUTSIDE BENDING	-16.70	-16.74
HOOP BENDING	N/A	-17.03
INSIDE BENDING	N/A	+17.19
OUTSIDE BENDING	N/A	-16.86

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	468.9	468.3
DELTA T1 (Total Section Delta T)	+122.1	+122.5

366

LINEAR INSIDE TEMPERATURE	407.3	407.1
LINEAR OUTSIDE TEMPERATURE	529.4	529.6
DELTA T2 (Absolute of Maximum)	24.3	24.1

Date: 05-24-2005 Time: 16:08:25 PAGE 78

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1100.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	361.1	
1	126.5625	126.5938	+5.14	+5.14	-0.00	379.2	381.6
2	126.6250	126.6563	+3.47	+3.48	+0.00	384.0	386.3
3	126.6875	127.1563	Interface (below)		+0.00	388.7	403.4
4	127.6250	128.0938	+13.49	+13.62	+0.13	416.6	429.8
5	128.5625	129.0313	+6.09	+6.29	+0.20	441.3	452.7
6	129.5000	129.9688	-0.12	+0.10	+0.22	462.1	471.5
7	130.4375	130.9063	-5.02	-4.82	+0.20	478.7	485.8
8	131.3750	131.8438	-8.53	-8.38	+0.15	490.6	495.4
9	132.3125	132.7813	-10.61	-10.53	+0.08	497.9	500.3
10	133.2500	133.7188	-11.24	-11.24	+0.00	500.3	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.82	+1.82	+0.00
FOR OUTER MATERIAL	+21.90	+21.91	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.15	+0.29
HOOP MEMBRANE	N/A	+0.15
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-16.34	-16.37
INSIDE BENDING	+16.63	+16.66
OUTSIDE BENDING	-16.04	-16.08
HOOP BENDING	N/A	-16.35
INSIDE BENDING	N/A	+16.50
OUTSIDE BENDING	N/A	-16.20

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	461.2	460.7
DELTA T1 (Total Section Delta T)	+117.5	+117.9
LINEAR INSIDE TEMPERATURE	402.0	401.8
LINEAR OUTSIDE TEMPERATURE	519.5	519.6
DELTA T2 (Absolute of Maximum)	22.8	22.6

Date: 05-24-2005 Time: 16:08:26 PAGE 79

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	358.3	
1	126.5625	126.5938	+4.31	+4.31	-0.00	375.5	377.8
2	126.6250	126.6563	+2.73	+2.73	+0.00	380.1	382.4
3	126.6875	127.1563	Interface (below)		+0.00	384.6	398.6
4	127.6250	128.0938	+12.94	+13.06	+0.13	411.2	423.8
5	128.5625	129.0313	+5.88	+6.07	+0.19	434.7	445.6
6	129.5000	129.9688	-0.07	+0.14	+0.21	454.7	463.7
7	130.4375	130.9063	-4.78	-4.59	+0.19	470.6	477.5
8	131.3750	131.8438	-8.17	-8.03	+0.14	482.2	486.8

P67

9	132.3125	132.7813	-10.18	-10.11	+0.08	489.2	491.5
10	133.2500	133.7188	-10.80	-10.80	+0.00	491.5	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.15	+1.16	+0.00
FOR OUTER MATERIAL	+20.96	+20.96	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.14	+0.28
HOOP MEMBRANE	N/A	+0.15
AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-15.64	-15.67
INSIDE BENDING	+15.91	+15.95
OUTSIDE BENDING	-15.36	-15.39
HOOP BENDING	N/A	-15.65
INSIDE BENDING	N/A	+15.80
OUTSIDE BENDING	N/A	-15.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	453.9	453.5
DELTA T1 (Total Section Delta T)	+112.7	+113.0
LINEAR INSIDE TEMPERATURE	397.1	397.0
LINEAR OUTSIDE TEMPERATURE	509.8	510.0
DELTA T2 (Absolute of Maximum)	21.6	21.4

Date: 05-24-2005 Time: 16:08:28 PAGE 80

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	355.6	
1	126.5625	126.5938	+3.55	+3.55	-0.00	372.0	374.2
2	126.6250	126.6563	+2.04	+2.04	+0.00	376.4	378.5
3	126.6875	127.1563	Interface (below)		+0.00	380.7	394.0
4	127.6250	128.0938	+12.40	+12.52	+0.12	406.1	418.1
5	128.5625	129.0313	+5.65	+5.83	+0.18	428.6	439.0
6	129.5000	129.9688	-0.04	+0.16	+0.20	447.7	456.3
7	130.4375	130.9063	-4.56	-4.38	+0.18	462.9	469.5
8	131.3750	131.8438	-7.82	-7.68	+0.14	474.0	478.5
9	132.3125	132.7813	-9.76	-9.68	+0.07	480.8	483.0
10	133.2500	133.7188	-10.35	-10.35	+0.00	483.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.53	+0.53	+0.00
FOR OUTER MATERIAL	+20.06	+20.06	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.14	+0.27
HOOP MEMBRANE	N/A	+0.14
AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-14.95	-14.98
INSIDE BENDING	+15.21	+15.25
OUTSIDE BENDING	-14.68	-14.71
HOOP BENDING	N/A	-14.96
INSIDE BENDING	N/A	+15.10
OUTSIDE BENDING	N/A	-14.82

B68

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TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	447.0	446.6
DELTA T1 (Total Section Delta T)	+108.0	+108.3
LINEAR INSIDE TEMPERATURE	392.6	392.4
LINEAR OUTSIDE TEMPERATURE	500.5	500.7
DELTA T2 (Absolute of Maximum)	20.6	20.4

Date: 05-24-2005 Time: 16:08:29 PAGE 81

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	352.8	
1	126.5625	126.5938	+2.85	+2.85	-0.00	368.5	370.6
2	126.6250	126.6563	+1.39	+1.40	+0.00	372.7	374.8
3	126.6875	127.1563	Interface (below)		+0.00	376.9	389.6
4	127.6250	128.0938	+11.88	+12.00	+0.11	401.2	412.7
5	128.5625	129.0313	+5.42	+5.60	+0.18	422.7	432.7
6	129.5000	129.9688	-0.03	+0.17	+0.19	441.0	449.2
7	130.4375	130.9063	-4.35	-4.18	+0.18	455.6	461.9
8	131.3750	131.8438	-7.48	-7.35	+0.13	466.3	470.6
9	132.3125	132.7813	-9.34	-9.27	+0.07	472.7	474.9
10	133.2500	133.7188	-9.91	-9.91	+0.00	474.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.05	-0.05	+0.00
FOR OUTER MATERIAL	+19.22	+19.22	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.13	+0.25
HOOP MEMBRANE	N/A	+0.13
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-14.29	-14.32
INSIDE BENDING	+14.54	+14.57
OUTSIDE BENDING	-14.03	-14.06
HOOP BENDING	N/A	-14.30
INSIDE BENDING	N/A	+14.44
OUTSIDE BENDING	N/A	-14.17

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	440.4	439.9
DELTA T1 (Total Section Delta T)	+103.4	+103.7
LINEAR INSIDE TEMPERATURE	388.2	388.1
LINEAR OUTSIDE TEMPERATURE	491.6	491.8
DELTA T2 (Absolute of Maximum)	19.7	19.5

Date: 05-24-2005 Time: 16:08:30 PAGE 82

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	350.0	
1	126.5625	126.5938	+2.20	+2.20	-0.00	365.1	367.1
2	126.6250	126.6563	+0.81	+0.81	+0.00	369.1	371.1
3	126.6875	127.1563	Interface (below)		+0.00	373.1	385.4
4	127.6250	128.0938	+11.40	+11.51	+0.11	396.4	407.5
5	128.5625	129.0313	+5.20	+5.37	+0.17	417.1	426.7

1369

6	129.5000	129.9688	-0.02	+0.17	+0.19	434.6	442.5
7	130.4375	130.9063	-4.16	-3.99	+0.17	448.6	454.7
8	131.3750	131.8438	-7.15	-7.03	+0.13	458.8	462.9
9	132.3125	132.7813	-8.94	-8.87	+0.07	465.0	467.1
10	133.2500	133.7188	-9.49	-9.49	+0.00	467.1	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.58	-0.58	+0.00
FOR OUTER MATERIAL	+18.44	+18.44	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.13	+0.24
HOOP MEMBRANE	N/A	+0.13
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-13.66	-13.69
INSIDE BENDING	+13.91	+13.93
OUTSIDE BENDING	-13.42	-13.45
HOOP BENDING	N/A	-13.68
INSIDE BENDING	N/A	+13.80
OUTSIDE BENDING	N/A	-13.55

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	434.0	433.6
DELTA T1 (Total Section Delta T)	+99.1	+99.4
LINEAR INSIDE TEMPERATURE	384.0	383.9
LINEAR OUTSIDE TEMPERATURE	483.1	483.3
DELTA T2 (Absolute of Maximum)	18.9	18.8

Date: 05-24-2005 Time: 16:08:32 PAGE 83

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	347.2	
1	126.5625	126.5938	+1.61	+1.61	-0.00	361.8	363.7
2	126.6250	126.6563	+0.27	+0.27	+0.00	365.6	367.5
3	126.6875	127.1563	Interface (below)		+0.00	369.5	381.2
4	127.6250	128.0938	+10.94	+11.04	+0.10	391.9	402.5
5	128.5625	129.0313	+5.00	+5.16	+0.16	411.7	420.9
6	129.5000	129.9688	-0.01	+0.17	+0.18	428.5	436.0
7	130.4375	130.9063	-3.98	-3.82	+0.16	441.9	447.7
8	131.3750	131.8438	-6.85	-6.73	+0.12	451.7	455.6
9	132.3125	132.7813	-8.56	-8.49	+0.06	457.6	459.6
10	133.2500	133.7188	-9.09	-9.09	+0.00	459.6	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-1.06	-1.06	+0.00
FOR OUTER MATERIAL	+17.70	+17.70	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.12	+0.23
HOOP MEMBRANE	N/A	+0.12
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-13.08	-13.10
INSIDE BENDING	+13.31	+13.33
OUTSIDE BENDING	-12.84	-12.87
HOOP BENDING	N/A	-13.09

B70

INSIDE BENDING	N/A	+13.21
OUTSIDE BENDING	N/A	-12.96

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	427.9	427.5
DELTA T1 (Total Section Delta T)	+95.0	+95.3
LINEAR INSIDE TEMPERATURE	380.0	379.8
LINEAR OUTSIDE TEMPERATURE	475.0	475.1
DELTA T2 (Absolute of Maximum)	18.2	18.1

Date: 05-24-2005 Time: 16:08:33 PAGE 84

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	344.4	
1	126.5625	126.5938	+1.06	+1.06	-0.00	358.5	360.3
2	126.6250	126.6563	-0.22	-0.22	+0.00	362.2	364.0
3	126.6875	127.1563	Interface (below)		-0.00	365.9	377.2
4	127.6250	128.0938	+10.51	+10.61	+0.10	387.4	397.6
5	128.5625	129.0313	+4.80	+4.96	+0.15	406.4	415.3
6	129.5000	129.9688	-0.00	+0.17	+0.17	422.6	429.8
7	130.4375	130.9063	-3.82	-3.66	+0.15	435.4	441.0
8	131.3750	131.8438	-6.57	-6.45	+0.12	444.8	448.6
9	132.3125	132.7813	-8.20	-8.14	+0.06	450.5	452.4
10	133.2500	133.7188	-8.71	-8.71	+0.00	452.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-1.50	-1.51	-0.00
FOR OUTER MATERIAL	+17.02	+17.02	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.12	+0.22
HOOP MEMBRANE	N/A	+0.12
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-12.53	-12.55
INSIDE BENDING	+12.75	+12.77
OUTSIDE BENDING	-12.30	-12.32
HOOP BENDING	N/A	-12.54
INSIDE BENDING	N/A	+12.65
OUTSIDE BENDING	N/A	-12.42

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	422.0	421.6
DELTA T1 (Total Section Delta T)	+91.2	+91.5
LINEAR INSIDE TEMPERATURE	376.0	375.9
LINEAR OUTSIDE TEMPERATURE	467.2	467.4
DELTA T2 (Absolute of Maximum)	17.5	17.4

Date: 05-24-2005 Time: 16:08:34 PAGE 85

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	341.7	
1	126.5625	126.5938	+0.57	+0.57	-0.00	355.2	357.0
2	126.6250	126.6563	-0.67	-0.67	-0.00	358.8	360.5

371

3	126.6875	127.1563	Interface (below)		-0.00	362.3	373.3
4	127.6250	128.0938	+10.11	+10.21	+0.10	383.1	392.9
5	128.5625	129.0313	+4.62	+4.77	+0.15	401.4	409.9
6	129.5000	129.9688	-0.00	+0.16	+0.16	416.9	423.9
7	130.4375	130.9063	-3.66	-3.51	+0.15	429.3	434.6
8	131.3750	131.8438	-6.30	-6.19	+0.11	438.3	441.9
9	132.3125	132.7813	-7.87	-7.81	+0.06	443.7	445.6
10	133.2500	133.7188	-8.36	-8.36	+0.00	445.6	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-1.91	-1.91	-0.00
FOR OUTER MATERIAL	+16.38	+16.38	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.11	+0.22
HOOP MEMBRANE	N/A	+0.11
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-12.01	-12.03
INSIDE BENDING	+12.23	+12.25
OUTSIDE BENDING	-11.80	-11.82
HOOP BENDING	N/A	-12.02
INSIDE BENDING	N/A	+12.14
OUTSIDE BENDING	N/A	-11.91

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	416.3	415.9
DELTA T1 (Total Section Delta T)	+87.7	+87.9
LINEAR INSIDE TEMPERATURE	372.1	372.0
LINEAR OUTSIDE TEMPERATURE	459.8	459.9
DELTA T2 (Absolute of Maximum)	16.9	16.8

Date: 05-24-2005 Time: 16:08:35 PAGE 86

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1900.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	338.9	
1	126.5625	126.5938	+0.12	+0.12	-0.00	351.9	353.7
2	126.6250	126.6563	-1.08	-1.08	-0.00	355.4	357.1
3	126.6875	127.1563	Interface (below)		-0.00	358.8	369.4
4	127.6250	128.0938	+9.74	+9.83	+0.09	378.9	388.3
5	128.5625	129.0313	+4.45	+4.59	+0.14	396.5	404.7
6	129.5000	129.9688	+0.00	+0.16	+0.16	411.4	418.1
7	130.4375	130.9063	-3.52	-3.38	+0.14	423.3	428.5
8	131.3750	131.8438	-6.05	-5.95	+0.11	432.0	435.4
9	132.3125	132.7813	-7.56	-7.51	+0.06	437.2	439.0
10	133.2500	133.7188	-8.03	-8.03	+0.00	439.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.27	-2.27	-0.00
FOR OUTER MATERIAL	+15.79	+15.78	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.11	+0.21
HOOP MEMBRANE	N/A	+0.11
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-11.53	-11.56

372

INSIDE BENDING	+11.74	+11.76
OUTSIDE BENDING	-11.33	-11.35
HOOP BENDING	N/A	-11.54
INSIDE BENDING	N/A	+11.65
OUTSIDE BENDING	N/A	-11.43

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	410.8	410.5
DELTA T1 (Total Section Delta T)	+84.4	+84.6
LINEAR INSIDE TEMPERATURE	368.3	368.2
LINEAR OUTSIDE TEMPERATURE	452.7	452.8
DELTA T2 (Absolute of Maximum)	16.4	16.2

Date: 05-24-2005 Time: 16:08:37 PAGE 87

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 2000.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	336.1	
1	126.5625	126.5938	-0.28	-0.28	+0.00	348.7	350.4
2	126.6250	126.6563	-1.44	-1.44	-0.00	352.1	353.7
3	126.6875	127.1563	Interface (below)		-0.00	355.4	365.6
4	127.6250	128.0938	+9.39	+9.48	+0.09	374.7	383.9
5	128.5625	129.0313	+4.29	+4.42	+0.14	391.8	399.6
6	129.5000	129.9688	+0.00	+0.15	+0.15	406.1	412.6
7	130.4375	130.9063	-3.38	-3.25	+0.14	417.6	422.5
8	131.3750	131.8438	-5.82	-5.72	+0.10	425.9	429.2
9	132.3125	132.7813	-7.27	-7.22	+0.05	430.9	432.6
10	133.2500	133.7188	-7.72	-7.72	+0.00	432.6	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.60	-2.60	-0.00
FOR OUTER MATERIAL	+15.23	+15.23	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.11	+0.20
HOOP MEMBRANE	N/A	+0.11
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-11.09	-11.11
INSIDE BENDING	+11.29	+11.31
OUTSIDE BENDING	-10.89	-10.91
HOOP BENDING	N/A	-11.10
INSIDE BENDING	N/A	+11.20
OUTSIDE BENDING	N/A	-10.99

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	405.6	405.2
DELTA T1 (Total Section Delta T)	+81.3	+81.5
LINEAR INSIDE TEMPERATURE	364.6	364.5
LINEAR OUTSIDE TEMPERATURE	445.8	446.0
DELTA T2 (Absolute of Maximum)	15.8	15.7

Date: 05-24-2005 Time: 16:08:38 PAGE 88

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 2100.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node

1373

					(Inside fluid)	333.3	
1	126.5625	126.5938	-0.65	-0.65	+0.00	345.6	347.2
2	126.6250	126.6563	-1.77	-1.77	-0.00	348.8	350.4
3	126.6875	127.1563	Interface (below)		-0.00	352.0	361.9
4	127.6250	128.0938	+9.06	+9.15	+0.09	370.7	379.5
5	128.5625	129.0313	+4.14	+4.27	+0.13	387.1	394.7
6	129.5000	129.9688	+0.01	+0.15	+0.15	401.0	407.2
7	130.4375	130.9063	-3.26	-3.13	+0.13	412.0	416.8
8	131.3750	131.8438	-5.61	-5.51	+0.10	420.0	423.3
9	132.3125	132.7813	-7.00	-6.95	+0.05	424.9	426.5
10	133.2500	133.7188	-7.43	-7.43	+0.00	426.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.89	-2.89	-0.00
FOR OUTER MATERIAL	+14.71	+14.71	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.10	+0.19
HOOP MEMBRANE	N/A	+0.10
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-10.67	-10.69
INSIDE BENDING	+10.87	+10.89
OUTSIDE BENDING	-10.48	-10.50
HOOP BENDING	N/A	-10.68
INSIDE BENDING	N/A	+10.78
OUTSIDE BENDING	N/A	-10.58

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	400.4	400.1
DELTA T1 (Total Section Delta T)	+78.4	+78.6
LINEAR INSIDE TEMPERATURE	360.9	360.8
LINEAR OUTSIDE TEMPERATURE	439.3	439.4
DELTA T2 (Absolute of Maximum)	15.4	15.2

Date: 05-24-2005 Time: 16:08:39 PAGE 89

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 2200.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	330.6	
1	126.5625	126.5938	-0.98	-0.98	+0.00	342.4	344.0
2	126.6250	126.6563	-2.07	-2.07	-0.00	345.5	347.1
3	126.6875	127.1563	Interface (below)		-0.00	348.7	358.2
4	127.6250	128.0938	+8.76	+8.84	+0.08	366.8	375.3
5	128.5625	129.0313	+3.99	+4.12	+0.13	382.7	390.0
6	129.5000	129.9688	+0.01	+0.15	+0.14	396.0	402.1
7	130.4375	130.9063	-3.14	-3.02	+0.13	406.7	411.3
8	131.3750	131.8438	-5.41	-5.31	+0.09	414.4	417.5
9	132.3125	132.7813	-6.75	-6.70	+0.05	419.1	420.7
10	133.2500	133.7188	-7.17	-7.17	+0.00	420.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.15	-3.15	-0.00
FOR OUTER MATERIAL	+14.23	+14.23	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.10	+0.19

674

HOOP MEMBRANE	N/A	+0.10
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-10.29	-10.31
INSIDE BENDING	+10.47	+10.49
OUTSIDE BENDING	-10.10	-10.12
HOOP BENDING	N/A	-10.30
INSIDE BENDING	N/A	+10.40
OUTSIDE BENDING	N/A	-10.20

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	395.5	395.2
DELTA T1 (Total Section Delta T)	+75.7	+75.9
LINEAR INSIDE TEMPERATURE	357.3	357.2
LINEAR OUTSIDE TEMPERATURE	433.0	433.1
DELTA T2 (Absolute of Maximum)	14.9	14.8

Date: 05-24-2005 Time: 16:08:41 PAGE 90

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 2300.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	327.8	
1	126.5625	126.5938	-1.28	-1.28	+0.00	339.3	340.8
2	126.6250	126.6563	-2.33	-2.34	-0.00	342.3	343.8
3	126.6875	127.1563	Interface (below)		-0.00	345.3	354.6
4	127.6250	128.0938	+8.48	+8.56	+0.08	362.9	371.2
5	128.5625	129.0313	+3.86	+3.99	+0.12	378.3	385.4
6	129.5000	129.9688	+0.01	+0.14	+0.14	391.2	397.1
7	130.4375	130.9063	-3.04	-2.91	+0.12	401.5	406.0
8	131.3750	131.8438	-5.22	-5.13	+0.09	409.0	412.0
9	132.3125	132.7813	-6.52	-6.47	+0.05	413.5	415.0
10	133.2500	133.7188	-6.92	-6.92	+0.00	415.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-3.38	-3.38	-0.00
FOR OUTER MATERIAL	+13.78	+13.78	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.10	+0.18
HOOP MEMBRANE	N/A	+0.10
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-9.93	-9.95
INSIDE BENDING	+10.11	+10.13
OUTSIDE BENDING	-9.75	-9.77
HOOP BENDING	N/A	-9.94
INSIDE BENDING	N/A	+10.03
OUTSIDE BENDING	N/A	-9.84

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	390.7	390.4
DELTA T1 (Total Section Delta T)	+73.2	+73.4
LINEAR INSIDE TEMPERATURE	353.8	353.7
LINEAR OUTSIDE TEMPERATURE	427.0	427.1
DELTA T2 (Absolute of Maximum)	14.5	14.4

Date: 05-24-2005 Time: 16:08:42 PAGE 91

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

B75

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.....OUTPUT FOR TIME= 2400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	325.0	
1	126.5625	126.5938	-1.54	-1.54	+0.00	336.2	337.7
2	126.6250	126.6563	-2.57	-2.57	-0.00	339.1	340.6
3	126.6875	127.1563	Interface (below)		-0.00	342.1	351.1
4	127.6250	128.0938	+8.22	+8.29	+0.08	359.1	367.1
5	128.5625	129.0313	+3.74	+3.86	+0.12	374.0	380.9
6	129.5000	129.9688	+0.01	+0.14	+0.13	386.6	392.2
7	130.4375	130.9063	-2.94	-2.82	+0.12	396.5	400.8
8	131.3750	131.8438	-5.05	-4.96	+0.09	403.7	406.6
9	132.3125	132.7813	-6.30	-6.26	+0.05	408.1	409.5
10	133.2500	133.7188	-6.69	-6.69	+0.00	409.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.59	-3.59	-0.00
FOR OUTER MATERIAL	+13.37	+13.36	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.09	+0.18
HOOP MEMBRANE	N/A	+0.09
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-9.59	-9.61
INSIDE BENDING	+9.77	+9.79
OUTSIDE BENDING	-9.42	-9.44
HOOP BENDING	N/A	-9.60
INSIDE BENDING	N/A	+9.70
OUTSIDE BENDING	N/A	-9.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	386.0	385.7
DELTA T1 (Total Section Delta T)	+70.9	+71.1
LINEAR INSIDE TEMPERATURE	350.3	350.2
LINEAR OUTSIDE TEMPERATURE	421.1	421.2
DELTA T2 (Absolute of Maximum)	14.1	14.0

Date: 05-24-2005 Time: 16:08:43 PAGE 92

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 2500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	322.2	
1	126.5625	126.5938	-1.78	-1.78	+0.00	333.1	334.5
2	126.6250	126.6563	-2.78	-2.78	-0.00	336.0	337.4
3	126.6875	127.1563	Interface (below)		-0.00	338.8	347.6
4	127.6250	128.0938	+7.97	+8.04	+0.07	355.4	363.2
5	128.5625	129.0313	+3.63	+3.74	+0.11	369.9	376.5
6	129.5000	129.9688	+0.01	+0.13	+0.13	382.0	387.5
7	130.4375	130.9063	-2.84	-2.73	+0.11	391.7	395.8
8	131.3750	131.8438	-4.89	-4.80	+0.09	398.6	401.4
9	132.3125	132.7813	-6.10	-6.06	+0.05	402.9	404.3
10	133.2500	133.7188	-6.47	-6.47	+0.00	404.3	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.77	-3.77	-0.00
FOR OUTER MATERIAL	+12.98	+12.97	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

1576

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.09	+0.17
HOOP MEMBRANE	N/A	+0.09
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-9.28	-9.30
INSIDE BENDING	+9.45	+9.47
OUTSIDE BENDING	-9.11	-9.13
HOOP BENDING	N/A	-9.29
INSIDE BENDING	N/A	+9.38
OUTSIDE BENDING	N/A	-9.20

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	381.5	381.2
DELTA T1 (Total Section Delta T)	+68.7	+68.9
LINEAR INSIDE TEMPERATURE	346.8	346.7
LINEAR OUTSIDE TEMPERATURE	415.5	415.6
DELTA T2 (Absolute of Maximum)	13.7	13.6

Date: 05-24-2005 Time: 16:08:45 PAGE 93

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 2600.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	319.4	
1	126.5625	126.5938	-1.99	-1.99	+0.00	330.0	331.4
2	126.6250	126.6563	-2.96	-2.96	-0.00	332.8	334.2
3	126.6875	127.1563	Interface (below)		-0.00	335.6	344.2
4	127.6250	128.0938	+7.74	+7.81	+0.07	351.8	359.3
5	128.5625	129.0313	+3.52	+3.63	+0.11	365.8	372.3
6	129.5000	129.9688	+0.01	+0.13	+0.12	377.6	382.9
7	130.4375	130.9063	-2.76	-2.64	+0.11	386.9	391.0
8	131.3750	131.8438	-4.74	-4.65	+0.08	393.7	396.4
9	132.3125	132.7813	-5.91	-5.87	+0.04	397.8	399.2
10	133.2500	133.7188	-6.27	-6.27	+0.00	399.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.92	-3.93	-0.00
FOR OUTER MATERIAL	+12.61	+12.61	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.09	+0.17
HOOP MEMBRANE	N/A	+0.09
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-9.00	-9.01
INSIDE BENDING	+9.16	+9.18
OUTSIDE BENDING	-8.83	-8.85
HOOP BENDING	N/A	-9.00
INSIDE BENDING	N/A	+9.09
OUTSIDE BENDING	N/A	-8.91

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	377.0	376.8
DELTA T1 (Total Section Delta T)	+66.7	+66.9
LINEAR INSIDE TEMPERATURE	343.4	343.3
LINEAR OUTSIDE TEMPERATURE	410.1	410.2
DELTA T2 (Absolute of Maximum)	13.4	13.3

377

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME= 2700.00  SECONDS...................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node       hoop      axial      radial          Grid    Node
                                                 (Inside fluid)   316.7
  1  126.5625  126.5938      -2.17     -2.17     +0.00          327.0   328.4
  2  126.6250  126.6563      -3.12     -3.12     -0.00          329.7   331.1
  3  126.6875  127.1563   Interface (below)      -0.00          332.4   340.8
  4  127.6250  128.0938      +7.53     +7.60     +0.07          348.2   355.5
  5  128.5625  129.0313      +3.42     +3.53     +0.11          361.8   368.1
  6  129.5000  129.9688      +0.01     +0.13     +0.12          373.3   378.4
  7  130.4375  130.9063      -2.68     -2.57     +0.11          382.4   386.3
  8  131.3750  131.8438      -4.60     -4.52     +0.08          388.9   391.6
  9  132.3125  132.7813      -5.74     -5.70     +0.04          392.9   394.2
 10  133.2500  133.7188      -6.09     -6.09     +0.00          394.2   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -4.06     -4.06     -0.00
    FOR OUTER MATERIAL      +12.27    +12.27     -0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02   +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.09                      +0.16
  HOOP MEMBRANE                        N/A                       +0.09
  AVERAGE RADIAL                       N/A                       +0.07
  AXIAL BENDING                       -8.73                      -8.74
     INSIDE BENDING                   +8.89                      +8.90
     OUTSIDE BENDING                  -8.57                      -8.58
  HOOP BENDING                         N/A                       -8.74
     INSIDE BENDING                     N/A                      +8.82
     OUTSIDE BENDING                    N/A                      -8.65

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AVERAGE TEMPERATURE                 372.7                      372.4
  DELTA T1 (Total Section Delta T)    +64.8                      +65.0
  LINEAR INSIDE TEMPERATURE           340.1                      340.0
  LINEAR OUTSIDE TEMPERATURE          404.8                      404.9
  DELTA T2 (Absolute of Maximum)       13.1                       13.0
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME= 2800.00  SECONDS...................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node       hoop      axial      radial          Grid    Node
                                                 (Inside fluid)   313.9
  1  126.5625  126.5938      -2.33     -2.33     +0.00          324.0   325.3
  2  126.6250  126.6563      -3.25     -3.26     -0.00          326.6   328.0
  3  126.6875  127.1563   Interface (below)      -0.00          329.3   337.4
  4  127.6250  128.0938      +7.33     +7.39     +0.07          344.6   351.8
  5  128.5625  129.0313      +3.33     +3.43     +0.10          357.9   364.1
  6  129.5000  129.9688      +0.01     +0.12     +0.12          369.1   374.1
  7  130.4375  130.9063      -2.60     -2.50     +0.10          377.9   381.7
  8  131.3750  131.8438      -4.47     -4.39     +0.08          384.3   386.8
  9  132.3125  132.7813      -5.57     -5.53     +0.04          388.1   389.4
 10  133.2500  133.7188      -5.92     -5.92     +0.00          389.4   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -4.17     -4.18     -0.00
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B-78

FOR OUTER MATERIAL +11.96 +11.95 -0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.16
HOOP MEMBRANE	N/A	+0.09
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-8.48	-8.49
INSIDE BENDING	+8.64	+8.65
OUTSIDE BENDING	-8.32	-8.34
HOOP BENDING	N/A	-8.49
INSIDE BENDING	N/A	+8.57
OUTSIDE BENDING	N/A	-8.40

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	368.5	368.3
DELTA T1 (Total Section Delta T)	+63.0	+63.2
LINEAR INSIDE TEMPERATURE	336.7	336.7
LINEAR OUTSIDE TEMPERATURE	399.8	399.9
DELTA T2 (Absolute of Maximum)	12.8	12.7

Date: 05-24-2005 Time: 16:08:48 PAGE - 96

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 2900.00 SECONDS.....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	311.1	
1	126.5625	126.5938	-2.47	-2.47	+0.00	321.0	322.3
2	126.6250	126.6563	-3.37	-3.37	-0.00	323.6	324.9
3	126.6875	127.1563	Interface (below)		-0.00	326.2	334.1
4	127.6250	128.0938	+7.14	+7.21	+0.07	341.1	348.1
5	128.5625	129.0313	+3.24	+3.35	+0.10	354.1	360.1
6	129.5000	129.9688	+0.01	+0.12	+0.11	365.0	369.8
7	130.4375	130.9063	-2.53	-2.43	+0.10	373.6	377.3
8	131.3750	131.8438	-4.35	-4.27	+0.08	379.8	382.2
9	132.3125	132.7813	-5.42	-5.38	+0.04	383.5	384.7
10	133.2500	133.7188	-5.75	-5.75	+0.00	384.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL -4.27 -4.27 -0.00

FOR OUTER MATERIAL +11.66 +11.66 -0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.15
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-8.25	-8.26
INSIDE BENDING	+8.40	+8.41
OUTSIDE BENDING	-8.09	-8.11
HOOP BENDING	N/A	-8.25
INSIDE BENDING	N/A	+8.34
OUTSIDE BENDING	N/A	-8.17

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	364.4	364.2
DELTA T1 (Total Section Delta T)	+61.4	+61.6
LINEAR INSIDE TEMPERATURE	333.5	333.4
LINEAR OUTSIDE TEMPERATURE	394.8	394.9

B79

DELTA T2 (Absolute of Maximum) 12.5 12.4

Date: 05-24-2005 Time: 16:08:50 PAGE 97

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	308.3	
1	126.5625	126.5938	-2.58	-2.58	+0.00	318.0	319.3
2	126.6250	126.6563	-3.47	-3.47	-0.00	320.5	321.8
3	126.6875	127.1563	Interface (below)		-0.00	323.1	330.8
4	127.6250	128.0938	+6.97	+7.03	+0.06	337.7	344.5
5	128.5625	129.0313	+3.16	+3.26	+0.10	350.4	356.2
6	129.5000	129.9688	+0.01	+0.12	+0.11	361.0	365.7
7	130.4375	130.9063	-2.47	-2.37	+0.10	369.3	372.9
8	131.3750	131.8438	-4.23	-4.16	+0.07	375.4	377.8
9	132.3125	132.7813	-5.28	-5.24	+0.04	379.0	380.2
10	133.2500	133.7188	-5.60	-5.60	+0.00	380.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.35	-4.35	-0.00
FOR OUTER MATERIAL	+11.39	+11.38	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.15
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-8.03	-8.05
INSIDE BENDING	+8.18	+8.19
OUTSIDE BENDING	-7.88	-7.90
HOOP BENDING	N/A	-8.04
INSIDE BENDING	N/A	+8.12
OUTSIDE BENDING	N/A	-7.96

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	360.4	360.1
DELTA T1 (Total Section Delta T)	+59.8	+60.0
LINEAR INSIDE TEMPERATURE	330.2	330.1
LINEAR OUTSIDE TEMPERATURE	390.1	390.2
DELTA T2 (Absolute of Maximum)	12.2	12.2

Date: 05-24-2005 Time: 16:08:51 PAGE 98

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3100.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	305.6	
1	126.5625	126.5938	-2.68	-2.68	+0.00	315.0	316.3
2	126.6250	126.6563	-3.55	-3.55	-0.00	317.5	318.7
3	126.6875	127.1563	Interface (below)		-0.00	320.0	327.6
4	127.6250	128.0938	+6.81	+6.87	+0.06	334.3	341.0
5	128.5625	129.0313	+3.09	+3.18	+0.10	346.7	352.4
6	129.5000	129.9688	+0.01	+0.11	+0.11	357.0	361.7
7	130.4375	130.9063	-2.41	-2.31	+0.10	365.2	368.7
8	131.3750	131.8438	-4.13	-4.06	+0.07	371.1	373.4
9	132.3125	132.7813	-5.15	-5.11	+0.04	374.6	375.8
10	133.2500	133.7188	-5.46	-5.46	+0.00	375.8	120.0

B50

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.41	-4.41	-0.00
FOR OUTER MATERIAL	+11.13	+11.13	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.15
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-7.83	-7.85
INSIDE BENDING	+7.98	+7.99
OUTSIDE BENDING	-7.69	-7.70
HOOP BENDING	N/A	-7.84
INSIDE BENDING	N/A	+7.92
OUTSIDE BENDING	N/A	-7.76

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	356.5	356.2
DELTA T1 (Total Section Delta T)	+58.4	+58.6
LINEAR INSIDE TEMPERATURE	327.0	326.9
LINEAR OUTSIDE TEMPERATURE	385.4	385.5
DELTA T2 (Absolute of Maximum)	12.0	11.9

Date: 05-24-2005 Time: 16:08:52 PAGE 99

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	302.8	
1	126.5625	126.5938	-2.76	-2.76	+0.00	312.0	313.3
2	126.6250	126.6563	-3.61	-3.61	-0.00	314.5	315.7
3	126.6875	127.1563	Interface (below)		-0.00	316.9	324.4
4	127.6250	128.0938	+6.65	+6.71	+0.06	331.0	337.5
5	128.5625	129.0313	+3.02	+3.11	+0.09	343.1	348.6
6	129.5000	129.9688	+0.00	+0.11	+0.10	353.2	357.7
7	130.4375	130.9063	-2.35	-2.26	+0.09	361.1	364.6
8	131.3750	131.8438	-4.03	-3.96	+0.07	366.9	369.2
9	132.3125	132.7813	-5.03	-4.99	+0.04	370.3	371.5
10	133.2500	133.7188	-5.33	-5.33	+0.00	371.5	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.45	-4.46	-0.00
FOR OUTER MATERIAL	+10.89	+10.89	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.14
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.65	-7.66
INSIDE BENDING	+7.79	+7.80
OUTSIDE BENDING	-7.50	-7.52
HOOP BENDING	N/A	-7.65
INSIDE BENDING	N/A	+7.73
OUTSIDE BENDING	N/A	-7.57

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	352.6	352.4

381

DELTA T1 (Total Section Delta T)	+57.1	+57.3
LINEAR INSIDE TEMPERATURE	323.8	323.7
LINEAR OUTSIDE TEMPERATURE	380.9	381.0
DELTA T2 (Absolute of Maximum)	11.8	11.7

Date: 05-24-2005 Time: 16:08:53 PAGE 100

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	300.0	
1	126.5625	126.5938	-2.82	-2.82	+0.00	309.1	310.3
2	126.6250	126.6563	-3.66	-3.66	-0.00	311.5	312.7
3	126.6875	127.1563	Interface (below)		-0.00	313.9	321.2
4	127.6250	128.0938	+6.51	+6.57	+0.06	327.6	334.1
5	128.5625	129.0313	+2.95	+3.04	+0.09	339.5	345.0
6	129.5000	129.9688	+0.00	+0.11	+0.10	349.4	353.8
7	130.4375	130.9063	-2.30	-2.21	+0.09	357.2	360.5
8	131.3750	131.8438	-3.94	-3.87	+0.07	362.8	365.0
9	132.3125	132.7813	-4.92	-4.88	+0.04	366.2	367.3
10	133.2500	133.7188	-5.21	-5.21	+0.00	367.3	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.48	-4.49	-0.00
FOR OUTER MATERIAL	+10.67	+10.66	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.14
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.47	-7.49
INSIDE BENDING	+7.61	+7.63
OUTSIDE BENDING	-7.33	-7.35
HOOP BENDING	N/A	-7.48
INSIDE BENDING	N/A	+7.56
OUTSIDE BENDING	N/A	-7.40

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	348.8	348.6
DELTA T1 (Total Section Delta T)	+55.9	+56.0
LINEAR INSIDE TEMPERATURE	320.7	320.6
LINEAR OUTSIDE TEMPERATURE	376.5	376.6
DELTA T2 (Absolute of Maximum)	11.6	11.5

Date: 05-24-2005 Time: 16:08:55 PAGE 101

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	297.2	
1	126.5625	126.5938	-2.87	-2.87	+0.00	306.1	307.3
2	126.6250	126.6563	-3.69	-3.69	-0.00	308.5	309.7
3	126.6875	127.1563	Interface (below)		-0.00	310.9	318.0
4	127.6250	128.0938	+6.38	+6.44	+0.06	324.4	330.7
5	128.5625	129.0313	+2.89	+2.98	+0.09	336.0	341.3
6	129.5000	129.9688	+0.00	+0.10	+0.10	345.7	350.0
7	130.4375	130.9063	-2.25	-2.16	+0.09	353.3	356.6

1382

8	131.3750	131.8438	-3.86	-3.79	+0.07	358.8	361.0
9	132.3125	132.7813	-4.81	-4.77	+0.04	362.1	363.2
10	133.2500	133.7188	-5.10	-5.10	+0.00	363.2	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.50	-4.50	-0.00
FOR OUTER MATERIAL	+10.46	+10.45	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.14
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.31	-7.33
INSIDE BENDING	+7.45	+7.46
OUTSIDE BENDING	-7.18	-7.19
HOOP BENDING	N/A	-7.32
INSIDE BENDING	N/A	+7.39
OUTSIDE BENDING	N/A	-7.24

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	345.1	344.9
DELTA T1 (Total Section Delta T)	+54.7	+54.9
LINEAR INSIDE TEMPERATURE	317.5	317.4
LINEAR OUTSIDE TEMPERATURE	372.2	372.3
DELTA T2 (Absolute of Maximum)	11.4	11.3

Date: 05-24-2005 Time: 16:08:56 PAGE 102

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	294.4	
1	126.5625	126.5938	-2.90	-2.90	+0.00	303.2	304.4
2	126.6250	126.6563	-3.71	-3.71	-0.00	305.5	306.7
3	126.6875	127.1563	Interface (below)		-0.00	307.8	314.9
4	127.6250	128.0938	+6.26	+6.32	+0.06	321.1	327.3
5	128.5625	129.0313	+2.83	+2.92	+0.09	332.6	337.8
6	129.5000	129.9688	+0.00	+0.10	+0.10	342.0	346.3
7	130.4375	130.9063	-2.21	-2.12	+0.09	349.5	352.7
8	131.3750	131.8438	-3.78	-3.72	+0.07	354.9	357.0
9	132.3125	132.7813	-4.71	-4.68	+0.03	358.1	359.2
10	133.2500	133.7188	-5.00	-5.00	+0.00	359.2	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.51	-4.51	-0.00
FOR OUTER MATERIAL	+10.26	+10.26	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.13
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.17	-7.18
INSIDE BENDING	+7.30	+7.31
OUTSIDE BENDING	-7.03	-7.04
HOOP BENDING	N/A	-7.17
INSIDE BENDING	N/A	+7.25
OUTSIDE BENDING	N/A	-7.10

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	341.5	341.2
DELTA T1 (Total Section Delta T)	+53.6	+53.8
LINEAR INSIDE TEMPERATURE	314.4	314.3
LINEAR OUTSIDE TEMPERATURE	368.1	368.2
DELTA T2 (Absolute of Maximum)	11.2	11.1

Date: 05-24-2005 Time: 16:08:57 PAGE 103

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	291.7	
1	126.5625	126.5938	-2.92	-2.92	+0.00	300.3	301.5
2	126.6250	126.6563	-3.71	-3.72	-0.00	302.6	303.7
3	126.6875	127.1563	Interface (below)		-0.00	304.9	311.8
4	127.6250	128.0938	+6.14	+6.20	+0.06	317.9	324.0
5	128.5625	129.0313	+2.78	+2.86	+0.09	329.1	334.3
6	129.5000	129.9688	-0.00	+0.10	+0.10	338.5	342.6
7	130.4375	130.9063	-2.17	-2.08	+0.09	345.8	348.9
8	131.3750	131.8438	-3.71	-3.64	+0.06	351.0	353.1
9	132.3125	132.7813	-4.62	-4.59	+0.03	354.2	355.3
10	133.2500	133.7188	-4.90	-4.90	+0.00	355.3	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-4.50	-4.50	-0.00
FOR OUTER MATERIAL	+10.08	+10.08	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.13
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-7.03	-7.04
INSIDE BENDING	+7.16	+7.17
OUTSIDE BENDING	-6.90	-6.91
HOOP BENDING	N/A	-7.03
INSIDE BENDING	N/A	+7.11
OUTSIDE BENDING	N/A	-6.96

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	337.9	337.7
DELTA T1 (Total Section Delta T)	+52.7	+52.8
LINEAR INSIDE TEMPERATURE	311.3	311.3
LINEAR OUTSIDE TEMPERATURE	364.0	364.1
DELTA T2 (Absolute of Maximum)	11.0	10.9

Date: 05-24-2005 Time: 16:08:59 PAGE 104

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	288.9	
1	126.5625	126.5938	-2.93	-2.93	+0.00	297.4	298.5
2	126.6250	126.6563	-3.71	-3.71	-0.00	299.6	300.8
3	126.6875	127.1563	Interface (below)		-0.00	301.9	308.7
4	127.6250	128.0938	+6.04	+6.09	+0.05	314.7	320.7

134

5	128.5625	129.0313	+2.73	+2.81	+0.09	325.8	330.8
6	129.5000	129.9688	-0.00	+0.09	+0.09	334.9	339.0
7	130.4375	130.9063	-2.13	-2.04	+0.09	342.1	345.2
8	131.3750	131.8438	-3.64	-3.58	+0.06	347.3	349.3
9	132.3125	132.7813	-4.54	-4.50	+0.03	350.4	351.4
10	133.2500	133.7188	-4.81	-4.81	+0.00	351.4	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.48	-4.48	-0.00
FOR OUTER MATERIAL	+9.91	+9.91	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.13
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-6.90	-6.91
INSIDE BENDING	+7.03	+7.04
OUTSIDE BENDING	-6.77	-6.78
HOOP BENDING	N/A	-6.91
INSIDE BENDING	N/A	+6.98
OUTSIDE BENDING	N/A	-6.83

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	334.4	334.1
DELTA T1 (Total Section Delta T)	+51.7	+51.9
LINEAR INSIDE TEMPERATURE	308.3	308.2
LINEAR OUTSIDE TEMPERATURE	360.0	360.1
DELTA T2 (Absolute of Maximum)	10.9	10.8

Date: 05-24-2005 Time: 16:09:00 PAGE 105

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	286.1	
1	126.5625	126.5938	-2.92	-2.92	+0.00	294.5	295.6
2	126.6250	126.6563	-3.69	-3.69	-0.00	296.7	297.8
3	126.6875	127.1563	Interface (below)		-0.00	298.9	305.7
4	127.6250	128.0938	+5.94	+5.99	+0.05	311.6	317.5
5	128.5625	129.0313	+2.68	+2.76	+0.08	322.4	327.4
6	129.5000	129.9688	-0.00	+0.09	+0.09	331.4	335.5
7	130.4375	130.9063	-2.09	-2.01	+0.08	338.5	341.5
8	131.3750	131.8438	-3.58	-3.52	+0.06	343.6	345.6
9	132.3125	132.7813	-4.46	-4.42	+0.03	346.6	347.6
10	133.2500	133.7188	-4.73	-4.73	+0.00	347.6	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.45	-4.46	-0.00
FOR OUTER MATERIAL	+9.76	+9.75	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.13
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-6.78	-6.79
INSIDE BENDING	+6.91	+6.92
OUTSIDE BENDING	-6.65	-6.67

635

HOOP BENDING	N/A	-6.79
INSIDE BENDING	N/A	+6.86
OUTSIDE BENDING	N/A	-6.72

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	330.9	330.7
DELTA T1 (Total Section Delta T)	+50.8	+51.0
LINEAR INSIDE TEMPERATURE	305.2	305.2
LINEAR OUTSIDE TEMPERATURE	356.1	356.2
DELTA T2 (Absolute of Maximum)	10.7	10.7

Date: 05-24-2005 Time: 16:09:01 PAGE 106

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 3900.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	283.3	
1	126.5625	126.5938	-2.91	-2.91	+0.00	291.6	292.7
2	126.6250	126.6563	-3.67	-3.67	-0.00	293.8	294.9
3	126.6875	127.1563	Interface (below)		-0.00	296.0	302.6
4	127.6250	128.0938	+5.84	+5.90	+0.05	308.5	314.2
5	128.5625	129.0313	+2.63	+2.72	+0.08	319.2	324.0
6	129.5000	129.9688	-0.01	+0.08	+0.09	328.0	332.0
7	130.4375	130.9063	-2.06	-1.98	+0.08	335.0	337.9
8	131.3750	131.8438	-3.52	-3.46	+0.06	339.9	341.9
9	132.3125	132.7813	-4.38	-4.35	+0.03	342.9	343.9
10	133.2500	133.7188	-4.65	-4.65	+0.00	343.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-4.42	-4.42	-0.00
FOR OUTER MATERIAL	+9.61	+9.61	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.13
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-6.67	-6.68
INSIDE BENDING	+6.80	+6.81
OUTSIDE BENDING	-6.55	-6.56
HOOP BENDING	N/A	-6.68
INSIDE BENDING	N/A	+6.75
OUTSIDE BENDING	N/A	-6.61

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	327.4	327.2
DELTA T1 (Total Section Delta T)	+50.0	+50.2
LINEAR INSIDE TEMPERATURE	302.2	302.1
LINEAR OUTSIDE TEMPERATURE	352.2	352.3
DELTA T2 (Absolute of Maximum)	10.6	10.5

Date: 05-24-2005 Time: 16:09:02 PAGE 107

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4000.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	280.6	
1	126.5625	126.5938	-2.88	-2.88	+0.00	288.7	289.8

356

2	126.6250	126.6563	-3.63	-3.63	-0.00	290.9	292.0
3	126.6875	127.1563	Interface (below)		-0.00	293.0	299.6
4	127.6250	128.0938	+5.76	+5.81	+0.05	305.3	311.1
5	128.5625	129.0313	+2.59	+2.67	+0.08	315.9	320.7
6	129.5000	129.9688	-0.01	+0.08	+0.09	324.6	328.5
7	130.4375	130.9063	-2.03	-1.95	+0.08	331.4	334.4
8	131.3750	131.8438	-3.47	-3.41	+0.06	336.4	338.3
9	132.3125	132.7813	-4.32	-4.28	+0.03	339.3	340.3
10	133.2500	133.7188	-4.58	-4.58	+0.00	340.3	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.37	-4.38	-0.00
FOR OUTER MATERIAL	+9.47	+9.47	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.12
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-6.57	-6.58
INSIDE BENDING	+6.69	+6.71
OUTSIDE BENDING	-6.45	-6.46
HOOP BENDING	N/A	-6.58
INSIDE BENDING	N/A	+6.64
OUTSIDE BENDING	N/A	-6.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	324.0	323.8
DELTA T1 (Total Section Delta T)	+49.3	+49.4
LINEAR INSIDE TEMPERATURE	299.2	299.1
LINEAR OUTSIDE TEMPERATURE	348.5	348.6
DELTA T2 (Absolute of Maximum)	10.5	10.4

Date: 05-24-2005 Time: 16:09:04 PAGE 108

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4100.00 SECONDS.....

	-- Radii, inches -		------ Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	277.8	
1	126.5625	126.5938	-2.85	-2.85	+0.00	285.8	286.9
2	126.6250	126.6563	-3.59	-3.59	-0.00	288.0	289.0
3	126.6875	127.1563	Interface (below)		-0.00	290.1	296.6
4	127.6250	128.0938	+5.68	+5.73	+0.05	302.3	307.9
5	128.5625	129.0313	+2.55	+2.63	+0.08	312.7	317.4
6	129.5000	129.9688	-0.01	+0.08	+0.09	321.3	325.1
7	130.4375	130.9063	-2.00	-1.92	+0.08	328.0	330.9
8	131.3750	131.8438	-3.42	-3.36	+0.06	332.8	334.8
9	132.3125	132.7813	-4.25	-4.22	+0.03	335.7	336.7
10	133.2500	133.7188	-4.51	-4.51	+0.00	336.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.32	-4.32	-0.00
FOR OUTER MATERIAL	+9.34	+9.34	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.12
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.05

857

AXIAL BENDING	-6.48	-6.49
INSIDE BENDING	+6.60	+6.61
OUTSIDE BENDING	-6.35	-6.36
HOOP BENDING	N/A	-6.48
INSIDE BENDING	N/A	+6.55
OUTSIDE BENDING	N/A	-6.41

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	320.7	320.5
DELTA T1 (Total Section Delta T)	+48.6	+48.7
LINEAR INSIDE TEMPERATURE	296.2	296.1
LINEAR OUTSIDE TEMPERATURE	344.8	344.9
DELTA T2 (Absolute of Maximum)	10.4	10.3

Date: 05-24-2005 Time: 16:09:05 PAGE 109

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4200.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	275.0	
1	126.5625	126.5938	-2.80	-2.80	+0.00	283.0	284.0
2	126.6250	126.6563	-3.53	-3.53	-0.00	285.1	286.1
3	126.6875	127.1563	Interface (below)		-0.00	287.2	293.6
4	127.6250	128.0938	+5.60	+5.65	+0.05	299.2	304.8
5	128.5625	129.0313	+2.52	+2.60	+0.08	309.5	314.2
6	129.5000	129.9688	-0.01	+0.08	+0.09	318.0	321.7
7	130.4375	130.9063	-1.98	-1.90	+0.08	324.6	327.4
8	131.3750	131.8438	-3.37	-3.31	+0.06	329.4	331.3
9	132.3125	132.7813	-4.19	-4.16	+0.03	332.2	333.2
10	133.2500	133.7188	-4.45	-4.45	+0.00	333.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-4.26	-4.26	-0.00
FOR OUTER MATERIAL	+9.22	+9.22	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.12
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.39	-6.40
INSIDE BENDING	+6.51	+6.52
OUTSIDE BENDING	-6.27	-6.28
HOOP BENDING	N/A	-6.39
INSIDE BENDING	N/A	+6.46
OUTSIDE BENDING	N/A	-6.33

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	317.4	317.2
DELTA T1 (Total Section Delta T)	+47.9	+48.1
LINEAR INSIDE TEMPERATURE	293.2	293.1
LINEAR OUTSIDE TEMPERATURE	341.2	341.2
DELTA T2 (Absolute of Maximum)	10.2	10.2

Date: 05-24-2005 Time: 16:09:06 PAGE 110

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4300.00 SECONDS.....

-- Radii, inches - ---- Grid Stress, ksi ------ Temperature, F

088

CGS-RPV

N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	272.2	
1	126.5625	126.5938	-2.75	-2.75	+0.00	280.1	281.2
2	126.6250	126.6563	-3.47	-3.47	-0.00	282.2	283.2
3	126.6875	127.1563	Interface (below)		-0.00	284.3	290.6
4	127.6250	128.0938	+5.53	+5.58	+0.05	296.2	301.7
5	128.5625	129.0313	+2.48	+2.56	+0.08	306.3	310.9
6	129.5000	129.9688	-0.01	+0.07	+0.09	314.7	318.4
7	130.4375	130.9063	-1.95	-1.88	+0.08	321.2	324.1
8	131.3750	131.8438	-3.33	-3.27	+0.06	325.9	327.8
9	132.3125	132.7813	-4.14	-4.11	+0.03	328.8	329.7
10	133.2500	133.7188	-4.39	-4.39	+0.00	329.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.19	-4.19	-0.00
FOR OUTER MATERIAL	+9.11	+9.11	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.07	+0.12
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.31	-6.32
INSIDE BENDING	+6.43	+6.44
OUTSIDE BENDING	-6.19	-6.20
HOOP BENDING	N/A	-6.31
INSIDE BENDING	N/A	+6.38
OUTSIDE BENDING	N/A	-6.25

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	314.1	313.9
DELTA T1 (Total Section Delta T)	+47.3	+47.5
LINEAR INSIDE TEMPERATURE	290.3	290.2
LINEAR OUTSIDE TEMPERATURE	337.6	337.7
DELTA T2 (Absolute of Maximum)	10.1	10.1

Date: 05-24-2005 Time: 16:09:07 PAGE 111

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	269.4	
1	126.5625	126.5938	-2.69	-2.69	+0.00	277.3	278.3
2	126.6250	126.6563	-3.40	-3.41	-0.00	279.3	280.4
3	126.6875	127.1563	Interface (below)		-0.00	281.4	287.7
4	127.6250	128.0938	+5.46	+5.51	+0.05	293.1	298.6
5	128.5625	129.0313	+2.45	+2.53	+0.08	303.2	307.8
6	129.5000	129.9688	-0.02	+0.07	+0.09	311.5	315.1
7	130.4375	130.9063	-1.93	-1.85	+0.08	317.9	320.7
8	131.3750	131.8438	-3.29	-3.23	+0.06	322.6	324.4
9	132.3125	132.7813	-4.09	-4.06	+0.03	325.3	326.3
10	133.2500	133.7188	-4.33	-4.33	+0.00	326.3	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-4.11	-4.12	-0.00
FOR OUTER MATERIAL	+9.01	+9.01	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON: AREA WEIGHTED AVERAGING LINEAR AVERAGING

AXIAL MEMBRANE	+0.06	+0.12
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.23	-6.25
INSIDE BENDING	+6.35	+6.36
OUTSIDE BENDING	-6.12	-6.13
HOOP BENDING	N/A	-6.24
INSIDE BENDING	N/A	+6.31
OUTSIDE BENDING	N/A	-6.17

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	310.9	310.7
DELTA T1 (Total Section Delta T)	+46.8	+46.9
LINEAR INSIDE TEMPERATURE	287.3	287.2
LINEAR OUTSIDE TEMPERATURE	334.1	334.1
DELTA T2 (Absolute of Maximum)	10.0	10.0

Date: 05-24-2005 Time: 16:09:09 PAGE 112

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	266.7	
1	126.5625	126.5938	-2.62	-2.62	+0.00	274.4	275.4
2	126.6250	126.6563	-3.33	-3.33	-0.00	276.5	277.5
3	126.6875	127.1563	Interface (below)		-0.00	278.5	284.7
4	127.6250	128.0938	+5.40	+5.45	+0.05	290.1	295.5
5	128.5625	129.0313	+2.42	+2.50	+0.08	300.1	304.6
6	129.5000	129.9688	-0.02	+0.07	+0.08	308.2	311.9
7	130.4375	130.9063	-1.91	-1.83	+0.08	314.6	317.4
8	131.3750	131.8438	-3.25	-3.20	+0.06	319.2	321.0
9	132.3125	132.7813	-4.04	-4.01	+0.03	322.0	322.9
10	133.2500	133.7188	-4.28	-4.28	+0.00	322.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-4.03	-4.03	-0.00
FOR OUTER MATERIAL	+8.91	+8.91	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.12
HOOP MEMBRANE	N/A	+0.07
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.17	-6.18
INSIDE BENDING	+6.28	+6.30
OUTSIDE BENDING	-6.05	-6.06
HOOP BENDING	N/A	-6.17
INSIDE BENDING	N/A	+6.24
OUTSIDE BENDING	N/A	-6.11

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	307.7	307.5
DELTA T1 (Total Section Delta T)	+46.2	+46.4
LINEAR INSIDE TEMPERATURE	284.4	284.3
LINEAR OUTSIDE TEMPERATURE	330.6	330.7
DELTA T2 (Absolute of Maximum)	10.0	9.9

Date: 05-24-2005 Time: 16:09:10 PAGE 113

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610

CGS-RPV

* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	263.9	
1	126.5625	126.5938	-2.54	-2.54	+0.00	271.6	272.6
2	126.6250	126.6563	-3.25	-3.25	-0.00	273.6	274.6
3	126.6875	127.1563	Interface (below)		-0.00	275.6	281.8
4	127.6250	128.0938	+5.34	+5.39	+0.05	287.1	292.5
5	128.5625	129.0313	+2.39	+2.47	+0.08	297.0	301.4
6	129.5000	129.9688	-0.02	+0.06	+0.08	305.1	308.7
7	130.4375	130.9063	-1.89	-1.82	+0.08	311.4	314.1
8	131.3750	131.8438	-3.22	-3.16	+0.06	315.9	317.7
9	132.3125	132.7813	-4.00	-3.97	+0.03	318.6	319.5
10	133.2500	133.7188	-4.24	-4.24	+0.00	319.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.95	-3.95	-0.00
FOR OUTER MATERIAL	+8.82	+8.82	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.12
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.10	-6.12
INSIDE BENDING	+6.22	+6.23
OUTSIDE BENDING	-5.99	-6.00
HOOP BENDING	N/A	-6.11
INSIDE BENDING	N/A	+6.17
OUTSIDE BENDING	N/A	-6.04

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	304.5	304.3
DELTA T1 (Total Section Delta T)	+45.7	+45.9
LINEAR INSIDE TEMPERATURE	281.4	281.4
LINEAR OUTSIDE TEMPERATURE	327.2	327.2
DELTA T2 (Absolute of Maximum)	9.9	9.8

Date: 05-24-2005 Time: 16:09:11 PAGE 114

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	261.1	
1	126.5625	126.5938	-2.46	-2.46	+0.00	268.7	269.7
2	126.6250	126.6563	-3.16	-3.16	-0.00	270.7	271.7
3	126.6875	127.1563	Interface (below)		-0.00	272.7	278.9
4	127.6250	128.0938	+5.29	+5.34	+0.05	284.2	289.5
5	128.5625	129.0313	+2.37	+2.44	+0.08	293.9	298.3
6	129.5000	129.9688	-0.02	+0.06	+0.08	301.9	305.5
7	130.4375	130.9063	-1.87	-1.80	+0.07	308.2	310.9
8	131.3750	131.8438	-3.19	-3.13	+0.06	312.7	314.4
9	132.3125	132.7813	-3.96	-3.93	+0.03	315.3	316.2
10	133.2500	133.7188	-4.20	-4.20	+0.00	316.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.85	-3.86	-0.00
FOR OUTER MATERIAL	+8.74	+8.73	-0.00

B-4

CGS-RPV

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.12
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-6.05	-6.06
INSIDE BENDING	+6.16	+6.17
OUTSIDE BENDING	-5.93	-5.94
HOOP BENDING	N/A	-6.05
INSIDE BENDING	N/A	+6.11
OUTSIDE BENDING	N/A	-5.99

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	301.4	301.2
DELTA T1 (Total Section Delta T)	+45.3	+45.4
LINEAR INSIDE TEMPERATURE	278.5	278.4
LINEAR OUTSIDE TEMPERATURE	323.8	323.9
DELTA T2 (Absolute of Maximum)	9.8	9.7

Date: 05-24-2005 Time: 16:09:13 PAGE 115

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	258.3	
1	126.5625	126.5938	-2.38	-2.38	+0.00	265.9	266.9
2	126.6250	126.6563	-3.07	-3.07	-0.00	267.9	268.9
3	126.6875	127.1563	Interface (below)		-0.00	269.9	275.9
4	127.6250	128.0938	+5.24	+5.29	+0.05	281.2	286.4
5	128.5625	129.0313	+2.34	+2.42	+0.07	290.9	295.2
6	129.5000	129.9688	-0.03	+0.06	+0.08	298.8	302.3
7	130.4375	130.9063	-1.86	-1.79	+0.07	305.0	307.6
8	131.3750	131.8438	-3.16	-3.10	+0.06	309.4	311.2
9	132.3125	132.7813	-3.92	-3.89	+0.03	312.1	313.0
10	133.2500	133.7188	-4.16	-4.16	+0.00	313.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.75	-3.76	-0.00
FOR OUTER MATERIAL	+8.66	+8.65	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.99	-6.00
INSIDE BENDING	+6.11	+6.12
OUTSIDE BENDING	-5.88	-5.89
HOOP BENDING	N/A	-6.00
INSIDE BENDING	N/A	+6.06
OUTSIDE BENDING	N/A	-5.93

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	298.2	298.0
DELTA T1 (Total Section Delta T)	+44.9	+45.0
LINEAR INSIDE TEMPERATURE	275.6	275.5
LINEAR OUTSIDE TEMPERATURE	320.5	320.5
DELTA T2 (Absolute of Maximum)	9.7	9.6

B92

Date: 05-24-2005 Time: 16:09:14 PAGE 116

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4900.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	255.6	
1	126.5625	126.5938	-2.29	-2.29	+0.00	263.1	264.0
2	126.6250	126.6563	-2.97	-2.97	-0.00	265.0	266.0
3	126.6875	127.1563	Interface (below)		-0.00	267.0	273.0
4	127.6250	128.0938	+5.19	+5.24	+0.05	278.3	283.5
5	128.5625	129.0313	+2.32	+2.39	+0.07	287.8	292.2
6	129.5000	129.9688	-0.03	+0.05	+0.08	295.7	299.2
7	130.4375	130.9063	-1.84	-1.77	+0.07	301.8	304.5
8	131.3750	131.8438	-3.13	-3.08	+0.05	306.2	308.0
9	132.3125	132.7813	-3.89	-3.86	+0.03	308.9	309.7
10	133.2500	133.7188	-4.12	-4.12	+0.00	309.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.65	-3.66	-0.00
FOR OUTER MATERIAL	+8.58	+8.58	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.94	-5.95
INSIDE BENDING	+6.06	+6.07
OUTSIDE BENDING	-5.83	-5.84
HOOP BENDING	N/A	-5.95
INSIDE BENDING	N/A	+6.01
OUTSIDE BENDING	N/A	-5.88

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	295.1	294.9
DELTA T1 (Total Section Delta T)	+44.5	+44.6
LINEAR INSIDE TEMPERATURE	272.7	272.6
LINEAR OUTSIDE TEMPERATURE	317.2	317.2
DELTA T2 (Absolute of Maximum)	9.6	9.6

Date: 05-24-2005 Time: 16:09:15 PAGE 117

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	252.8	
1	126.5625	126.5938	-2.19	-2.19	+0.00	260.2	261.2
2	126.6250	126.6563	-2.87	-2.87	-0.00	262.2	263.2
3	126.6875	127.1563	Interface (below)		-0.00	264.1	270.1
4	127.6250	128.0938	+5.14	+5.19	+0.05	275.3	280.5
5	128.5625	129.0313	+2.30	+2.37	+0.07	284.8	289.1
6	129.5000	129.9688	-0.03	+0.05	+0.08	292.6	296.1
7	130.4375	130.9063	-1.83	-1.76	+0.07	298.7	301.3
8	131.3750	131.8438	-3.11	-3.05	+0.05	303.1	304.8
9	132.3125	132.7813	-3.86	-3.83	+0.03	305.7	306.5
10	133.2500	133.7188	-4.09	-4.09	+0.00	306.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

B93

FOR INNER MATERIAL	-3.55	-3.55	-0.00
FOR OUTER MATERIAL	+8.51	+8.51	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.90	-5.91
INSIDE BENDING	+6.01	+6.02
OUTSIDE BENDING	-5.79	-5.80
HOOP BENDING	N/A	-5.90
INSIDE BENDING	N/A	+5.97
OUTSIDE BENDING	N/A	-5.84

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	292.0	291.9
DELTA T1 (Total Section Delta T)	+44.1	+44.2
LINEAR INSIDE TEMPERATURE	269.8	269.7
LINEAR OUTSIDE TEMPERATURE	313.9	314.0
DELTA T2 (Absolute of Maximum)	9.6	9.5

Date: 05-24-2005 Time: 16:09:16 PAGE 118

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5100.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	250.0	
1	126.5625	126.5938	-2.09	-2.09	+0.00	257.4	258.4
2	126.6250	126.6563	-2.76	-2.77	-0.00	259.4	260.3
3	126.6875	127.1563	Interface (below)		-0.00	261.3	267.2
4	127.6250	128.0938	+5.10	+5.15	+0.05	272.4	277.5
5	128.5625	129.0313	+2.27	+2.35	+0.07	281.8	286.1
6	129.5000	129.9688	-0.03	+0.05	+0.08	289.6	293.0
7	130.4375	130.9063	-1.82	-1.75	+0.07	295.6	298.2
8	131.3750	131.8438	-3.08	-3.03	+0.05	299.9	301.6
9	132.3125	132.7813	-3.83	-3.80	+0.03	302.5	303.4
10	133.2500	133.7188	-4.05	-4.05	+0.00	303.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.44	-3.44	-0.00
FOR OUTER MATERIAL	+8.45	+8.45	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.86	-5.87
INSIDE BENDING	+5.97	+5.98
OUTSIDE BENDING	-5.74	-5.76
HOOP BENDING	N/A	-5.86
INSIDE BENDING	N/A	+5.92
OUTSIDE BENDING	N/A	-5.80

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	289.0	288.8
DELTA T1 (Total Section Delta T)	+43.8	+43.9
LINEAR INSIDE TEMPERATURE	266.9	266.9

1394

LINEAR OUTSIDE TEMPERATURE	310.7	310.7
DELTA T2 (Absolute of Maximum)	9.5	9.5

Date: 05-24-2005 Time: 16:09:18 PAGE 119

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	247.2	
1	126.5625	126.5938	-1.98	-1.98	+0.00	254.6	255.5
2	126.6250	126.6563	-2.66	-2.66	-0.00	256.5	257.5
3	126.6875	127.1563	Interface (below)		-0.00	258.4	264.4
4	127.6250	128.0938	+5.06	+5.11	+0.05	269.5	274.6
5	128.5625	129.0313	+2.26	+2.33	+0.07	278.8	283.1
6	129.5000	129.9688	-0.04	+0.04	+0.08	286.5	289.9
7	130.4375	130.9063	-1.81	-1.74	+0.07	292.5	295.1
8	131.3750	131.8438	-3.06	-3.01	+0.05	296.8	298.5
9	132.3125	132.7813	-3.80	-3.77	+0.03	299.4	300.2
10	133.2500	133.7188	-4.03	-4.03	+0.00	300.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-3.32	-3.33	-0.00
FOR OUTER MATERIAL	+8.39	+8.39	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.82	-5.83
INSIDE BENDING	+5.93	+5.94
OUTSIDE BENDING	-5.71	-5.72
HOOP BENDING	N/A	-5.82
INSIDE BENDING	N/A	+5.89
OUTSIDE BENDING	N/A	-5.76

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	285.9	285.8
DELTA T1 (Total Section Delta T)	+43.4	+43.6
LINEAR INSIDE TEMPERATURE	264.1	264.0
LINEAR OUTSIDE TEMPERATURE	307.5	307.5
DELTA T2 (Absolute of Maximum)	9.5	9.4

Date: 05-24-2005 Time: 16:09:19 PAGE 120

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	244.4	
1	126.5625	126.5938	-1.87	-1.87	+0.00	251.8	252.7
2	126.6250	126.6563	-2.54	-2.54	-0.00	253.7	254.7
3	126.6875	127.1563	Interface (below)		-0.00	255.6	261.5
4	127.6250	128.0938	+5.03	+5.07	+0.05	266.6	271.6
5	128.5625	129.0313	+2.24	+2.31	+0.07	275.9	280.1
6	129.5000	129.9688	-0.04	+0.04	+0.08	283.5	286.9
7	130.4375	130.9063	-1.80	-1.73	+0.07	289.4	292.0
8	131.3750	131.8438	-3.04	-2.99	+0.05	293.7	295.4
9	132.3125	132.7813	-3.77	-3.75	+0.03	296.2	297.1

395

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 10  133.2500  133.7188      -4.00      -4.00      +0.00        297.1   120.0
                                                  (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -3.21      -3.21      -0.00
    FOR OUTER MATERIAL       +8.33      +8.33      -0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING      LINEAR AVERAGING
  AXIAL MEMBRANE                        +0.06                      +0.11
  HOOP MEMBRANE                           N/A                      +0.06
  AVERAGE RADIAL                          N/A                      +0.05
  AXIAL BENDING                         -5.78                      -5.79
      INSIDE BENDING                     +5.89                      +5.90
      OUTSIDE BENDING                    -5.67                      -5.68
  HOOP BENDING                            N/A                      -5.79
      INSIDE BENDING                        N/A                    +5.85
      OUTSIDE BENDING                       N/A                    -5.73

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING      LINEAR AVERAGING
  AVERAGE TEMPERATURE                    282.9                      282.7
  DELTA T1 (Total Section Delta T)       +43.1                      +43.3
  LINEAR INSIDE TEMPERATURE              261.2                      261.1
  LINEAR OUTSIDE TEMPERATURE             304.3                      304.4
  DELTA T2 (Absolute of Maximum)           9.4                        9.4


 Date: 05-24-2005          Time: 16:09:20                          PAGE 121
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      * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME= 5400.00  SECONDS.....................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node       hoop       axial      radial        Grid    Node
                                                (Inside fluid)   241.7
  1  126.5625  126.5938      -1.76      -1.76      +0.00        248.9   249.9
  2  126.6250  126.6563      -2.43      -2.43      -0.00        250.9   251.8
  3  126.6875  127.1563   Interface (below)        -0.00        252.8   258.6
  4  127.6250  128.0938      +4.99      +5.04      +0.05        263.7   268.7
  5  128.5625  129.0313      +2.22      +2.29      +0.07        272.9   277.1
  6  129.5000  129.9688      -0.04      +0.04      +0.08        280.5   283.9
  7  130.4375  130.9063      -1.79      -1.72      +0.07        286.4   288.9
  8  131.3750  131.8438      -3.02      -2.97      +0.05        290.6   292.3
  9  132.3125  132.7813      -3.75      -3.72      +0.03        293.1   294.0
 10  133.2500  133.7188      -3.97      -3.97      +0.00        294.0   120.0
                                                  (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -3.09      -3.09      -0.00
    FOR OUTER MATERIAL       +8.28      +8.28      -0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING      LINEAR AVERAGING
  AXIAL MEMBRANE                        +0.06                      +0.11
  HOOP MEMBRANE                           N/A                      +0.06
  AVERAGE RADIAL                          N/A                      +0.05
  AXIAL BENDING                         -5.75                      -5.76
      INSIDE BENDING                     +5.86                      +5.87
      OUTSIDE BENDING                    -5.64                      -5.65
  HOOP BENDING                            N/A                      -5.76
      INSIDE BENDING                        N/A                    +5.82
      OUTSIDE BENDING                       N/A                    -5.69

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING      LINEAR AVERAGING
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p 96

AVERAGE TEMPERATURE	279.9	279.7
DELTA T1 (Total Section Delta T)	+42.8	+43.0
LINEAR INSIDE TEMPERATURE	258.3	258.3
LINEAR OUTSIDE TEMPERATURE	301.2	301.2
DELTA T2 (Absolute of Maximum)	9.4	9.3

Date: 05-24-2005 Time: 16:09:22 PAGE 122

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	238.9	
1	126.5625	126.5938	-1.64	-1.64	+0.00	246.1	247.1
2	126.6250	126.6563	-2.31	-2.31	-0.00	248.0	249.0
3	126.6875	127.1563	Interface (below)		-0.00	249.9	255.8
4	127.6250	128.0938	+4.96	+5.01	+0.05	260.8	265.8
5	128.5625	129.0313	+2.20	+2.27	+0.07	270.0	274.1
6	129.5000	129.9688	-0.04	+0.03	+0.08	277.5	280.8
7	130.4375	130.9063	-1.78	-1.71	+0.07	283.4	285.9
8	131.3750	131.8438	-3.01	-2.95	+0.05	287.6	289.2
9	132.3125	132.7813	-3.73	-3.70	+0.03	290.1	290.9
10	133.2500	133.7188	-3.95	-3.95	+0.00	290.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-2.96	-2.96	-0.00
FOR OUTER MATERIAL	+8.23	+8.23	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.72	-5.73
INSIDE BENDING	+5.83	+5.84
OUTSIDE BENDING	-5.61	-5.62
HOOP BENDING	N/A	-5.73
INSIDE BENDING	N/A	+5.79
OUTSIDE BENDING	N/A	-5.67

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	276.9	276.8
DELTA T1 (Total Section Delta T)	+42.6	+42.7
LINEAR INSIDE TEMPERATURE	255.5	255.4
LINEAR OUTSIDE TEMPERATURE	298.0	298.1
DELTA T2 (Absolute of Maximum)	9.3	9.3

Date: 05-24-2005 Time: 16:09:23 PAGE 123

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	236.1	
1	126.5625	126.5938	-1.52	-1.52	+0.00	243.3	244.3
2	126.6250	126.6563	-2.18	-2.18	-0.00	245.2	246.2
3	126.6875	127.1563	Interface (below)		-0.00	247.1	252.9
4	127.6250	128.0938	+4.93	+4.98	+0.05	257.9	262.9
5	128.5625	129.0313	+2.19	+2.26	+0.07	267.0	271.2
6	129.5000	129.9688	-0.05	+0.03	+0.08	274.5	277.9

697

7	130.4375	130.9063	-1.77	-1.70	+0.07	280.4	282.9
8	131.3750	131.8438	-2.99	-2.94	+0.05	284.5	286.2
9	132.3125	132.7813	-3.71	-3.68	+0.03	287.0	287.8
10	133.2500	133.7188	-3.93	-3.93	+0.00	287.8	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.83	-2.84	-0.00
FOR OUTER MATERIAL	+8.18	+8.18	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.70	-5.71
INSIDE BENDING	+5.80	+5.81
OUTSIDE BENDING	-5.59	-5.60
HOOP BENDING	N/A	-5.70
INSIDE BENDING	N/A	+5.76
OUTSIDE BENDING	N/A	-5.64

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	274.0	273.8
DELTA T1 (Total Section Delta T)	+42.3	+42.5
LINEAR INSIDE TEMPERATURE	252.6	252.5
LINEAR OUTSIDE TEMPERATURE	294.9	295.0
DELTA T2 (Absolute of Maximum)	9.3	9.2

Date: 05-24-2005 Time: 16:09:24 PAGE 124

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	233.3	
1	126.5625	126.5938	-1.40	-1.40	+0.00	240.5	241.5
2	126.6250	126.6563	-2.06	-2.06	-0.00	242.4	243.3
3	126.6875	127.1563	Interface (below)		-0.00	244.3	250.0
4	127.6250	128.0938	+4.90	+4.95	+0.05	255.0	260.0
5	128.5625	129.0313	+2.17	+2.24	+0.07	264.1	268.2
6	129.5000	129.9688	-0.05	+0.03	+0.08	271.6	274.9
7	130.4375	130.9063	-1.76	-1.70	+0.07	277.4	279.8
8	131.3750	131.8438	-2.98	-2.93	+0.05	281.5	283.2
9	132.3125	132.7813	-3.69	-3.66	+0.03	284.0	284.8
10	133.2500	133.7188	-3.91	-3.91	+0.00	284.8	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.71	-2.71	-0.00
FOR OUTER MATERIAL	+8.14	+8.14	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.67	-5.68
INSIDE BENDING	+5.78	+5.79
OUTSIDE BENDING	-5.56	-5.57
HOOP BENDING	N/A	-5.67
INSIDE BENDING	N/A	+5.73

OUTSIDE BENDING	N/A		-5.61

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	271.0	270.8
DELTA T1 (Total Section Delta T)	+42.1	+42.2
LINEAR INSIDE TEMPERATURE	249.8	249.7
LINEAR OUTSIDE TEMPERATURE	291.9	291.9
DELTA T2 (Absolute of Maximum)	9.3	9.2

Date: 05-24-2005 Time: 16:09:25 PAGE 125

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	230.6	
1	126.5625	126.5938	-1.27	-1.27	+0.00	237.7	238.6
2	126.6250	126.6563	-1.93	-1.93	-0.00	239.6	240.5
3	126.6875	127.1563	Interface (below)		-0.00	241.5	247.2
4	127.6250	128.0938	+4.88	+4.92	+0.05	252.1	257.1
5	128.5625	129.0313	+2.16	+2.23	+0.07	261.2	265.3
6	129.5000	129.9688	-0.05	+0.02	+0.08	268.6	271.9
7	130.4375	130.9063	-1.76	-1.69	+0.07	274.4	276.9
8	131.3750	131.8438	-2.97	-2.91	+0.05	278.5	280.1
9	132.3125	132.7813	-3.67	-3.65	+0.03	281.0	281.8
10	133.2500	133.7188	-3.89	-3.89	+0.00	281.8	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.57	-2.58	-0.00
FOR OUTER MATERIAL	+8.10	+8.10	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.65	-5.66
INSIDE BENDING	+5.76	+5.77
OUTSIDE BENDING	-5.54	-5.55
HOOP BENDING	N/A	-5.65
INSIDE BENDING	N/A	+5.71
OUTSIDE BENDING	N/A	-5.59

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	268.0	267.9
DELTA T1 (Total Section Delta T)	+41.9	+42.0
LINEAR INSIDE TEMPERATURE	246.9	246.8
LINEAR OUTSIDE TEMPERATURE	288.8	288.9
DELTA T2 (Absolute of Maximum)	9.2	9.2

Date: 05-24-2005 Time: 16:09:27 PAGE 126

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5900.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	227.8	
1	126.5625	126.5938	-1.14	-1.14	+0.00	234.9	235.8
2	126.6250	126.6563	-1.79	-1.80	-0.00	236.8	237.7
3	126.6875	127.1563	Interface (below)		-0.00	238.6	244.4

B79

4	127.6250	128.0938	+4.85	+4.89	+0.05	249.3	254.2
5	128.5625	129.0313	+2.14	+2.21	+0.07	258.3	262.4
6	129.5000	129.9688	-0.06	+0.02	+0.08	265.7	269.0
7	130.4375	130.9063	-1.75	-1.68	+0.07	271.4	273.9
8	131.3750	131.8438	-2.95	-2.90	+0.05	275.5	277.1
9	132.3125	132.7813	-3.66	-3.63	+0.03	278.0	278.8
10	133.2500	133.7188	-3.87	-3.87	+0.00	278.8	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.44	-2.44	-0.00
FOR OUTER MATERIAL	+8.06	+8.06	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.63	-5.64
INSIDE BENDING	+5.74	+5.75
OUTSIDE BENDING	-5.52	-5.53
HOOP BENDING	N/A	-5.63
INSIDE BENDING	N/A	+5.69
OUTSIDE BENDING	N/A	-5.57

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	265.1	264.9
DELTA T1 (Total Section Delta T)	+41.7	+41.8
LINEAR INSIDE TEMPERATURE	244.1	244.0
LINEAR OUTSIDE TEMPERATURE	285.8	285.8
DELTA T2 (Absolute of Maximum)	9.2	9.1

Date: 05-24-2005 Time: 16:09:28 PAGE 127

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	225.0	
1	126.5625	126.5938	-1.01	-1.01	+0.00	232.1	233.0
2	126.6250	126.6563	-1.66	-1.66	-0.00	234.0	234.9
3	126.6875	127.1563	Interface (below)		-0.00	235.8	241.5
4	127.6250	128.0938	+4.83	+4.87	+0.05	246.4	251.3
5	128.5625	129.0313	+2.13	+2.20	+0.07	255.4	259.5
6	129.5000	129.9688	-0.06	+0.02	+0.08	262.7	266.0
7	130.4375	130.9063	-1.75	-1.68	+0.07	268.5	270.9
8	131.3750	131.8438	-2.94	-2.89	+0.05	272.5	274.2
9	132.3125	132.7813	-3.64	-3.62	+0.03	275.0	275.8
10	133.2500	133.7188	-3.86	-3.86	+0.00	275.8	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.31	-2.31	-0.00
FOR OUTER MATERIAL	+8.02	+8.02	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.61	-5.62
INSIDE BENDING	+5.72	+5.73

3100

OUTSIDE BENDING	-5.50	-5.52
HOOP BENDING	N/A	-5.62
INSIDE BENDING	N/A	+5.68
OUTSIDE BENDING	N/A	-5.56

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	262.2	262.0
DELTA T1 (Total Section Delta T)	+41.5	+41.6
LINEAR INSIDE TEMPERATURE	241.2	241.2
LINEAR OUTSIDE TEMPERATURE	282.8	282.8
DELTA T2 (Absolute of Maximum)	9.2	9.1

Date: 05-24-2005 Time: 16:09:29 PAGE 128

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6100.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	222.2	
1	126.5625	126.5938	-0.88	-0.88	+0.00	229.3	230.2
2	126.6250	126.6563	-1.53	-1.53	-0.00	231.2	232.1
3	126.6875	127.1563	Interface (below)		-0.00	233.0	238.7
4	127.6250	128.0938	+4.80	+4.85	+0.05	243.6	248.4
5	128.5625	129.0313	+2.12	+2.19	+0.07	252.5	256.6
6	129.5000	129.9688	-0.06	+0.01	+0.08	259.8	263.1
7	130.4375	130.9063	-1.74	-1.68	+0.07	265.5	267.9
8	131.3750	131.8438	-2.93	-2.88	+0.05	269.6	271.2
9	132.3125	132.7813	-3.63	-3.60	+0.03	272.0	272.8
10	133.2500	133.7188	-3.84	-3.84	+0.00	272.8	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.17	-2.17	-0.00
FOR OUTER MATERIAL	+7.99	+7.99	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.59	-5.61
INSIDE BENDING	+5.70	+5.71
OUTSIDE BENDING	-5.49	-5.50
HOOP BENDING	N/A	-5.60
INSIDE BENDING	N/A	+5.66
OUTSIDE BENDING	N/A	-5.54

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	259.3	259.1
DELTA T1 (Total Section Delta T)	+41.3	+41.5
LINEAR INSIDE TEMPERATURE	238.4	238.3
LINEAR OUTSIDE TEMPERATURE	279.8	279.8
DELTA T2 (Absolute of Maximum)	9.1	9.1

Date: 05-24-2005 Time: 16:09:30 PAGE 129

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	219.4	

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1	126.5625	126.5938	-0.74	-0.74	+0.00	226.5	227.4
2	126.6250	126.6563	-1.39	-1.39	-0.00	228.3	229.3
3	126.6875	127.1563	Interface (below)		-0.00	230.2	235.8
4	127.6250	128.0938	+4.78	+4.83	+0.04	240.7	245.6
5	128.5625	129.0313	+2.11	+2.18	+0.07	249.6	253.7
6	129.5000	129.9688	-0.06	+0.01	+0.08	256.9	260.2
7	130.4375	130.9063	-1.74	-1.67	+0.07	262.6	265.0
8	131.3750	131.8438	-2.92	-2.87	+0.05	266.6	268.2
9	132.3125	132.7813	-3.62	-3.59	+0.03	269.0	269.9
10	133.2500	133.7188	-3.83	-3.83	+0.00	269.9	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-2.03	-2.03	-0.00
FOR OUTER MATERIAL	+7.96	+7.96	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.58	-5.59
INSIDE BENDING	+5.69	+5.70
OUTSIDE BENDING	-5.47	-5.48
HOOP BENDING	N/A	-5.59
INSIDE BENDING	N/A	+5.64
OUTSIDE BENDING	N/A	-5.53

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	256.4	256.2
DELTA T1 (Total Section Delta T)	+41.2	+41.3
LINEAR INSIDE TEMPERATURE	235.6	235.5
LINEAR OUTSIDE TEMPERATURE	276.8	276.8
DELTA T2 (Absolute of Maximum)	9.1	9.0

Date: 05-24-2005 Time: 16:09:32 PAGE 130

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	216.7	
1	126.5625	126.5938	-0.60	-0.60	+0.00	223.7	224.6
2	126.6250	126.6563	-1.25	-1.25	-0.00	225.5	226.5
3	126.6875	127.1563	Interface (below)		-0.00	227.4	233.0
4	127.6250	128.0938	+4.76	+4.81	+0.04	237.9	242.7
5	128.5625	129.0313	+2.10	+2.17	+0.07	246.8	250.8
6	129.5000	129.9688	-0.07	+0.01	+0.08	254.0	257.2
7	130.4375	130.9063	-1.74	-1.67	+0.07	259.7	262.1
8	131.3750	131.8438	-2.92	-2.87	+0.05	263.7	265.3
9	132.3125	132.7813	-3.61	-3.58	+0.03	266.1	266.9
10	133.2500	133.7188	-3.82	-3.82	+0.00	266.9	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-1.89	-1.89	-0.00
FOR OUTER MATERIAL	+7.93	+7.93	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06

B102

AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.57	-5.58
INSIDE BENDING	+5.67	+5.68
OUTSIDE BENDING	-5.46	-5.47
HOOP BENDING	N/A	-5.57
INSIDE BENDING	N/A	+5.63
OUTSIDE BENDING	N/A	-5.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	253.5	253.3
DELTA T1 (Total Section Delta T)	+41.0	+41.2
LINEAR INSIDE TEMPERATURE	232.8	232.7
LINEAR OUTSIDE TEMPERATURE	273.8	273.9
DELTA T2 (Absolute of Maximum)	9.1	9.0

Date: 05-24-2005 Time: 16:09:33 PAGE 131

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6400.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	213.9	
1	126.5625	126.5938	-0.47	-0.47	+0.00	220.9	221.8
2	126.6250	126.6563	-1.11	-1.11	-0.00	222.7	223.7
3	126.6875	127.1563	Interface (below)		-0.00	224.6	230.2
4	127.6250	128.0938	+4.74	+4.79	+0.04	235.0	239.9
5	128.5625	129.0313	+2.09	+2.16	+0.07	243.9	247.9
6	129.5000	129.9688	-0.07	+0.01	+0.08	251.1	254.3
7	130.4375	130.9063	-1.73	-1.67	+0.07	256.8	259.2
8	131.3750	131.8438	-2.91	-2.86	+0.05	260.8	262.4
9	132.3125	132.7813	-3.60	-3.57	+0.03	263.2	264.0
10	133.2500	133.7188	-3.81	-3.81	+0.00	264.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-1.74	-1.74	-0.00
FOR OUTER MATERIAL	+7.90	+7.90	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.56	-5.57
INSIDE BENDING	+5.66	+5.67
OUTSIDE BENDING	-5.45	-5.46
HOOP BENDING	N/A	-5.56
INSIDE BENDING	N/A	+5.62
OUTSIDE BENDING	N/A	-5.50

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	250.6	250.4
DELTA T1 (Total Section Delta T)	+40.9	+41.0
LINEAR INSIDE TEMPERATURE	229.9	229.9
LINEAR OUTSIDE TEMPERATURE	270.8	270.9
DELTA T2 (Absolute of Maximum)	9.0	9.0

Date: 05-24-2005 Time: 16:09:34 PAGE 132

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6500.00 SECONDS.....

B103

CGS-RPV

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	211.1	
1	126.5625	126.5938	-0.32	-0.32	+0.00	218.1	219.0
2	126.6250	126.6563	-0.96	-0.97	-0.00	219.9	220.9
3	126.6875	127.1563	Interface (below)		-0.00	221.8	227.4
4	127.6250	128.0938	+4.73	+4.77	+0.04	232.2	237.0
5	128.5625	129.0313	+2.08	+2.15	+0.07	241.0	245.0
6	129.5000	129.9688	-0.07	+0.00	+0.08	248.2	251.4
7	130.4375	130.9063	-1.73	-1.66	+0.07	253.8	256.2
8	131.3750	131.8438	-2.90	-2.85	+0.05	257.8	259.4
9	132.3125	132.7813	-3.59	-3.56	+0.03	260.2	261.0
10	133.2500	133.7188	-3.80	-3.80	+0.00	261.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-1.60	-1.60	-0.00
FOR OUTER MATERIAL	+7.87	+7.87	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.55	-5.56
INSIDE BENDING	+5.65	+5.66
OUTSIDE BENDING	-5.44	-5.45
HOOP BENDING	N/A	-5.55
INSIDE BENDING	N/A	+5.61
OUTSIDE BENDING	N/A	-5.49

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	247.7	247.5
DELTA T1 (Total Section Delta T)	+40.8	+40.9
LINEAR INSIDE TEMPERATURE	227.1	227.1
LINEAR OUTSIDE TEMPERATURE	267.9	268.0
DELTA T2 (Absolute of Maximum)	9.0	9.0

Date: 05-24-2005 Time: 16:09:36 PAGE 133

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	208.3	
1	126.5625	126.5938	-0.18	-0.18	+0.00	215.3	216.2
2	126.6250	126.6563	-0.82	-0.82	-0.00	217.1	218.1
3	126.6875	127.1563	Interface (below)		-0.00	219.0	224.6
4	127.6250	128.0938	+4.71	+4.75	+0.04	229.4	234.2
5	128.5625	129.0313	+2.07	+2.14	+0.07	238.2	242.2
6	129.5000	129.9688	-0.08	-0.00	+0.08	245.4	248.6
7	130.4375	130.9063	-1.73	-1.66	+0.07	251.0	253.3
8	131.3750	131.8438	-2.90	-2.85	+0.05	254.9	256.5
9	132.3125	132.7813	-3.58	-3.55	+0.03	257.3	258.1
10	133.2500	133.7188	-3.79	-3.79	+0.00	258.1	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-1.45	-1.45	-0.00
FOR OUTER MATERIAL	+7.85	+7.85	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

6104

CGS-RPV

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.54	-5.55
INSIDE BENDING	+5.64	+5.65
OUTSIDE BENDING	-5.43	-5.44
HOOP BENDING	N/A	-5.54
INSIDE BENDING	N/A	+5.60
OUTSIDE BENDING	N/A	-5.48

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	244.8	244.6
DELTA T1 (Total Section Delta T)	+40.6	+40.8
LINEAR INSIDE TEMPERATURE	224.3	224.2
LINEAR OUTSIDE TEMPERATURE	264.9	265.0
DELTA T2 (Absolute of Maximum)	9.0	8.9

Date: 05-24-2005 Time: 16:09:37 PAGE 134

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	205.6	
1	126.5625	126.5938	-0.04	-0.04	+0.00	212.5	213.4
2	126.6250	126.6563	-0.67	-0.68	-0.00	214.3	215.3
3	126.6875	127.1563	Interface (below)		-0.00	216.2	221.7
4	127.6250	128.0938	+4.69	+4.74	+0.04	226.5	231.3
5	128.5625	129.0313	+2.06	+2.13	+0.07	235.3	239.3
6	129.5000	129.9688	-0.08	-0.00	+0.07	242.5	245.7
7	130.4375	130.9063	-1.73	-1.66	+0.07	248.1	250.4
8	131.3750	131.8438	-2.89	-2.84	+0.05	252.0	253.6
9	132.3125	132.7813	-3.57	-3.55	+0.03	254.4	255.2
10	133.2500	133.7188	-3.78	-3.78	+0.00	255.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-1.31	-1.31	-0.00
FOR OUTER MATERIAL	+7.82	+7.82	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.11
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.53	-5.54
INSIDE BENDING	+5.63	+5.65
OUTSIDE BENDING	-5.42	-5.44
HOOP BENDING	N/A	-5.53
INSIDE BENDING	N/A	+5.59
OUTSIDE BENDING	N/A	-5.48

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	241.9	241.8
DELTA T1 (Total Section Delta T)	+40.5	+40.7
LINEAR INSIDE TEMPERATURE	221.5	221.4
LINEAR OUTSIDE TEMPERATURE	262.0	262.1
DELTA T2 (Absolute of Maximum)	9.0	8.9

Date: 05-24-2005 Time: 16:09:38 PAGE 135

90105

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME= 6800.00  SECONDS....................
     -- Radii, inches -    ---- Grid Stress, ksi ------        Temperature, F
  N   Grid       Node        hoop      axial      radial          Grid    Node
                                                (Inside fluid)   202.8
  1  126.5625  126.5938      +0.11     +0.11      -0.00          209.7   210.6
  2  126.6250  126.6563      -0.53     -0.53      -0.00          211.5   212.5
  3  126.6875  127.1563   Interface (below)       -0.00          213.4   218.9
  4  127.6250  128.0938      +4.68     +4.72      +0.04          223.7   228.5
  5  128.5625  129.0313      +2.05     +2.12      +0.07          232.5   236.5
  6  129.5000  129.9688      -0.08     -0.01      +0.07          239.6   242.8
  7  130.4375  130.9063      -1.73     -1.66      +0.07          245.2   247.6
  8  131.3750  131.8438      -2.88     -2.83      +0.05          249.1   250.7
  9  132.3125  132.7813      -3.57     -3.54      +0.03          251.5   252.3
 10  133.2500  133.7188      -3.77     -3.77      +0.00          252.3   120.0
                                                (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -1.16     -1.16      -0.00
    FOR OUTER MATERIAL       +7.80     +7.80      -0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02   +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING    LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.06                      +0.10
  HOOP MEMBRANE                        N/A                       +0.06
  AVERAGE RADIAL                       N/A                       +0.05
  AXIAL BENDING                       -5.52                      -5.53
      INSIDE BENDING                  +5.63                      +5.64
      OUTSIDE BENDING                 -5.42                      -5.43
  HOOP BENDING                         N/A                       -5.53
      INSIDE BENDING                    N/A                      +5.59
      OUTSIDE BENDING                   N/A                      -5.47

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING    LINEAR AVERAGING
  AVERAGE TEMPERATURE                 239.1                      238.9
  DELTA T1 (Total Section Delta T)    +40.4                      +40.6
  LINEAR INSIDE TEMPERATURE           218.7                      218.6
  LINEAR OUTSIDE TEMPERATURE          259.1                      259.2
  DELTA T2 (Absolute of Maximum)        9.0                        8.9

 Date: 05-24-2005          Time: 16:09:39                      PAGE 136
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME= 6900.00  SECONDS....................
     -- Radii, inches -    ---- Grid Stress, ksi ------        Temperature, F
  N   Grid       Node        hoop      axial      radial          Grid    Node
                                                (Inside fluid)   200.0
  1  126.5625  126.5938      +0.26     +0.26      -0.00          206.9   207.8
  2  126.6250  126.6563      -0.38     -0.38      -0.00          208.7   209.7
  3  126.6875  127.1563   Interface (below)       -0.00          210.6   216.1
  4  127.6250  128.0938      +4.66     +4.71      +0.04          220.9   225.7
  5  128.5625  129.0313      +2.04     +2.11      +0.07          229.6   233.6
  6  129.5000  129.9688      -0.08     -0.01      +0.07          236.8   239.9
  7  130.4375  130.9063      -1.72     -1.66      +0.07          242.3   244.7
  8  131.3750  131.8438      -2.88     -2.83      +0.05          246.3   247.8
  9  132.3125  132.7813      -3.56     -3.53      +0.03          248.6   249.4
 10  133.2500  133.7188      -3.77     -3.77      +0.00          249.4   120.0
                                                (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -1.01     -1.01      -0.00
    FOR OUTER MATERIAL       +7.78     +7.78      -0.00
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B106

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.52	-5.53
INSIDE BENDING	+5.62	+5.63
OUTSIDE BENDING	-5.41	-5.42
HOOP BENDING	N/A	-5.52
INSIDE BENDING	N/A	+5.58
OUTSIDE BENDING	N/A	-5.46

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	236.2	236.0
DELTA T1 (Total Section Delta T)	+40.3	+40.4
LINEAR INSIDE TEMPERATURE	215.9	215.8
LINEAR OUTSIDE TEMPERATURE	256.2	256.3
DELTA T2 (Absolute of Maximum)	9.0	8.9

Date: 05-24-2005 Time: 16:09:41 PAGE 137

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	------ Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	197.2	
1	126.5625	126.5938	+0.40	+0.40	-0.00	204.1	205.0
2	126.6250	126.6563	-0.23	-0.23	+0.00	206.0	206.9
3	126.6875	127.1563	Interface (below)		-0.00	207.8	213.3
4	127.6250	128.0938	+4.65	+4.69	+0.04	218.1	222.8
5	128.5625	129.0313	+2.04	+2.10	+0.07	226.8	230.8
6	129.5000	129.9688	-0.09	-0.01	+0.07	233.9	237.1
7	130.4375	130.9063	-1.72	-1.66	+0.07	239.4	241.8
8	131.3750	131.8438	-2.88	-2.83	+0.05	243.4	245.0
9	132.3125	132.7813	-3.55	-3.53	+0.03	245.7	246.5
10	133.2500	133.7188	-3.76	-3.76	+0.00	246.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.86	-0.86	-0.00
FOR OUTER MATERIAL	+7.76	+7.76	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.51	-5.52
INSIDE BENDING	+5.62	+5.63
OUTSIDE BENDING	-5.41	-5.42
HOOP BENDING	N/A	-5.52
INSIDE BENDING	N/A	+5.58
OUTSIDE BENDING	N/A	-5.46

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	233.4	233.2
DELTA T1 (Total Section Delta T)	+40.2	+40.4
LINEAR INSIDE TEMPERATURE	213.1	213.0
LINEAR OUTSIDE TEMPERATURE	253.3	253.4
DELTA T2 (Absolute of Maximum)	8.9	8.9

B107

Date: 05-24-2005 Time: 16:09:42 PAGE 138

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7100.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	194.4	
1	126.5625	126.5938	+0.55	+0.55	-0.00	201.3	202.3
2	126.6250	126.6563	-0.08	-0.08	+0.00	203.2	204.1
3	126.6875	127.1563	Interface (below)		-0.00	205.0	210.5
4	127.6250	128.0938	+4.64	+4.68	+0.04	215.3	220.0
5	128.5625	129.0313	+2.03	+2.10	+0.07	224.0	227.9
6	129.5000	129.9688	-0.09	-0.02	+0.07	231.1	234.2
7	130.4375	130.9063	-1.72	-1.66	+0.07	236.6	238.9
8	131.3750	131.8438	-2.87	-2.82	+0.05	240.5	242.1
9	132.3125	132.7813	-3.55	-3.52	+0.03	242.9	243.7
10	133.2500	133.7188	-3.75	-3.75	+0.00	243.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.71	-0.71	-0.00
FOR OUTER MATERIAL	+7.74	+7.74	-0.00

INSIDE/OUTSIDE HT TX COEF: (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.51	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.42
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.46

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	230.5	230.3
DELTA T1 (Total Section Delta T)	+40.1	+40.3
LINEAR INSIDE TEMPERATURE	210.3	210.2
LINEAR OUTSIDE TEMPERATURE	250.4	250.5
DELTA T2 (Absolute of Maximum)	8.9	8.9

Date: 05-24-2005 Time: 16:09:43 PAGE 139

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	191.7	
1	126.5625	126.5938	+0.70	+0.70	-0.00	198.6	199.5
2	126.6250	126.6563	+0.07	+0.07	+0.00	200.4	201.3
3	126.6875	127.1563	Interface (below)		+0.00	202.2	207.7
4	127.6250	128.0938	+4.62	+4.67	+0.04	212.5	217.2
5	128.5625	129.0313	+2.02	+2.09	+0.07	221.1	225.1
6	129.5000	129.9688	-0.09	-0.02	+0.07	228.2	231.4
7	130.4375	130.9063	-1.72	-1.65	+0.07	233.7	236.1
8	131.3750	131.8438	-2.87	-2.82	+0.05	237.7	239.2
9	132.3125	132.7813	-3.54	-3.52	+0.03	240.0	240.8
10	133.2500	133.7188	-3.75	-3.75	+0.00	240.8	120.0
					(Above node is outside fluid)		

B108

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.55	-0.55	+0.00
FOR OUTER MATERIAL	+7.73	+7.73	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.51	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.41
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.45

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	227.7	227.5
DELTA T1 (Total Section Delta T)	+40.1	+40.2
LINEAR INSIDE TEMPERATURE	207.5	207.4
LINEAR OUTSIDE TEMPERATURE	247.5	247.6
DELTA T2 (Absolute of Maximum)	8.9	8.8

Date: 05-24-2005 Time: 16:09:44 PAGE 140

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7300.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	188.9	
1	126.5625	126.5938	+0.85	+0.85	-0.00	195.8	196.7
2	126.6250	126.6563	+0.22	+0.22	+0.00	197.6	198.5
3	126.6875	127.1563	Interface (below)		+0.00	199.4	204.9
4	127.6250	128.0938	+4.61	+4.66	+0.05	209.6	214.4
5	128.5625	129.0313	+2.01	+2.08	+0.07	218.3	222.2
6	129.5000	129.9688	-0.10	-0.02	+0.07	225.4	228.5
7	130.4375	130.9063	-1.72	-1.65	+0.07	230.9	233.2
8	131.3750	131.8438	-2.87	-2.82	+0.05	234.8	236.4
9	132.3125	132.7813	-3.54	-3.51	+0.03	237.1	237.9
10	133.2500	133.7188	-3.74	-3.74	+0.00	237.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.40	-0.40	+0.00
FOR OUTER MATERIAL	+7.71	+7.71	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.50	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.41
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.45

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	224.8	224.7
DELTA T1 (Total Section Delta T)	+40.0	+40.1

B109

LINEAR INSIDE TEMPERATURE	204.7	204.6
LINEAR OUTSIDE TEMPERATURE	244.6	244.7
DELTA T2 (Absolute of Maximum)	8.9	8.8

Date: 05-24-2005 Time: 16:09:46 PAGE 141

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	186.1	
1	126.5625	126.5938	+1.01	+1.01	-0.00	193.0	193.9
2	126.6250	126.6563	+0.38	+0.38	+0.00	194.8	195.7
3	126.6875	127.1563	Interface (below)		+0.00	196.6	202.1
4	127.6250	128.0938	+4.60	+4.65	+0.05	206.8	211.6
5	128.5625	129.0313	+2.01	+2.08	+0.07	215.5	219.4
6	129.5000	129.9688	-0.10	-0.02	+0.07	222.6	225.7
7	130.4375	130.9063	-1.72	-1.65	+0.07	228.0	230.4
8	131.3750	131.8438	-2.87	-2.82	+0.05	231.9	233.5
9	132.3125	132.7813	-3.54	-3.51	+0.03	234.3	235.1
10	133.2500	133.7188	-3.74	-3.74	+0.00	235.1	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.25	-0.25	+0.00
FOR OUTER MATERIAL	+7.69	+7.69	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.50	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.41
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.45

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	222.0	221.8
DELTA T1 (Total Section Delta T)	+39.9	+40.1
LINEAR INSIDE TEMPERATURE	201.9	201.8
LINEAR OUTSIDE TEMPERATURE	241.8	241.8
DELTA T2 (Absolute of Maximum)	8.9	8.8

Date: 05-24-2005 Time: 16:09:47 PAGE 142

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	183.3	
1	126.5625	126.5938	+1.16	+1.16	-0.00	190.2	191.1
2	126.6250	126.6563	+0.53	+0.53	+0.00	192.0	192.9
3	126.6875	127.1563	Interface (below)		+0.00	193.8	199.3
4	127.6250	128.0938	+4.59	+4.64	+0.05	204.0	208.7
5	128.5625	129.0313	+2.00	+2.07	+0.07	212.7	216.6
6	129.5000	129.9688	-0.10	-0.03	+0.07	219.7	222.9
7	130.4375	130.9063	-1.72	-1.65	+0.07	225.2	227.5
8	131.3750	131.8438	-2.86	-2.81	+0.05	229.1	230.7

5110

9	132.3125	132.7813	-3.53	-3.51	+0.03	231.4	232.2
10	133.2500	133.7188	-3.74	-3.74	+0.00	232.2	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.09	-0.09	+0.00
FOR OUTER MATERIAL	+7.68	+7.68	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.50	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.41
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.45

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	219.2	219.0
DELTA T1 (Total Section Delta T)	+39.9	+40.0
LINEAR INSIDE TEMPERATURE	199.1	199.0
LINEAR OUTSIDE TEMPERATURE	238.9	239.0
DELTA T2 (Absolute of Maximum)	8.9	8.8

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	180.6	
1	126.5625	126.5938	+1.31	+1.31	-0.00	187.4	188.3
2	126.6250	126.6563	+0.69	+0.69	+0.00	189.2	190.1
3	126.6875	127.1563	Interface (below)		+0.00	191.0	196.5
4	127.6250	128.0938	+4.58	+4.63	+0.05	201.2	205.9
5	128.5625	129.0313	+1.99	+2.06	+0.07	209.9	213.8
6	129.5000	129.9688	-0.11	-0.03	+0.07	216.9	220.0
7	130.4375	130.9063	-1.72	-1.66	+0.07	222.4	224.7
8	131.3750	131.8438	-2.86	-2.81	+0.05	226.3	227.8
9	132.3125	132.7813	-3.53	-3.50	+0.03	228.6	229.4
10	133.2500	133.7188	-3.73	-3.73	+0.00	229.4	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.06	+0.06	+0.00
FOR OUTER MATERIAL	+7.66	+7.66	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.50	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.41
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.45

Bill

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	216.3	216.2
DELTA T1 (Total Section Delta T)	+39.8	+39.9
LINEAR INSIDE TEMPERATURE	196.3	196.2
LINEAR OUTSIDE TEMPERATURE	236.1	236.1
DELTA T2 (Absolute of Maximum)	8.9	8.8

Date: 05-24-2005 Time: 16:09:50 PAGE 144

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

....OUTPUT FOR TIME= 7700.00 SECONDS....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	177.8	
1	126.5625	126.5938	+1.47	+1.47	-0.00	184.6	185.5
2	126.6250	126.6563	+0.84	+0.84	+0.00	186.4	187.3
3	126.6875	127.1563	Interface (below)		+0.00	188.2	193.7
4	127.6250	128.0938	+4.57	+4.62	+0.05	198.4	203.1
5	128.5625	129.0313	+1.99	+2.06	+0.07	207.0	210.9
6	129.5000	129.9688	-0.11	-0.03	+0.07	214.1	217.2
7	130.4375	130.9063	-1.72	-1.66	+0.07	219.5	221.9
8	131.3750	131.8438	-2.86	-2.81	+0.05	223.4	225.0
9	132.3125	132.7813	-3.53	-3.50	+0.03	225.7	226.5
10	133.2500	133.7188	-3.73	-3.73	+0.00	226.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.22	+0.22	+0.00
FOR OUTER MATERIAL	+7.65	+7.65	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.50	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.41
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.45

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	213.5	213.3
DELTA T1 (Total Section Delta T)	+39.7	+39.9
LINEAR INSIDE TEMPERATURE	193.5	193.4
LINEAR OUTSIDE TEMPERATURE	233.2	233.3
DELTA T2 (Absolute of Maximum)	8.9	8.8

Date: 05-24-2005 Time: 16:09:51 PAGE 145

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

....OUTPUT FOR TIME= 7800.00 SECONDS....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	175.0	
1	126.5625	126.5938	+1.62	+1.62	-0.00	181.8	182.7
2	126.6250	126.6563	+1.00	+1.00	+0.00	183.6	184.5
3	126.6875	127.1563	Interface (below)		+0.00	185.4	190.9
4	127.6250	128.0938	+4.56	+4.61	+0.05	195.6	200.3
5	128.5625	129.0313	+1.98	+2.05	+0.07	204.2	208.1

6	129.5000	129.9688	-0.11	-0.04	+0.07	211.3	214.4
7	130.4375	130.9063	-1.72	-1.66	+0.07	216.7	219.0
8	131.3750	131.8438	-2.86	-2.81	+0.05	220.6	222.1
9	132.3125	132.7813	-3.53	-3.50	+0.03	222.9	223.7
10	133.2500	133.7188	-3.73	-3.73	+0.00	223.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.38	+0.38	+0.00
FOR OUTER MATERIAL	+7.64	+7.64	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.51	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.41
HOOP BENDING	N/A	-5.51
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.45

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	210.7	210.5
DELTA T1 (Total Section Delta T)	+39.7	+39.8
LINEAR INSIDE TEMPERATURE	190.7	190.6
LINEAR OUTSIDE TEMPERATURE	230.4	230.4
DELTA T2 (Absolute of Maximum)	8.8	8.8

Date: 05-24-2005 Time: 16:09:52 PAGE 146

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7900.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	172.2	
1	126.5625	126.5938	+1.78	+1.78	-0.00	179.0	180.0
2	126.6250	126.6563	+1.15	+1.15	+0.00	180.9	181.7
3	126.6875	127.1563	Interface (below)		+0.00	182.6	188.1
4	127.6250	128.0938	+4.55	+4.60	+0.05	192.8	197.5
5	128.5625	129.0313	+1.98	+2.05	+0.07	201.4	205.3
6	129.5000	129.9688	-0.11	-0.04	+0.07	208.4	211.5
7	130.4375	130.9063	-1.72	-1.66	+0.07	213.9	216.2
8	131.3750	131.8438	-2.86	-2.81	+0.05	217.8	219.3
9	132.3125	132.7813	-3.53	-3.50	+0.03	220.1	220.8
10	133.2500	133.7188	-3.73	-3.73	+0.00	220.8	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.53	+0.53	+0.00
FOR OUTER MATERIAL	+7.63	+7.63	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.51	-5.52
INSIDE BENDING	+5.61	+5.62
OUTSIDE BENDING	-5.40	-5.42
HOOP BENDING	N/A	-5.51

3113

INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.46

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	207.9	207.7
DELTA T1 (Total Section Delta T)	+39.6	+39.8
LINEAR INSIDE TEMPERATURE	187.9	187.8
LINEAR OUTSIDE TEMPERATURE	227.5	227.6
DELTA T2 (Absolute of Maximum)	8.8	8.8

Date: 05-24-2005 Time: 16:09:54 PAGE 147

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	169.4	
1	126.5625	126.5938	+1.94	+1.94	-0.00	176.3	177.2
2	126.6250	126.6563	+1.31	+1.31	+0.00	178.1	179.0
3	126.6875	127.1563	Interface (below)		+0.00	179.8	185.3
4	127.6250	128.0938	+4.55	+4.59	+0.05	190.0	194.7
5	128.5625	129.0313	+1.97	+2.04	+0.07	198.6	202.5
6	129.5000	129.9688	-0.12	-0.04	+0.07	205.6	208.7
7	130.4375	130.9063	-1.73	-1.66	+0.07	211.1	213.4
8	131.3750	131.8438	-2.86	-2.81	+0.05	214.9	216.5
9	132.3125	132.7813	-3.52	-3.50	+0.03	217.2	218.0
10	133.2500	133.7188	-3.73	-3.73	+0.00	218.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	+0.69	+0.69	+0.00
FOR OUTER MATERIAL	+7.61	+7.62	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.51	-5.52
INSIDE BENDING	+5.61	+5.63
OUTSIDE BENDING	-5.41	-5.42
HOOP BENDING	N/A	-5.52
INSIDE BENDING	N/A	+5.57
OUTSIDE BENDING	N/A	-5.46

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	205.1	204.9
DELTA T1 (Total Section Delta T)	+39.6	+39.7
LINEAR INSIDE TEMPERATURE	185.1	185.0
LINEAR OUTSIDE TEMPERATURE	224.7	224.7
DELTA T2 (Absolute of Maximum)	8.8	8.8

Date: 05-24-2005 Time: 16:09:55 PAGE 148

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8100.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	166.7	
1	126.5625	126.5938	+2.09	+2.09	-0.00	173.5	174.4
2	126.6250	126.6563	+1.47	+1.47	+0.00	175.3	176.2

13114

3	126.6875	127.1563	Interface (below)		+0.00	177.1	182.5
4	127.6250	128.0938	+4.54	+4.58	+0.05	187.2	191.9
5	128.5625	129.0313	+1.97	+2.03	+0.07	195.8	199.7
6	129.5000	129.9688	-0.12	-0.05	+0.07	202.8	205.9
7	130.4375	130.9063	-1.73	-1.66	+0.07	208.2	210.6
8	131.3750	131.8438	-2.86	-2.81	+0.05	212.1	213.6
9	132.3125	132.7813	-3.52	-3.50	+0.03	214.4	215.2
10	133.2500	133.7188	-3.73	-3.73	+0.00	215.2	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+0.85	+0.85	+0.00
FOR OUTER MATERIAL	+7.60	+7.61	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.51	-5.53
INSIDE BENDING	+5.62	+5.63
OUTSIDE BENDING	-5.41	-5.42
HOOP BENDING	N/A	-5.52
INSIDE BENDING	N/A	+5.58
OUTSIDE BENDING	N/A	-5.46

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	202.2	202.1
DELTA T1 (Total Section Delta T)	+39.5	+39.7
LINEAR INSIDE TEMPERATURE	182.3	182.2
LINEAR OUTSIDE TEMPERATURE	221.8	221.9
DELTA T2 (Absolute of Maximum)	8.8	8.8

Date: 05-24-2005 Time: 16:09:56 PAGE 149

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	163.9	
1	126.5625	126.5938	+2.25	+2.25	-0.00	170.7	171.6
2	126.6250	126.6563	+1.63	+1.63	+0.00	172.5	173.4
3	126.6875	127.1563	Interface (below)		+0.00	174.3	179.7
4	127.6250	128.0938	+4.53	+4.58	+0.05	184.4	189.1
5	128.5625	129.0313	+1.96	+2.03	+0.07	193.0	196.9
6	129.5000	129.9688	-0.12	-0.05	+0.07	200.0	203.1
7	130.4375	130.9063	-1.73	-1.66	+0.07	205.4	207.7
8	131.3750	131.8438	-2.86	-2.81	+0.05	209.3	210.8
9	132.3125	132.7813	-3.52	-3.50	+0.03	211.6	212.4
10	133.2500	133.7188	-3.73	-3.73	+0.00	212.4	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.01	+1.01	+0.00
FOR OUTER MATERIAL	+7.59	+7.60	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.52	-5.53

B115

INSIDE BENDING	+5.62	+5.63
OUTSIDE BENDING	-5.41	-5.43
HOOP BENDING	N/A	-5.52
INSIDE BENDING	N/A	+5.58
OUTSIDE BENDING	N/A	-5.46

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	199.4	199.3
DELTA T1 (Total Section Delta T)	+39.5	+39.6
LINEAR INSIDE TEMPERATURE	179.5	179.4
LINEAR OUTSIDE TEMPERATURE	219.0	219.1
DELTA T2 (Absolute of Maximum)	8.8	8.8

Date: 05-24-2005 Time: 16:09:57 PAGE 150

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F. Grid	Node
					(Inside fluid)	161.1	
1	126.5625	126.5938	+2.41	+2.41	-0.00	167.9	168.8
2	126.6250	126.6563	+1.78	+1.79	+0.00	169.7	170.6
3	126.6875	127.1563	Interface (below)		+0.00	171.5	176.9
4	127.6250	128.0938	+4.52	+4.57	+0.05	181.6	186.3
5	128.5625	129.0313	+1.96	+2.02	+0.07	190.2	194.1
6	129.5000	129.9688	-0.13	-0.05	+0.07	197.2	200.3
7	130.4375	130.9063	-1.73	-1.66	+0.07	202.6	204.9
8	131.3750	131.8438	-2.86	-2.81	+0.05	206.5	208.0
9	132.3125	132.7813	-3.52	-3.50	+0.03	208.8	209.5
10	133.2500	133.7188	-3.72	-3.72	+0.00	209.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.17	+1.17	+0.00
FOR OUTER MATERIAL	+7.58	+7.58	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.52	-5.53
INSIDE BENDING	+5.62	+5.64
OUTSIDE BENDING	-5.42	-5.43
HOOP BENDING	N/A	-5.53
INSIDE BENDING	N/A	+5.58
OUTSIDE BENDING	N/A	-5.47

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	196.6	196.4
DELTA T1 (Total Section Delta T)	+39.5	+39.6
LINEAR INSIDE TEMPERATURE	176.7	176.6
LINEAR OUTSIDE TEMPERATURE	216.2	216.2
DELTA T2 (Absolute of Maximum)	8.8	8.7

Date: 05-24-2005 Time: 16:09:59 PAGE 151

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F. Grid	Node

B/16

					(Inside fluid)	158.3	
1	126.5625	126.5938	+2.57	+2.57	-0.00	165.1	166.0
2	126.6250	126.6563	+1.94	+1.94	+0.00	166.9	167.8
3	126.6875	127.1563	Interface (below)		+0.00	168.7	174.1
4	127.6250	128.0938	+4.51	+4.56	+0.05	178.8	183.5
5	128.5625	129.0313	+1.95	+2.02	+0.07	187.4	191.3
6	129.5000	129.9688	-0.13	-0.06	+0.07	194.4	197.5
7	130.4375	130.9063	-1.73	-1.66	+0.07	199.8	202.1
8	131.3750	131.8438	-2.86	-2.81	+0.05	203.6	205.2
9	132.3125	132.7813	-3.52	-3.49	+0.03	205.9	206.7
10	133.2500	133.7188	-3.72	-3.72	+0.00	206.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.32	+1.32	+0.00
FOR OUTER MATERIAL	+7.57	+7.57	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.52	-5.53
INSIDE BENDING	+5.62	+5.64
OUTSIDE BENDING	-5.42	-5.43
HOOP BENDING	N/A	-5.53
INSIDE BENDING	N/A	+5.58
OUTSIDE BENDING	N/A	-5.47

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	193.8	193.6
DELTA T1 (Total Section Delta T)	+39.4	+39.5
LINEAR INSIDE TEMPERATURE	173.9	173.9
LINEAR OUTSIDE TEMPERATURE	213.3	213.4
DELTA T2 (Absolute of Maximum)	8.8	8.7

Date: 05-24-2005 Time: 16:10:00 PAGE 152

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	155.6	
1	126.5625	126.5938	+2.72	+2.72	-0.00	162.3	163.2
2	126.6250	126.6563	+2.10	+2.10	+0.00	164.1	165.0
3	126.6875	127.1563	Interface (below)		+0.00	165.9	171.4
4	127.6250	128.0938	+4.51	+4.55	+0.05	176.0	180.7
5	128.5625	129.0313	+1.94	+2.01	+0.07	184.6	188.4
6	129.5000	129.9688	-0.13	-0.06	+0.07	191.5	194.6
7	130.4375	130.9063	-1.73	-1.67	+0.07	197.0	199.3
8	131.3750	131.8438	-2.86	-2.81	+0.05	200.8	202.3
9	132.3125	132.7813	-3.52	-3.49	+0.03	203.1	203.9
10	133.2500	133.7188	-3.72	-3.72	+0.00	203.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.48	+1.48	+0.00
FOR OUTER MATERIAL	+7.56	+7.56	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10

B117

HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.52	-5.54
INSIDE BENDING	+5.63	+5.64
OUTSIDE BENDING	-5.42	-5.43
HOOP BENDING	N/A	-5.53
INSIDE BENDING	N/A	+5.59
OUTSIDE BENDING	N/A	-5.47

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	191.0	190.8
DELTA T1 (Total Section Delta T)	+39.4	+39.5
LINEAR INSIDE TEMPERATURE	171.1	171.1
LINEAR OUTSIDE TEMPERATURE	210.5	210.6
DELTA T2 (Absolute of Maximum)	8.8	8.7

Date: 05-24-2005 Time: 16:10:01 PAGE 153

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	152.8	
1	126.5625	126.5938	+2.88	+2.88	-0.00	159.6	160.5
2	126.6250	126.6563	+2.26	+2.26	+0.00	161.3	162.2
3	126.6875	127.1563	Interface (below)		+0.00	163.1	168.6
4	127.6250	128.0938	+4.50	+4.55	+0.05	173.2	177.9
5	128.5625	129.0313	+1.94	+2.01	+0.07	181.8	185.6
6	129.5000	129.9688	-0.14	-0.06	+0.07	188.7	191.8
7	130.4375	130.9063	-1.73	-1.67	+0.07	194.1	196.4
8	131.3750	131.8438	-2.86	-2.81	+0.05	198.0	199.5
9	132.3125	132.7813	-3.52	-3.49	+0.03	200.3	201.0
10	133.2500	133.7188	-3.72	-3.72	+0.00	201.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	+1.64	+1.64	+0.00
FOR OUTER MATERIAL	+7.55	+7.55	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.53	-5.54
INSIDE BENDING	+5.63	+5.65
OUTSIDE BENDING	-5.42	-5.44
HOOP BENDING	N/A	-5.53
INSIDE BENDING	N/A	+5.59
OUTSIDE BENDING	N/A	-5.48

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	188.2	188.0
DELTA T1 (Total Section Delta T)	+39.3	+39.5
LINEAR INSIDE TEMPERATURE	168.3	168.3
LINEAR OUTSIDE TEMPERATURE	207.7	207.7
DELTA T2 (Absolute of Maximum)	8.8	8.7

Date: 05-24-2005 Time: 16:10:02 PAGE 154

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

B118

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.....OUTPUT FOR TIME= 8700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	150.0	
1	126.5625	126.5938	+3.04	+3.04	-0.00	156.8	157.7
2	126.6250	126.6563	+2.42	+2.42	+0.00	158.6	159.5
3	126.6875	127.1563	Interface (below)		+0.00	160.3	165.8
4	127.6250	128.0938	+4.49	+4.54	+0.05	170.4	175.1
5	128.5625	129.0313	+1.93	+2.00	+0.07	179.0	182.8
6	129.5000	129.9688	-0.14	-0.06	+0.07	185.9	189.0
7	130.4375	130.9063	-1.73	-1.67	+0.07	191.3	193.6
8	131.3750	131.8438	-2.86	-2.81	+0.05	195.2	196.7
9	132.3125	132.7813	-3.52	-3.49	+0.03	197.5	198.2
10	133.2500	133.7188	-3.72	-3.72	+0.00	198.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.80	+1.80	+0.00
FOR OUTER MATERIAL	+7.54	+7.54	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.53	-5.55
INSIDE BENDING	+5.63	+5.65
OUTSIDE BENDING	-5.43	-5.44
HOOP BENDING	N/A	-5.54
INSIDE BENDING	N/A	+5.59
OUTSIDE BENDING	N/A	-5.48

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	185.4	185.2
DELTA T1 (Total Section Delta T)	+39.3	+39.4
LINEAR INSIDE TEMPERATURE	165.5	165.5
LINEAR OUTSIDE TEMPERATURE	204.8	204.9
DELTA T2 (Absolute of Maximum)	8.8	8.7

Date: 05-24-2005 Time: 16:10:04 PAGE 155

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	147.2	
1	126.5625	126.5938	+3.20	+3.20	-0.00	154.0	154.9
2	126.6250	126.6563	+2.57	+2.58	+0.00	155.8	156.7
3	126.6875	127.1563	Interface (below)		+0.00	157.5	163.0
4	127.6250	128.0938	+4.48	+4.53	+0.05	167.6	172.3
5	128.5625	129.0313	+1.93	+2.00	+0.07	176.2	180.0
6	129.5000	129.9688	-0.14	-0.07	+0.07	183.1	186.2
7	130.4375	130.9063	-1.74	-1.67	+0.07	188.5	190.8
8	131.3750	131.8438	-2.86	-2.81	+0.05	192.3	193.9
9	132.3125	132.7813	-3.52	-3.49	+0.03	194.6	195.4
10	133.2500	133.7188	-3.72	-3.72	+0.00	195.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.96	+1.96	+0.00
FOR OUTER MATERIAL	+7.53	+7.53	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

B119

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.53	-5.55
INSIDE BENDING	+5.64	+5.65
OUTSIDE BENDING	-5.43	-5.45
HOOP BENDING	N/A	-5.54
INSIDE BENDING	N/A	+5.60
OUTSIDE BENDING	N/A	-5.48

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	182.6	182.4
DELTA T1 (Total Section Delta T)	+39.3	+39.4
LINEAR INSIDE TEMPERATURE	162.8	162.7
LINEAR OUTSIDE TEMPERATURE	202.0	202.1
DELTA T2 (Absolute of Maximum)	8.8	8.7

Date: 05-24-2005 Time: 16:10:05 PAGE 156

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8900.00 SECONDS.....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	144.4	
1	126.5625	126.5938	+3.36	+3.36	-0.00	151.2	152.1
2	126.6250	126.6563	+2.73	+2.73	+0.00	153.0	153.9
3	126.6875	127.1563	Interface (below)		+0.00	154.8	160.2
4	127.6250	128.0938	+4.48	+4.52	+0.05	164.9	169.5
5	128.5625	129.0313	+1.92	+1.99	+0.07	173.4	177.2
6	129.5000	129.9688	-0.14	-0.07	+0.07	180.3	183.4
7	130.4375	130.9063	-1.74	-1.67	+0.07	185.7	188.0
8	131.3750	131.8438	-2.86	-2.81	+0.05	189.5	191.1
9	132.3125	132.7813	-3.52	-3.49	+0.03	191.8	192.6
10	133.2500	133.7188	-3.72	-3.72	+0.00	192.6	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	+2.12	+2.12	+0.00
FOR OUTER MATERIAL	+7.52	+7.52	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.54	-5.55
INSIDE BENDING	+5.64	+5.66
OUTSIDE BENDING	-5.43	-5.45
HOOP BENDING	N/A	-5.55
INSIDE BENDING	N/A	+5.60
OUTSIDE BENDING	N/A	-5.49

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	179.7	179.6
DELTA T1 (Total Section Delta T)	+39.2	+39.4
LINEAR INSIDE TEMPERATURE	160.0	159.9
LINEAR OUTSIDE TEMPERATURE	199.2	199.3
DELTA T2 (Absolute of Maximum)	8.8	8.7

5120

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ..................OUTPUT FOR TIME= 9000.00  SECONDS....................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                   (Inside fluid)   141.7
  1  126.5625  126.5938      +3.51      +3.51      -0.00          148.4   149.3
  2  126.6250  126.6563      +2.89      +2.89      +0.00          150.2   151.1
  3  126.6875  127.1563   Interface (below)        +0.00          152.0   157.4
  4  127.6250  128.0938      +4.47      +4.52      +0.05          162.1   166.7
  5  128.5625  129.0313      +1.92      +1.99      +0.07          170.6   174.4
  6  129.5000  129.9688      -0.15      -0.07      +0.07          177.5   180.6
  7  130.4375  130.9063      -1.74      -1.67      +0.07          182.9   185.2
  8  131.3750  131.8438      -2.86      -2.81      +0.05          186.7   188.2
  9  132.3125  132.7813      -3.52      -3.49      +0.03          189.0   189.8
 10  133.2500  133.7188      -3.72      -3.72      +0.00          189.8   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       +2.28      +2.28      +0.00
    FOR OUTER MATERIAL       +7.51      +7.51      +0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.06                       +0.10
  HOOP MEMBRANE                        N/A                        +0.06
  AVERAGE RADIAL                       N/A                        +0.05
  AXIAL BENDING                       -5.54                       -5.56
      INSIDE BENDING                  +5.65                       +5.66
      OUTSIDE BENDING                 -5.44                       -5.45
  HOOP BENDING                         N/A                        -5.55
      INSIDE BENDING                    N/A                       +5.61
      OUTSIDE BENDING                   N/A                       -5.49

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AVERAGE TEMPERATURE                 176.9                       176.8
  DELTA T1 (Total Section Delta T)    +39.2                       +39.3
  LINEAR INSIDE TEMPERATURE           157.2                       157.1
  LINEAR OUTSIDE TEMPERATURE          196.4                       196.4
  DELTA T2 (Absolute of Maximum)        8.8                         8.7
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ..................OUTPUT FOR TIME= 9100.00  SECONDS....................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                   (Inside fluid)   138.9
  1  126.5625  126.5938      +3.67      +3.67      -0.00          145.6   146.5
  2  126.6250  126.6563      +3.05      +3.05      +0.00          147.4   148.3
  3  126.6875  127.1563   Interface (below)        +0.00          149.2   154.6
  4  127.6250  128.0938      +4.46      +4.51      +0.05          159.3   163.9
  5  128.5625  129.0313      +1.92      +1.98      +0.07          167.8   171.6
  6  129.5000  129.9688      -0.15      -0.08      +0.07          174.7   177.8
  7  130.4375  130.9063      -1.74      -1.67      +0.07          180.1   182.4
  8  131.3750  131.8438      -2.86      -2.81      +0.05          183.9   185.4
  9  132.3125  132.7813      -3.52      -3.49      +0.03          186.2   187.0
 10  133.2500  133.7188      -3.72      -3.72      +0.00          187.0   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       +2.44      +2.44      +0.00
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6/21

FOR OUTER MATERIAL +7.50 +7.50 +0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.55	-5.56
INSIDE BENDING	+5.65	+5.67
OUTSIDE BENDING	-5.44	-5.46
HOOP BENDING	N/A	-5.55
INSIDE BENDING	N/A	+5.61
OUTSIDE BENDING	N/A	-5.50

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	174.1	174.0
DELTA T1 (Total Section Delta T)	+39.2	+39.3
LINEAR INSIDE TEMPERATURE	154.4	154.3
LINEAR OUTSIDE TEMPERATURE	193.6	193.6
DELTA T2 (Absolute of Maximum)	8.8	8.7

Date: 05-24-2005 Time: 16:10:09 PAGE 159

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	136.1	
1	126.5625	126.5938	+3.84	+3.84	-0.00	142.9	143.8
2	126.6250	126.6563	+3.21	+3.22	+0.00	144.6	145.5
3	126.6875	127.1563	Interface (below)		+0.00	146.4	151.8
4	127.6250	128.0938	+4.46	+4.50	+0.05	156.5	161.1
5	128.5625	129.0313	+1.91	+1.98	+0.07	165.0	168.8
6	129.5000	129.9688	-0.15	-0.08	+0.07	171.9	175.0
7	130.4375	130.9063	-1.74	-1.68	+0.07	177.3	179.6
8	131.3750	131.8438	-2.86	-2.81	+0.05	181.1	182.6
9	132.3125	132.7813	-3.52	-3.49	+0.03	183.4	184.2
10	133.2500	133.7188	-3.72	-3.72	+0.00	184.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL +2.60 +2.60 +0.00

FOR OUTER MATERIAL +7.49 +7.50 +0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.55	-5.57
INSIDE BENDING	+5.66	+5.67
OUTSIDE BENDING	-5.45	-5.46
HOOP BENDING	N/A	-5.56
INSIDE BENDING	N/A	+5.62
OUTSIDE BENDING	N/A	-5.50

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	171.3	171.2
DELTA T1 (Total Section Delta T)	+39.1	+39.3
LINEAR INSIDE TEMPERATURE	151.6	151.5
LINEAR OUTSIDE TEMPERATURE	190.7	190.8

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DELTA T2 (Absolute of Maximum) 8.7 8.7

Date: 05-24-2005 Time: 16:10:10 PAGE 160

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	133.3	
1	126.5625	126.5938	+4.00	+4.00	-0.00	140.1	141.0
2	126.6250	126.6563	+3.38	+3.38	+0.00	141.9	142.7
3	126.6875	127.1563	Interface (below)		+0.00	143.6	149.0
4	127.6250	128.0938	+4.45	+4.50	+0.05	153.7	158.3
5	128.5625	129.0313	+1.91	+1.98	+0.07	162.2	166.0
6	129.5000	129.9688	-0.16	-0.08	+0.07	169.1	172.2
7	130.4375	130.9063	-1.74	-1.68	+0.07	174.5	176.8
8	131.3750	131.8438	-2.86	-2.82	+0.05	178.3	179.8
9	132.3125	132.7813	-3.52	-3.50	+0.03	180.6	181.4
10	133.2500	133.7188	-3.72	-3.72	+0.00	181.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+2.76	+2.76	+0.00
FOR OUTER MATERIAL	+7.49	+7.49	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.56	-5.57
INSIDE BENDING	+5.66	+5.68
OUTSIDE BENDING	-5.46	-5.47
HOOP BENDING	N/A	-5.57
INSIDE BENDING	N/A	+5.62
OUTSIDE BENDING	N/A	-5.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	168.5	168.4
DELTA T1 (Total Section Delta T)	+39.1	+39.2
LINEAR INSIDE TEMPERATURE	148.8	148.8
LINEAR OUTSIDE TEMPERATURE	187.9	188.0
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:11 PAGE 161

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	130.6	
1	126.5625	126.5938	+4.16	+4.16	-0.00	137.3	138.2
2	126.6250	126.6563	+3.54	+3.54	+0.00	139.1	140.0
3	126.6875	127.1563	Interface (below)		+0.00	140.8	146.3
4	127.6250	128.0938	+4.45	+4.49	+0.05	150.9	155.5
5	128.5625	129.0313	+1.90	+1.97	+0.07	159.4	163.2
6	129.5000	129.9688	-0.16	-0.09	+0.07	166.3	169.4
7	130.4375	130.9063	-1.75	-1.68	+0.07	171.7	174.0
8	131.3750	131.8438	-2.87	-2.82	+0.05	175.5	177.0
9	132.3125	132.7813	-3.52	-3.50	+0.03	177.8	178.5
10	133.2500	133.7188	-3.72	-3.72	+0.00	178.5	120.0

B123

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+2.92	+2.93	+0.00
FOR OUTER MATERIAL	+7.48	+7.48	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.57	-5.58
INSIDE BENDING	+5.67	+5.68
OUTSIDE BENDING	-5.46	-5.48
HOOP BENDING	N/A	-5.57
INSIDE BENDING	N/A	+5.63
OUTSIDE BENDING	N/A	-5.52

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	165.7	165.6
DELTA T1 (Total Section Delta T)	+39.1	+39.2
LINEAR INSIDE TEMPERATURE	146.0	146.0
LINEAR OUTSIDE TEMPERATURE	185.1	185.2
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:13 PAGE 162

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	127.8	
1	126.5625	126.5938	+4.32	+4.32	-0.00	134.5	135.4
2	126.6250	126.6563	+3.70	+3.70	+0.00	136.3	137.2
3	126.6875	127.1563	Interface (below)		+0.00	138.1	143.5
4	127.6250	128.0938	+4.44	+4.49	+0.05	148.1	152.7
5	128.5625	129.0313	+1.90	+1.97	+0.07	156.6	160.4
6	129.5000	129.9688	-0.16	-0.09	+0.07	163.5	166.6
7	130.4375	130.9063	-1.75	-1.68	+0.07	168.9	171.2
8	131.3750	131.8438	-2.87	-2.82	+0.05	172.7	174.2
9	132.3125	132.7813	-3.52	-3.50	+0.03	175.0	175.7
10	133.2500	133.7188	-3.72	-3.72	+0.00	175.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.08	+3.09	+0.00
FOR OUTER MATERIAL	+7.47	+7.48	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.57	-5.59
INSIDE BENDING	+5.67	+5.69
OUTSIDE BENDING	-5.47	-5.48
HOOP BENDING	N/A	-5.58
INSIDE BENDING	N/A	+5.64
OUTSIDE BENDING	N/A	-5.52

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	163.0	162.8

B124

DELTA T1 (Total Section Delta T)	+39.1	+39.2
LINEAR INSIDE TEMPERATURE	143.2	143.2
LINEAR OUTSIDE TEMPERATURE	182.3	182.4
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:14 PAGE 163

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	125.0	
1	126.5625	126.5938	+4.48	+4.48	-0.00	131.7	132.6
2	126.6250	126.6563	+3.86	+3.86	+0.00	133.5	134.4
3	126.6875	127.1563	Interface (below)		+0.00	135.3	140.7
4	127.6250	128.0938	+4.44	+4.48	+0.05	145.3	150.0
5	128.5625	129.0313	+1.89	+1.96	+0.07	153.8	157.6
6	129.5000	129.9688	-0.17	-0.09	+0.07	160.7	163.8
7	130.4375	130.9063	-1.75	-1.68	+0.07	166.1	168.4
8	131.3750	131.8438	-2.87	-2.82	+0.05	169.9	171.4
9	132.3125	132.7813	-3.52	-3.50	+0.03	172.2	172.9
10	133.2500	133.7188	-3.72	-3.72	+0.00	172.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.25	+3.25	+0.00
FOR OUTER MATERIAL	+7.47	+7.47	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.58	-5.59
INSIDE BENDING	+5.68	+5.70
OUTSIDE BENDING	-5.47	-5.49
HOOP BENDING	N/A	-5.58
INSIDE BENDING	N/A	+5.64
OUTSIDE BENDING	N/A	-5.53

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	160.2	160.0
DELTA T1 (Total Section Delta T)	+39.0	+39.2
LINEAR INSIDE TEMPERATURE	140.5	140.4
LINEAR OUTSIDE TEMPERATURE	179.5	179.6
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:15 PAGE 164

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	122.2	
1	126.5625	126.5938	+4.64	+4.64	-0.00	129.0	129.8
2	126.6250	126.6563	+4.02	+4.02	+0.00	130.7	131.6
3	126.6875	127.1563	Interface (below)		+0.00	132.5	137.9
4	127.6250	128.0938	+4.43	+4.48	+0.05	142.5	147.2
5	128.5625	129.0313	+1.89	+1.96	+0.07	151.0	154.9
6	129.5000	129.9688	-0.17	-0.10	+0.07	157.9	161.0
7	130.4375	130.9063	-1.75	-1.69	+0.07	163.3	165.6

B/25

8	131.3750	131.8438	-2.87	-2.82	+0.05	167.1	168.6
9	132.3125	132.7813	-3.52	-3.50	+0.03	169.4	170.1
10	133.2500	133.7188	-3.72	-3.72	+0.00	170.1	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.41	+3.41	+0.00
FOR OUTER MATERIAL	+7.46	+7.46	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.58	-5.60
INSIDE BENDING	+5.69	+5.70
OUTSIDE BENDING	-5.48	-5.49
HOOP BENDING	N/A	-5.59
INSIDE BENDING	N/A	+5.65
OUTSIDE BENDING	N/A	-5.53

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	157.4	157.2
DELTA T1 (Total Section Delta T)	+39.0	+39.2
LINEAR INSIDE TEMPERATURE	137.7	137.6
LINEAR OUTSIDE TEMPERATURE	176.7	176.8
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:16 PAGE 165

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	119.4	
1	126.5625	126.5938	+4.80	+4.80	-0.00	126.2	127.1
2	126.6250	126.6563	+4.18	+4.18	+0.00	128.0	128.8
3	126.6875	127.1563	Interface (below)		+0.00	129.7	135.1
4	127.6250	128.0938	+4.42	+4.47	+0.05	139.8	144.4
5	128.5625	129.0313	+1.88	+1.95	+0.07	148.2	152.1
6	129.5000	129.9688	-0.17	-0.10	+0.07	155.1	158.2
7	130.4375	130.9063	-1.76	-1.69	+0.07	160.5	162.8
8	131.3750	131.8438	-2.87	-2.82	+0.05	164.3	165.8
9	132.3125	132.7813	-3.53	-3.50	+0.03	166.6	167.3
10	133.2500	133.7188	-3.72	-3.72	+0.00	167.3	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.57	+3.57	+0.00
FOR OUTER MATERIAL	+7.45	+7.46	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.59	-5.60
INSIDE BENDING	+5.69	+5.71
OUTSIDE BENDING	-5.48	-5.50
HOOP BENDING	N/A	-5.60
INSIDE BENDING	N/A	+5.65
OUTSIDE BENDING	N/A	-5.54

B126

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	154.6	154.4
DELTA T1 (Total Section Delta T)	+39.0	+39.1
LINEAR INSIDE TEMPERATURE	134.9	134.8
LINEAR OUTSIDE TEMPERATURE	173.9	174.0
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:18 PAGE 166

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9900.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	116.7	
1	126.5625	126.5938	+4.96	+4.96	-0.00	123.4	124.3
2	126.6250	126.6563	+4.34	+4.35	+0.00	125.2	126.1
3	126.6875	127.1563	Interface (below)		+0.00	126.9	132.3
4	127.6250	128.0938	+4.42	+4.47	+0.05	137.0	141.6
5	128.5625	129.0313	+1.88	+1.95	+0.07	145.4	149.3
6	129.5000	129.9688	-0.18	-0.10	+0.07	152.3	155.4
7	130.4375	130.9063	-1.76	-1.69	+0.07	157.7	160.0
8	131.3750	131.8438	-2.87	-2.82	+0.05	161.5	163.0
9	132.3125	132.7813	-3.53	-3.50	+0.03	163.8	164.5
10	133.2500	133.7188	-3.72	-3.72	+0.00	164.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.73	+3.74	+0.00
FOR OUTER MATERIAL	+7.44	+7.45	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.59	-5.61
INSIDE BENDING	+5.70	+5.71
OUTSIDE BENDING	-5.49	-5.51
HOOP BENDING	N/A	-5.60
INSIDE BENDING	N/A	+5.66
OUTSIDE BENDING	N/A	-5.54

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	151.8	151.6
DELTA T1 (Total Section Delta T)	+39.0	+39.1
LINEAR INSIDE TEMPERATURE	132.1	132.1
LINEAR OUTSIDE TEMPERATURE	171.1	171.2
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:19 PAGE 167

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	113.9	
1	126.5625	126.5938	+5.13	+5.13	-0.00	120.6	121.5
2	126.6250	126.6563	+4.51	+4.51	+0.00	122.4	123.3
3	126.6875	127.1563	Interface (below)		+0.00	124.2	129.6
4	127.6250	128.0938	+4.41	+4.46	+0.05	134.2	138.8

B127

5	128.5625	129.0313	+1.88	+1.95	+0.07	142.7	146.5
6	129.5000	129.9688	-0.18	-0.10	+0.07	149.6	152.6
7	130.4375	130.9063	-1.76	-1.69	+0.07	154.9	157.2
8	131.3750	131.8438	-2.88	-2.83	+0.05	158.7	160.2
9	132.3125	132.7813	-3.53	-3.50	+0.03	161.0	161.7
10	133.2500	133.7188	-3.73	-3.73	+0.00	161.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.89	+3.90	+0.00
FOR OUTER MATERIAL	+7.44	+7.44	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.60	-5.62
INSIDE BENDING	+5.71	+5.72
OUTSIDE BENDING	-5.50	-5.51
HOOP BENDING	N/A	-5.61
INSIDE BENDING	N/A	+5.67
OUTSIDE BENDING	N/A	-5.55

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	149.0	148.8
DELTA T1 (Total Section Delta T)	+39.0	+39.1
LINEAR INSIDE TEMPERATURE	129.3	129.3
LINEAR OUTSIDE TEMPERATURE	168.3	168.4
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:20 PAGE 168

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10100.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	111.1	
1	126.5625	126.5938	+5.29	+5.29	-0.00	117.8	118.7
2	126.6250	126.6563	+4.67	+4.67	+0.00	119.6	120.5
3	126.6875	127.1563	Interface (below)		+0.00	121.4	126.8
4	127.6250	128.0938	+4.41	+4.46	+0.05	131.4	136.0
5	128.5625	129.0313	+1.87	+1.94	+0.07	139.9	143.7
6	129.5000	129.9688	-0.18	-0.11	+0.07	146.8	149.8
7	130.4375	130.9063	-1.76	-1.70	+0.07	152.1	154.4
8	131.3750	131.8438	-2.88	-2.83	+0.05	155.9	157.4
9	132.3125	132.7813	-3.53	-3.50	+0.03	158.2	159.0
10	133.2500	133.7188	-3.73	-3.73	+0.00	159.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.06	+4.06	+0.00
FOR OUTER MATERIAL	+7.43	+7.44	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.61	-5.63
INSIDE BENDING	+5.71	+5.73
OUTSIDE BENDING	-5.51	-5.52

B128

HOOP BENDING	N/A	-5.62
INSIDE BENDING	N/A	+5.67
OUTSIDE BENDING	N/A	-5.56

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	146.2	146.0
DELTA T1 (Total Section Delta T)	+39.0	+39.1
LINEAR INSIDE TEMPERATURE	126.5	126.5
LINEAR OUTSIDE TEMPERATURE	165.5	165.6
DELTA T2 (Absolute of Maximum)	8.7	8.7

Date: 05-24-2005 Time: 16:10:22 PAGE 169

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	108.3	
1	126.5625	126.5938	+5.45	+5.45	-0.00	115.1	115.9
2	126.6250	126.6563	+4.83	+4.84	+0.00	116.8	117.7
3	126.6875	127.1563	Interface (below)		+0.00	118.6	124.0
4	127.6250	128.0938	+4.41	+4.45	+0.05	128.6	133.2
5	128.5625	129.0313	+1.87	+1.94	+0.07	137.1	140.9
6	129.5000	129.9688	-0.19	-0.11	+0.08	144.0	147.0
7	130.4375	130.9063	-1.77	-1.70	+0.07	149.3	151.6
8	131.3750	131.8438	-2.88	-2.83	+0.05	153.1	154.6
9	132.3125	132.7813	-3.53	-3.51	+0.03	155.4	156.2
10	133.2500	133.7188	-3.73	-3.73	+0.00	156.2	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.22	+4.23	+0.00
FOR OUTER MATERIAL	+7.43	+7.43	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.62	-5.63
INSIDE BENDING	+5.72	+5.74
OUTSIDE BENDING	-5.51	-5.53
HOOP BENDING	N/A	-5.63
INSIDE BENDING	N/A	+5.68
OUTSIDE BENDING	N/A	-5.57

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	143.4	143.2
DELTA T1 (Total Section Delta T)	+39.0	+39.1
LINEAR INSIDE TEMPERATURE	123.8	123.7
LINEAR OUTSIDE TEMPERATURE	162.7	162.8
DELTA T2 (Absolute of Maximum)	8.7	8.6

Date: 05-24-2005 Time: 16:10:23 PAGE 170

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	105.6	
1	126.5625	126.5938	+5.62	+5.62	-0.00	112.3	113.2

B129

2	126.6250	126.6563	+5.00	+5.00	+0.00	114.1	114.9
3	126.6875	127.1563	Interface (below)		+0.00	115.8	121.2
4	127.6250	128.0938	+4.40	+4.45	+0.05	125.8	130.4
5	128.5625	129.0313	+1.87	+1.94	+0.07	134.3	138.1
6	129.5000	129.9688	-0.19	-0.11	+0.08	141.2	144.2
7	130.4375	130.9063	-1.77	-1.70	+0.07	146.5	148.8
8	131.3750	131.8438	-2.88	-2.83	+0.05	150.3	151.9
9	132.3125	132.7813	-3.54	-3.51	+0.03	152.6	153.4
10	133.2500	133.7188	-3.73	-3.73	+0.00	153.4	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.38	+4.39	+0.00
FOR OUTER MATERIAL	+7.42	+7.43	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.63	-5.64
INSIDE BENDING	+5.73	+5.75
OUTSIDE BENDING	-5.52	-5.54
HOOP BENDING	N/A	-5.63
INSIDE BENDING	N/A	+5.69
OUTSIDE BENDING	N/A	-5.58

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	140.6	140.5
DELTA T1 (Total Section Delta T)	+39.0	+39.1
LINEAR INSIDE TEMPERATURE	121.0	120.9
LINEAR OUTSIDE TEMPERATURE	159.9	160.0
DELTA T2 (Absolute of Maximum)	8.7	8.6

Date: 05-24-2005 Time: 16:10:24 PAGE 171

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	102.8	
1	126.5625	126.5938	+5.78	+5.78	-0.00	109.5	110.4
2	126.6250	126.6563	+5.16	+5.16	+0.00	111.3	112.2
3	126.6875	127.1563	Interface (below)		+0.01	113.0	118.4
4	127.6250	128.0938	+4.40	+4.45	+0.05	123.1	127.7
5	128.5625	129.0313	+1.86	+1.93	+0.07	131.5	135.3
6	129.5000	129.9688	-0.19	-0.12	+0.08	138.4	141.5
7	130.4375	130.9063	-1.77	-1.70	+0.07	143.7	146.0
8	131.3750	131.8438	-2.89	-2.84	+0.05	147.6	149.1
9	132.3125	132.7813	-3.54	-3.51	+0.03	149.8	150.6
10	133.2500	133.7188	-3.74	-3.74	+0.00	150.6	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.55	+4.55	+0.01
FOR OUTER MATERIAL	+7.42	+7.42	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05

AXIAL BENDING	-5.63	-5.65
INSIDE BENDING	+5.74	+5.75
OUTSIDE BENDING	-5.53	-5.55
HOOP BENDING	N/A	-5.64
INSIDE BENDING	N/A	+5.70
OUTSIDE BENDING	N/A	-5.59

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	137.8	137.7
DELTA T1 (Total Section Delta T)	+39.0	+39.1
LINEAR INSIDE TEMPERATURE	118.2	118.1
LINEAR OUTSIDE TEMPERATURE	157.2	157.2
DELTA T2 (Absolute of Maximum)	8.7	8.6

Date: 05-24-2005 Time: 16:10:25 PAGE 172

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	100.0	
1	126.5625	126.5938	+5.94	+5.94	-0.00	106.7	107.6
2	126.6250	126.6563	+5.32	+5.33	+0.00	108.5	109.4
3	126.6875	127.1563	Interface (below)		+0.01	110.3	115.6
4	127.6250	128.0938	+4.39	+4.44	+0.05	120.3	124.9
5	128.5625	129.0313	+1.86	+1.93	+0.07	128.7	132.6
6	129.5000	129.9688	-0.19	-0.12	+0.08	135.6	138.7
7	130.4375	130.9063	-1.77	-1.71	+0.07	141.0	143.2
8	131.3750	131.8438	-2.89	-2.84	+0.05	144.8	146.3
9	132.3125	132.7813	-3.54	-3.51	+0.03	147.0	147.8
10	133.2500	133.7188	-3.74	-3.74	+0.00	147.8	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.71	+4.72	+0.01
FOR OUTER MATERIAL	+7.41	+7.42	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.06	+0.10
HOOP MEMBRANE	N/A	+0.06
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.64	-5.66
INSIDE BENDING	+5.75	+5.76
OUTSIDE BENDING	-5.54	-5.55
HOOP BENDING	N/A	-5.65
INSIDE BENDING	N/A	+5.71
OUTSIDE BENDING	N/A	-5.59

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	135.1	134.9
DELTA T1 (Total Section Delta T)	+38.9	+39.1
LINEAR INSIDE TEMPERATURE	115.4	115.4
LINEAR OUTSIDE TEMPERATURE	154.4	154.4
DELTA T2 (Absolute of Maximum)	8.7	8.6

Date: 05-24-2005 Time: 16:10:27 PAGE 173

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10600.00 SECONDS.....

-- Radii, inches - ---- Grid Stress, ksi ------ Temperature, F

6131

CGS-RPV

N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	100.0	
1	126.5625	126.5938	+5.51	+5.51	-0.00	105.9	106.6
2	126.6250	126.6563	+4.97	+4.97	+0.00	107.4	108.2
3	126.6875	127.1563	Interface (below)		+0.00	109.0	113.7
4	127.6250	128.0938	+4.29	+4.34	+0.05	118.1	122.4
5	128.5625	129.0313	+1.87	+1.94	+0.07	126.1	129.9
6	129.5000	129.9688	-0.14	-0.07	+0.07	132.9	135.9
7	130.4375	130.9063	-1.71	-1.65	+0.07	138.2	140.5
8	131.3750	131.8438	-2.82	-2.77	+0.05	142.0	143.5
9	132.3125	132.7813	-3.47	-3.45	+0.03	144.3	145.0
10	133.2500	133.7188	-3.67	-3.67	+0.00	145.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.43	+4.43	+0.00
FOR OUTER MATERIAL	+7.04	+7.04	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.05	+0.10
HOOP MEMBRANE	N/A	+0.05
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-5.48	-5.50
INSIDE BENDING	+5.58	+5.59
OUTSIDE BENDING	-5.38	-5.40
HOOP BENDING	N/A	-5.49
INSIDE BENDING	N/A	+5.54
OUTSIDE BENDING	N/A	-5.44

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	132.5	132.3
DELTA T1 (Total Section Delta T)	+37.9	+38.0
LINEAR INSIDE TEMPERATURE	113.4	113.3
LINEAR OUTSIDE TEMPERATURE	151.3	151.3
DELTA T2 (Absolute of Maximum)	7.5	7.5

Date: 05-24-2005 Time: 16:10:28 PAGE 174

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	100.0	
1	126.5625	126.5938	+5.04	+5.04	-0.00	105.3	106.0
2	126.6250	126.6563	+4.54	+4.55	+0.00	106.7	107.4
3	126.6875	127.1563	Interface (below)		+0.00	108.1	112.5
4	127.6250	128.0938	+4.08	+4.12	+0.04	116.5	120.5
5	128.5625	129.0313	+1.82	+1.89	+0.06	124.0	127.5
6	129.5000	129.9688	-0.09	-0.02	+0.07	130.4	133.3
7	130.4375	130.9063	-1.60	-1.54	+0.06	135.5	137.8
8	131.3750	131.8438	-2.69	-2.64	+0.05	139.2	140.7
9	132.3125	132.7813	-3.33	-3.31	+0.02	141.5	142.2
10	133.2500	133.7188	-3.53	-3.53	+0.00	142.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.05	+4.06	+0.00
FOR OUTER MATERIAL	+6.60	+6.60	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON: AREA WEIGHTED AVERAGING LINEAR AVERAGING

13132

AXIAL MEMBRANE	+0.04	+0.09
HOOP MEMBRANE	N/A	+0.05
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-5.21	-5.22
INSIDE BENDING	+5.30	+5.31
OUTSIDE BENDING	-5.12	-5.13
HOOP BENDING	N/A	-5.22
INSIDE BENDING	N/A	+5.26
OUTSIDE BENDING	N/A	-5.17

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	130.2	130.0
DELTA T1 (Total Section Delta T)	+36.1	+36.2
LINEAR INSIDE TEMPERATURE	112.0	111.9
LINEAR OUTSIDE TEMPERATURE	148.1	148.1
DELTA T2 (Absolute of Maximum)	6.7	6.6

Date: 05-24-2005 Time: 16:10:29 PAGE 175

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 100.0
1	126.5625	126.5938	+4.58	+4.58	-0.00	104.9	105.5
2	126.6250	126.6563	+4.13	+4.13	+0.00	106.2	106.8
3	126.6875	127.1563	Interface (below)		+0.00	107.5	111.5
4	127.6250	128.0938	+3.84	+3.88	+0.04	115.2	118.9
5	128.5625	129.0313	+1.74	+1.80	+0.06	122.2	125.5
6	129.5000	129.9688	-0.06	+0.01	+0.07	128.2	131.0
7	130.4375	130.9063	-1.50	-1.44	+0.06	133.1	135.2
8	131.3750	131.8438	-2.54	-2.49	+0.04	136.6	138.1
9	132.3125	132.7813	-3.16	-3.13	+0.02	138.8	139.5
10	133.2500	133.7188	-3.35	-3.35	+0.00	139.5	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.68	+3.68	+0.00
FOR OUTER MATERIAL	+6.17	+6.17	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.04	+0.08
HOOP MEMBRANE	N/A	+0.04
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-4.90	-4.92
INSIDE BENDING	+4.99	+5.00
OUTSIDE BENDING	-4.82	-4.83
HOOP BENDING	N/A	-4.91
INSIDE BENDING	N/A	+4.95
OUTSIDE BENDING	N/A	-4.87

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	128.1	127.9
DELTA T1 (Total Section Delta T)	+34.0	+34.1
LINEAR INSIDE TEMPERATURE	110.9	110.9
LINEAR OUTSIDE TEMPERATURE	145.0	145.0
DELTA T2 (Absolute of Maximum)	6.0	6.0

Date: 05-24-2005 Time: 16:10:31 PAGE 176

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3133

CGS-RPV

* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %10900.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	100.0	
1	126.5625	126.5938	+4.15	+4.15	-0.00	104.5	105.1
2	126.6250	126.6563	+3.73	+3.73	+0.00	105.7	106.3
3	126.6875	127.1563	Interface (below)		+0.00	106.9	110.6
4	127.6250	128.0938	+3.60	+3.64	+0.04	114.1	117.5
5	128.5625	129.0313	+1.65	+1.70	+0.06	120.6	123.6
6	129.5000	129.9688	-0.04	+0.03	+0.06	126.2	128.8
7	130.4375	130.9063	-1.39	-1.34	+0.06	130.8	132.8
8	131.3750	131.8438	-2.38	-2.34	+0.04	134.2	135.5
9	132.3125	132.7813	-2.97	-2.95	+0.02	136.2	136.9
10	133.2500	133.7188	-3.15	-3.15	+0.00	136.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.32	+3.32	+0.00
FOR OUTER MATERIAL	+5.76	+5.76	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.04	+0.08
HOOP MEMBRANE	N/A	+0.04
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-4.59	-4.60
INSIDE BENDING	+4.67	+4.68
OUTSIDE BENDING	-4.52	-4.53
HOOP BENDING	N/A	-4.60
INSIDE BENDING	N/A	+4.64
OUTSIDE BENDING	N/A	-4.56

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	126.2	126.0
DELTA T1 (Total Section Delta T)	+31.9	+32.0
LINEAR INSIDE TEMPERATURE	110.1	110.0
LINEAR OUTSIDE TEMPERATURE	142.0	142.0
DELTA T2 (Absolute of Maximum)	5.5	5.5

Date: 05-24-2005 Time: 16:10:32 PAGE 177

* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= %11000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	100.0	
1	126.5625	126.5938	+3.75	+3.75	-0.00	104.2	104.8
2	126.6250	126.6563	+3.36	+3.36	+0.00	105.3	105.9
3	126.6875	127.1563	Interface (below)		+0.00	106.4	109.8
4	127.6250	128.0938	+3.37	+3.40	+0.04	113.0	116.2
5	128.5625	129.0313	+1.55	+1.60	+0.05	119.1	122.0
6	129.5000	129.9688	-0.02	+0.03	+0.06	124.4	126.8
7	130.4375	130.9063	-1.29	-1.24	+0.05	128.7	130.6
8	131.3750	131.8438	-2.22	-2.18	+0.04	131.8	133.1
9	132.3125	132.7813	-2.78	-2.76	+0.02	133.8	134.4
10	133.2500	133.7188	-2.95	-2.95	+0.00	134.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+2.97	+2.98	+0.00
FOR OUTER MATERIAL	+5.37	+5.37	+0.00

B134

CGS-RPV

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.04	+0.07
HOOP MEMBRANE	N/A	+0.04
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-4.29	-4.30
INSIDE BENDING	+4.36	+4.37
OUTSIDE BENDING	-4.22	-4.23
HOOP BENDING	N/A	-4.29
INSIDE BENDING	N/A	+4.33
OUTSIDE BENDING	N/A	-4.26

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	124.4	124.2
DELTA T1 (Total Section Delta T)	+29.8	+29.9
LINEAR INSIDE TEMPERATURE	109.3	109.3
LINEAR OUTSIDE TEMPERATURE	139.1	139.2
DELTA T2 (Absolute of Maximum)	5.1	5.1

B135

CGS-RPV2


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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *

================= START OF INPUT =========================

INPUT FILE  => CGS-RPV2.IN
THIS FILE IS => CGS-RPV2.OUT

CASE INFORMATION.....................................
    Columbia Generating Station RPV Shell Welds


MODEL INFORMATION........................................
  INSIDE RADIUS(INCHES) =  126.5625
  OUTSIDE RADIUS(IN.) =  133.25

  NUMBER OF NODES IN PIPE MODEL =  9
  NUMBER OF NODES IN INNER MATERIAL =  2
  RADIUS TO MATERIAL INTERFACE(INCHES) =  126.6875
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *

TEMPERATURE INFORMATION.............................

  INITIAL  PIPE WALL TEMPERATURE (F) =  552

  INSIDE FLUID TEMPERATURE HISTORY - TIME (sec)/TEMPERATURE (F) =
  TIME (SEC) =        0.00    T (F)   =  +552.0
  TIME (SEC) =       15.00    T (F)   =  +281.0
  TIME (SEC) =    10000.00    T (F)   =  +281.0

  INSIDE FLUID HT TRANSFER COEFFICIENT HISTORY BTU/HR-FT2-F
  TIME (SEC) =        0.00    H (BTU/HR-FT2-F) = +5.0000E+02
  TIME (SEC) =    20000.00    H (BTU/HR-FT2-F) = +5.0000E+02

  OUTSIDE FLUID TEMPERATURE HISTORY - TIME (sec)/TEMPERATURE (F) =
  TIME (SEC) =        0.00    T (F)   =  +120.0
  TIME (SEC) =    20000.00    T (F)   =  +120.0

  OUTSIDE HT TRANSFER COEFFICIENT HISTORY BTU/HR-FT2-F
  TIME (SEC) =        0.00    H (BTU/HR-FT2-F) = +1.0000E-05
  TIME (SEC) =    20000.00    H (BTU/HR-FT2-F) = +1.0000E-05
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *

MATERIAL PROPERTIES(INNER MATERIAL)................

  CONDUCTIVITY(BTU/HR-FT-F)= 9.8
  RHOCP(BTU/FT3-F)= 61.1
  E - MODULUS OF ELASTICITY(KSI)= 27000
  ALPHA - COEFFICIENT OF THERMAL EXPANSION(IN/IN-F)= .000009
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f6134

NU - POISSONS RATIO= .3

MATERIAL PROPERTIES(OUTER MATERIAL).....

CONDUCTIVITY(BTU/HR-FT-F)= 23.8
RHOCP(BTU/FT3-F)= 58.7
E - MODULUS OF ELASTICITY(KSI)= 28000
ALPHA - COEFFICIENT OF THERMAL EXPANSION(IN/IN-F)= 7.43E-06
NU - POISSONS RATIO= .3

STRESS-FREE TEMPERATURE FOR BIMETALLIC CYLINDER (F)
May be any value for single material T = 70

TIME CONTROL INFORMATION.....

MAXIMUM STABLE TIME STEP IS APPROXIMATELY 0.29 SECONDS

NUMBER OF TIME STEP CONTROL INTERVALS = 3

FOR INTERVAL 1
END OF INTERVAL TIME (SEC) = 60 TIME STEP(SEC) = .1
PRINT/EVALUATION INTERVAL(SEC) = 1

FOR INTERVAL 2
END OF INTERVAL TIME (SEC) = 200 TIME STEP(SEC) = .1
PRINT/EVALUATION INTERVAL(SEC) = 10

FOR INTERVAL 3
END OF INTERVAL TIME (SEC) = 1000 TIME STEP(SEC) = .1
PRINT/EVALUATION INTERVAL(SEC) = 100

==========END OF INPUT==========

DATE = 05-24-2005 TIME = 16:19:39

Date: 05-24-2005 Time: 16:19:41 PAGE 4

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 0.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	552.0	
1	126.5625	126.5938	-28.68	-28.68	+0.00	552.0	552.0
2	126.6250	126.6563	-28.66	-28.68	-0.01	552.0	552.0
3	126.6875	127.1563	Interface (below)		-0.03	552.0	552.0
4	127.6250	128.0938	+0.56	+0.53	-0.02	552.0	552.0
5	128.5625	129.0313	+0.55	+0.53	-0.02	552.0	552.0
6	129.5000	129.9688	+0.55	+0.53	-0.02	552.0	552.0
7	130.4375	130.9063	+0.54	+0.53	-0.01	552.0	552.0
8	131.3750	131.8438	+0.54	+0.53	-0.01	552.0	552.0
9	132.3125	132.7813	+0.54	+0.53	-0.00	552.0	552.0
10	133.2500	133.7188	+0.53	+0.53	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-28.65	-28.68	-0.03
FOR OUTER MATERIAL	+0.56	+0.53	-0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

B137

CGS-RPV2

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	-0.00	-0.01
HOOP MEMBRANE	N/A	-0.00
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+1.58	+1.61
INSIDE BENDING	-1.59	-1.62
OUTSIDE BENDING	+1.57	+1.59
HOOP BENDING	N/A	+1.59
INSIDE BENDING	N/A	-1.59
OUTSIDE BENDING	N/A	+1.59

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	552.0	552.0
DELTA T1 (Total Section Delta T)	-0.0	+0.0
LINEAR INSIDE TEMPERATURE	552.0	552.0
LINEAR OUTSIDE TEMPERATURE	552.0	552.0
DELTA T2 (Absolute of Maximum)	0.0	0.0

Date: 05-24-2005 Time: 16:19:42 PAGE 5

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	533.9	
1	126.5625	126.5938	-27.20	-27.20	+0.00	547.7	549.5
2	126.6250	126.6563	-28.09	-28.10	-0.01	550.3	551.1
3	126.6875	127.1563	Interface (below)		-0.03	551.2	552.0
4	127.6250	128.0938	+0.54	+0.51	-0.02	552.0	552.0
5	128.5625	129.0313	+0.53	+0.51	-0.02	552.0	552.0
6	129.5000	129.9688	+0.53	+0.51	-0.02	552.0	552.0
7	130.4375	130.9063	+0.52	+0.51	-0.01	552.0	552.0
8	131.3750	131.8438	+0.52	+0.51	-0.01	552.0	552.0
9	132.3125	132.7813	+0.52	+0.51	-0.00	552.0	552.0
10	133.2500	133.7188	+0.51	+0.51	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-28.40	-28.42	-0.03
FOR OUTER MATERIAL	+0.77	+0.74	-0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.01	-0.00
HOOP MEMBRANE	N/A	+0.01
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+1.50	+1.52
INSIDE BENDING	-1.50	-1.53
OUTSIDE BENDING	+1.49	+1.52
HOOP BENDING	N/A	+1.51
INSIDE BENDING	N/A	-1.50
OUTSIDE BENDING	N/A	+1.52

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.9	551.9
DELTA T1 (Total Section Delta T)	+0.4	+0.4
LINEAR INSIDE TEMPERATURE	551.8	551.8
LINEAR OUTSIDE TEMPERATURE	552.1	552.1
DELTA T2 (Absolute of Maximum)	4.1	4.1

Date: 05-24-2005 Time: 16:19:43 PAGE 6

B138

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=    2.00  SECONDS...................
     -- Radii, inches -    ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                   (Inside fluid)   515.9
  1  126.5625  126.5938      -24.98     -24.98     +0.00          541.2   544.5
  2  126.6250  126.6563      -26.75     -26.76     -0.01          546.3   548.0
  3  126.6875  127.1563   Interface (below)        -0.03          548.6   551.9
  4  127.6250  128.0938      +0.49      +0.47     -0.02          552.0   552.0
  5  128.5625  129.0313      +0.47      +0.46     -0.02          552.0   552.0
  6  129.5000  129.9688      +0.47      +0.46     -0.01          552.0   552.0
  7  130.4375  130.9063      +0.47      +0.46     -0.01          552.0   552.0
  8  131.3750  131.8438      +0.46      +0.46     -0.01          552.0   552.0
  9  132.3125  132.7813      +0.46      +0.46     -0.00          552.0   552.0
 10  133.2500  133.7188      +0.46      +0.46     +0.00          552.0   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -27.53     -27.56     -0.03
    FOR OUTER MATERIAL        +1.50      +1.47     -0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:        AREA WEIGHTED AVERAGING      LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.04                       +0.03
  HOOP MEMBRANE                        N/A                        +0.04
  AVERAGE RADIAL                       N/A                        -0.01
  AXIAL BENDING                       +1.27                       +1.29
      INSIDE BENDING                  -1.25                       -1.27
      OUTSIDE BENDING                 +1.30                       +1.32
  HOOP BENDING                         N/A                        +1.28
      INSIDE BENDING                    N/A                       -1.25
      OUTSIDE BENDING                   N/A                       +1.32

TEMPERATURES (F) BASED ON:      AREA WEIGHTED AVERAGING      LINEAR AVERAGING
  AVERAGE TEMPERATURE                 551.8                       551.8
  DELTA T1 (Total Section Delta T)      +1.3                        +1.4
  LINEAR INSIDE TEMPERATURE           551.1                       551.1
  LINEAR OUTSIDE TEMPERATURE          552.4                       552.4
  DELTA T2 (Absolute of Maximum)        9.9                         9.9

 Date: 05-24-2005          Time: 16:19:44                        PAGE   7
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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=    3.00  SECONDS...................
     -- Radii, inches -    ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                   (Inside fluid)   497.8
  1  126.5625  126.5938      -22.32     -22.32     +0.00          533.3   538.0
  2  126.6250  126.6563      -24.90     -24.91     -0.01          540.7   543.5
  3  126.6875  127.1563   Interface (below)        -0.02          544.6   551.7
  4  127.6250  128.0938      +0.43      +0.41     -0.02          551.9   552.0
  5  128.5625  129.0313      +0.39      +0.38     -0.01          552.0   552.0
  6  129.5000  129.9688      +0.39      +0.37     -0.01          552.0   552.0
  7  130.4375  130.9063      +0.38      +0.37     -0.01          552.0   552.0
  8  131.3750  131.8438      +0.38      +0.37     -0.01          552.0   552.0
  9  132.3125  132.7813      +0.38      +0.37     -0.00          552.0   552.0
 10  133.2500  133.7188      +0.37      +0.37     +0.00          552.0   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       -26.24     -26.26     -0.02
    FOR OUTER MATERIAL        +2.59      +2.57     -0.02
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6139

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.08	+0.07
HOOP MEMBRANE	N/A	+0.08
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+0.94	+0.96
INSIDE BENDING	-0.88	-0.89
OUTSIDE BENDING	+1.01	+1.03
HOOP BENDING	N/A	+0.95
INSIDE BENDING	N/A	-0.87
OUTSIDE BENDING	N/A	+1.03

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.5	551.5
DELTA T1 (Total Section Delta T)	+2.8	+2.8
LINEAR INSIDE TEMPERATURE	550.1	550.1
LINEAR OUTSIDE TEMPERATURE	552.9	552.9
DELTA T2 (Absolute of Maximum)	16.8	16.8

Date: 05-24-2005 Time: 16:19:45 PAGE 8

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 4.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 479.7
1	126.5625	126.5938	-19.37	-19.37	+0.00	524.5	530.4
2	126.6250	126.6563	-22.72	-22.73	-0.01	534.1	537.9
3	126.6875	127.1563	Interface (below)		-0.02	539.8	551.4
4	127.6250	128.0938	+0.37	+0.36	-0.01	551.7	552.0
5	128.5625	129.0313	+0.28	+0.27	-0.01	552.0	552.0
6	129.5000	129.9688	+0.28	+0.27	-0.01	552.0	552.0
7	130.4375	130.9063	+0.28	+0.27	-0.01	552.0	552.0
8	131.3750	131.8438	+0.28	+0.27	-0.00	552.0	552.0
9	132.3125	132.7813	+0.28	+0.27	-0.00	552.0	552.0
10	133.2500	133.7188	+0.27	+0.27	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-24.65	-24.68	-0.02
FOR OUTER MATERIAL	+3.93	+3.91	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.12	+0.12
HOOP MEMBRANE	N/A	+0.13
AVERAGE RADIAL	N/A	-0.01
AXIAL BENDING	+0.54	+0.55
INSIDE BENDING	-0.43	-0.44
OUTSIDE BENDING	+0.66	+0.67
HOOP BENDING	N/A	+0.55
INSIDE BENDING	N/A	-0.42
OUTSIDE BENDING	N/A	+0.67

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	551.2	551.2
DELTA T1 (Total Section Delta T)	+4.6	+4.7
LINEAR INSIDE TEMPERATURE	548.9	548.8
LINEAR OUTSIDE TEMPERATURE	553.5	553.5
DELTA T2 (Absolute of Maximum)	24.4	24.4

6140

Date: 05-24-2005 Time: 16:19:47 PAGE 9

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 5.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 461.7
1	126.5625	126.5938	-16.22	-16.22	+0.00	515.1	522.2
2	126.6250	126.6563	-20.31	-20.32	-0.01	526.9	531.6
3	126.6875	127.1563	Interface (below)		-0.02	534.3	550.9
4	127.6250	128.0938	+0.33	+0.32	-0.01	551.4	552.0
5	128.5625	129.0313	+0.16	+0.16	-0.01	552.0	552.0
6	129.5000	129.9688	+0.16	+0.16	-0.00	552.0	552.0
7	130.4375	130.9063	+0.16	+0.16	-0.00	552.0	552.0
8	131.3750	131.8438	+0.16	+0.16	-0.00	552.0	552.0
9	132.3125	132.7813	+0.16	+0.16	-0.00	552.0	552.0
10	133.2500	133.7188	+0.16	+0.16	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-22.87	-22.89	-0.02
FOR OUTER MATERIAL	+5.44	+5.42	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.17	+0.17
HOOP MEMBRANE	N/A	+0.18
AVERAGE RADIAL	N/A	-0.00
AXIAL BENDING	+0.09	+0.09
INSIDE BENDING	+0.08	+0.08
OUTSIDE BENDING	+0.26	+0.27
HOOP BENDING	N/A	+0.09
INSIDE BENDING	N/A	+0.09
OUTSIDE BENDING	N/A	+0.27

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	550.8	550.8
DELTA T1 (Total Section Delta T)	+6.7	+6.8
LINEAR INSIDE TEMPERATURE	547.4	547.4
LINEAR OUTSIDE TEMPERATURE	554.1	554.2
DELTA T2 (Absolute of Maximum)	32.4	32.3

Date: 05-24-2005 Time: 16:19:48 PAGE 10

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 6.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 443.6
1	126.5625	126.5938	-12.94	-12.94	+0.00	505.3	513.4
2	126.6250	126.6563	-17.75	-17.75	-0.01	519.1	524.8
3	126.6875	127.1563	Interface (below)		-0.02	528.4	550.2
4	127.6250	128.0938	+0.29	+0.29	-0.00	551.1	552.0
5	128.5625	129.0313	+0.03	+0.03	-0.00	552.0	552.0
6	129.5000	129.9688	+0.02	+0.02	-0.00	552.0	552.0
7	130.4375	130.9063	+0.02	+0.02	-0.00	552.0	552.0
8	131.3750	131.8438	+0.02	+0.02	-0.00	552.0	552.0
9	132.3125	132.7813	+0.02	+0.02	-0.00	552.0	552.0
10	133.2500	133.7188	+0.02	+0.02	+0.00	552.0	120.0

(Above node is outside fluid)

B141

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-20.94	-20.96	-0.02
FOR OUTER MATERIAL	+7.07	+7.05	-0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.23
HOOP MEMBRANE	N/A	+0.23
AVERAGE RADIAL	N/A	-0.00
AXIAL BENDING	-0.41	-0.41
INSIDE BENDING	+0.64	+0.64
OUTSIDE BENDING	-0.18	-0.18
HOOP BENDING	N/A	-0.41
INSIDE BENDING	N/A	+0.64
OUTSIDE BENDING	N/A	-0.18

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	550.4	550.4
DELTA T1 (Total Section Delta T)	+9.0	+9.1
LINEAR INSIDE TEMPERATURE	545.9	545.8
LINEAR OUTSIDE TEMPERATURE	554.9	554.9
DELTA T2 (Absolute of Maximum)	40.6	40.5

Date: 05-24-2005 Time: 16:19:49 PAGE 11

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 7.00 SECONDS.....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	425.5	
1	126.5625	126.5938	-9.56	-9.56	+0.00	495.1	504.4
2	126.6250	126.6563	-15.07	-15.08	-0.01	511.0	517.7
3	126.6875	127.1563	Interface (below)		-0.01	522.1	549.4
4	127.6250	128.0938	+0.28	+0.28	+0.00	550.7	551.9
5	128.5625	129.0313	-0.11	-0.11	+0.00	552.0	552.0
6	129.5000	129.9688	-0.12	-0.12	+0.00	552.0	552.0
7	130.4375	130.9063	-0.12	-0.12	+0.00	552.0	552.0
8	131.3750	131.8438	-0.12	-0.12	+0.00	552.0	552.0
9	132.3125	132.7813	-0.12	-0.12	+0.00	552.0	552.0
10	133.2500	133.7188	-0.12	-0.12	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-18.91	-18.92	-0.01
FOR OUTER MATERIAL	+8.78	+8.77	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.28	+0.29
HOOP MEMBRANE	N/A	+0.29
AVERAGE RADIAL	N/A	+0.00
AXIAL BENDING	-0.93	-0.94
INSIDE BENDING	+1.22	+1.23
OUTSIDE BENDING	-0.64	-0.65
HOOP BENDING	N/A	-0.94
INSIDE BENDING	N/A	+1.23
OUTSIDE BENDING	N/A	-0.66

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	549.9	549.9
DELTA T1 (Total Section Delta T)	+11.5	+11.7

B142

LINEAR INSIDE TEMPERATURE	544.1	544.1
LINEAR OUTSIDE TEMPERATURE	555.6	555.7
DELTA T2 (Absolute of Maximum)	49.0	48.9

Date: 05-24-2005 Time: 16:19:50 PAGE 12

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 8.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	407.5	
1	126.5625	126.5938	-6.12	-6.12	+0.00	484.8	495.1
2	126.6250	126.6563	-12.32	-12.32	-0.00	502.7	510.3
3	126.6875	127.1563	Interface (below)		-0.01	515.6	548.3
4	127.6250	128.0938	+0.28	+0.29	+0.01	550.1	551.9
5	128.5625	129.0313	-0.26	-0.25	+0.01	551.9	552.0
6	129.5000	129.9688	-0.28	-0.27	+0.01	552.0	552.0
7	130.4375	130.9063	-0.28	-0.27	+0.01	552.0	552.0
8	131.3750	131.8438	-0.28	-0.27	+0.00	552.0	552.0
9	132.3125	132.7813	-0.27	-0.27	+0.00	552.0	552.0
10	133.2500	133.7188	-0.27	-0.27	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-16.80	-16.81	-0.01
FOR OUTER MATERIAL	+10.56	+10.55	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.34	+0.35
HOOP MEMBRANE	N/A	+0.35
AVERAGE RADIAL	N/A	+0.00
AXIAL BENDING	-1.49	-1.51
INSIDE BENDING	+1.84	+1.86
OUTSIDE BENDING	-1.14	-1.15
HOOP BENDING	N/A	-1.50
INSIDE BENDING	N/A	+1.85
OUTSIDE BENDING	N/A	-1.16

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	549.4	549.4
DELTA T1 (Total Section Delta T)	+14.2	+14.4
LINEAR INSIDE TEMPERATURE	542.3	542.2
LINEAR OUTSIDE TEMPERATURE	556.5	556.6
DELTA T2 (Absolute of Maximum)	57.5	57.4

Date: 05-24-2005 Time: 16:19:52 PAGE 13

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 9.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	389.4	
1	126.5625	126.5938	-2.62	-2.62	+0.00	474.3	485.5
2	126.6250	126.6563	-9.51	-9.51	-0.00	494.1	502.7
3	126.6875	127.1563	Interface (below)		-0.01	508.9	547.1
4	127.6250	128.0938	+0.30	+0.32	+0.02	549.5	551.8
5	128.5625	129.0313	-0.42	-0.40	+0.02	551.9	552.0
6	129.5000	129.9688	-0.45	-0.43	+0.01	552.0	552.0
7	130.4375	130.9063	-0.44	-0.44	+0.01	552.0	552.0
8	131.3750	131.8438	-0.44	-0.44	+0.01	552.0	552.0

B143

9	132.3125	132.7813	-0.44	-0.44	+0.00	552.0	552.0
10	133.2500	133.7188	-0.44	-0.44	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-14.63	-14.63	-0.01
FOR OUTER MATERIAL	+12.39	+12.38	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.39	+0.41
HOOP MEMBRANE	N/A	+0.40
AVERAGE RADIAL	N/A	+0.01
AXIAL BENDING	-2.07	-2.09
INSIDE BENDING	+2.48	+2.50
OUTSIDE BENDING	-1.66	-1.68
HOOP BENDING	N/A	-2.09
INSIDE BENDING	N/A	+2.49
OUTSIDE BENDING	N/A	-1.68

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	548.9	548.9
DELTA T1 (Total Section Delta T)	+17.0	+17.2
LINEAR INSIDE TEMPERATURE	540.4	540.2
LINEAR OUTSIDE TEMPERATURE	557.4	557.5
DELTA T2 (Absolute of Maximum)	66.1	66.0

Date: 05-24-2005 Time: 16:19:53 PAGE 14

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 10.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	371.3	
1	126.5625	126.5938	+0.91	+0.91	-0.00	463.6	475.9
2	126.6250	126.6563	-6.64	-6.64	-0.00	485.4	494.9
3	126.6875	127.1563	Interface (below)		-0.01	502.0	545.7
4	127.6250	128.0938	+0.34	+0.37	+0.03	548.7	551.7
5	128.5625	129.0313	-0.58	-0.56	+0.02	551.8	552.0
6	129.5000	129.9688	-0.62	-0.61	+0.02	552.0	552.0
7	130.4375	130.9063	-0.62	-0.61	+0.01	552.0	552.0
8	131.3750	131.8438	-0.62	-0.61	+0.01	552.0	552.0
9	132.3125	132.7813	-0.61	-0.61	+0.00	552.0	552.0
10	133.2500	133.7188	-0.61	-0.61	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-12.40	-12.41	-0.01
FOR OUTER MATERIAL	+14.27	+14.26	-0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.45	+0.47
HOOP MEMBRANE	N/A	+0.46
AVERAGE RADIAL	N/A	+0.01
AXIAL BENDING	-2.67	-2.70
INSIDE BENDING	+3.14	+3.17
OUTSIDE BENDING	-2.20	-2.23
HOOP BENDING	N/A	-2.69
INSIDE BENDING	N/A	+3.15
OUTSIDE BENDING	N/A	-2.23

B144

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	548.4	548.3
DELTA T1 (Total Section Delta T)	+20.0	+20.3
LINEAR INSIDE TEMPERATURE	538.3	538.2
LINEAR OUTSIDE TEMPERATURE	558.3	558.4
DELTA T2 (Absolute of Maximum)	74.7	74.5

Date: 05-24-2005 Time: 16:19:54 PAGE 15

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 11.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	353.3	
1	126.5625	126.5938	+4.47	+4.47	-0.00	452.8	466.1
2	126.6250	126.6563	-3.74	-3.74	+0.00	476.5	486.9
3	126.6875	127.1563	Interface (below)		-0.00	494.9	544.1
4	127.6250	128.0938	+0.41	+0.44	+0.03	547.9	551.6
5	128.5625	129.0313	-0.75	-0.73	+0.03	551.8	552.0
6	129.5000	129.9688	-0.81	-0.79	+0.02	552.0	552.0
7	130.4375	130.9063	-0.81	-0.79	+0.02	552.0	552.0
8	131.3750	131.8438	-0.80	-0.79	+0.01	552.0	552.0
9	132.3125	132.7813	-0.79	-0.79	+0.01	552.0	552.0
10	133.2500	133.7188	-0.79	-0.79	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-10.13	-10.13	-0.00
FOR OUTER MATERIAL	+16.18	+16.18	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.51	+0.53
HOOP MEMBRANE	N/A	+0.52
AVERAGE RADIAL	N/A	+0.02
AXIAL BENDING	-3.29	-3.33
INSIDE BENDING	+3.82	+3.86
OUTSIDE BENDING	-2.76	-2.79
HOOP BENDING	N/A	-3.32
INSIDE BENDING	N/A	+3.84
OUTSIDE BENDING	N/A	-2.80

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	547.8	547.7
DELTA T1 (Total Section Delta T)	+23.1	+23.4
LINEAR INSIDE TEMPERATURE	536.1	536.0
LINEAR OUTSIDE TEMPERATURE	559.2	559.4
DELTA T2 (Absolute of Maximum)	83.3	83.1

Date: 05-24-2005 Time: 16:19:55 PAGE 16

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 12.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	335.2	
1	126.5625	126.5938	+8.07	+8.07	-0.00	442.0	456.1
2	126.6250	126.6563	-0.80	-0.80	+0.00	467.5	478.8
3	126.6875	127.1563	Interface (below)		-0.00	487.7	542.4
4	127.6250	128.0938	+0.49	+0.53	+0.04	546.9	551.4
5	128.5625	129.0313	-0.93	-0.89	+0.04	551.7	552.0

15145

6	129.5000	129.9688	-1.00	-0.98	+0.03	552.0	552.0
7	130.4375	130.9063	-1.00	-0.98	+0.02	552.0	552.0
8	131.3750	131.8438	-0.99	-0.98	+0.01	552.0	552.0
9	132.3125	132.7813	-0.99	-0.98	+0.01	552.0	552.0
10	133.2500	133.7188	-0.98	-0.98	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-7.82	-7.82	-0.00
FOR OUTER MATERIAL	+18.13	+18.13	-0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.56	+0.60
HOOP MEMBRANE	N/A	+0.58
AVERAGE RADIAL	N/A	+0.02
AXIAL BENDING	-3.93	-3.98
INSIDE BENDING	+4.53	+4.57
OUTSIDE BENDING	-3.33	-3.38
HOOP BENDING	N/A	-3.96
INSIDE BENDING	N/A	+4.54
OUTSIDE BENDING	N/A	-3.39

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	547.2	547.1
DELTA T1 (Total Section Delta T)	+26.4	+26.7
LINEAR INSIDE TEMPERATURE	533.9	533.7
LINEAR OUTSIDE TEMPERATURE	560.3	560.4
DELTA T2 (Absolute of Maximum)	91.9	91.7

Date: 05-24-2005 Time: 16:19:56 PAGE 17

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 13.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	317.1	
1	126.5625	126.5938	+11.68	+11.68	-0.00	431.0	446.1
2	126.6250	126.6563	+2.17	+2.17	+0.00	458.4	470.6
3	126.6875	127.1563	Interface (below)		+0.00	480.4	540.5
4	127.6250	128.0938	+0.59	+0.64	+0.05	545.9	551.3
5	128.5625	129.0313	-1.11	-1.06	+0.04	551.6	552.0
6	129.5000	129.9688	-1.21	-1.17	+0.03	552.0	552.0
7	130.4375	130.9063	-1.20	-1.18	+0.03	552.0	552.0
8	131.3750	131.8438	-1.19	-1.18	+0.02	552.0	552.0
9	132.3125	132.7813	-1.19	-1.18	+0.01	552.0	552.0
10	133.2500	133.7188	-1.18	-1.18	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-5.47	-5.47	+0.00
FOR OUTER MATERIAL	+20.10	+20.10	+0.00

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.62	+0.66
HOOP MEMBRANE	N/A	+0.63
AVERAGE RADIAL	N/A	+0.03
AXIAL BENDING	-4.59	-4.64
INSIDE BENDING	+5.24	+5.30
OUTSIDE BENDING	-3.93	-3.99
HOOP BENDING	N/A	-4.63

3146

INSIDE BENDING	N/A	+5.26
OUTSIDE BENDING	N/A	-4.00

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	546.5	546.4
DELTA T1 (Total Section Delta T)	+29.8	+30.2
LINEAR INSIDE TEMPERATURE	531.5	531.3
LINEAR OUTSIDE TEMPERATURE	561.3	561.5
DELTA T2 (Absolute of Maximum)	100.5	100.3

Date: 05-24-2005 Time: 16:19:58 PAGE 18

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 14.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	299.1	
1	126.5625	126.5938	+15.32	+15.32	-0.00	419.9	436.0
2	126.6250	126.6563	+5.17	+5.17	+0.00	449.2	462.3
3	126.6875	127.1563	Interface (below)		+0.01	472.9	538.4
4	127.6250	128.0938	+0.72	+0.77	+0.06	544.7	551.1
5	128.5625	129.0313	-1.29	-1.24	+0.05	551.5	552.0
6	129.5000	129.9688	-1.42	-1.38	+0.04	552.0	552.0
7	130.4375	130.9063	-1.41	-1.38	+0.03	552.0	552.0
8	131.3750	131.8438	-1.40	-1.38	+0.02	552.0	552.0
9	132.3125	132.7813	-1.39	-1.38	+0.01	552.0	552.0
10	133.2500	133.7188	-1.38	-1.38	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	-3.09	-3.08	+0.01
FOR OUTER MATERIAL	+22.10	+22.11	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.67	+0.72
HOOP MEMBRANE	N/A	+0.69
AVERAGE RADIAL	N/A	+0.03
AXIAL BENDING	-5.26	-5.33
INSIDE BENDING	+5.98	+6.05
OUTSIDE BENDING	-4.55	-4.61
HOOP BENDING	N/A	-5.31
INSIDE BENDING	N/A	+6.00
OUTSIDE BENDING	N/A	-4.62

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	545.9	545.7
DELTA T1 (Total Section Delta T)	+33.3	+33.7
LINEAR INSIDE TEMPERATURE	529.1	528.9
LINEAR OUTSIDE TEMPERATURE	562.4	562.6
DELTA T2 (Absolute of Maximum)	109.1	108.9

Date: 05-24-2005 Time: 16:19:59 PAGE 19

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 15.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+18.98	+18.98	-0.00	408.8	425.8
2	126.6250	126.6563	+8.19	+8.20	+0.01	439.9	453.9

B147

3	126.6875	127.1563	Interface (below)		+0.01	465.4	536.1
4	127.6250	128.0938	+0.86	+0.93	+0.07	543.5	550.8
5	128.5625	129.0313	-1.48	-1.42	+0.06	551.4	551.9
6	129.5000	129.9688	-1.64	-1.59	+0.05	552.0	552.0
7	130.4375	130.9063	-1.63	-1.60	+0.03	552.0	552.0
8	131.3750	131.8438	-1.62	-1.60	+0.02	552.0	552.0
9	132.3125	132.7813	-1.61	-1.60	+0.01	552.0	552.0
10	133.2500	133.7188	-1.60	-1.60	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	-0.67	-0.66	+0.01
FOR OUTER MATERIAL	+24.13	+24.14	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.73	+0.78
HOOP MEMBRANE	N/A	+0.74
AVERAGE RADIAL	N/A	+0.03
AXIAL BENDING	-5.96	-6.03
INSIDE BENDING	+6.73	+6.81
OUTSIDE BENDING	-5.18	-5.25
HOOP BENDING	N/A	-6.01
INSIDE BENDING	N/A	+6.75
OUTSIDE BENDING	N/A	-5.26

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	545.2	545.0
DELTA T1 (Total Section Delta T)	+36.9	+37.4
LINEAR INSIDE TEMPERATURE	526.6	526.3
LINEAR OUTSIDE TEMPERATURE	563.5	563.7
DELTA T2 (Absolute of Maximum)	117.7	117.5

Date: 05-24-2005 Time: 16:20:00 PAGE 20

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 16.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+21.17	+21.17	-0.00	401.9	418.0
2	126.6250	126.6563	+10.67	+10.68	+0.01	432.1	446.3
3	126.6875	127.1563	Interface (below)		+0.01	458.5	533.7
4	127.6250	128.0938	+1.05	+1.12	+0.07	542.2	550.6
5	128.5625	129.0313	-1.64	-1.58	+0.07	551.2	551.9
6	129.5000	129.9688	-1.84	-1.79	+0.05	552.0	552.0
7	130.4375	130.9063	-1.84	-1.80	+0.04	552.0	552.0
8	131.3750	131.8438	-1.83	-1.80	+0.03	552.0	552.0
9	132.3125	132.7813	-1.82	-1.80	+0.01	552.0	552.0
10	133.2500	133.7188	-1.80	-1.80	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+1.52	+1.53	+0.01
FOR OUTER MATERIAL	+25.97	+25.98	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.77	+0.83
HOOP MEMBRANE	N/A	+0.79
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-6.58	-6.66

6145

INSIDE BENDING	+7.41	+7.49
OUTSIDE BENDING	-5.76	-5.84
HOOP BENDING	N/A	-6.64
INSIDE BENDING	N/A	+7.43
OUTSIDE BENDING	N/A	-5.85

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	544.5	544.3
DELTA T1 (Total Section Delta T)	+40.3	+40.9
LINEAR INSIDE TEMPERATURE	524.2	523.9
LINEAR OUTSIDE TEMPERATURE	564.5	564.8
DELTA T2 (Absolute of Maximum)	122.3	122.0

Date: 05-24-2005 Time: 16:20:01 PAGE 21

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 17.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+22.65	+22.65	-0.00	397.2	412.6
2	126.6250	126.6563	+12.40	+12.41	+0.01	426.7	440.7
3	126.6875	127.1563	Interface (below)		+0.01	453.4	531.2
4	127.6250	128.0938	+1.28	+1.36	+0.08	540.8	550.3
5	128.5625	129.0313	-1.78	-1.71	+0.07	551.1	551.9
6	129.5000	129.9688	-2.02	-1.96	+0.06	551.9	552.0
7	130.4375	130.9063	-2.02	-1.98	+0.04	552.0	552.0
8	131.3750	131.8438	-2.01	-1.98	+0.03	552.0	552.0
9	132.3125	132.7813	-1.99	-1.98	+0.01	552.0	552.0
10	133.2500	133.7188	-1.98	-1.98	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+3.13	+3.14	+0.01
FOR OUTER MATERIAL	+27.32	+27.34	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.80	+0.86
HOOP MEMBRANE	N/A	+0.82
AVERAGE RADIAL	N/A	+0.04
AXIAL BENDING	-7.08	-7.17
INSIDE BENDING	+7.94	+8.03
OUTSIDE BENDING	-6.23	-6.31
HOOP BENDING	N/A	-7.14
INSIDE BENDING	N/A	+7.96
OUTSIDE BENDING	N/A	-6.33

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	543.9	543.8
DELTA T1 (Total Section Delta T)	+43.2	+43.8
LINEAR INSIDE TEMPERATURE	522.1	521.9
LINEAR OUTSIDE TEMPERATURE	565.4	565.7
DELTA T2 (Absolute of Maximum)	125.0	124.7

Date: 05-24-2005 Time: 16:20:03 PAGE 22

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 18.00 SECONDS.....

-- Radii, inches - ---- Grid Stress, ksi ------ Temperature, F

N Grid Node hoop axial radial Grid Node

B149

					(Inside fluid)	281.0	
1	126.5625	126.5938	+23.70	+23.70	-0.00	393.7	408.7
2	126.6250	126.6563	+13.65	+13.66	+0.01	422.6	436.6
3	126.6875	127.1563	Interface (below)		+0.01	449.4	528.7
4	127.6250	128.0938	+1.54	+1.62	+0.09	539.4	549.9
5	128.5625	129.0313	-1.89	-1.81	+0.08	550.9	551.9
6	129.5000	129.9688	-2.18	-2.11	+0.06	551.9	552.0
7	130.4375	130.9063	-2.18	-2.13	+0.05	552.0	552.0
8	131.3750	131.8438	-2.17	-2.14	+0.03	552.0	552.0
9	132.3125	132.7813	-2.15	-2.14	+0.02	552.0	552.0
10	133.2500	133.7188	-2.14	-2.14	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+4.34	+4.35	+0.01
FOR OUTER MATERIAL	+28.33	+28.34	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.81	+0.88
HOOP MEMBRANE	N/A	+0.83
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-7.50	-7.59
INSIDE BENDING	+8.37	+8.46
OUTSIDE BENDING	-6.62	-6.71
HOOP BENDING	N/A	-7.56
INSIDE BENDING	N/A	+8.39
OUTSIDE BENDING	N/A	-6.73

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	543.4	543.2
DELTA T1 (Total Section Delta T)	+45.8	+46.4
LINEAR INSIDE TEMPERATURE	520.3	520.0
LINEAR OUTSIDE TEMPERATURE	566.1	566.4
DELTA T2 (Absolute of Maximum)	126.6	126.3

Date: 05-24-2005 Time: 16:20:04 PAGE 23

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 19.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+24.47	+24.47	-0.00	391.1	405.7
2	126.6250	126.6563	+14.59	+14.60	+0.01	419.5	433.4
3	126.6875	127.1563	Interface (below)		+0.01	446.3	526.2
4	127.6250	128.0938	+1.82	+1.91	+0.09	537.9	549.6
5	128.5625	129.0313	-1.98	-1.89	+0.08	550.7	551.8
6	129.5000	129.9688	-2.32	-2.25	+0.07	551.9	552.0
7	130.4375	130.9063	-2.33	-2.28	+0.05	552.0	552.0
8	131.3750	131.8438	-2.31	-2.28	+0.03	552.0	552.0
9	132.3125	132.7813	-2.30	-2.28	+0.02	552.0	552.0
10	133.2500	133.7188	-2.28	-2.28	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+5.28	+5.30	+0.01
FOR OUTER MATERIAL	+29.11	+29.13	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.82	+0.88

B150

HOOP MEMBRANE	N/A	+0.84
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-7.85	-7.95
INSIDE BENDING	+8.74	+8.83
OUTSIDE BENDING	-6.97	-7.06
HOOP BENDING	N/A	-7.92
INSIDE BENDING	N/A	+8.75
OUTSIDE BENDING	N/A	-7.08

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	542.9	542.7
DELTA T1 (Total Section Delta T)	+48.1	+48.7
LINEAR INSIDE TEMPERATURE	518.7	518.4
LINEAR OUTSIDE TEMPERATURE	566.8	567.1
DELTA T2 (Absolute of Maximum)	127.6	127.3

Date: 05-24-2005 Time: 16:20:05 PAGE 24

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 20.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+25.07	+25.06	-0.00	389.6	403.3
2	126.6250	126.6563	+15.32	+15.33	+0.01	417.1	430.8
3	126.6875	127.1563	Interface (below)		+0.02	443.7	523.7
4	127.6250	128.0938	+2.11	+2.20	+0.10	536.5	549.2
5	128.5625	129.0313	-2.05	-1.96	+0.09	550.5	551.8
6	129.5000	129.9688	-2.45	-2.38	+0.07	551.9	552.0
7	130.4375	130.9063	-2.47	-2.42	+0.05	552.0	552.0
8	131.3750	131.8438	-2.45	-2.42	+0.03	552.0	552.0
9	132.3125	132.7813	-2.43	-2.42	+0.02	552.0	552.0
10	133.2500	133.7188	-2.42	-2.42	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+6.05	+6.07	+0.02
FOR OUTER MATERIAL	+29.75	+29.76	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.82	+0.89
HOOP MEMBRANE	N/A	+0.84
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-8.17	-8.27
INSIDE BENDING	+9.06	+9.16
OUTSIDE BENDING	-7.28	-7.38
HOOP BENDING	N/A	-8.24
INSIDE BENDING	N/A	+9.07
OUTSIDE BENDING	N/A	-7.40

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	542.5	542.3
DELTA T1 (Total Section Delta T)	+50.3	+50.9
LINEAR INSIDE TEMPERATURE	517.1	516.8
LINEAR OUTSIDE TEMPERATURE	567.4	567.7
DELTA T2 (Absolute of Maximum)	128.1	127.8

Date: 05-24-2005 Time: 16:20:06 PAGE 25

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

B151

CGS-RPV2

.....OUTPUT FOR TIME= 21.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+25.54	+25.54	-0.00	387.3	401.4
2	126.6250	126.6563	+15.91	+15.92	+0.01	415.0	428.5
3	126.6875	127.1563	Interface (below)		+0.02	441.5	521.3
4	127.6250	128.0938	+2.40	+2.50	+0.10	535.0	548.7
5	128.5625	129.0313	-2.12	-2.02	+0.09	550.2	551.7
6	129.5000	129.9688	-2.58	-2.51	+0.07	551.9	552.0
7	130.4375	130.9063	-2.60	-2.55	+0.06	552.0	552.0
8	131.3750	131.8438	-2.59	-2.55	+0.04	552.0	552.0
9	132.3125	132.7813	-2.57	-2.55	+0.02	552.0	552.0
10	133.2500	133.7188	-2.55	-2.55	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+6.71	+6.72	+0.02
FOR OUTER MATERIAL	+30.28	+30.30	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.81	+0.89
HOOP MEMBRANE	N/A	+0.83
AVERAGE RADIAL	N/A	+0.05
AXIAL BENDING	-8.47	-8.57
INSIDE BENDING	+9.35	+9.46
OUTSIDE BENDING	-7.58	-7.68
HOOP BENDING	N/A	-8.53
INSIDE BENDING	N/A	+9.37
OUTSIDE BENDING	N/A	-7.70

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	542.1	541.8
DELTA T1 (Total Section Delta T)	+52.3	+53.0
LINEAR INSIDE TEMPERATURE	515.7	515.3
LINEAR OUTSIDE TEMPERATURE	568.0	568.3
DELTA T2 (Absolute of Maximum)	128.4	128.1

Date: 05-24-2005 Time: 16:20:07 PAGE 26

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 22.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+25.93	+25.93	-0.00	385.8	399.7
2	126.6250	126.6563	+16.42	+16.43	+0.01	413.2	426.6
3	126.6875	127.1563	Interface (below)		+0.02	439.5	518.8
4	127.6250	128.0938	+2.69	+2.80	+0.10	533.6	548.3
5	128.5625	129.0313	-2.17	-2.07	+0.10	550.0	551.7
6	129.5000	129.9688	-2.70	-2.62	+0.08	551.8	552.0
7	130.4375	130.9063	-2.73	-2.67	+0.06	552.0	552.0
8	131.3750	131.8438	-2.71	-2.68	+0.04	552.0	552.0
9	132.3125	132.7813	-2.69	-2.68	+0.02	552.0	552.0
10	133.2500	133.7188	-2.68	-2.68	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+7.28	+7.30	+0.02
FOR OUTER MATERIAL	+30.75	+30.77	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

B152

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.81	+0.89
HOOP MEMBRANE	N/A	+0.83
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-8.74	-8.85
INSIDE BENDING	+9.63	+9.73
OUTSIDE BENDING	-7.86	-7.96
HOOP BENDING	N/A	-8.81
INSIDE BENDING	N/A	+9.64
OUTSIDE BENDING	N/A	-7.98

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	541.6	541.4
DELTA T1 (Total Section Delta T)	+54.3	+55.0
LINEAR INSIDE TEMPERATURE	514.3	513.9
LINEAR OUTSIDE TEMPERATURE	568.6	568.9
DELTA T2 (Absolute of Maximum)	128.5	128.1

Date: 05-24-2005 Time: 16:20:09 PAGE 27

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 23.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+26.27	+26.27	-0.00	384.5	398.2
2	126.6250	126.6563	+16.87	+16.88	+0.01	411.5	424.8
3	126.6875	127.1563	Interface (below)		+0.02	437.6	516.5
4	127.6250	128.0938	+2.99	+3.10	+0.11	532.2	547.8
5	128.5625	129.0313	-2.22	-2.12	+0.10	549.7	551.6
6	129.5000	129.9688	-2.82	-2.74	+0.08	551.8	552.0
7	130.4375	130.9063	-2.86	-2.80	+0.06	552.0	552.0
8	131.3750	131.8438	-2.84	-2.80	+0.04	552.0	552.0
9	132.3125	132.7813	-2.82	-2.80	+0.02	552.0	552.0
10	133.2500	133.7188	-2.80	-2.80	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+7.80	+7.82	+0.02
FOR OUTER MATERIAL	+31.18	+31.19	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.81	+0.88
HOOP MEMBRANE	N/A	+0.82
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-9.01	-9.11
INSIDE BENDING	+9.89	+10.00
OUTSIDE BENDING	-8.12	-8.23
HOOP BENDING	N/A	-9.07
INSIDE BENDING	N/A	+9.90
OUTSIDE BENDING	N/A	-8.25

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	541.2	541.0
DELTA T1 (Total Section Delta T)	+56.2	+56.9
LINEAR INSIDE TEMPERATURE	512.9	512.5
LINEAR OUTSIDE TEMPERATURE	569.1	569.4
DELTA T2 (Absolute of Maximum)	128.4	128.1

B153

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      * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=   24.00  SECONDS.................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node       hoop      axial      radial          Grid    Node
                                                 (Inside fluid)   281.0
  1  126.5625  126.5938     +26.57    +26.57     -0.00          383.3   396.8
  2  126.6250  126.6563     +17.27    +17.28     +0.01          410.0   423.2
  3  126.6875  127.1563   Interface (below)      +0.02          435.9   514.2
  4  127.6250  128.0938      +3.28     +3.39     +0.11          530.8   547.3
  5  128.5625  129.0313      -2.26     -2.15     +0.11          549.4   551.6
  6  129.5000  129.9688      -2.94     -2.85     +0.09          551.8   552.0
  7  130.4375  130.9063      -2.98     -2.92     +0.06          552.0   552.0
  8  131.3750  131.8438      -2.96     -2.92     +0.04          552.0   552.0
  9  132.3125  132.7813      -2.94     -2.92     +0.02          552.0   552.0
 10  133.2500  133.7188      -2.92     -2.92     +0.00          552.0   120.0
                                                (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       +8.28     +8.30     +0.02
    FOR OUTER MATERIAL      +31.56    +31.58     +0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02    +1.000D-05

STRESSES (KSI) BASED ON:      AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AXIAL MEMBRANE                    +0.80                      +0.88
  HOOP MEMBRANE                      N/A                       +0.82
  AVERAGE RADIAL                     N/A                       +0.06
  AXIAL BENDING                     -9.26                      -9.37
    INSIDE BENDING                 +10.14                      +10.25
    OUTSIDE BENDING                 -8.38                       -8.49
  HOOP BENDING                       N/A                       -9.33
    INSIDE BENDING                    N/A                      +10.15
    OUTSIDE BENDING                   N/A                       -8.51

TEMPERATURES (F) BASED ON:    AREA WEIGHTED AVERAGING     LINEAR AVERAGING
  AVERAGE TEMPERATURE              540.8                       540.6
  DELTA T1 (Total Section Delta T)  +58.0                      +58.8
  LINEAR INSIDE TEMPERATURE        511.6                       511.2
  LINEAR OUTSIDE TEMPERATURE       569.6                       569.9
  DELTA T2 (Absolute of Maximum)   -128.3                      127.9
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      * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=   25.00  SECONDS.................
     -- Radii, inches -   ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node       hoop      axial      radial          Grid    Node
                                                 (Inside fluid)   281.0
  1  126.5625  126.5938     +26.85    +26.85     -0.00          382.1   395.6
  2  126.6250  126.6563     +17.64    +17.65     +0.01          408.6   421.7
  3  126.6875  127.1563   Interface (below)      +0.02          434.3   511.9
  4  127.6250  128.0938      +3.57     +3.69     +0.11          529.4   546.7
  5  128.5625  129.0313      -2.29     -2.18     +0.11          549.1   551.5
  6  129.5000  129.9688      -3.05     -2.96     +0.09          551.7   552.0
  7  130.4375  130.9063      -3.10     -3.03     +0.07          552.0   552.0
  8  131.3750  131.8438      -3.08     -3.04     +0.04          552.0   552.0
  9  132.3125  132.7813      -3.06     -3.04     +0.02          552.0   552.0
 10  133.2500  133.7188      -3.04     -3.04     +0.00          552.0   120.0
                                                (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL       +8.73     +8.75     +0.02
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B154

FOR OUTER MATERIAL +31.93 +31.95 +0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.79	+0.88
HOOP MEMBRANE	N/A	+0.81
AVERAGE RADIAL	N/A	+0.06
AXIAL BENDING	-9.51	-9.62
INSIDE BENDING	+10.38	+10.50
OUTSIDE BENDING	-8.63	-8.74
HOOP BENDING	N/A	-9.58
INSIDE BENDING	N/A	+10.39
OUTSIDE BENDING	N/A	-8.77

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	540.4	540.2
DELTA T1 (Total Section Delta T)	+59.9	+60.6
LINEAR INSIDE TEMPERATURE	510.2	509.9
LINEAR OUTSIDE TEMPERATURE	570.1	570.4
DELTA T2 (Absolute of Maximum)	128.1	127.7

Date: 05-24-2005 Time: 16:20:12 PAGE 30

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 26.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi - hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+27.10	+27.10	-0.00	381.1	394.4
2	126.6250	126.6563	+17.99	+18.00	+0.01	407.3	420.2
3	126.6875	127.1563	Interface (below)		+0.02	432.7	509.7
4	127.6250	128.0938	+3.86	+3.98	+0.12	528.0	546.2
5	128.5625	129.0313	-2.32	-2.20	+0.11	548.8	551.4
6	129.5000	129.9688	-3.15	-3.06	+0.09	551.7	552.0
7	130.4375	130.9063	-3.22	-3.15	+0.07	552.0	552.0
8	131.3750	131.8438	-3.20	-3.16	+0.05	552.0	552.0
9	132.3125	132.7813	-3.18	-3.16	+0.02	552.0	552.0
10	133.2500	133.7188	-3.16	-3.16	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL +9.15 +9.17 +0.02

FOR OUTER MATERIAL +32.27 +32.29 +0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.79	+0.87
HOOP MEMBRANE	N/A	+0.81
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-9.75	-9.86
INSIDE BENDING	+10.62	+10.73
OUTSIDE BENDING	-8.88	-8.99
HOOP BENDING	N/A	-9.82
INSIDE BENDING	N/A	+10.63
OUTSIDE BENDING	N/A	-9.02

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	540.0	539.8
DELTA T1 (Total Section Delta T)	+61.6	+62.4
LINEAR INSIDE TEMPERATURE	509.0	508.6
LINEAR OUTSIDE TEMPERATURE	570.6	570.9

B155

DELTA T2 (Absolute of Maximum) 127.9 127.5

Date: 05-24-2005 Time: 16:20:13 PAGE 31

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 27.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0
1	126.5625	126.5938	+27.34	+27.34	-0.00	380.1	393.2
2	126.6250	126.6563	+18.32	+18.33	+0.01	406.0	418.8
3	126.6875	127.1563	Interface (below)		+0.02	431.2	507.6
4	127.6250	128.0938	+4.14	+4.26	+0.12	526.6	545.6
5	128.5625	129.0313	-2.34	-2.22	+0.12	548.5	551.3
6	129.5000	129.9688	-3.26	-3.16	+0.10	551.6	551.9
7	130.4375	130.9063	-3.34	-3.27	+0.07	552.0	552.0
8	131.3750	131.8438	-3.32	-3.28	+0.05	552.0	552.0
9	132.3125	132.7813	-3.30	-3.28	+0.02	552.0	552.0
10	133.2500	133.7188	-3.28	-3.28	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+9.56	+9.58	+0.02
FOR OUTER MATERIAL	+32.60	+32.62	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.78	+0.87
HOOP MEMBRANE	N/A	+0.80
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-9.99	-10.10
INSIDE BENDING	+10.85	+10.97
OUTSIDE BENDING	-9.12	-9.24
HOOP BENDING	N/A	-10.06
INSIDE BENDING	N/A	+10.86
OUTSIDE BENDING	N/A	-9.26

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	539.6	539.4
DELTA T1 (Total Section Delta T)	+63.4	+64.1
LINEAR INSIDE TEMPERATURE	507.7	507.3
LINEAR OUTSIDE TEMPERATURE	571.1	571.4
DELTA T2 (Absolute of Maximum)	127.6	127.2

Date: 05-24-2005 Time: 16:20:15 PAGE 32

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 28.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0
1	126.5625	126.5938	+27.57	+27.57	-0.00	379.1	392.1
2	126.6250	126.6563	+18.63	+18.64	+0.01	404.8	417.5
3	126.6875	127.1563	Interface (below)		+0.02	429.8	505.5
4	127.6250	128.0938	+4.42	+4.55	+0.12	525.3	545.0
5	128.5625	129.0313	-2.36	-2.23	+0.12	548.1	551.2
6	129.5000	129.9688	-3.36	-3.26	+0.10	551.6	551.9
7	130.4375	130.9063	-3.45	-3.38	+0.07	552.0	552.0
8	131.3750	131.8438	-3.44	-3.39	+0.05	552.0	552.0
9	132.3125	132.7813	-3.42	-3.39	+0.02	552.0	552.0
10	133.2500	133.7188	-3.39	-3.39	+0.00	552.0	120.0

B52

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+9.95	+9.97	+0.02
FOR OUTER MATERIAL	+32.91	+32.93	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.77	+0.86
HOOP MEMBRANE	N/A	+0.79
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-10.22	-10.34
INSIDE BENDING	+11.08	+11.20
OUTSIDE BENDING	-9.36	-9.47
HOOP BENDING	N/A	-10.29
INSIDE BENDING	N/A	+11.08
OUTSIDE BENDING	N/A	-9.50

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	539.3	539.0
DELTA T1 (Total Section Delta T)	+65.1	+65.8
LINEAR INSIDE TEMPERATURE	506.4	506.1
LINEAR OUTSIDE TEMPERATURE	571.5	571.9
DELTA T2 (Absolute of Maximum)	127.4	127.0

Date: 05-24-2005 Time: 16:20:16 PAGE 33

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 29.00 SECONDS.....

N	Radii, inches - Grid	Node	Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+27.79	+27.79	-0.00	378.1	391.0
2	126.6250	126.6563	+18.93	+18.94	+0.01	403.6	416.2
3	126.6875	127.1563	Interface (below)		+0.02	428.4	503.5
4	127.6250	128.0938	+4.70	+4.83	+0.13	524.0	544.4
5	128.5625	129.0313	-2.37	-2.24	+0.13	547.7	551.1
6	129.5000	129.9688	-3.46	-3.36	+0.10	551.5	551.9
7	130.4375	130.9063	-3.57	-3.49	+0.08	552.0	552.0
8	131.3750	131.8438	-3.56	-3.51	+0.05	552.0	552.0
9	132.3125	132.7813	-3.53	-3.51	+0.02	552.0	552.0
10	133.2500	133.7188	-3.51	-3.51	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+10.33	+10.35	+0.02
FOR OUTER MATERIAL	+33.22	+33.24	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.77	+0.86
HOOP MEMBRANE	N/A	+0.79
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-10.45	-10.57
INSIDE BENDING	+11.31	+11.43
OUTSIDE BENDING	-9.59	-9.71
HOOP BENDING	N/A	-10.52
INSIDE BENDING	N/A	+11.31
OUTSIDE BENDING	N/A	-9.74

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	538.9	538.6

3157

DELTA T1 (Total Section Delta T)	+66.8	+67.6
LINEAR INSIDE TEMPERATURE	505.2	504.8
LINEAR OUTSIDE TEMPERATURE	572.0	572.4
DELTA T2 (Absolute of Maximum)	127.1	126.7

Date: 05-24-2005 Time: 16:20:17 PAGE 34

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 30.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+28.00	+28.00	-0.00	377.2	390.0
2	126.6250	126.6563	+19.22	+19.23	+0.01	402.5	414.9
3	126.6875	127.1563	Interface (below)		+0.02	427.0	501.5
4	127.6250	128.0938	+4.97	+5.10	+0.13	522.7	543.7
5	128.5625	129.0313	-2.37	-2.24	+0.13	547.4	551.0
6	129.5000	129.9688	-3.56	-3.46	+0.11	551.4	551.9
7	130.4375	130.9063	-3.68	-3.60	+0.08	551.9	552.0
8	131.3750	131.8438	-3.67	-3.62	+0.05	552.0	552.0
9	132.3125	132.7813	-3.65	-3.62	+0.03	552.0	552.0
10	133.2500	133.7188	-3.62	-3.62	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+10.69	+10.71	+0.02
FOR OUTER MATERIAL	+33.51	+33.53	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.76	+0.85
HOOP MEMBRANE	N/A	+0.78
AVERAGE RADIAL	N/A	+0.07
AXIAL BENDING	-10.68	-10.80
INSIDE BENDING	+11.53	+11.65
OUTSIDE BENDING	-9.82	-9.94
HOOP BENDING	N/A	-10.75
INSIDE BENDING	N/A	+11.53
OUTSIDE BENDING	N/A	-9.97

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	538.5	538.2
DELTA T1 (Total Section Delta T)	+68.4	+69.2
LINEAR INSIDE TEMPERATURE	504.0	503.6
LINEAR OUTSIDE TEMPERATURE	572.4	572.8
DELTA T2 (Absolute of Maximum)	126.8	126.4

Date: 05-24-2005 Time: 16:20:18 PAGE 35

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 31.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+28.20	+28.20	-0.00	376.3	389.0
2	126.6250	126.6563	+19.50	+19.51	+0.01	401.3	413.7
3	126.6875	127.1563	Interface (below)		+0.02	425.7	499.6
4	127.6250	128.0938	+5.24	+5.37	+0.13	521.4	543.1
5	128.5625	129.0313	-2.38	-2.24	+0.13	547.0	550.9
6	129.5000	129.9688	-3.66	-3.55	+0.11	551.4	551.9
7	130.4375	130.9063	-3.79	-3.71	+0.08	551.9	552.0

B155

8	131.3750	131.8438	-3.78	-3.73	+0.05	552.0	552.0
9	132.3125	132.7813	-3.76	-3.73	+0.03	552.0	552.0
10	133.2500	133.7188	-3.73	-3.73	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+11.04	+11.06	+0.02
FOR OUTER MATERIAL	+33.79	+33.81	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.75	+0.85
HOOP MEMBRANE	N/A	+0.77
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-10.90	-11.02
INSIDE BENDING	+11.75	+11.87
OUTSIDE BENDING	-10.05	-10.17
HOOP BENDING	N/A	-10.97
INSIDE BENDING	N/A	+11.74
OUTSIDE BENDING	N/A	-10.20

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	538.1	537.8
DELTA T1 (Total Section Delta T)	+70.1	+70.9
LINEAR INSIDE TEMPERATURE	502.8	502.4
LINEAR OUTSIDE TEMPERATURE	572.9	573.3
DELTA T2 (Absolute of Maximum)	126.5	126.1

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930). * * * * *

.....OUTPUT FOR TIME= 32.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+28.39	+28.39	-0.00	375.5	388.0
2	126.6250	126.6563	+19.77	+19.78	+0.01	400.3	412.5
3	126.6875	127.1563	Interface (below)		+0.02	424.4	497.7
4	127.6250	128.0938	+5.51	+5.64	+0.14	520.1	542.4
5	128.5625	129.0313	-2.37	-2.24	+0.14	546.6	550.7
6	129.5000	129.9688	-3.75	-3.64	+0.11	551.3	551.9
7	130.4375	130.9063	-3.91	-3.82	+0.08	551.9	552.0
8	131.3750	131.8438	-3.90	-3.84	+0.06	552.0	552.0
9	132.3125	132.7813	-3.87	-3.84	+0.03	552.0	552.0
10	133.2500	133.7188	-3.84	-3.84	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+11.39	+11.40	+0.02
FOR OUTER MATERIAL	+34.06	+34.08	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.75	+0.84
HOOP MEMBRANE	N/A	+0.77
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-11.12	-11.24
INSIDE BENDING	+11.96	+12.08
OUTSIDE BENDING	-10.27	-10.39
HOOP BENDING	N/A	-11.19
INSIDE BENDING	N/A	+11.96
OUTSIDE BENDING	N/A	-10.43

3159

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	537.8	537.4
DELTA T1 (Total Section Delta T)	+71.7	+72.5
LINEAR INSIDE TEMPERATURE	501.6	501.2
LINEAR OUTSIDE TEMPERATURE	573.3	573.7
DELTA T2 (Absolute of Maximum)	126.1	125.7

Date: 05-24-2005 Time: 16:20:21 PAGE 37

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 33.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+28.58	+28.58	-0.00	374.6	387.1
2	126.6250	126.6563	+20.03	+20.04	+0.01	399.2	411.3
3	126.6875	127.1563	Interface (below)		+0.02	423.1	495.8
4	127.6250	128.0938	+5.77	+5.91	+0.14	518.8	541.7
5	128.5625	129.0313	-2.37	-2.23	+0.14	546.2	550.6
6	129.5000	129.9688	-3.84	-3.72	+0.12	551.2	551.8
7	130.4375	130.9063	-4.02	-3.93	+0.09	551.9	552.0
8	131.3750	131.8438	-4.01	-3.95	+0.06	552.0	552.0
9	132.3125	132.7813	-3.98	-3.95	+0.03	552.0	552.0
10	133.2500	133.7188	-3.95	-3.95	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+11.72	+11.74	+0.02
FOR OUTER MATERIAL	+34.33	+34.35	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.74	+0.84
HOOP MEMBRANE	N/A	+0.76
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-11.33	-11.46
INSIDE BENDING	+12.17	+12.30
OUTSIDE BENDING	-10.49	-10.62
HOOP BENDING	N/A	-11.41
INSIDE BENDING	N/A	+12.17
OUTSIDE BENDING	N/A	-10.65

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	537.4	537.1
DELTA T1 (Total Section Delta T)	+73.3	+74.1
LINEAR INSIDE TEMPERATURE	500.4	500.0
LINEAR OUTSIDE TEMPERATURE	573.7	574.1
DELTA T2 (Absolute of Maximum)	125.8	125.4

Date: 05-24-2005 Time: 16:20:22 PAGE 38

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 34.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+28.76	+28.76	-0.00	373.8	386.1
2	126.6250	126.6563	+20.29	+20.30	+0.01	398.2	410.2
3	126.6875	127.1563	Interface (below)		+0.02	421.9	494.0
4	127.6250	128.0938	+6.03	+6.17	+0.14	517.6	541.1

3160

5	128.5625	129.0313	-2.36	-2.21	+0.14	545.8	550.5
6	129.5000	129.9688	-3.93	-3.81	+0.12	551.1	551.8
7	130.4375	130.9063	-4.12	-4.04	+0.09	551.9	552.0
8	131.3750	131.8438	-4.12	-4.06	+0.06	552.0	552.0
9	132.3125	132.7813	-4.09	-4.06	+0.03	552.0	552.0
10	133.2500	133.7188	-4.06	-4.06	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+12.04	+12.06	+0.02
FOR OUTER MATERIAL	+34.58	+34.60	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.74	+0.84
HOOP MEMBRANE	N/A	+0.75
AVERAGE RADIAL	N/A	+0.08
AXIAL BENDING	-11.55	-11.67
INSIDE BENDING	+12.38	+12.51
OUTSIDE BENDING	-10.71	-10.84
HOOP BENDING	N/A	-11.62
INSIDE BENDING	N/A	+12.38
OUTSIDE BENDING	N/A	-10.87

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	537.0	536.7
DELTA T1 (Total Section Delta T)	+74.8	+75.7
LINEAR INSIDE TEMPERATURE	499.3	498.9
LINEAR OUTSIDE TEMPERATURE	574.1	574.5
DELTA T2 (Absolute of Maximum)	125.5	125.1

Date: 05-24-2005 Time: 16:20:23 PAGE 39

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 35.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+28.93	+28.93	-0.00	373.0	385.2
2	126.6250	126.6563	+20.53	+20.54	+0.01	397.2	409.1
3	126.6875	127.1563	Interface (below)		+0.02	420.7	492.2
4	127.6250	128.0938	+6.28	+6.42	+0.15	516.3	540.4
5	128.5625	129.0313	-2.34	-2.20	+0.15	545.4	550.3
6	129.5000	129.9688	-4.01	-3.89	+0.12	551.1	551.8
7	130.4375	130.9063	-4.23	-4.14	+0.09	551.9	552.0
8	131.3750	131.8438	-4.23	-4.17	+0.06	552.0	552.0
9	132.3125	132.7813	-4.20	-4.17	+0.03	552.0	552.0
10	133.2500	133.7188	-4.17	-4.17	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+12.35	+12.37	+0.02
FOR OUTER MATERIAL	+34.83	+34.85	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.73	+0.83
HOOP MEMBRANE	N/A	+0.75
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-11.76	-11.88
INSIDE BENDING	+12.59	+12.72
OUTSIDE BENDING	-10.92	-11.05

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HOOP BENDING	N/A	-11.83
INSIDE BENDING	N/A	+12.58
OUTSIDE BENDING	N/A	-11.09

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	536.7	536.3
DELTA T1 (Total Section Delta T)	+76.4	+77.2
LINEAR INSIDE TEMPERATURE	498.1	497.7
LINEAR OUTSIDE TEMPERATURE	574.5	574.9
DELTA T2 (Absolute of Maximum)	125:2	124.7

Date: 05-24-2005 Time: 16:20:24 PAGE 40

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 36.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+29.10	+29.10	-0.00	372.2	384.3
2	126.6250	126.6563	+20.77	+20.78	+0.01	396.2	408.0
3	126.6875	127.1563	Interface (below)		+0.02	419.5	490.5
4	127.6250	128.0938	+6.53	+6.68	+0.15	515.1	539.7
5	128.5625	129.0313	-2.33	-2.18	+0.15	544.9	550.2
6	129.5000	129.9688	-4.10	-3.97	+0.12	551.0	551.8
7	130.4375	130.9063	-4.34	-4.24	+0.09	551.9	552.0
8	131.3750	131.8438	-4.34	-4.28	+0.06	552.0	552.0
9	132.3125	132.7813	-4.31	-4.28	+0.03	552.0	552.0
10	133.2500	133.7188	-4.28	-4.28	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+12.65	+12.67	+0.02
FOR OUTER MATERIAL	+35.07	+35.09	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.73	+0.83
HOOP MEMBRANE	N/A	+0.74
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-11.96	-12.09
INSIDE BENDING	+12.79	+12.92
OUTSIDE BENDING	-11.14	-11.26
HOOP BENDING	N/A	-12.04
INSIDE BENDING	N/A	+12.78
OUTSIDE BENDING	N/A	-11.30

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	536.3	536.0
DELTA T1 (Total Section Delta T)	+77.9	+78.8
LINEAR INSIDE TEMPERATURE	497.0	496.6
LINEAR OUTSIDE TEMPERATURE	574.9	575.3
DELTA T2 (Absolute of Maximum)	124.8	124.4

Date: 05-24-2005 Time: 16:20:26 PAGE 41

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 37.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+29.26	+29.26	-0.00	371.4	383.5

B167

2	126.6250	126.6563	+21.00	+21.01	+0.01	395.2	407.0
3	126.6875	127.1563	Interface (below)		+0.02	418.4	488.8
4	127.6250	128.0938	+6.78	+6.93	+0.15	513.9	539.0
5	128.5625	129.0313	-2.31	-2.15	+0.15	544.5	550.0
6	129.5000	129.9688	-4.18	-4.05	+0.13	550.9	551.8
7	130.4375	130.9063	-4.44	-4.35	+0.10	551.9	552.0
8	131.3750	131.8438	-4.45	-4.38	+0.06	552.0	552.0
9	132.3125	132.7813	-4.42	-4.39	+0.03	552.0	552.0
10	133.2500	133.7188	-4.39	-4.39	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+12.95	+12.97	+0.02
FOR OUTER MATERIAL	+35.30	+35.33	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.72	+0.83
HOOP MEMBRANE	N/A	+0.74
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-12.17	-12.30
INSIDE BENDING	+12.99	+13.12
OUTSIDE BENDING	-11.34	-11.47
HOOP BENDING	N/A	-12.25
INSIDE BENDING	N/A	+12.98
OUTSIDE BENDING	N/A	-11.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	535.9	535.6
DELTA T1 (Total Section Delta T)	+79.4	+80.3
LINEAR INSIDE TEMPERATURE	495.9	495.5
LINEAR OUTSIDE TEMPERATURE	575.3	575.7
DELTA T2 (Absolute of Maximum)	124.5	124.0

Date: 05-24-2005 Time: 16:20:27 PAGE 42

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 38.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+29.42	+29.42	-0.00	370.7	382.6
2	126.6250	126.6563	+21.22	+21.24	+0.01	394.3	405.9
3	126.6875	127.1563	Interface (below)		+0.02	417.3	487.2
4	127.6250	128.0938	+7.02	+7.17	+0.15	512.7	538.2
5	128.5625	129.0313	-2.28	-2.12	+0.16	544.0	549.8
6	129.5000	129.9688	-4.26	-4.13	+0.13	550.8	551.7
7	130.4375	130.9063	-4.54	-4.45	+0.10	551.8	552.0
8	131.3750	131.8438	-4.55	-4.49	+0.06	552.0	552.0
9	132.3125	132.7813	-4.52	-4.49	+0.03	552.0	552.0
10	133.2500	133.7188	-4.49	-4.49	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+13.23	+13.25	+0.02
FOR OUTER MATERIAL	+35.53	+35.55	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.71	+0.82
HOOP MEMBRANE	N/A	+0.73
AVERAGE RADIAL	N/A	+0.09

3163

AXIAL BENDING	-12.37	-12.50
INSIDE BENDING	+13.19	+13.32
OUTSIDE BENDING	-11.55	-11.68
HOOP BENDING	N/A	-12.45
INSIDE BENDING	N/A	+13.18
OUTSIDE BENDING	N/A	-11.72

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	535.6	535.2
DELTA T1 (Total Section Delta T)	+80.9	+81.8
LINEAR INSIDE TEMPERATURE	494.8	494.4
LINEAR OUTSIDE TEMPERATURE	575.7	576.1
DELTA T2 (Absolute of Maximum)	124.1	123.7

Date: 05-24-2005 Time: 16:20:28 PAGE 43

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 39.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+29.57	+29.57	-0.00	370.0	381.8
2	126.6250	126.6563	+21.44	+21.45	+0.01	393.3	404.9
3	126.6875	127.1563	Interface (below)		+0.02	416.2	485.6
4	127.6250	128.0938	+7.26	+7.42	+0.16	511.6	537.5
5	128.5625	129.0313	-2.26	-2.10	+0.16	543.6	549.6
6	129.5000	129.9688	-4.34	-4.20	+0.13	550.7	551.7
7	130.4375	130.9063	-4.65	-4.55	+0.10	551.8	552.0
8	131.3750	131.8438	-4.66	-4.59	+0.07	552.0	552.0
9	132.3125	132.7813	-4.63	-4.60	+0.03	552.0	552.0
10	133.2500	133.7188	-4.60	-4.60	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+13.51	+13.53	+0.02
FOR OUTER MATERIAL	+35.75	+35.77	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.71	+0.82
HOOP MEMBRANE	N/A	+0.73
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-12.57	-12.70
INSIDE BENDING	+13.39	+13.52
OUTSIDE BENDING	-11.75	-11.88
HOOP BENDING	N/A	-12.65
INSIDE BENDING	N/A	+13.37
OUTSIDE BENDING	N/A	-11.92

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	535.2	534.9
DELTA T1 (Total Section Delta T)	+82.3	+83.2
LINEAR INSIDE TEMPERATURE	493.7	493.3
LINEAR OUTSIDE TEMPERATURE	576.1	576.5
DELTA T2 (Absolute of Maximum)	123.8	123.3

Date: 05-24-2005 Time: 16:20:29 PAGE 44

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 40.00 SECONDS.....

-- Radii, inches - ---- Grid Stress, ksi ------ Temperature, F

B164

CGS-RPV2

N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+29.72	+29.72	-0.00	369.2	381.0
2	126.6250	126.6563	+21.65	+21.67	+0.01	392.4	403.9
3	126.6875	127.1563	Interface (below)		+0.02	415.1	484.0
4	127.6250	128.0938	+7.50	+7.65	+0.16	510.4	536.8
5	128.5625	129.0313	-2.23	-2.06	+0.16	543.1	549.4
6	129.5000	129.9688	-4.41	-4.27	+0.14	550.6	551.7
7	130.4375	130.9063	-4.75	-4.65	+0.10	551.8	552.0
8	131.3750	131.8438	-4.76	-4.70	+0.07	552.0	552.0
9	132.3125	132.7813	-4.74	-4.70	+0.03	552.0	552.0
10	133.2500	133.7188	-4.70	-4.70	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+13.78	+13.80	+0.02
FOR OUTER MATERIAL	+35.96	+35.99	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.70	+0.81
HOOP MEMBRANE	N/A	+0.72
AVERAGE RADIAL	N/A	+0.09
AXIAL BENDING	-12.77	-12.90
INSIDE BENDING	+13.58	+13.72
OUTSIDE BENDING	-11.95	-12.09
HOOP BENDING	N/A	-12.85
INSIDE BENDING	N/A	+13.57
OUTSIDE BENDING	N/A	-12.13

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	534.9	534.5
DELTA T1 (Total Section Delta T)	+83.8	+84.7
LINEAR INSIDE TEMPERATURE	492.6	492.2
LINEAR OUTSIDE TEMPERATURE	576.4	576.9
DELTA T2 (Absolute of Maximum)	123.4	122.9

Date: 05-24-2005 Time: 16:20:30 PAGE 45

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 41.00 SECONDS.....

N	Grid	Node	hoop	axial	radial	Grid	Node
	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
					(Inside fluid)	281.0	
1	126.5625	126.5938	+29.86	+29.86	-0.00	368.5	380.2
2	126.6250	126.6563	+21.86	+21.87	+0.01	391.6	403.0
3	126.6875	127.1563	Interface (below)		+0.02	414.1	482.4
4	127.6250	128.0938	+7.73	+7.89	+0.16	509.3	536.0
5	128.5625	129.0313	-2.20	-2.03	+0.17	542.7	549.3
6	129.5000	129.9688	-4.48	-4.34	+0.14	550.4	551.6
7	130.4375	130.9063	-4.85	-4.74	+0.10	551.8	552.0
8	131.3750	131.8438	-4.87	-4.80	+0.07	552.0	552.0
9	132.3125	132.7813	-4.84	-4.81	+0.03	552.0	552.0
10	133.2500	133.7188	-4.81	-4.81	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+14.04	+14.07	+0.02
FOR OUTER MATERIAL	+36.17	+36.19	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON: AREA WEIGHTED AVERAGING LINEAR AVERAGING

R165

AXIAL MEMBRANE	+0.70	+0.81
HOOP MEMBRANE	N/A	+0.71
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-12.96	-13.10
INSIDE BENDING	+13.77	+13.91
OUTSIDE BENDING	-12.15	-12.29
HOOP BENDING	N/A	-13.04
INSIDE BENDING	N/A	+13.76
OUTSIDE BENDING	N/A	-12.33

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	534.5	534.2
DELTA T1 (Total Section Delta T)	+85.2	+86.1
LINEAR INSIDE TEMPERATURE	491.6	491.1
LINEAR OUTSIDE TEMPERATURE	576.8	577.2
DELTA T2 (Absolute of Maximum)	123.0	122.6

Date: 05-24-2005 Time: 16:20:32 PAGE 46

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 42.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+30.00	+30.00	-0.00	367.9	379.4
2	126.6250	126.6563	+22.06	+22.07	+0.01	390.7	402.0
3	126.6875	127.1563	Interface (below)		+0.02	413.0	430.9
4	127.6250	128.0938	+7.96	+8.12	+0.16	508.2	535.3
5	128.5625	129.0313	-2.16	-1.99	+0.17	542.2	549.1
6	129.5000	129.9688	-4.55	-4.41	+0.14	550.3	551.6
7	130.4375	130.9063	-4.95	-4.84	+0.11	551.8	552.0
8	131.3750	131.8438	-4.97	-4.90	+0.07	552.0	552.0
9	132.3125	132.7813	-4.94	-4.91	+0.03	552.0	552.0
10	133.2500	133.7188	-4.91	-4.91	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+14.30	+14.32	+0.02
FOR OUTER MATERIAL	+36.37	+36.39	+0.02

INSIDE/OUTSIDE HT TX COEF: (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.69	+0.81
HOOP MEMBRANE	N/A	+0.71
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-13.15	-13.29
INSIDE BENDING	+13.96	+14.10
OUTSIDE BENDING	-12.35	-12.48
HOOP BENDING	N/A	-13.23
INSIDE BENDING	N/A	+13.94
OUTSIDE BENDING	N/A	-12.52

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	534.2	533.8
DELTA T1 (Total Section Delta T)	+86.6	+87.5
LINEAR INSIDE TEMPERATURE	490.5	490.1
LINEAR OUTSIDE TEMPERATURE	577.1	577.6
DELTA T2 (Absolute of Maximum)	122.7	122.2

Date: 05-24-2005 Time: 16:20:33 PAGE 47

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B166

CGS-RPV2

* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 43.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node
						281.0	
1	126.5625	126.5938	+30.13	+30.13	-0.00	367.2	378.6
2	126.6250	126.6563	+22.25	+22.26	+0.01	389.9	401.1
3	126.6875	127.1563	Interface (below)		+0.02	412.0	479.4
4	127.6250	128.0938	+8.19	+8.35	+0.16	507.0	534.5
5	128.5625	129.0313	-2.13	-1.95	+0.17	541.7	548.8
6	129.5000	129.9688	-4.62	-4.47	+0.15	550.2	551.5
7	130.4375	130.9063	-5.04	-4.94	+0.11	551.7	551.9
8	131.3750	131.8438	-5.07	-5.00	+0.07	552.0	552.0
9	132.3125	132.7813	-5.05	-5.01	+0.04	552.0	552.0
10	133.2500	133.7188	-5.01	-5.01	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+14.55	+14.57	+0.02
FOR OUTER MATERIAL	+36.57	+36.59	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.69	+0.80
HOOP MEMBRANE	N/A	+0.70
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-13.34	-13.48
INSIDE BENDING	+14.15	+14.29
OUTSIDE BENDING	-12.54	-12.68
HOOP BENDING	N/A	-13.42
INSIDE BENDING	N/A	+14.13
OUTSIDE BENDING	N/A	-12.72

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	533.9	533.5
DELTA T1 (Total Section Delta T)	+88.0	+88.9
LINEAR INSIDE TEMPERATURE	489.5	489.0
LINEAR OUTSIDE TEMPERATURE	577.5	577.9
DELTA T2 (Absolute of Maximum)	122.3	121.8

Date: 05-24-2005 Time: 16:20:34 PAGE 48

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 44.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node
						281.0	
1	126.5625	126.5938	+30.26	+30.26	-0.00	366.5	377.9
2	126.6250	126.6563	+22.44	+22.45	+0.01	389.0	400.2
3	126.6875	127.1563	Interface (below)		+0.02	411.0	478.0
4	127.6250	128.0938	+8.41	+8.57	+0.17	505.9	533.8
5	128.5625	129.0313	-2.09	-1.91	+0.18	541.2	548.6
6	129.5000	129.9688	-4.69	-4.54	+0.15	550.1	551.5
7	130.4375	130.9063	-5.14	-5.03	+0.11	551.7	551.9
8	131.3750	131.8438	-5.18	-5.10	+0.07	552.0	552.0
9	132.3125	132.7813	-5.15	-5.11	+0.04	552.0	552.0
10	133.2500	133.7188	-5.11	-5.11	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+14.79	+14.81	+0.02
FOR OUTER MATERIAL	+36.76	+36.78	+0.02

B167

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.68	+0.80
HOOP MEMBRANE	N/A	+0.70
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-13.53	-13.67
INSIDE BENDING	+14.33	+14.47
OUTSIDE BENDING	-12.73	-12.87
HOOP BENDING	N/A	-13.61
INSIDE BENDING	N/A	+14.31
OUTSIDE BENDING	N/A	-12.91

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	533.5	533.1
DELTA T1 (Total Section Delta T)	+89.4	+90.3
LINEAR INSIDE TEMPERATURE	488.5	488.0
LINEAR OUTSIDE TEMPERATURE	577.8	578.3
DELTA T2 (Absolute of Maximum)	121.9	121.4

Date: 05-24-2005 Time: 16:20:35 PAGE 49

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 45.00 SECONDS.....

N	Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+30.39	+30.39	-0.00	365.9	377.2
2	126.6250	126.6563	+22.62	+22.63	+0.01	388.2	399.3
3	126.6875	127.1563	Interface (below)		+0.02	410.1	476.6
4	127.6250	128.0938	+8.63	+8.80	+0.17	504.9	533.0
5	128.5625	129.0313	-2.05	-1.87	+0.18	540.7	548.4
6	129.5000	129.9688	-4.75	-4.60	+0.15	549.9	551.5
7	130.4375	130.9063	-5.24	-5.12	+0.11	551.7	551.9
8	131.3750	131.8438	-5.28	-5.20	+0.07	552.0	552.0
9	132.3125	132.7813	-5.25	-5.21	+0.04	552.0	552.0
10	133.2500	133.7188	-5.21	-5.21	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+15.03	+15.05	+0.02
FOR OUTER MATERIAL	+36.94	+36.96	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.68	+0.80
HOOP MEMBRANE	N/A	+0.70
AVERAGE RADIAL	N/A	+0.10
AXIAL BENDING	-13.72	-13.85
INSIDE BENDING	+14.51	+14.65
OUTSIDE BENDING	-12.92	-13.06
HOOP BENDING	N/A	-13.80
INSIDE BENDING	N/A	+14.49
OUTSIDE BENDING	N/A	-13.10

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	533.2	532.8
DELTA T1 (Total Section Delta T)	+90.7	+91.6
LINEAR INSIDE TEMPERATURE	487.4	487.0
LINEAR OUTSIDE TEMPERATURE	578.1	578.6
DELTA T2 (Absolute of Maximum)	121.5	121.1

B168

Date: 05-24-2005 Time: 16:20:36 PAGE 50

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 46.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+30.51	+30.51	-0.00	365.3	376.5
2	126.6250	126.6563	+22.80	+22.81	+0.01	387.5	398.4
3	126.6875	127.1563	Interface (below)		+0.02	409.1	475.2
4	127.6250	128.0938	+8.84	+9.02	+0.17	503.8	532.3
5	128.5625	129.0313	-2.00	-1.82	+0.18	540.2	548.2
6	129.5000	129.9688	-4.81	-4.66	+0.15	549.8	551.4
7	130.4375	130.9063	-5.33	-5.21	+0.12	551.7	551.9
8	131.3750	131.8438	-5.38	-5.30	+0.08	552.0	552.0
9	132.3125	132.7813	-5.35	-5.31	+0.04	552.0	552.0
10	133.2500	133.7188	-5.31	-5.31	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+15.26	+15.28	+0.02
FOR OUTER MATERIAL	+37.12	+37.14	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.68	+0.80
HOOP MEMBRANE	N/A	+0.69
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-13.90	-14.04
INSIDE BENDING	+14.69	+14.83
OUTSIDE BENDING	-13.10	-13.24
HOOP BENDING	N/A	-13.98
INSIDE BENDING	N/A	+14.67
OUTSIDE BENDING	N/A	-13.29

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	532.8	532.5
DELTA T1 (Total Section Delta T)	+92.0	+93.0
LINEAR INSIDE TEMPERATURE	486.4	485.9
LINEAR OUTSIDE TEMPERATURE	578.5	579.0
DELTA T2 (Absolute of Maximum)	121.2	120.7

Date: 05-24-2005 Time: 16:20:38 PAGE 51

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 47.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+30.63	+30.63	-0.00	364.7	375.8
2	126.6250	126.6563	+22.97	+22.98	+0.01	386.7	397.6
3	126.6875	127.1563	Interface (below)		+0.02	408.2	473.8
4	127.6250	128.0938	+9.06	+9.23	+0.17	502.7	531.5
5	128.5625	129.0313	-1.96	-1.77	+0.19	539.8	547.9
6	129.5000	129.9688	-4.87	-4.71	+0.16	549.7	551.4
7	130.4375	130.9063	-5.42	-5.30	+0.12	551.6	551.9
8	131.3750	131.8438	-5.48	-5.40	+0.08	552.0	552.0
9	132.3125	132.7813	-5.45	-5.41	+0.04	552.0	552.0
10	133.2500	133.7188	-5.41	-5.41	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

B169

FOR INNER MATERIAL	+15.48	+15.50	+0.02
FOR OUTER MATERIAL	+37.30	+37.32	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.67	+0.79
HOOP MEMBRANE	N/A	+0.69
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-14.08	-14.22
INSIDE BENDING	+14.87	+15.01
OUTSIDE BENDING	-13.29	-13.43
HOOP BENDING	N/A	-14.16
INSIDE BENDING	N/A	+14.85
OUTSIDE BENDING	N/A	-13.47

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	532.5	532.1
DELTA T1 (Total Section Delta T)	+93.3	+94.3
LINEAR INSIDE TEMPERATURE	485.4	485.0
LINEAR OUTSIDE TEMPERATURE	578.8	579.3
DELTA T2 (Absolute of Maximum)	120.8	120.3

Date: 05-24-2005 Time: 16:20:39 PAGE 52

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 48.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+30.74	+30.74	-0.00	364.1	375.1
2	126.6250	126.6563	+23.14	+23.15	+0.01	385.9	396.7
3	126.6875	127.1563	Interface (below)		+0.02	407.3	472.5
4	127.6250	128.0938	+9.27	+9.44	+0.17	501.7	530.8
5	128.5625	129.0313	-1.91	-1.72	+0.19	539.3	547.7
6	129.5000	129.9688	-4.93	-4.77	+0.16	549.5	551.3
7	130.4375	130.9063	-5.51	-5.39	+0.12	551.6	551.9
8	131.3750	131.8438	-5.57	-5.50	+0.08	551.9	552.0
9	132.3125	132.7813	-5.55	-5.51	+0.04	552.0	552.0
10	133.2500	133.7188	-5.51	-5.51	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+15.70	+15.72	+0.02
FOR OUTER MATERIAL	+37.46	+37.49	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.67	+0.79
HOOP MEMBRANE	N/A	+0.68
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-14.26	-14.40
INSIDE BENDING	+15.05	+15.19
OUTSIDE BENDING	-13.47	-13.61
HOOP BENDING	N/A	-14.34
INSIDE BENDING	N/A	+15.02
OUTSIDE BENDING	N/A	-13.66

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	532.2	531.8
DELTA T1 (Total Section Delta T)	+94.6	+95.6
LINEAR INSIDE TEMPERATURE	484.5	484.0

B120

LINEAR OUTSIDE TEMPERATURE	579.1	579.6
DELTA T2 (Absolute of Maximum)	120.4	119.9

Date: 05-24-2005 Time: 16:20:40 PAGE 53

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 49.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0
1	126.5625	126.5938	+30.85	+30.85	-0.00	363.5	374.4
2	126.6250	126.6563	+23.30	+23.31	+0.01	385.2	395.9
3	126.6875	127.1563	Interface (below)		+0.02	406.4	471.2
4	127.6250	128.0938	+9.48	+9.65	+0.18	500.7	530.0
5	128.5625	129.0313	-1.86	-1.67	+0.19	538.7	547.5
6	129.5000	129.9688	-4.98	-4.82	+0.16	549.4	551.2
7	130.4375	130.9063	-5.60	-5.48	+0.12	551.6	551.9
8	131.3750	131.8438	-5.67	-5.59	+0.08	551.9	552.0
9	132.3125	132.7813	-5.65	-5.61	+0.04	552.0	552.0
10	133.2500	133.7188	-5.61	-5.61	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+15.91	+15.93	+0.02
FOR OUTER MATERIAL	+37.63	+37.65	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.66	+0.79
HOOP MEMBRANE	N/A	+0.68
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-14.43	-14.58
INSIDE BENDING	+15.22	+15.36
OUTSIDE BENDING	-13.65	-13.79
HOOP BENDING	N/A	-14.51
INSIDE BENDING	N/A	+15.19
OUTSIDE BENDING	N/A	-13.84

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	531.9	531.4
DELTA T1 (Total Section Delta T)	+95.9	+96.9
LINEAR INSIDE TEMPERATURE	483.5	483.0
LINEAR OUTSIDE TEMPERATURE	579.4	579.9
DELTA T2 (Absolute of Maximum)	120.0	119.5

Date: 05-24-2005 Time: 16:20:41 PAGE 54

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 50.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0
1	126.5625	126.5938	+30.96	+30.95	-0.00	362.9	373.8
2	126.6250	126.6563	+23.46	+23.47	+0.01	384.5	395.1
3	126.6875	127.1563	Interface (below)		+0.02	405.6	469.9
4	127.6250	128.0938	+9.68	+9.86	+0.18	499.6	529.3
5	128.5625	129.0313	-1.81	-1.62	+0.19	538.2	547.2
6	129.5000	129.9688	-5.04	-4.87	+0.16	549.2	551.2
7	130.4375	130.9063	-5.69	-5.57	+0.12	551.5	551.9
8	131.3750	131.8438	-5.77	-5.69	+0.08	551.9	552.0
9	132.3125	132.7813	-5.75	-5.70	+0.04	552.0	552.0

B171

10	133.2500	133.7188	-5.71	-5.71	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+16.12	+16.14	+0.02
FOR OUTER MATERIAL	+37.79	+37.81	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.66	+0.78
HOOP MEMBRANE	N/A	+0.67
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-14.61	-14.75
INSIDE BENDING	+15.39	+15.53
OUTSIDE BENDING	-13.82	-13.97
HOOP BENDING	N/A	-14.69
INSIDE BENDING	N/A	+15.36
OUTSIDE BENDING	N/A	-14.02

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	531.5	531.1
DELTA T1 (Total Section Delta T)	+97.2	+98.2
LINEAR INSIDE TEMPERATURE	482.5	482.0
LINEAR OUTSIDE TEMPERATURE	579.7	580.2
DELTA T2 (Absolute of Maximum)	119.6	119.1

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 51.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.06	+31.06	-0.00	362.3	373.1
2	126.6250	126.6563	+23.61	+23.62	+0.01	383.7	394.4
3	126.6875	127.1563	Interface (below)		+0.02	404.7	468.6
4	127.6250	128.0938	+9.88	+10.06	+0.18	498.6	528.5
5	128.5625	129.0313	-1.76	-1.56	+0.20	537.7	546.9
6	129.5000	129.9688	-5.09	-4.92	+0.17	549.0	551.1
7	130.4375	130.9063	-5.78	-5.65	+0.13	551.5	551.9
8	131.3750	131.8438	-5.87	-5.78	+0.08	551.9	552.0
9	132.3125	132.7813	-5.84	-5.80	+0.04	552.0	552.0
10	133.2500	133.7188	-5.80	-5.80	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+16.32	+16.34	+0.02
FOR OUTER MATERIAL	+37.94	+37.97	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.65	+0.78
HOOP MEMBRANE	N/A	+0.67
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-14.78	-14.92
INSIDE BENDING	+15.56	+15.70
OUTSIDE BENDING	-14.00	-14.14
HOOP BENDING	N/A	-14.86
INSIDE BENDING	N/A	+15.53
OUTSIDE BENDING	N/A	-14.19

TEMPERATURES (F) BASED ON: AREA WEIGHTED AVERAGING LINEAR AVERAGING

B172

AVERAGE TEMPERATURE	531.2	530.8
DELTA T1 (Total Section Delta T)	+98.4	+99.4
LINEAR INSIDE TEMPERATURE	481.6	481.1
LINEAR OUTSIDE TEMPERATURE	580.0	580.5
DELTA T2 (Absolute of Maximum)	119.2	118.7

Date: 05-24-2005 Time: 16:20:44 PAGE 56

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 52.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.16	+31.16	-0.00	361.8	372.5
2	126.6250	126.6563	+23.76	+23.77	+0.01	383.0	393.6
3	126.6875	127.1563	Interface (below)		+0.02	403.9	467.4
4	127.6250	128.0938	+10.08	+10.26	+0.18	497.6	527.7
5	128.5625	129.0313	-1.71	-1.51	+0.20	537.2	546.7
6	129.5000	129.9688	-5.14	-4.97	+0.17	548.9	551.1
7	130.4375	130.9063	-5.87	-5.74	+0.13	551.5	551.9
8	131.3750	131.8438	-5.96	-5.88	+0.08	551.9	552.0
9	132.3125	132.7813	-5.94	-5.90	+0.04	552.0	552.0
10	133.2500	133.7188	-5.90	-5.90	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+16.52	+16.54	+0.02
FOR OUTER MATERIAL	+38.10	+38.12	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.65	+0.78
HOOP MEMBRANE	N/A	+0.66
AVERAGE RADIAL	N/A	+0.11
AXIAL BENDING	-14.95	-15.09
INSIDE BENDING	+15.73	+15.87
OUTSIDE BENDING	-14.17	-14.31
HOOP BENDING	N/A	-15.03
INSIDE BENDING	N/A	+15.69
OUTSIDE BENDING	N/A	-14.37

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	530.9	530.5
DELTA T1 (Total Section Delta T)	+99.7	+100.7
LINEAR INSIDE TEMPERATURE	480.6	480.1
LINEAR OUTSIDE TEMPERATURE	580.3	580.8
DELTA T2 (Absolute of Maximum)	118.8	118.3

Date: 05-24-2005 Time: 16:20:45 PAGE 57

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 53.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.26	+31.25	-0.00	361.2	371.9
2	126.6250	126.6563	+23.91	+23.92	+0.01	382.4	392.8
3	126.6875	127.1563	Interface (below)		+0.02	403.1	466.2
4	127.6250	128.0938	+10.27	+10.46	+0.18	496.6	527.0
5	128.5625	129.0313	-1.65	-1.45	+0.20	536.7	546.4
6	129.5000	129.9688	-5.19	-5.02	+0.17	548.7	551.0

3173

7	130.4375	130.9063	-5.95	-5.82	+0.13	551.4	551.8
8	131.3750	131.8438	-6.06	-5.97	+0.09	551.9	552.0
9	132.3125	132.7813	-6.03	-5.99	+0.04	552.0	552.0
10	133.2500	133.7188	-5.99	-5.99	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+16.71	+16.73	+0.02
FOR OUTER MATERIAL	+38.24	+38.27	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.65	+0.78
HOOP MEMBRANE	N/A	+0.66
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-15.12	-15.26
INSIDE BENDING	+15.89	+16.04
OUTSIDE BENDING	-14.34	-14.49
HOOP BENDING	N/A	-15.20
INSIDE BENDING	N/A	+15.86
OUTSIDE BENDING	N/A	-14.54

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	530.6	530.1
DELTA T1 (Total Section Delta T)	+100.9	+101.9
LINEAR INSIDE TEMPERATURE	479.7	479.2
LINEAR OUTSIDE TEMPERATURE	580.6	581.1
DELTA T2 (Absolute of Maximum)	118.5	117.9

Date: 05-24-2005 Time: 16:20:46 PAGE 58

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 54.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.35	+31.35	-0.00	360.7	371.3
2	126.6250	126.6563	+24.05	+24.06	+0.01	381.7	392.1
3	126.6875	127.1563	Interface (below)		+0.02	402.3	465.0
4	127.6250	128.0938	+10.47	+10.65	+0.19	495.7	526.2
5	128.5625	129.0313	-1.60	-1.39	+0.21	536.2	546.1
6	129.5000	129.9688	-5.23	-5.06	+0.17	548.5	550.9
7	130.4375	130.9063	-6.04	-5.91	+0.13	551.4	551.8
8	131.3750	131.8438	-6.15	-6.06	+0.09	551.9	552.0
9	132.3125	132.7813	-6.13	-6.09	+0.04	552.0	552.0
10	133.2500	133.7188	-6.09	-6.09	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+16.89	+16.92	+0.02
FOR OUTER MATERIAL	+38.39	+38.41	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.64	+0.77
HOOP MEMBRANE	N/A	+0.66
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-15.28	-15.43
INSIDE BENDING	+16.05	+16.20
OUTSIDE BENDING	-14.51	-14.65
HOOP BENDING	N/A	-15.36
INSIDE BENDING	N/A	+16.02

B174

OUTSIDE BENDING	N/A	-14.71

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	530.3	529.8
DELTA T1 (Total Section Delta T)	+102.1	+103.1
LINEAR INSIDE TEMPERATURE	478.8	478.3
LINEAR OUTSIDE TEMPERATURE	580.9	581.4
DELTA T2 (Absolute of Maximum)	118.1	117.6

Date: 05-24-2005 Time: 16:20:47 PAGE 59

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 55.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.44	+31.44	-0.00	360.2	370.7
2	126.6250	126.6563	+24.19	+24.20	+0.01	381.0	391.4
3	126.6875	127.1563	Interface (below)		+0.02	401.5	463.8
4	127.6250	128.0938	+10.66	+10.84	+0.19	494.7	525.5
5	128.5625	129.0313	-1.54	-1.33	+0.21	535.7	545.9
6	129.5000	129.9688	-5.28	-5.10	+0.18	548.4	550.9
7	130.4375	130.9063	-6.12	-5.99	+0.13	551.3	551.8
8	131.3750	131.8438	-6.24	-6.15	+0.09	551.9	552.0
9	132.3125	132.7813	-6.22	-6.18	+0.04	552.0	552.0
10	133.2500	133.7188	-6.18	-6.18	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+17.08	+17.10	+0.02
FOR OUTER MATERIAL	+38.53	+38.55	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.64	+0.77
HOOP MEMBRANE	N/A	+0.65
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-15.45	-15.59
INSIDE BENDING	+16.22	+16.36
OUTSIDE BENDING	-14.68	-14.82
HOOP BENDING	N/A	-15.53
INSIDE BENDING	N/A	+16.18
OUTSIDE BENDING	N/A	-14.88

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	529.9	529.5
DELTA T1 (Total Section Delta T)	+103.3	+104.3
LINEAR INSIDE TEMPERATURE	477.8	477.3
LINEAR OUTSIDE TEMPERATURE	581.1	581.6
DELTA T2 (Absolute of Maximum)	117.7	117.2

Date: 05-24-2005 Time: 16:20:48 PAGE 60

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 56.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.53	+31.53	-0.00	359.7	370.1
2	126.6250	126.6563	+24.32	+24.33	+0.01	380.4	390.7
3	126.6875	127.1563	Interface (below)		+0.02	400.7	462.7

6175

4	127.6250	128.0938	+10.84	+11.03	+0.19	493.8	524.7
5	128.5625	129.0313	-1.48	-1.27	+0.21	535.2	545.6
6	129.5000	129.9688	-5.32	-5.14	+0.18	548.2	550.8
7	130.4375	130.9063	-6.20	-6.07	+0.14	551.3	551.8
8	131.3750	131.8438	-6.34	-6.25	+0.09	551.9	552.0
9	132.3125	132.7813	-6.32	-6.27	+0.04	552.0	552.0
10	133.2500	133.7188	-6.28	-6.28	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+17.25	+17.28	+0.02
FOR OUTER MATERIAL	+38.66	+38.68	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.63	+0.77
HOOP MEMBRANE	N/A	+0.65
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-15.61	-15.76
INSIDE BENDING	+16.38	+16.52
OUTSIDE BENDING	-14.84	-14.99
HOOP BENDING	N/A	-15.69
INSIDE BENDING	N/A	+16.34
OUTSIDE BENDING	N/A	-15.04

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	529.6	529.2
DELTA T1 (Total Section Delta T)	+104.4	+105.5
LINEAR INSIDE TEMPERATURE	477.0	476.4
LINEAR OUTSIDE TEMPERATURE	581.4	581.9
DELTA T2 (Absolute of Maximum)	117.3	116.8

Date: 05-24-2005 Time: 16:20:50 PAGE 61

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 57.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.61	+31.61	-0.00	359.2	369.5
2	126.6250	126.6563	+24.45	+24.46	+0.01	379.8	390.0
3	126.6875	127.1563	Interface (below)		+0.02	400.0	461.6
4	127.6250	128.0938	+11.03	+11.22	+0.19	492.8	524.0
5	128.5625	129.0313	-1.42	-1.21	+0.21	534.6	545.3
6	129.5000	129.9688	-5.36	-5.18	+0.18	548.0	550.7
7	130.4375	130.9063	-6.28	-6.15	+0.14	551.2	551.8
8	131.3750	131.8438	-6.43	-6.34	+0.09	551.9	552.0
9	132.3125	132.7813	-6.41	-6.37	+0.05	552.0	552.0
10	133.2500	133.7188	-6.37	-6.37	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+17.43	+17.45	+0.02
FOR OUTER MATERIAL	+38.79	+38.82	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.63	+0.77
HOOP MEMBRANE	N/A	+0.64
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-15.77	-15.92
INSIDE BENDING	+16.53	+16.68

B174

OUTSIDE BENDING	-15.00	-15.15
HOOP BENDING	N/A	-15.85
INSIDE BENDING	N/A	+16.50
OUTSIDE BENDING	N/A	-15.21

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	529.3	528.9
DELTA T1 (Total Section Delta T)	+105.6	+106.6
LINEAR INSIDE TEMPERATURE	476.0	475.5
LINEAR OUTSIDE TEMPERATURE	581.7	582.2
DELTA T2 (Absolute of Maximum)	116.9	116.4

Date: 05-24-2005 Time: 16:20:51 PAGE 62

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 58.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0
1	126.5625	126.5938	+31.69	+31.69	-0.00	358.7	369.0
2	126.6250	126.6563	+24.58	+24.59	+0.01	379.1	389.3
3	126.6875	127.1563	Interface	(below)	+0.02	399.2	460.5
4	127.6250	128.0938	+11.21	+11.40	+0.19	491.9	523.2
5	128.5625	129.0313	-1.36	-1.15	+0.22	534.1	545.0
6	129.5000	129.9688	-5.40	-5.22	+0.18	547.8	550.6
7	130.4375	130.9063	-6.36	-6.22	+0.14	551.2	551.8
8	131.3750	131.8438	-6.52	-6.43	+0.09	551.9	552.0
9	132.3125	132.7813	-6.50	-6.46	+0.05	552.0	552.0
10	133.2500	133.7188	-6.46	-6.46	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+17.60	+17.62	+0.02
FOR OUTER MATERIAL	+38.92	+38.95	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.63	+0.76
HOOP MEMBRANE	N/A	+0.64
AVERAGE RADIAL	N/A	+0.12
AXIAL BENDING	-15.93	-16.08
INSIDE BENDING	+16.69	+16.84
OUTSIDE BENDING	-15.16	-15.31
HOOP BENDING	N/A	-16.01
INSIDE BENDING	N/A	+16.65
OUTSIDE BENDING	N/A	-15.37

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	529.0	528.5
DELTA T1 (Total Section Delta T)	+106.8	+107.8
LINEAR INSIDE TEMPERATURE	475.2	474.6
LINEAR OUTSIDE TEMPERATURE	581.9	582.4
DELTA T2 (Absolute of Maximum)	116.5	116.0

Date: 05-24-2005 Time: 16:20:52 PAGE 63

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 59.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0

6177

1	126.5625	126.5938	+31.77	+31.77	-0.00	358.2	368.4
2	126.6250	126.6563	+24.70	+24.71	+0.01	378.5	388.6
3	126.6875	127.1563	Interface (below)		+0.02	398.5	459.4
4	127.6250	128.0938	+11.39	+11.58	+0.19	491.0	522.5
5	128.5625	129.0313	-1.30	-1.08	+0.22	533.6	544.7
6	129.5000	129.9688	-5.44	-5.25	+0.19	547.6	550.5
7	130.4375	130.9063	-6.44	-6.30	+0.14	551.1	551.8
8	131.3750	131.8438	-6.61	-6.51	+0.09	551.9	552.0
9	132.3125	132.7813	-6.60	-6.55	+0.05	552.0	552.0
10	133.2500	133.7188	-6.55	-6.55	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+17.76	+17.78	+0.02
FOR OUTER MATERIAL	+39.05	+39.07	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.62	+0.76
HOOP MEMBRANE	N/A	+0.64
AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-16.08	-16.23
INSIDE BENDING	+16.84	+16.99
OUTSIDE BENDING	-15.32	-15.47
HOOP BENDING	N/A	-16.17
INSIDE BENDING	N/A	+16.80
OUTSIDE BENDING	N/A	-15.53

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	528.7	528.2
DELTA T1 (Total Section Delta T)	+107.9	+108.9
LINEAR INSIDE TEMPERATURE	474.3	473.8
LINEAR OUTSIDE TEMPERATURE	582.2	582.7
DELTA T2 (Absolute of Maximum)	116.1	115.6

Date: 05-24-2005 Time: 16:20:53 PAGE 64

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 60.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+31.85	+31.85	-0.00	357.7	367.9
2	126.6250	126.6563	+24.82	+24.83	+0.01	377.9	387.9
3	126.6875	127.1563	Interface (below)		+0.02	397.8	458.3
4	127.6250	128.0938	+11.56	+11.76	+0.19	490.1	521.7
5	128.5625	129.0313	-1.24	-1.02	+0.22	533.1	544.4
6	129.5000	129.9688	-5.48	-5.29	+0.19	547.4	550.4
7	130.4375	130.9063	-6.52	-6.38	+0.14	551.1	551.7
8	131.3750	131.8438	-6.70	-6.60	+0.10	551.8	552.0
9	132.3125	132.7813	-6.69	-6.64	+0.05	552.0	552.0
10	133.2500	133.7188	-6.65	-6.65	+0.00	552.0	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+17.92	+17.94	+0.02
FOR OUTER MATERIAL	+39.17	+39.19	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.62	+0.76
HOOP MEMBRANE	N/A	+0.63

B175

AVERAGE RADIAL	N/A	+0.13
AXIAL BENDING	-16.24	-16.39
INSIDE BENDING	+17.00	+17.15
OUTSIDE BENDING	-15.48	-15.63
HOOP BENDING	N/A	-16.32
INSIDE BENDING	N/A	+16.95
OUTSIDE BENDING	N/A	-15.69

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	528.4	527.9
DELTA T1 (Total Section Delta T)	+109.0	+110.1
LINEAR INSIDE TEMPERATURE	473.4	472.9
LINEAR OUTSIDE TEMPERATURE	582.4	582.9
DELTA T2 (Absolute of Maximum)	115.7	115.2

Date: 05-24-2005 Time: 16:20:55 PAGE 65

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 70.00 SECONDS.....

	-- Radii, inches -		---- Grid Stress, ksi ------			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+32.50	+32.50	-0.00	353.4	363.0
2	126.6250	126.6563	+25.86	+25.87	+0.01	372.5	381.9
3	126.6875	127.1563	Interface (below)		+0.03	391.2	448.6
4	127.6250	128.0938	+13.19	+13.40	+0.21	481.6	514.4
5	128.5625	129.0313	-0.59	-0.34	+0.24	527.8	541.2
6	129.5000	129.9688	-5.76	-5.55	+0.21	545.3	549.4
7	130.4375	130.9063	-7.24	-7.08	+0.16	550.5	551.5
8	131.3750	131.8438	-7.55	-7.45	+0.11	551.7	551.9
9	132.3125	132.7813	-7.57	-7.52	+0.05	551.9	552.0
10	133.2500	133.7188	-7.53	-7.53	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3			
FOR INNER MATERIAL	+19.33	+19.35	+0.03
FOR OUTER MATERIAL	+40.22	+40.24	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.59	+0.74
HOOP MEMBRANE	N/A	+0.60
AVERAGE RADIAL	N/A	+0.14
AXIAL BENDING	-17.69	-17.85
INSIDE BENDING	+18.43	+18.59
OUTSIDE BENDING	-16.95	-17.11
HOOP BENDING	N/A	-17.78
INSIDE BENDING	N/A	+18.38
OUTSIDE BENDING	N/A	-17.18

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	525.4	524.9
DELTA T1 (Total Section Delta T)	+119.5	+120.6
LINEAR INSIDE TEMPERATURE	465.2	464.6
LINEAR OUTSIDE TEMPERATURE	584.7	585.2
DELTA T2 (Absolute of Maximum)	111.8	111.2

Date: 05-24-2005 Time: 16:20:56 PAGE 66

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 80.00 SECONDS.....

5179

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+32.96	+32.96	-0.00	349.7	358.8
2	126.6250	126.6563	+26.65	+26.67	+0.01	367.8	376.8
3	126.6875	127.1563	Interface (below)		+0.03	385.7	440.3
4	127.6250	128.0938	+14.61	+14.82	+0.22	473.9	507.4
5	128.5625	129.0313	+0.11	+0.37	+0.26	522.6	537.7
6	129.5000	129.9688	-5.91	-5.68	+0.23	542.9	548.2
7	130.4375	130.9063	-7.86	-7.68	+0.18	549.7	551.1
8	131.3750	131.8438	-8.34	-8.22	+0.12	551.5	551.8
9	132.3125	132.7813	-8.41	-8.35	+0.06	551.9	552.0
10	133.2500	133.7188	-8.37	-8.37	+0.00	552.0	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+20.44	+20.47	+0.03
FOR OUTER MATERIAL	+41.02	+41.05	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.56	+0.72
HOOP MEMBRANE	N/A	+0.57
AVERAGE RADIAL	N/A	+0.15
AXIAL BENDING	-18.99	-19.15
INSIDE BENDING	+19.72	+19.88
OUTSIDE BENDING	-18.27	-18.43
HOOP BENDING	N/A	-19.08
INSIDE BENDING	N/A	+19.65
OUTSIDE BENDING	N/A	-18.51

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	522.6	522.0
DELTA T1 (Total Section Delta T)	+128.9	+130.0
LINEAR INSIDE TEMPERATURE	457.6	457.0
LINEAR OUTSIDE TEMPERATURE	586.5	587.1
DELTA T2 (Absolute of Maximum)	107.9	107.3

Date: 05-24-2005 Time: 16:20:57 PAGE 67

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 90.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+33.29	+33.29	-0.00	346.5	355.2
2	126.6250	126.6563	+27.27	+27.28	+0.01	363.8	372.4
3	126.6875	127.1563	Interface (below)		+0.03	380.9	433.1
4	127.6250	128.0938	+15.83	+16.06	+0.23	467.1	500.9
5	128.5625	129.0313	+0.80	+1.08	+0.28	517.5	534.0
6	129.5000	129.9688	-5.97	-5.72	+0.25	540.3	546.7
7	130.4375	130.9063	-8.39	-8.19	+0.20	548.7	550.7
8	131.3750	131.8438	-9.07	-8.94	+0.13	551.2	551.7
9	132.3125	132.7813	-9.19	-9.13	+0.07	551.8	551.9
10	133.2500	133.7188	-9.16	-9.16	+0.00	551.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+21.33	+21.35	+0.03
FOR OUTER MATERIAL	+41.64	+41.67	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

B150

CGS-RPV2

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.53	+0.71
HOOP MEMBRANE	N/A	+0.55
AVERAGE RADIAL	N/A	+0.16
AXIAL BENDING	-20.17	-20.33
INSIDE BENDING	+20.87	+21.03
OUTSIDE BENDING	-19.46	-19.62
HOOP BENDING	N/A	-20.25
INSIDE BENDING	N/A	+20.80
OUTSIDE BENDING	N/A	-19.71

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	519.9	519.3
DELTA T1 (Total Section Delta T)	+137.3	+138.5
LINEAR INSIDE TEMPERATURE	450.7	450.1
LINEAR OUTSIDE TEMPERATURE	588.0	588.6
DELTA T2 (Absolute of Maximum)	104.1	103.6

Date: 05-24-2005 Time: 16:20:58 PAGE 68

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 100.00 SECONDS.....

N	--Radii, inches -- Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+33.51	+33.51	-0.00	343.8	352.1
2	126.6250	126.6563	+27.73	+27.75	+0.02	360.3	368.6
3	126.6875	127.1563	Interface	(below)	+0.03	376.7	426.9
4	127.6250	128.0938	+16.90	+17.13	+0.24	460.9	494.8
5	128.5625	129.0313	+1.49	+1.78	+0.29	512.5	530.2
6	129.5000	129.9688	-5.94	-5.68	+0.27	537.6	545.0
7	130.4375	130.9063	-8.83	-8.62	+0.21	547.5	550.1
8	131.3750	131.8438	-9.73	-9.59	+0.14	550.8	551.5
9	132.3125	132.7813	-9.93	-9.86	+0.07	551.7	551.9
10	133.2500	133.7188	-9.92	-9.92	+0.00	551.9	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+22.04	+22.06	+0.03
FOR OUTER MATERIAL	+42.11	+42.14	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.51	+0.70
HOOP MEMBRANE	N/A	+0.52
AVERAGE RADIAL	N/A	+0.17
AXIAL BENDING	-21.22	-21.38
INSIDE BENDING	+21.92	+22.08
OUTSIDE BENDING	-20.53	-20.68
HOOP BENDING	N/A	-21.31
INSIDE BENDING	N/A	+21.83
OUTSIDE BENDING	N/A	-20.78

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	517.3	516.7
DELTA T1 (Total Section Delta T)	+144.9	+146.0
LINEAR INSIDE TEMPERATURE	444.3	443.7
LINEAR OUTSIDE TEMPERATURE	589.2	589.7
DELTA T2 (Absolute of Maximum)	100.5	99.9

Date: 05-24-2005 Time: 16:20:59 PAGE 69

6181

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        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=  110.00  SECONDS...................
     -- Radii, inches -    ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                   (Inside fluid)  281.0
  1  126.5625  126.5938     +33.64     +33.64     -0.00          341.3   349.3
  2  126.6250  126.6563     +28.09     +28.10     +0.02          357.3   365.2
  3  126.6875  127.1563   Interface (below)       +0.03          373.0   421.3
  4  127.6250  128.0938     +17.83     +18.07     +0.24          455.2   489.0
  5  128.5625  129.0313      +2.15      +2.45     +0.30          507.8   526.4
  6  129.5000  129.9688      -5.86      -5.58     +0.28          534.8   543.1
  7  130.4375  130.9063      -9.20      -8.98     +0.22          546.2   549.3
  8  131.3750  131.8438     -10.34     -10.19     +0.15          550.3   551.3
  9  132.3125  132.7813     -10.63     -10.56     +0.08          551.5   551.8
 10  133.2500  133.7188     -10.63     -10.63     +0.00          551.8   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL      +22.61     +22.63     +0.03
    FOR OUTER MATERIAL      +42.47     +42.50     +0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F):  +5.000D+02   +1.000D-05

STRESSES (KSI) BASED ON:      AREA WEIGHTED AVERAGING    LINEAR AVERAGING
  AXIAL MEMBRANE                      +0.49                    +0.69
  HOOP MEMBRANE                        N/A                     +0.50
  AVERAGE RADIAL                       N/A                     +0.18
  AXIAL BENDING                      -22.18                    -22.33
     INSIDE BENDING                  +22.86                    +23.02
     OUTSIDE BENDING                 -21.49                    -21.65
  HOOP BENDING                         N/A                    -22.26
     INSIDE BENDING                     N/A                    +22.76
     OUTSIDE BENDING                    N/A                    -21.75

TEMPERATURES (F) BASED ON:    AREA WEIGHTED AVERAGING    LINEAR AVERAGING
  AVERAGE TEMPERATURE                 514.9                    514.2
  DELTA T1 (Total Section Delta T)   +151.7                   +152.9
  LINEAR INSIDE TEMPERATURE           438.3                    437.8
  LINEAR OUTSIDE TEMPERATURE          590.1                    590.6
  DELTA T2 (Absolute of Maximum)       97.0                     96.5


 Date: 05-24-2005          Time: 16:21:01                      PAGE  70
*************************************************************************
        * * * * *  PIPE-TS2 VERSION 1.01  (4/17/91 1930)  * * * * *
   ................OUTPUT FOR TIME=  120.00  SECONDS...................
     -- Radii, inches -    ---- Grid Stress, ksi ------        Temperature, F
  N    Grid       Node        hoop       axial      radial          Grid    Node
                                                   (Inside fluid)  281.0
  1  126.5625  126.5938     +33.71     +33.71     -0.00          339.1   346.9
  2  126.6250  126.6563     +28.35     +28.37     +0.02          354.5   362.2
  3  126.6875  127.1563   Interface (below)       +0.03          369.7   416.3
  4  127.6250  128.0938     +18.64     +18.89     +0.25          450.1   483.7
  5  128.5625  129.0313      +2.78      +3.09     +0.31          503.2   522.7
  6  129.5000  129.9688      -5.74      -5.44     +0.30          531.9   541.2
  7  130.4375  130.9063      -9.51      -9.28     +0.24          544.8   548.5
  8  131.3750  131.8438     -10.90     -10.74     +0.16          549.8   551.0
  9  132.3125  132.7813     -11.29     -11.21     +0.08          551.3   551.7
 10  133.2500  133.7188     -11.31     -11.31     +0.00          551.7   120.0
                                                 (Above node is outside fluid)
INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID  3
    FOR INNER MATERIAL      +23.06     +23.09     +0.03
    FOR OUTER MATERIAL      +42.74     +42.77     +0.03
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B15

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.48	+0.68
HOOP MEMBRANE	N/A	+0.49
AVERAGE RADIAL	N/A	+0.19
AXIAL BENDING	-23.04	-23.20
INSIDE BENDING	+23.71	+23.87
OUTSIDE BENDING	-22.36	-22.52
HOOP BENDING	N/A	-23.12
INSIDE BENDING	N/A	+23.61
OUTSIDE BENDING	N/A	-22.63

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	512.5	511.8
DELTA T1 (Total Section Delta T)	+157.9	+159.0
LINEAR INSIDE TEMPERATURE	432.8	432.3
LINEAR OUTSIDE TEMPERATURE	590.7	591.3
DELTA T2 (Absolute of Maximum)	93.7	93.1

Date: 05-24-2005 Time: 16:21:02 PAGE 71

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 130.00 SECONDS.....

N	-- Radii, inches - Grid	Node	--- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+33.72	+33.72	-0.00	337.2	344.7
2	126.6250	126.6563	+28.54	+28.56	+0.02	352.1	359.5
3	126.6875	127.1563	Interface (below)		+0.03	366.8	411.9
4	127.6250	128.0938	+19.35	+19.60	+0.25	445.3	478.7
5	128.5625	129.0313	+3.37	+3.70	+0.32	498.9	519.0
6	129.5000	129.9688	-5.58	-5.27	+0.31	529.0	539.1
7	130.4375	130.9063	-9.76	-9.52	+0.25	543.3	547.6
8	131.3750	131.8438	-11.40	-11.23	+0.17	549.1	550.6
9	132.3125	132.7813	-11.91	-11.82	+0.08	551.1	551.5
10	133.2500	133.7188	-11.96	-11.96	+0.00	551.5	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+23.42	+23.45	+0.03
FOR OUTER MATERIAL	+42.93	+42.96	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.46	+0.67
HOOP MEMBRANE	N/A	+0.47
AVERAGE RADIAL	N/A	+0.20
AXIAL BENDING	-23.82	-23.97
INSIDE BENDING	+24.49	+24.64
OUTSIDE BENDING	-23.15	-23.31
HOOP BENDING	N/A	-23.90
INSIDE BENDING	N/A	+24.37
OUTSIDE BENDING	N/A	-23.43

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	510.2	509.5
DELTA T1 (Total Section Delta T)	+163.5	+164.6
LINEAR INSIDE TEMPERATURE	427.7	427.2
LINEAR OUTSIDE TEMPERATURE	591.2	591.7
DELTA T2 (Absolute of Maximum)	90.5	90.0

B153

Date: 05-24-2005 Time: 16:21:03 PAGE 72

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 140.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+33.69	+33.69	-0.00	335.4	342.7
2	126.6250	126.6563	+28.67	+28.69	+0.02	349.8	357.0
3	126.6875	127.1563	Interface (below)		+0.03	364.1	407.8
4	127.6250	128.0938	+19.98	+20.23	+0.25	441.0	474.0
5	128.5625	129.0313	+3.93	+4.26	+0.33	494.7	515.3
6	129.5000	129.9688	-5.39	-5.08	+0.32	526.1	536.9
7	130.4375	130.9063	-9.97	-9.71	+0.26	541.7	546.5
8	131.3750	131.8438	-11.86	-11.68	+0.18	548.4	550.2
9	132.3125	132.7813	-12.49	-12.40	+0.09	550.8	551.4
10	133.2500	133.7188	-12.57	-12.57	+0.00	551.4	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+23.71	+23.74	+0.03
FOR OUTER MATERIAL	+43.06	+43.08	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.45	+0.66
HOOP MEMBRANE	N/A	+0.46
AVERAGE RADIAL	N/A	+0.20
AXIAL BENDING	-24.52	-24.68
INSIDE BENDING	+25.18	+25.34
OUTSIDE BENDING	-23.86	-24.02
HOOP BENDING	N/A	-24.60
INSIDE BENDING	N/A	+25.06
OUTSIDE BENDING	N/A	-24.14

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	507.9	507.2
DELTA T1 (Total Section Delta T)	+168.5	+169.6
LINEAR INSIDE TEMPERATURE	422.9	422.4
LINEAR OUTSIDE TEMPERATURE	591.5	592.0
DELTA T2 (Absolute of Maximum)	87.5	86.9

Date: 05-24-2005 Time: 16:21:04 PAGE 73

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 150.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+33.62	+33.62	-0.00	333.8	340.8
2	126.6250	126.6563	+28.75	+28.77	+0.02	347.8	354.8
3	126.6875	127.1563	Interface (below)		+0.03	361.7	404.1
4	127.6250	128.0938	+20.52	+20.78	+0.26	437.0	469.6
5	128.5625	129.0313	+4.45	+4.79	+0.34	490.7	511.8
6	129.5000	129.9688	-5.20	-4.87	+0.33	523.3	534.7
7	130.4375	130.9063	-10.13	-9.86	+0.27	540.1	545.4
8	131.3750	131.8438	-12.27	-12.09	+0.18	547.6	549.7
9	132.3125	132.7813	-13.03	-12.94	+0.09	550.4	551.1
10	133.2500	133.7188	-13.15	-13.15	+0.00	551.1	120.0
					(Above node is outside fluid)		

6184

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+23.93	+23.96	+0.03
FOR OUTER MATERIAL	+43.13	+43.16	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.44	+0.65
HOOP MEMBRANE	N/A	+0.44
AVERAGE RADIAL	N/A	+0.21
AXIAL BENDING	-25.16	-25.31
INSIDE BENDING	+25.81	+25.96
OUTSIDE BENDING	-24.51	-24.66
HOOP BENDING	N/A	-25.24
INSIDE BENDING	N/A	+25.68
OUTSIDE BENDING	N/A	-24.79

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	505.7	505.0
DELTA T1 (Total Section Delta T)	+173.1	+174.2
LINEAR INSIDE TEMPERATURE	418.5	417.9
LINEAR OUTSIDE TEMPERATURE	591.5	592.1
DELTA T2 (Absolute of Maximum)	84.6	84.1

Date: 05-24-2005 Time: 16:21:06 PAGE 74

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 160.00 SECONDS.....

	Radii, inches		Grid Stress, ksi			Temperature, F	
N	Grid	Node	hoop	axial	radial	Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+33.52	+33.52	-0.00	332.3	339.2
2	126.6250	126.6563	+28.79	+28.81	+0.02	345.9	352.7
3	126.6875	127.1563	Interface (below)		+0.03	359.4	400.8
4	127.6250	128.0938	+21.00	+21.26	+0.26	433.2	465.5
5	128.5625	129.0313	+4.94	+5.29	+0.35	487.0	508.3
6	129.5000	129.9688	-4.99	-4.65	+0.34	520.4	532.5
7	130.4375	130.9063	-10.26	-9.98	+0.28	538.3	544.2
8	131.3750	131.8438	-12.65	-12.46	+0.19	546.7	549.1
9	132.3125	132.7813	-13.54	-13.44	+0.10	550.0	550.8
10	133.2500	133.7188	-13.69	-13.69	+0.00	550.8	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+24.10	+24.13	+0.03
FOR OUTER MATERIAL	+43.17	+43.20	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.42	+0.65
HOOP MEMBRANE	N/A	+0.43
AVERAGE RADIAL	N/A	+0.21
AXIAL BENDING	-25.74	-25.88
INSIDE BENDING	+26.38	+26.53
OUTSIDE BENDING	-25.09	-25.24
HOOP BENDING	N/A	-25.81
INSIDE BENDING	N/A	+26.24
OUTSIDE BENDING	N/A	-25.38

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	503.6	502.9
DELTA T1 (Total Section Delta T)	+177.2	+178.3

B185

LINEAR INSIDE TEMPERATURE	414.3	413.7
LINEAR OUTSIDE TEMPERATURE	591.5	592.0
DELTA T2 (Absolute of Maximum)	81.9	81.4

Date: 05-24-2005 Time: 16:21:07 PAGE 75

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 170.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0
1	126.5625	126.5938	+33.40	+33.40	-0.00	331.0	337.6
2	126.6250	126.6563	+28.79	+28.81	+0.02	344.2	350.8
3	126.6875	127.1563	Interface (below)		+0.03	357.4	397.7
4	127.6250	128.0938	+21.43	+21.69	+0.26	429.7	461.7
5	128.5625	129.0313	+5.39	+5.74	+0.35	483.4	505.0
6	129.5000	129.9688	-4.78	-4.43	+0.35	517.6	530.2
7	130.4375	130.9063	-10.35	-10.07	+0.29	536.6	542.9
8	131.3750	131.8438	-12.99	-12.79	+0.20	545.7	548.5
9	132.3125	132.7813	-14.01	-13.91	+0.10	549.5	550.5
10	133.2500	133.7188	-14.21	-14.21	+0.00	550.5	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+24.22	+24.25	+0.03
FOR OUTER MATERIAL	+43.16	+43.19	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.41	+0.64
HOOP MEMBRANE	N/A	+0.42
AVERAGE RADIAL	N/A	+0.22
AXIAL BENDING	-26.26	-26.40
INSIDE BENDING	+26.90	+27.04
OUTSIDE BENDING	-25.62	-25.76
HOOP BENDING	N/A	-26.33
INSIDE BENDING	N/A	+26.75
OUTSIDE BENDING	N/A	-25.91

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	501.6	500.8
DELTA T1 (Total Section Delta T)	+180.9	+182.0
LINEAR INSIDE TEMPERATURE	410.3	409.8
LINEAR OUTSIDE TEMPERATURE	591.3	591.8
DELTA T2 (Absolute of Maximum)	79.3	78.8

Date: 05-24-2005 Time: 16:21:08 PAGE 76

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 180.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial (Inside fluid)	Temperature, F Grid	Node 281.0
1	126.5625	126.5938	+33.26	+33.26	-0.00	329.7	336.2
2	126.6250	126.6563	+28.76	+28.78	+0.02	342.7	349.1
3	126.6875	127.1563	Interface (below)		+0.03	355.5	394.8
4	127.6250	128.0938	+21.79	+22.06	+0.26	426.5	458.0
5	128.5625	129.0313	+5.81	+6.17	+0.36	479.9	501.7
6	129.5000	129.9688	-4.56	-4.21	+0.35	514.8	527.9
7	130.4375	130.9063	-10.42	-10.13	+0.29	534.8	541.6
8	131.3750	131.8438	-13.29	-13.09	+0.20	544.7	547.8

3/56

9	132.3125	132.7813	-14.45	-14.35	+0.10	549.0	550.1
10	133.2500	133.7188	-14.69	-14.69	+0.00	550.1	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+24.30	+24.33	+0.03
FOR OUTER MATERIAL	+43.13	+43.16	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.40	+0.63
HOOP MEMBRANE	N/A	+0.41
AVERAGE RADIAL	N/A	+0.22
AXIAL BENDING	-26.72	-26.87
INSIDE BENDING	+27.36	+27.50
OUTSIDE BENDING	-26.09	-26.23
HOOP BENDING	N/A	-26.80
INSIDE BENDING	N/A	+27.21
OUTSIDE BENDING	N/A	-26.38

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	499.6	498.8
DELTA T1 (Total Section Delta T)	+184.3	+185.3
LINEAR INSIDE TEMPERATURE	406.6	406.1
LINEAR OUTSIDE TEMPERATURE	590.9	591.4
DELTA T2 (Absolute of Maximum)	76.9	76.4

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 190.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+33.10	+33.10	-0.00	328.6	334.9
2	126.6250	126.6563	+28.71	+28.72	+0.02	341.2	347.5
3	126.6875	127.1563	Interface (below)		+0.03	353.7	392.1
4	127.6250	128.0938	+22.12	+22.38	+0.26	423.4	454.6
5	128.5625	129.0313	+6.20	+6.56	+0.36	476.6	498.6
6	129.5000	129.9688	-4.35	-3.99	+0.36	512.1	525.6
7	130.4375	130.9063	-10.47	-10.17	+0.30	532.9	540.2
8	131.3750	131.8438	-13.56	-13.35	+0.21	543.6	547.1
9	132.3125	132.7813	-14.86	-14.76	+0.11	548.4	549.7
10	133.2500	133.7188	-15.14	-15.14	+0.00	549.7	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+24.35	+24.38	+0.03
FOR OUTER MATERIAL	+43.07	+43.10	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.39	+0.63
HOOP MEMBRANE	N/A	+0.40
AVERAGE RADIAL	N/A	+0.23
AXIAL BENDING	-27.14	-27.28
INSIDE BENDING	+27.77	+27.91
OUTSIDE BENDING	-26.52	-26.65
HOOP BENDING	N/A	-27.21
INSIDE BENDING	N/A	+27.62
OUTSIDE BENDING	N/A	-26.81

5/57

CGS-RPV2

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	497.6	496.8
DELTA T1 (Total Section Delta T)	+187.3	+188.3
LINEAR INSIDE TEMPERATURE	403.2	402.6
LINEAR OUTSIDE TEMPERATURE	590.5	590.9
DELTA T2 (Absolute of Maximum)	74.6	74.1

Date: 05-24-2005 Time: 16:21:10 PAGE 78

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 200.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+32.92	+32.92	-0.00	327.5	333.7
2	126.6250	126.6563	+28.63	+28.65	+0.02	339.8	346.0
3	126.6875	127.1563	Interface (below)		+0.03	352.1	389.6
4	127.6250	128.0938	+22.40	+22.66	+0.26	420.5	451.3
5	128.5625	129.0313	+6.56	+6.92	+0.36	473.5	495.6
6	129.5000	129.9688	-4.14	-3.77	+0.37	509.5	523.4
7	130.4375	130.9063	-10.50	-10.19	+0.31	531.1	538.8
8	131.3750	131.8438	-13.81	-13.59	+0.22	542.5	546.3
9	132.3125	132.7813	-15.24	-15.13	+0.11	547.7	549.2
10	133.2500	133.7188	-15.56	-15.56	+0.00	549.2	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+24.37	+24.40	+0.03
FOR OUTER MATERIAL	+42.99	+43.02	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.39	+0.62
HOOP MEMBRANE	N/A	+0.39
AVERAGE RADIAL	N/A	+0.23
AXIAL BENDING	-27.52	-27.66
INSIDE BENDING	+28.14	+28.28
OUTSIDE BENDING	-26.90	-27.03
HOOP BENDING	N/A	-27.59
INSIDE BENDING	N/A	+27.98
OUTSIDE BENDING	N/A	-27.19

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	495.7	494.9
DELTA T1 (Total Section Delta T)	+190.0	+191.0
LINEAR INSIDE TEMPERATURE	399.9	399.4
LINEAR OUTSIDE TEMPERATURE	589.9	590.4
DELTA T2 (Absolute of Maximum)	72.4	71.9

Date: 05-24-2005 Time: 16:21:12 PAGE 79

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 300.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+30.69	+30.69	-0.00	319.7	324.8
2	126.6250	126.6563	+27.12	+27.13	+0.01	329.9	335.0
3	126.6875	127.1563	Interface (below)		+0.03	340.1	371.5
4	127.6250	128.0938	+23.67	+23.93	+0.26	399.0	426.4
5	128.5625	129.0313	+8.88	+9.26	+0.38	448.4	470.2

6155

6	129.5000	129.9688	-2.39	-2.00	+0.39	486.2	502.2
7	130.4375	130.9063	-10.22	-9.88	+0.34	512.7	523.3
8	131.3750	131.8438	-15.10	-14.85	+0.25	529.5	535.6
9	132.3125	132.7813	-17.64	-17.51	+0.13	538.4	541.2
10	133.2500	133.7188	-18.34	-18.34	+0.00	541.2	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+23.56	+23.59	+0.03
FOR OUTER MATERIAL	+41.40	+41.43	+0.03

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.32	+0.58
HOOP MEMBRANE	N/A	+0.33
AVERAGE RADIAL	N/A	+0.25
AXIAL BENDING	-29.48	-29.59
INSIDE BENDING	+30.06	+30.17
OUTSIDE BENDING	-28.90	-29.01
HOOP BENDING	N/A	-29.53
INSIDE BENDING	N/A	+29.86
OUTSIDE BENDING	N/A	-29.20

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	478.4	477.6
DELTA T1 (Total Section Delta T)	+204.3	+205.1
LINEAR INSIDE TEMPERATURE	375.4	375.0
LINEAR OUTSIDE TEMPERATURE	579.7	580.1
DELTA T2 (Absolute of Maximum)	55.7	55.3

Date: 05-24-2005 Time: 16:21:13 PAGE 80

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 400.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+28.13	+28.13	-0.00	314.8	319.3
2	126.6250	126.6563	+25.00	+25.02	+0.01	323.8	328.3
3	126.6875	127.1563	Interface (below)		+0.02	332.7	360.2
4	127.6250	128.0938	+23.42	+23.67	+0.25	385.1	409.8
5	128.5625	129.0313	+9.73	+10.10	+0.37	430.7	451.5
6	129.5000	129.9688	-1.33	-0.94	+0.40	467.9	484.1
7	130.4375	130.9063	-9.60	-9.25	+0.35	495.8	507.5
8	131.3750	131.8438	-15.17	-14.92	+0.26	514.9	522.3
9	132.3125	132.7813	-18.30	-18.17	+0.13	525.8	529.4
10	133.2500	133.7188	-19.22	-19.22	+0.00	529.4	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+21.89	+21.92	+0.02
FOR OUTER MATERIAL	+39.20	+39.22	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.28	+0.54
HOOP MEMBRANE	N/A	+0.29
AVERAGE RADIAL	N/A	+0.25
AXIAL BENDING	-29.44	-29.53
INSIDE BENDING	+29.98	+30.07
OUTSIDE BENDING	-28.91	-29.00
HOOP BENDING	N/A	-29.48

B189

INSIDE BENDING	N/A	+29.77
OUTSIDE BENDING	N/A	-29.20

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	463.7	462.8
DELTA T1 (Total Section Delta T)	+204.5	+205.2
LINEAR INSIDE TEMPERATURE	360.5	360.2
LINEAR OUTSIDE TEMPERATURE	565.1	565.4
DELTA T2 (Absolute of Maximum)	45.7	45.4

Date: 05-24-2005 Time: 16:21:14 PAGE 81

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 500.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+25.55	+25.55	-0.00	311.4	315.4
2	126.6250	126.6563	+22.74	+22.75	+0.01	319.4	323.5
3	126.6875	127.1563	Interface (below)		+0.02	327.5	352.2
4	127.6250	128.0938	+22.53	+22.77	+0.24	374.9	397.6
5	128.5625	129.0313	+9.84	+10.19	+0.35	417.2	436.8
6	129.5000	129.9688	-0.74	-0.36	+0.38	452.7	468.6
7	130.4375	130.9063	-8.95	-8.61	+0.34	480.5	492.3
8	131.3750	131.8438	-14.45	-14.45	+0.25	500.2	507.9
9	132.3125	132.7813	-18.05	-17.91	+0.13	511.8	515.7
10	133.2500	133.7188	-19.06	-19.06	+0.00	515.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+19.94	+19.96	+0.02
FOR OUTER MATERIAL	+36.85	+36.87	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.26	+0.50
HOOP MEMBRANE	N/A	+0.26
AVERAGE RADIAL	N/A	+0.24
AXIAL BENDING	-28.45	-28.53
INSIDE BENDING	+28.95	+29.03
OUTSIDE BENDING	-27.95	-28.03
HOOP BENDING	N/A	-28.48
INSIDE BENDING	N/A	+28.74
OUTSIDE BENDING	N/A	-28.22

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	450.5	449.7
DELTA T1 (Total Section Delta T)	+198.0	+198.6
LINEAR INSIDE TEMPERATURE	350.7	350.4
LINEAR OUTSIDE TEMPERATURE	548.7	549.0
DELTA T2 (Absolute of Maximum)	39.3	39.0

Date: 05-24-2005 Time: 16:21:15 PAGE 82

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 600.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+23.05	+23.05	-0.00	308.7	312.4
2	126.6250	126.6563	+20.49	+20.50	+0.01	316.1	319.7

B190

3	126.6875	127.1563	Interface (below)		+0.02	323.4	346.0
4	127.6250	128.0938	+21.37	+21.60	+0.22	366.9	387.8
5	128.5625	129.0313	+9.58	+9.92	+0.33	406.2	424.6
6	129.5000	129.9688	-0.42	-0.05	+0.36	439.8	454.9
7	130.4375	130.9063	-8.33	-8.00	+0.33	466.5	478.1
8	131.3750	131.8438	-13.99	-13.75	+0.24	485.9	493.6
9	132.3125	132.7813	-17.34	-17.21	+0.13	497.5	501.4
10	133.2500	133.7188	-18.36	-18.36	+0.00	501.4	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+17.94	+17.96	+0.02
FOR OUTER MATERIAL	+34.51	+34.53	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.23	+0.47
HOOP MEMBRANE	N/A	+0.24
AVERAGE RADIAL	N/A	+0.23
AXIAL BENDING	-27.02	-27.09
INSIDE BENDING	+27.49	+27.56
OUTSIDE BENDING	-26.56	-26.63
HOOP BENDING	N/A	-27.05
INSIDE BENDING	N/A	+27.29
OUTSIDE BENDING	N/A	-26.82

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	438.6	437.8
DELTA T1 (Total Section Delta T)	+188.5	+189.0
LINEAR INSIDE TEMPERATURE	343.6	343.3
LINEAR OUTSIDE TEMPERATURE	532.0	532.3
DELTA T2 (Absolute of Maximum)	34.9	34.6

Date: 05-24-2005 Time: 16:21:17 PAGE 83

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 700.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+20.68	+20.68	-0.00	306.5	309.9
2	126.6250	126.6563	+18.32	+18.33	+0.01	313.3	316.7
3	126.6875	127.1563	Interface (below)		+0.02	320.0	340.8
4	127.6250	128.0938	+20.12	+20.33	+0.21	360.2	379.6
5	128.5625	129.0313	+9.16	+9.47	+0.31	396.8	413.9
6	129.5000	129.9688	-0.23	+0.11	+0.34	428.3	442.6
7	130.4375	130.9063	-7.75	-7.44	+0.31	453.7	464.7
8	131.3750	131.8438	-13.18	-12.95	+0.23	472.2	479.7
9	132.3125	132.7813	-16.42	-16.30	+0.12	483.5	487.3
10	133.2500	133.7188	-17.42	-17.42	+0.00	487.3	120.0

(Above node is outside fluid)

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+15.97	+15.98	+0.02
FOR OUTER MATERIAL	+32.26	+32.28	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.21	+0.43
HOOP MEMBRANE	N/A	+0.22
AVERAGE RADIAL	N/A	+0.22
AXIAL BENDING	-25.43	-25.49

591

INSIDE BENDING	+25.86	+25.92
OUTSIDE BENDING	-25.00	-25.06
HOOP BENDING	N/A	-25.46
INSIDE BENDING	N/A	+25.67
OUTSIDE BENDING	N/A	-25.24

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	427.7	426.9
DELTA T1 (Total Section Delta T)	+177.7	+178.2
LINEAR INSIDE TEMPERATURE	338.1	337.8
LINEAR OUTSIDE TEMPERATURE	515.7	516.0
DELTA T2 (Absolute of Maximum)	31.5	31.3

Date: 05-24-2005 Time: 16:21:18 PAGE 84

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 800.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+18.44	+18.44	-0.00	304.6	307.7
2	126.6250	126.6563	+16.26	+16.27	+0.01	310.9	314.0
3	126.6875	127.1563	Interface (below)		+0.02	317.1	336.4
4	127.6250	128.0938	+18.87	+19.06	+0.20	354.4	372.3
5	128.5625	129.0313	+8.66	+8.95	+0.29	388.4	404.4
6	129.5000	129.9688	-0.13	+0.19	+0.32	417.9	431.3
7	130.4375	130.9063	-7.21	-6.92	+0.29	441.8	452.2
8	131.3750	131.8438	-12.35	-12.14	+0.22	459.4	466.5
9	132.3125	132.7813	-15.44	-15.32	+0.11	470.1	473.7
10	133.2500	133.7188	-16.39	-16.39	+0.00	473.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+14.08	+14.10	+0.02
FOR OUTER MATERIAL	+30.12	+30.14	+0.02

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.20	+0.40
HOOP MEMBRANE	N/A	+0.20
AVERAGE RADIAL	N/A	+0.20
AXIAL BENDING	-23.80	-23.86
INSIDE BENDING	+24.21	+24.26
OUTSIDE BENDING	-23.40	-23.46
HOOP BENDING	N/A	-23.83
INSIDE BENDING	N/A	+24.03
OUTSIDE BENDING	N/A	-23.63

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	417.6	416.8
DELTA T1 (Total Section Delta T)	+166.7	+167.1
LINEAR INSIDE TEMPERATURE	333.5	333.3
LINEAR OUTSIDE TEMPERATURE	500.2	500.4
DELTA T2 (Absolute of Maximum)	28.9	28.7

Date: 05-24-2005 Time: 16:21:19 PAGE 85

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 900.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node

B192

					(Inside fluid)	281.0	
1	126.5625	126.5938	+16.34	+16.34	-0.00	302.9	305.8
2	126.6250	126.6563	+14.32	+14.32	+0.01	308.7	311.6
3	126.6875	127.1563	Interface (below)		+0.01	314.5	332.4
4	127.6250	128.0938	+17.65	+17.83	+0.18	349.1	365.9
5	128.5625	129.0313	+8.15	+8.42	+0.27	380.8	395.7
6	129.5000	129.9688	-0.07	+0.23	+0.30	408.4	420.9
7	130.4375	130.9063	-6.70	-6.43	+0.27	430.8	440.6
8	131.3750	131.8438	-11.54	-11.34	+0.20	447.3	454.0
9	132.3125	132.7813	-14.45	-14.34	+0.11	457.4	460.8
10	133.2500	133.7188	-15.35	-15.35	+0.00	460.8	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+12.30	+12.31	+0.01
FOR OUTER MATERIAL	+28.11	+28.12	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.18	+0.38
HOOP MEMBRANE	N/A	+0.19
AVERAGE RADIAL	N/A	+0.19
AXIAL BENDING	-22.22	-22.27
INSIDE BENDING	+22.59	+22.64
OUTSIDE BENDING	-21.84	-21.89
HOOP BENDING	N/A	-22.24
INSIDE BENDING	N/A	+22.43
OUTSIDE BENDING	N/A	-22.05

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	408.2	407.5
DELTA T1 (Total Section Delta T)	+155.9	+156.3
LINEAR INSIDE TEMPERATURE	329.6	329.4
LINEAR OUTSIDE TEMPERATURE	485.5	485.7
DELTA T2 (Absolute of Maximum)	26.7	26.5

Date: 05-24-2005 Time: 16:21:21 PAGE 86

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* * * * * PIPE-TS2 VERSION 1.01 (4/17/91 1930) * * * * *

.....OUTPUT FOR TIME= 1000.00 SECONDS.....

N	-- Radii, inches - Grid	Node	---- Grid Stress, ksi ------ hoop	axial	radial	Temperature, F Grid	Node
					(Inside fluid)	281.0	
1	126.5625	126.5938	+14.38	+14.38	-0.00	301.4	304.1
2	126.6250	126.6563	+12.50	+12.50	+0.01	306.8	309.5
3	126.6875	127.1563	Interface (below)		+0.01	312.2	328.8
4	127.6250	128.0938	+16.49	+16.66	+0.17	344.4	359.9
5	128.5625	129.0313	+7.64	+7.89	+0.25	373.9	387.8
6	129.5000	129.9688	-0.02	+0.25	+0.28	399.6	411.3
7	130.4375	130.9063	-6.23	-5.97	+0.25	420.5	429.7
8	131.3750	131.8438	-10.76	-10.57	+0.19	436.0	442.3
9	132.3125	132.7813	-13.49	-13.39	+0.10	445.5	448.7
10	133.2500	133.7188	-14.33	-14.33	+0.00	448.7	120.0
					(Above node is outside fluid)		

INDIVIDUAL MATERIAL STRESSES AT INTERFACE GRID 3

FOR INNER MATERIAL	+10.62	+10.63	+0.01
FOR OUTER MATERIAL	+26.22	+26.23	+0.01

INSIDE/OUTSIDE HT TX COEF. (BTU/HR-FT2-F): +5.000D+02 +1.000D-05

STRESSES (KSI) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AXIAL MEMBRANE	+0.17	+0.35

B193

CGS-RPV2

HOOP MEMBRANE	N/A	+0.17
AVERAGE RADIAL	N/A	+0.18
AXIAL BENDING	-20.70	-20.75
INSIDE BENDING	+21.05	+21.10
OUTSIDE BENDING	-20.35	-20.40
HOOP BENDING	N/A	-20.72
INSIDE BENDING	N/A	+20.89
OUTSIDE BENDING	N/A	-20.55

TEMPERATURES (F) BASED ON:	AREA WEIGHTED AVERAGING	LINEAR AVERAGING
AVERAGE TEMPERATURE	399.5	398.9
DELTA T1 (Total Section Delta T)	+145.6	+145.9
LINEAR INSIDE TEMPERATURE	326.1	325.9
LINEAR OUTSIDE TEMPERATURE	471.7	471.8
DELTA T2 (Absolute of Maximum)	24.7	24.5

B1C4

DOCUMENT SUMMARY

NOTE: Information obtained from this document summary should be verified against the original (hardcopy) controlled document prior to use in any design documents or the formulation of any official position statement.

Major Revision ☒ **Yes** ☐ **No**

Minor Revision ☐ **Yes** ☒ **No** **If Yes Rev. Number**

Document Number: ME-02-05-07

Revision/Date: 1/ 8/8/05

Title: Evaluation of RPV Shell Indications Identified During R17 ISI

Purpose/Scope:

Two unacceptable indications in the RPV shell were identified using UT methods during the R17 ISI activities. The indications were documented in PER 205-0348 and CR-2-05-03803. ASME Section XI allows acceptance of such indications as outlined in IWB-3610 of the Code. This calculation documents and reviews the evaluations performed by a QC 1 Engineering Services contractor with expertise in the methods prescribed by ASME Section XI for evaluation of the flaws.

Equipment Reference:

MS-RPV-3

Discipline: Mechanical

System(s):

001 REACTOR

Quality Class: 1

Attributes:

N/A

Input:

Output:

DOCUMENT SUMMARY

Results/Conclusions:

The calculation in Appendix A calculated the crack growth and the stress intensity factors for the indications reported in PER 205-0348 and CR 2-05-03803 . The evaluation showed that the stress intensity factors for normal and faulted conditions were less than the allowable stress intensity factors permitted by IWB-3612 of ASME Section XI. In addition, the crack growth when 500 SRV Blowdown events were applied was only 0.0064 in over the life of the plant. This growth is negligible compared to the original indication sizes which were determined to be acceptable by the rules in ASME Section XI.

Methodology:

The indications (flaws) were evaluated using the methodology outlined in ASME Section XI IWB-3610. This methodology classifies the flaw as subsurface based on their dimensions and location within the RPV wall. The flaw was evaluated per IWB 3612 for acceptance based on applied stress intensity factor. The thermal stress analysis in Appendix B calculated the primary stress limits for two transient conditions. These stresses were well below the NB-3000 allowable stresses which implied a reduction of area equal to the flaw area would not exceed the allowable stresses.

The stress intensity allowable was determined by Fig A-4200-1 of Appendix A of ASME Section XI using the RTNDT from Ref 4 of Appendix A of this calculation which accounts for neutron flux changes to the vessel wall over the operating life of the plant. The stress intensity for normal and emergency conditions was calculated using Linear Elastic Fracture Mechanics as contained in Appendix A of this calculation. It was conservatively assumed the ASME Code allowable stresses were present when calculating the stress intensity for normal and emergency conditions.

Appendix B of this calculation contains the results of a thermal/stress analysis for SRV Blowdown and Pipe Rupture & Blowdown using parameters supplied by Energy Northwest used for RPV reanalysis for power uprate. The calculation was performed by a computer code using the finite element method.

Key Parameters:

N/A

Comments:

CR 2-05-03803, PER 205-0348 —Rev 1 addresses incorrect "S" dimension provided by GE in the original flaw input information (Ref CR 2-05-05427). The fracture mechanics analysis was reperformed with a negligible change in the result.

CMR:

None

DIC

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DOCUMENT TRANSMITTAL

TO BE COMPLETED BY ORIGINATOR

To: Energy Northwest P.O. Box 968 Richland, WA 99352 **Attention: Administrative Services M/D 964Y**	1. Transmittal No. 19408 9. Initiating Doc. No. CR 2-05-05427	2. Page 1 of 21. Priority
3. From Technical Services	4. Purchase Order/Contract No. C00318201	
5. Energy Northwest Cognizant Engineer JR Zimmerschied	14. Receipt Acknowledged Veena Duggal 8/9/05	

6. Originator Remarks
copy to TM Erwin

7. ITEM NO.	8. DOCUMENT OR DRAWING NO.	6. SHEET NO.	6. REV. NO.	10. DOCUMENT TITLE OR ITEM SUBMITTED	Submitted For 11. APPROVE	12. RELEASE	13. INFO	15. OFFICIAL DISPOS.
1	ME-02-05-07		1	Evaluation of RPV Shell Indications Identified During R17 ISI	x			
2				Calculation Summary				

TO BE COMPLETED BY ENERGY NORTHWEST

16. Energy Northwest Disposition

Manager W. [illegible] 8-8-05 [illegible] 8/10/05 for Bill LeFrancois

6. Engr. Req. Response Date ACTION PARTIES	19. REQ APPROVE	19. REQ REVIEW	20. RESPONSE APPROVE	20. RESPONSE APPROVED	20. RESPONSE DISAPPROVE	SIGNATURE AND DATE	ACTION PARTIES	19. REQ APPROVE	19. REQ REVIEW	20. RESPONSE APPROVE	20. RESPONSE APPROVED	20. RESPONSE DISAPPROVE	SIGNATURE AND DATE
5. Cognizant Engineer JR Zimmerschied	x		x			[illegible] 7/20/05	18. Design ALARA						
17. Component/System Anal.							18. Penetrations						
17. Mechanical/Civil/Stress Engineer							18. ASME Code Compliance						
17. Electrical/I&C Engineer							18. Control Sys. Failure						
18. Overall Design Verif. TM Erwin	x		X			[illegible] 7/8/05	18. Pipe Break/Missile						
18. Equip. Engineer							18. App. R/Electrical Sep.						
18. Human Factors							18. Health Safety/Fire Prot.						
18. Emergency Prep.							18. Security						
18. Environmental							18. Quality Assurance						
18. MEL Input Coord.							18. Project Manager						

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