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SEISMIC AND STRESS ANALYSIS OF LACBWR FEEDWATER PIPING SYSTEM

Prepared Under NES Project 5101 for

DAIRYLAND POWER COOPERATIVE

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COMPUTER OUTPUT - PIPESD Static and Dynamic Analysis of LACBWR Feedwater and Condensate Return Piping System.

1. SUMMARY

This report, prepared for Dairyland Power Cooperative, presents the results of seismic and stress analyses of the feedwater piping system for the LACBWR Nuclear Power Station. The seismic and stress analyses are performed in accordance with the design requirements for Class 2 piping components of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components", 1974. By providing adequate seismic restraints (snubbers) at critical locations of the feedwater system, the stresses in the piping due to a seismic event have been reduced to acceptable values. It is concluded that the stresses due to seismic, deadweight, pressure and thermal expansion loadings, combined according to the ASME Code rules for Class 2 components, satisfy the design requirements given in the Code.

2. INTRODUCTION

In response to AEC/DL's request to review the effects of an earthquake event on the LaCrosse Boiling Water Reactor, Dairyland Power Cooperative requested Gulf United Nuclear Fuels Corporation to evaluate the adequacy of the major structures and equipment to withstand seismic loadings. The seismic study performed by Gulf United (GU) Nuclear Fuels Corporation (Ref. 1) included an analysis of the main steam line which indicated that high stresses would be generated in the main steam line during a seismic event. It was also evident from these analyses that the LACBWR piping systems, in general, were not designed to accomodate horizontal accelerations, the primary earthquake induced loading condition. Anticipating the possibility of a seismically induced loss of coolant accident, it was, therefore, concluded that analyses of the major Class 1 piping systems should be performed to evaluate their structural integrity.

In order to verify that the seismic stresses are acceptable, it is necessary to show that the combined stresses in the piping system are within ASME Boiler and Pressure Vessel Code allowable values. This requires that the seismic stresses be combined with the stresses due to deadweight, pressure and thermal loadings in accordance with the ASME Code Section III rules(Ref. 2).

The rules for a Class 1 (Section III) analysis require that thermal stress and fatigue due to thermal cycling be considered. A review of the available feedwater piping system flexibility and stress analyses indicated that only thermal expansion was considered together with the pressure and deadweight loads in the original design. Consequently, it is not possible to perform a Class 1 analysis with the existing analytical data.

The existing analytical data, however, is sufficient to perform a Class 2 (Section III) analysis. Therefore, in the subject analysis, the adequacy of the feedwater piping system to withstand an earthquake event is evaluated by combining the stresses due to deadweight, pressure, thermal and seismic loadings in accordance with ASME Code requirements for the design of Class 2 components. It should be noted that the requirements of the ASME Code, Section III, for the design of Class 2 components are much more rigorous than the design requirements given in the Power Piping Code, USAS B31.1.0 (The applicable code for the LACBWR Project).

Section 3.0 of this report describes the scope of the feedwater piping system considered in the analysis. The loading criteria, design criteria and analytical methods used in the analyses are given in Sections 4.0, 5.0 and 6.0 respectively. The results of the analysis are discussed in Section 7.0 . The conclusions and recommendations are summarized in Section 8.0.

3. DESCRIPTION OF PIPING SYSTEM

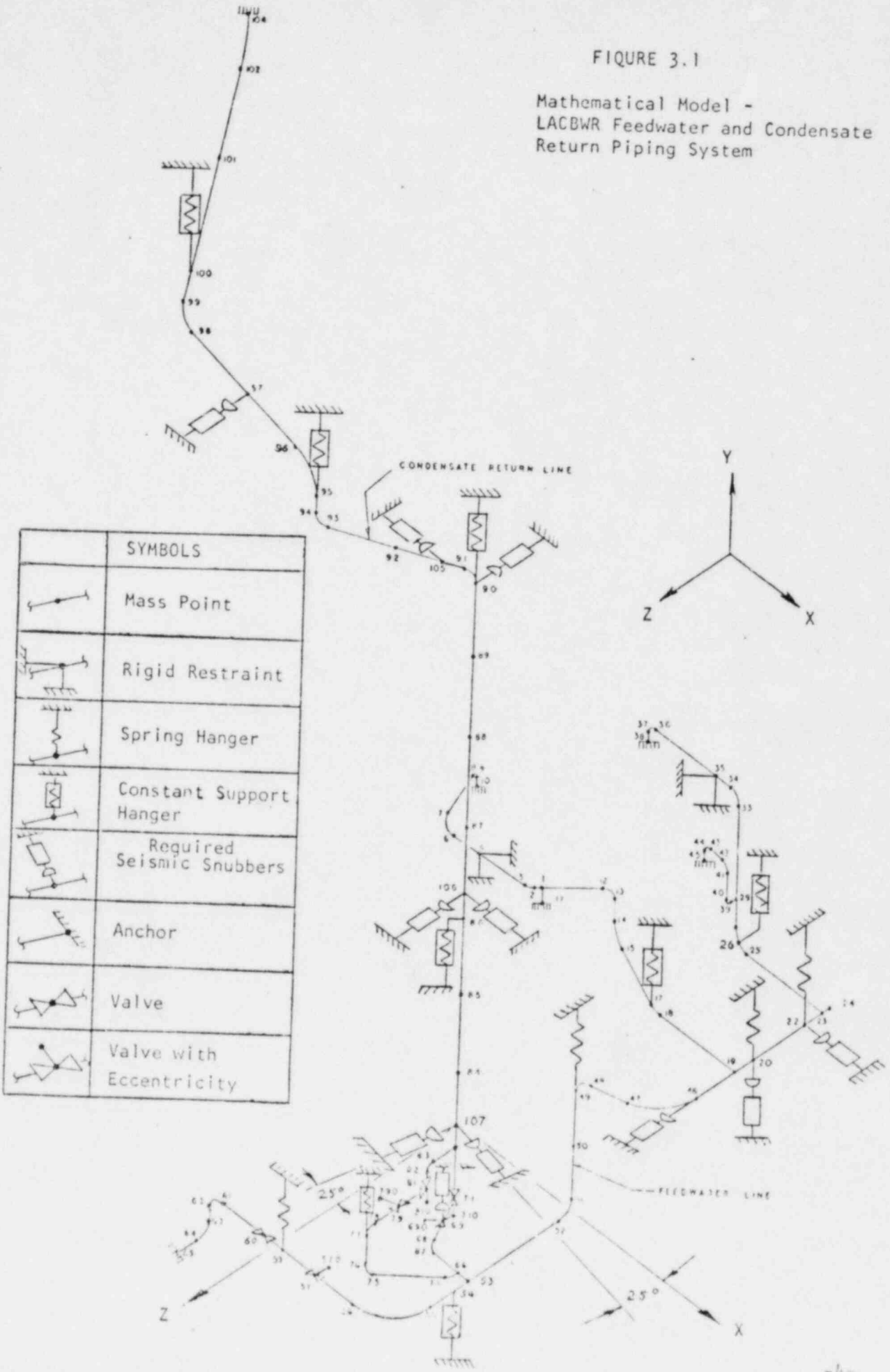
The feedwater piping system returns condensate from the turbine building and feeds it directly to the forced circulation suction header where the condensate is mixed with the recirculating coolant. Feedwater enters the containment building through an 8" line, passes through an 8" check valve and an 8" gate valve and flows into a manifold section. Two 6" lines connected to this manifold enter the biological shield and feed the water directly to the 16" forced-circulation suction header through four 4" nozzles. The condensate return line from the shutdown condenser is included in the analysis in order to account for its effects on the feedwater line. Condensate water from the shutdown condenser flows by gravity from a 6" to a 4" line and then through a parallel system of 4" control, check, and gate valves before entering the 8" feedwater line through a branch connection.

The governing design specification used in the analysis of the feedwater piping system is given in Reference 3. The piping arrangement and piping suspension (hangers, etc.) characteristics have been taken from the drawings listed in Reference 4. Piping properties have been taken from the information given in Reference 5 and from the piping specification (Reference 3). This information is summarized in Table A-1 of Appendix A.

An isometric drawing showing the feedwater piping system as analyzed, including the suspension system and recommended seismic snubbers, is given in Figure 3.1.

FIQURE 3.1

Mathematical Model -
LACBWR Feedwater and Condensate
Return Piping System



4. LOADING CRITERIA

The load cases which must be considered in performing a Class 2 stress analysis include: dead loads and sustained mechanical loads, internal pressure, thermal expansion loading, seismic inertia loads and seismic anchor movement loading. The static and dynamic load cases are summarized in Tables A-III and A-IV of Appendix A.

4.1 Dead Weight and Other Sustained Mechanical Loads (Static Load Case 1)

The deadweight of the piping system is calculated assuming the system to be insulated and filled with water. The weight of valves, valve operators, and branch piping are included in the analysis. Valve weights and dimensions are taken from vendor drawings and specifications supplied by DPC and are given in Table A-II of Appendix A. Sustained loads imposed on the piping system by constant load hangers are also considered in the dead weight analysis. These loads are taken from Ref. 4 drawings.

4.2 Internal Pressure (Static Load Cases 2 and 3)

System normal operating pressure, Load Case 2, and peak pressure, Load Case 3, used in the analysis are taken from Refs. 3 and 6. A value of 1300 psia for operating pressure and 1415 psia for peak pressure are used for the condensate return and main feedwater system. An operating pressure of 1350 psia and a peak pressure of 1615 psia are used for the feedwater piping between the containment vessel and the 8" gate valve.

4.3 Thermal Loading (Static Load Case 4)

The thermal expansion stresses are based on the thermal loading for the normal operating condition. A normal operating temperature of 547°F is used for the condensate return and main feedwater piping, while a temperature of 295°F is used for the feedwater piping between the containment vessel and the 8" gate valve (Reference 9).

Thermal anchor movements at the nozzle connections to the recirculation suction line manifold are taken from the NES recirculation line thermal analysis (Ref. 8). Thermal anchor movement at the shutdown condenser connection is taken from Ref. 9.

4.4 Seismic Loading

A dynamic analysis of the piping system is performed using the response spectrum method of analysis (Section 6.4). Two seismic loading events are considered: the safe shutdown earthquake (SSE), and the operating basis earthquake (OBE). The established design criteria (Ref. 7, Reg. Guide 1.48, May 1973) for Class 2 analysis considers the OBE (or 1/2 SSE) to be the normal and upset condition while the SSE is considered the faulted condition.

Seismic inertia loading is imposed on the piping system in the form of seismic acceleration spectra which were derived for the LACBWR plant (Ref.1). The horizontal acceleration spectrum used for the feedwater line is that corresponding to the reactor vessel at an elevation of 664.5 ft. The vertical response spectrum for the SSE loading is taken as 2/3 of the horizontal SSE ground response spectrum assuming no amplification of vertical response in the structure. For the operating basis earthquake the vertical piping response spectrum is taken as 1/2 of the SSE vertical response spectrum. Damping values used are 1% for the OBE and 2% for the SSE.

The horizontal spectra in either the global X- direction (Dynamic Load Cases 8 and 10) or the global Z- direction (Dynamic Load Cases 9 and 11) are applied simultaneously with the vertical spectra in the global Y- direction. Load cases 8 and 9 represent the operating bases earthquake while 10 and 11 represent the SSE earthquake. The applicable response spectra used in the analysis for dynamic load cases are shown in Table A-V of Appendix A.

Seismically induced anchor movements (Static Load Cases 6,7,12, and 13) for points 10,11, 38, 45 and 104 were estimated by calculating low frequency displacements from the containment vessel response spectra at the different anchor point elevations.

5. STRESS ACCEPTANCE CRITERIA

The requirements for acceptability of a Class 2 piping system are given in AEC regulatory position 8 of Reference 7 and Section NC-3611 of Reference 2. Calculated stresses resulting from specified load combinations must meet the stress limits of equations 8 through 11 (Section 6.5).

5.1 Normal Operating Conditions

Under normal operating conditions, the combined stresses due to design pressure, weight, and other sustained loads (load Cases 1 and 2) must not exceed the baisc material allowable stress at maximum temperature, S_h, and the requirements of Equation 8, Section 6.5. Additionally, either the stress range due to thermal expansion and seismic anchor movements (Load Cases 4 and 6) as calculated by Equation 10, Section 6.5, must not exceed the allowable expansion stress range S_A (Reference 2), or the combined stresses due to design pressure, weight, other sustained loads and the stress range due to thermal expansion (Load Cases 1, 2, 4 and 6 or 7) must not exceed the sum of S_A and S_h as required by Equation 11, Section 6.5.

5.2 Upset Conditions

The requirements for operation under upset conditions include compliance with the requirements of Equations 8, 10 and 11 as described above as well as Equation 9, Section 6.5. Equation 9 requires that the combined stresses produced by peak pressure (Load Case 3), live and dead loads (Load Case 1), and those produced by occasional loads -- in this analysis defined as the OBE earthquake -- (Load Cases 8 and 9), must not be greater than 1.2 times the allowable stress value S_h.

5.3 Faulted Conditions

During faulted conditions, the requirements of Equation 9 must be met using a stress limit of 1.8 S_h. For the purpose of satisfying this criteria, the faulted conditions are specified as peak pressure loads (Load Case 3), live and dead loads (Load Case 1), the SSE seismic inertia loadings (Load Cases 1 and 11) and the seismic anchor movement loads associated with the SSE (Load Cases 12 and 13).

6. ANALYTICAL METHODS

6.1 Mathematical Model

In order to perform static, dynamic and stress analyses, the continuous piping system is mathematically modeled as an assembly of elastic structural elements interconnected at discrete nodal points(Figure 3.1). Nodal points are located at all points of interest in the piping system such as elbows, valves,anchorages,hangers,tee intersections, load points, all structural and material discontinuities, etc. This three dimensional multidegree-of-freedom model of the piping system is attached to the "ground" (structure) by means of rigid hangers, support springs, hydraulic snubbers and anchors. Stiffness characteristics of structural elements are related to the moment of inertia and the axial and effective shear area of the pipe cross section. The stiffness characteristics of the elbows and tee connections are modified to account for local deformation by using the flexibility factors given in the ASME Code (Ref. 2).

For the seismic analysis the distributed mass of the piping system is lumped at the system nodal points. Masses are lumped so that the lumped mass, multi-degree-of-freedom model represents the dynamic characteristics of the piping system. In order to reduce the number of dynamic degrees-of-freedom, only translational degrees-of-freedom are considered at each mass point (the masses associated with the rotational degrees-of-freedom are set to zero). This assumption has been shown to be completely satisfactory for accurate analysis of seismic response. Special items such as valves and actuators are modeled by lumping their masses at an appropriate offset from the center-line of the piping system.

6.2 Static Load Analysis

The static load analysis involves the application of the following loading conditions and their combinations:

- Design Pressure
- Gravity Loading (dead weight) and Sustained Mechanical Loads
- Support Displacement
- Thermal Expansion

For the pressure loadings, the hoop and longitudinal stresses in the affected piping are calculated using the formulae given in the Code (see Section 6.5).

For the deadweight, support displacement, or thermal expansion loading conditions the following equations of equilibrium written in matrix form are solved:

$$KU = P \qquad (1)$$

where:

K = System stiffness matrix

U = Nodal point displacement vector

P = External forces, dead weight or equivalent thermal load vector.

The system stiffness matrix is obtained from element stiffness matrices using direct stiffness methods. The unknown nodal displacements U are obtained as follows:

$$U = K^{-1}P \qquad (2)$$

The inversion of the stiffness matrix is performed using the Gauss-Siedel technique.

From the nodal displacements U, the member internal forces are determined using the member stiffness matrix. Finally the member internal forces are used in calculating the stresses.

6.3 Eigenvalue Analysis

The eigenvalues (natural frequencies) and the eigenvectors (mode shapes) for each of the natural modes of vibration are calculated by solving the following frequency equation:

$$\left[K - \omega_n^2 M\right] \left\{\Phi_n\right\} = \left\{0\right\} \qquad (3)$$

where:

ω_n = Natural angular frequency for the n^{th} mode

M = System mass matrix

Φ_n = Mode shape vector for the n^{th} mode

0 = Null vector

The eigenvalue/eigenvector extraction is performed using the Householder-QR technique.

6.4 Dynamic (Seismic) Load Analysis

Considering only translational degrees of freedom and assuming viscous (velocity proportional) form of damping, the equation of motion in matrix form can be expressed as follows:

$$M(\ddot{U}_t + \ddot{U}_{gt}) + C\dot{U}_t + KU_t = 0 \qquad (4)$$

where:

$\ddot{U}_t$ = Relative acceleration time history vector

$\ddot{U}_{gt}$ = Ground acceleration time history vector

C = Damping matrix

$\dot{U}_t$ = Velocity time history vector

U_t = Relative displacement time history vector

Rearranging equation (4)

$$M\ddot{U}_t + C\dot{U}_t + KU_t = -M\ddot{U}_{gt} = P_{eff} \qquad (5)$$

To uncouple equation (5), assume

$$U = \Phi Y_t$$

where:

Φ = Characteristic free vibration mode shapes matrix.

Y_t = Generalized coordinate displacement time history vector.

Pre-and post-multiplying equation (5) by the transpose of Φ and by Φ respectively and using orthogonality conditions, the following uncoupled equations of motion are obtained:

$$\ddot{Y}_{nt} + 2\omega_n \lambda_n \dot{Y}_{nt} + \omega_n^2 Y_{nt} = M_n^{*-1} R_n \ddot{U}_{gt} \qquad (6)$$

where:

Y_{nt} = Generalized displacement coordinate time history for n^{th} mode

λ_n = Damping ratio for the nth mode expressed as percent of critical damping

M_n^* = Generalized mass for the n^{th} mode

$= \Phi_n^T M \Phi_n = M_i \Phi_{in}^2$

The mode shape Φ_n is normalized such that $M_n^* = 1$

R_n = Participation factor for the n^{th} mode

$= \Phi_n^T M I \quad = \sum M_I \Phi_{in}$

I = Column vector whose elements are generally unity

The solution for the differential equation (6) is given by the Duhamel Integral

$$Y_{nt} = \frac{R_n}{M_n^* \omega_n} \int_o^t \ddot{U}_{gt}\, e^{-\lambda_n \omega_n (t-\tau)} \sin \omega_n (t-\tau)\, d\tau$$

Using the response spectrum method of analysis, the maximum values of the generalized response for each mode is given by:

$$\ddot{Y}_{n\,max} = \frac{R_n\, S_{an}}{M_n^*} \qquad (7)$$

where:

$\ddot{Y}_{n\,max}$ = Maximum generalized coordinate acceleration response for the n^{th} mode.

S_{an} = Spectral acceleration value for the n^{th} mode (from the applicable response spectrum curve)

From the maximum generalized coordinate response, the maximum acceleration ($\ddot{U}_{n\,max}$) and maximum inertia forces ($F_{n\,max}$) at each mass point are given by:

$$\ddot{U}_{n\,max} = \ddot{Y}_{n\,max}\, \Phi_{in}$$

$$F_{n\,max} = M_n\, \ddot{U}_{n\,max}$$

The inertia forces ($F_{n\,max}$) for each of the system natural modes are applied as external static forces, and the piping system response (displacements, member internal forces and stresses) are calculated using the procedure described in Section 4.2. Total system response is then obtained by combining the individual modal response values by the square-root of the sum of the squares method; lower modes having large contribution to the response (all modes having natural frequency under 30 cycles per second) are considered and higher modes with negligible participation are neglected.

6.5 Stress Analysis

The design requirements of the ASME Code for Class 2 piping systems are satisfied when the calculated stresses in the piping system due to thermal expansion, weight, and other sustained and occasional loads are combined in accordance with and meet the limitations of, equations 8,9,10,and 11 of Subsection NC-3652 of Reference 8. These requirements are described below:

A. Sustained Loads

The effects of pressure weight and other sustained mechanical loads must meet the requirements of equation (8).

$$S_{SL} = \frac{PDo}{4t_n} + \frac{0.75iM_A}{Z} \leq 1.0S_h \qquad (8)$$

where:

P = Internal design pressure, psi

D_o = Outside diameter of pipe, in.

t_n = Nominal wall thickness, in.

M_A = Resultant moment loading on cross section due to weight and other sustained loads, in.(See NC-3652.4, Ref.8)

Z = Section modulus of pipe, $in.^3$ (See NC-3652.4, Ref.8)

i = Stress intensification factor (NC-3673.2 (b), Ref.8) The product of 0.75i shall never be taken as less than 1.0

S_h = Basic material allowable stress at design temperature

B. Occasional Loads

The effects of pressure, weight, other sustained loads and occasional loads including earthquake must meet the requirements of Equation (9).

$$S_{OL} = \frac{P_{max}D_o}{4t_n} + \frac{0.75i\ (M_A + M_B)}{Z} \leq 1.2S_h \qquad (9)$$

where:

P_{max} = Peak pressure, psi

M_B = Resultant moment loading on cross section due to occasional loads such as earthquake loads

C. Thermal Expansion

The requirements of either Equation (10) or Equation (11) must be met.

1. The effects of thermal expansion must meet the requirements of Equation (10)

$$S_{TE} = \frac{iM_C}{Z} \leq S_A \qquad (10)$$

where:

M_C = Range of resultant moments due to thermal expansion. Also include moment effects of anchor displacements due to earthquake if anchor displacement effects were omitted from Equation (9)

S_A = Allowable stress range for expansion stresses (NC-3611.2,Ref.8)

2. The effects of pressure, weight, other sustained loads and thermal expansion shall meet the requirements of Equation (11)

$$S_{TE} = \frac{PD_o}{4t_n} + 0.75i\frac{M_A}{Z} + \frac{iM_C}{Z} \leq (S_h + S_A) \qquad (11)$$

The above mentioned static, dynamic and stress analyses are carried out using the PIPESD computer code. PIPESD was developed by URS/John A. Blume and Associates, Engineers, San Francisco, California and has been extensively used in the seismic and stress analysis of piping system for a number of nuclear power plants. PIPESD is available to Nuclear Energy Services through the Control Data Corporation CYBERNET Service.

7. DISCUSSION OF RESULTS

A preliminary seismic analysis of the feedwater piping system with its existing support configuration indicated that the stresses due to the operating basis earthquake would be substantially greater than the allowable stress values at critical locations (particularly in the vicinity of nodes 1,23, 29, 45,53 and 65). In addition, this preliminary analysis indicated that, in the relatively long condensate return line, the lateral deflections due to the seismic inertia loads would be of the order of 5 to 6 inches. In order to reduce the seismic stresses and deflections to acceptable values eleven seismic snubbers were located at critical locations in the piping system as shown in Figure 3.1. The results presented in this report represent the response of this modified system configuration.

The natural frequencies for the first 42 modes of vibration of the piping system are summarized in Table 7-1, from which it may be seen that the piping system is a fairly flexible (low frequency) system.

The deflections at each node point due to the various load cases are summarized in Table B-I, pages B-1 through B-10 of Appendix B. The maximum deflection due to the SSE seismic inertia loading (Load Case 10) is 0.46 inches at node point 88. For a flexible piping system this deflection should be acceptable. The maximum deflection due to thermal expansion (Load Case 4) is 3.3 inches at node 89. Table B-II, pages B-11 through B-14 of Appendix B, summarizes the elastic support reaction forces. The seismic restraints and anchors should be designed (sized) using these restraint forces. The maximum reaction force in the seismic restraints is 1041 pounds (Load Case 11).

The results of the detailed stress analysis in accordance with the requirements of Subarticle NC 3652 of the ASME Code for the Class 2 piping system are given in Table B-III, pages B-15 through B-41 of Appendix B. Figures No. 7.1 through 7.9 indicate node points with maximum stresses or stresses exceeding 10.0 ksi for specified Class 2 load conditions. From these stress results summaries, it may be seen that code allowable stress values are not exceeded.

TABLE 7-1

NATURAL FREQUENCIES OF VIBRATION

Mode No.	Frequency (CPS)	Mode No.	Frequency (CPS)
1	2.85	22	15.12
2	3.52	23	15.18
3	3.83	24	15.64
4	4.14	25	16.16
5	4.45	26	16.50
6	5.08	27	17.10
7	5.39	28	18.11
8	5.90	29	18.77
9	6.66	30	20.03
10	7.30	31	20.24
11	7.67	32	20.61
12	8.23	33	22.10
13	9.04	34	23.09
14	10.86	35	25.45
15	11.56	36	25.54
16	11.80	37	25.85
17	12.66	38	26.77
18	12.95	39	28.14
19	13.73	40	29.74
20	13.81	41	29.98
21	14.52	42	32.42

FIGURE 7.1

COMPLIANCE WITH ASME CODE EQUATION 8

Normal Operating Conditions

Applied Loads				
Design Pressure Dead Weight and Other Sustained Mechanical Loads				
Allowable Stress,	$1.0\ S_h$	=	15.9	KSI
Maximum Stress at Node	53	=	7.5	KSI

(Stresses Greater Than 6.0 KSI Indicated)

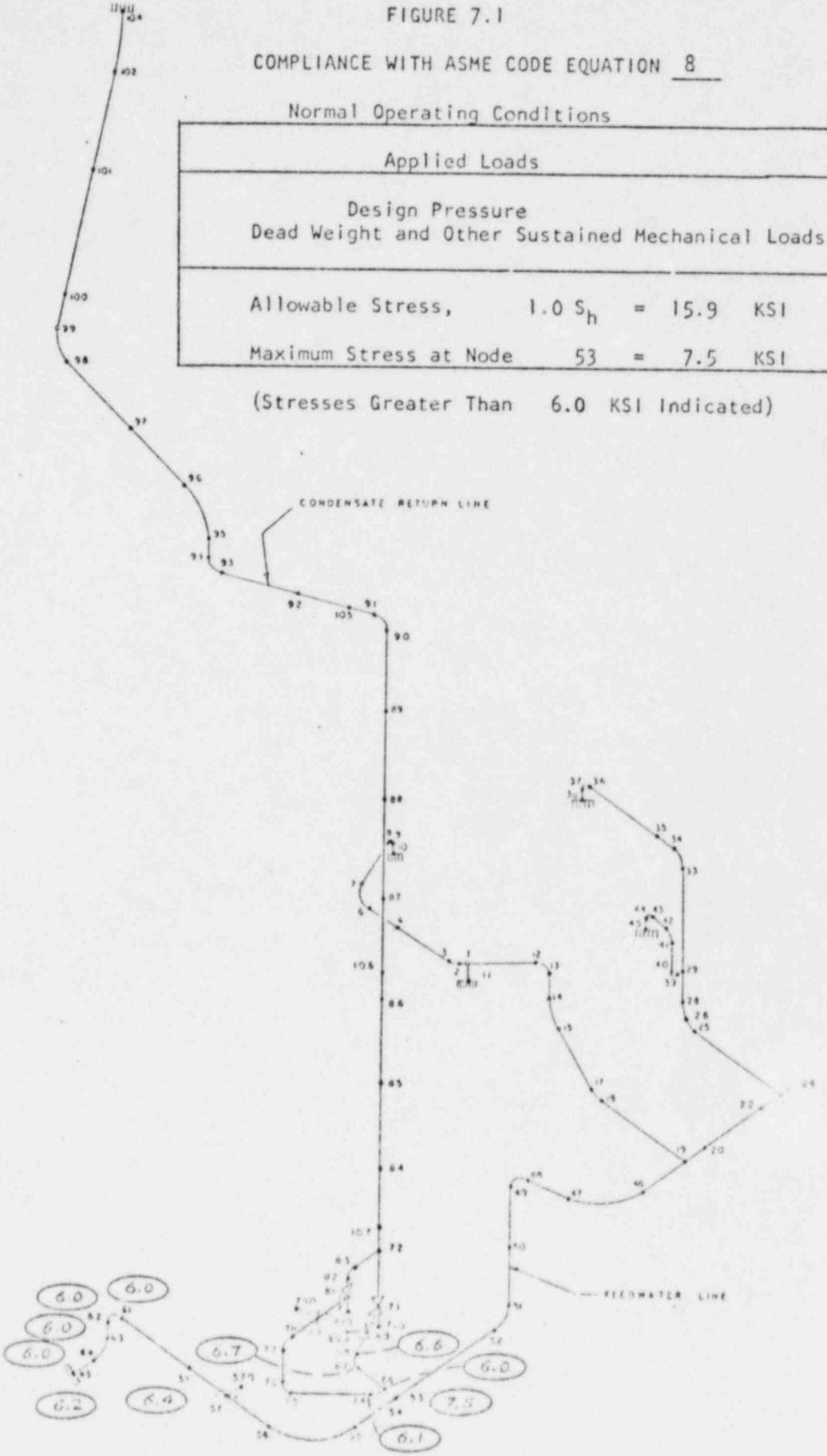


FIGURE 7.2

COMPLIANCE WITH ASME CODE EQUATION 9

Upset Conditions

Applied Loads
Peak Pressure Dead Weight and Other Sustained Mechanical Loads X +Y Earthquake (1/2 SSE)
Allowable Stress, $1.2\ S_h$ = 19.1 KSI
Maximum Stress at Node 53 = 14.7 KSI

(Stresses Greater Than 10.0 KSI Indicated)

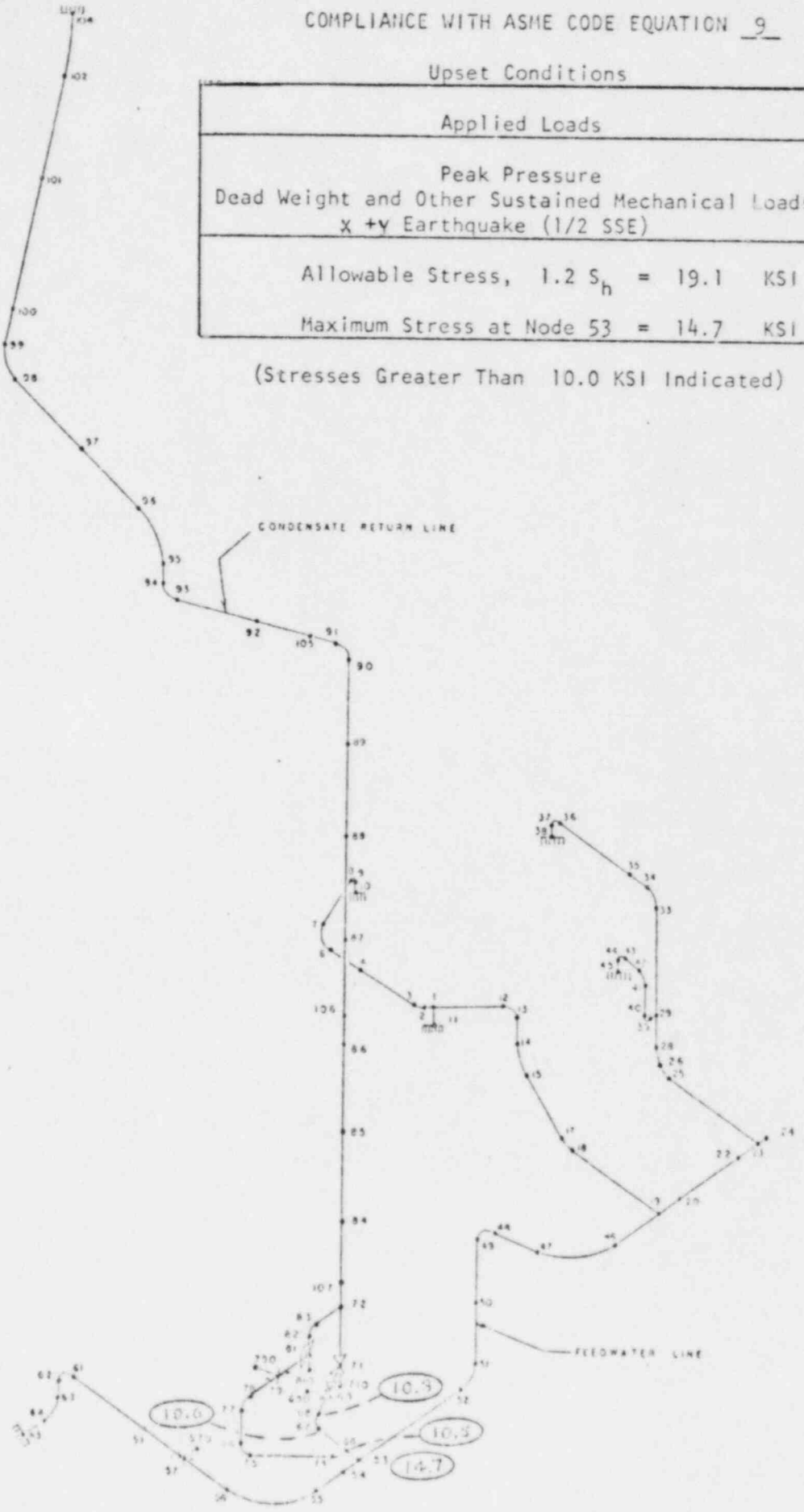


FIGURE 7.3

COMPLIANCE WITH ASME CODE EQUATION 9

Upset Conditions

Applied Loads
Peak Pressure Dead Weight and Other Sustained Mechanical Loads Z + Y Earthquake (1/2 SSE)
Allowable Stress, $1.2\ S_h$ = 19.1 KSI Maximum Stress at Node 53 = 14.1 KSI

(Stresses Greater Than 10.0 KSI Indicated)

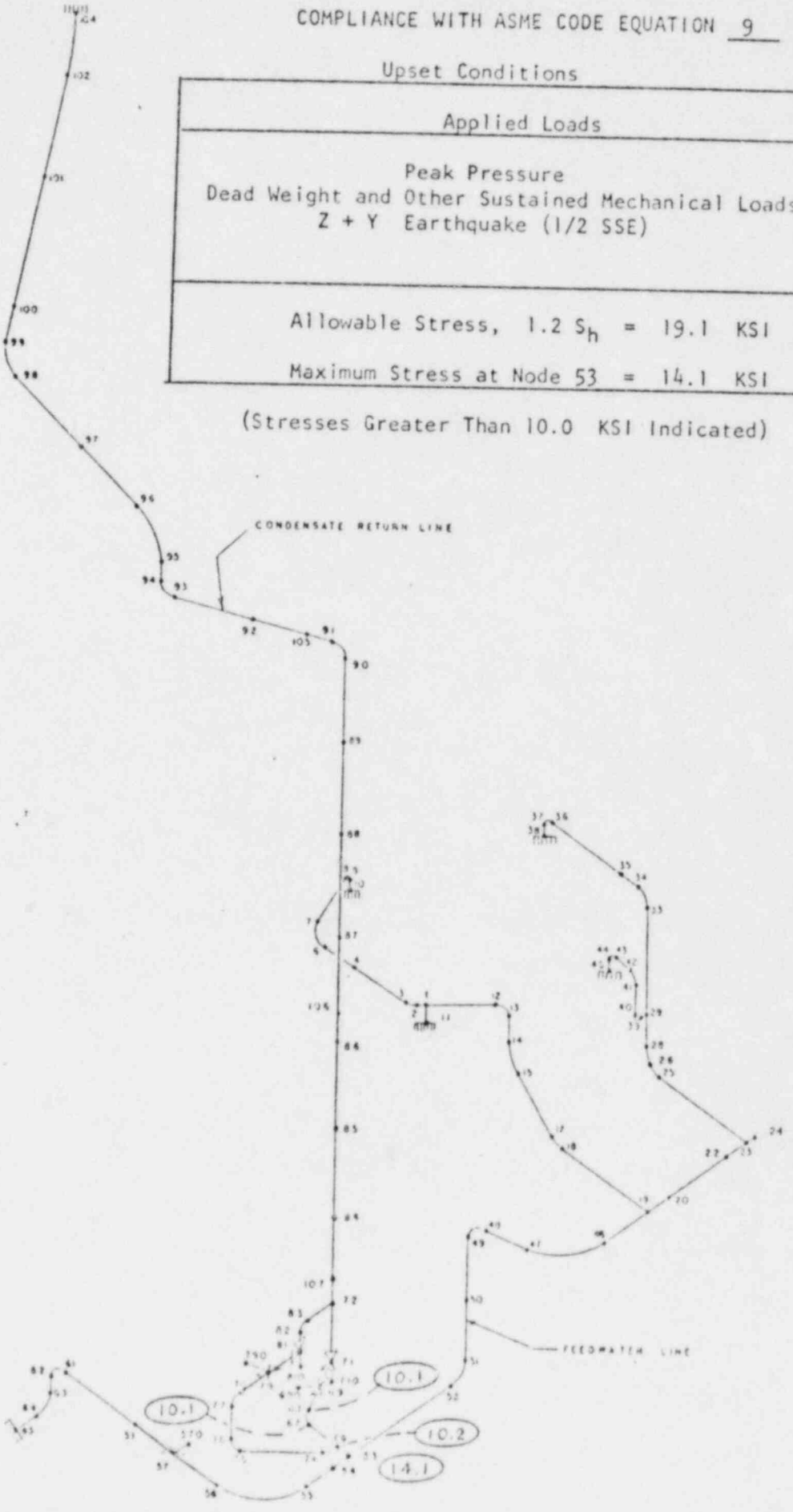


FIGURE 7.4

COMPLIANCE WITH ASME CODE EQUATION 10

Normal Operating and Upset Conditions

Applied Loads
Design Temperature Thermal Anchor Movements Seismic Anchor Movements (X-direction)
Allowable Stress, S_A = 23.4 KSI
Maximum Stress at Node 29 = 12.5 KSI

(Stresses Greater Than 10.0 KSI Indicated)

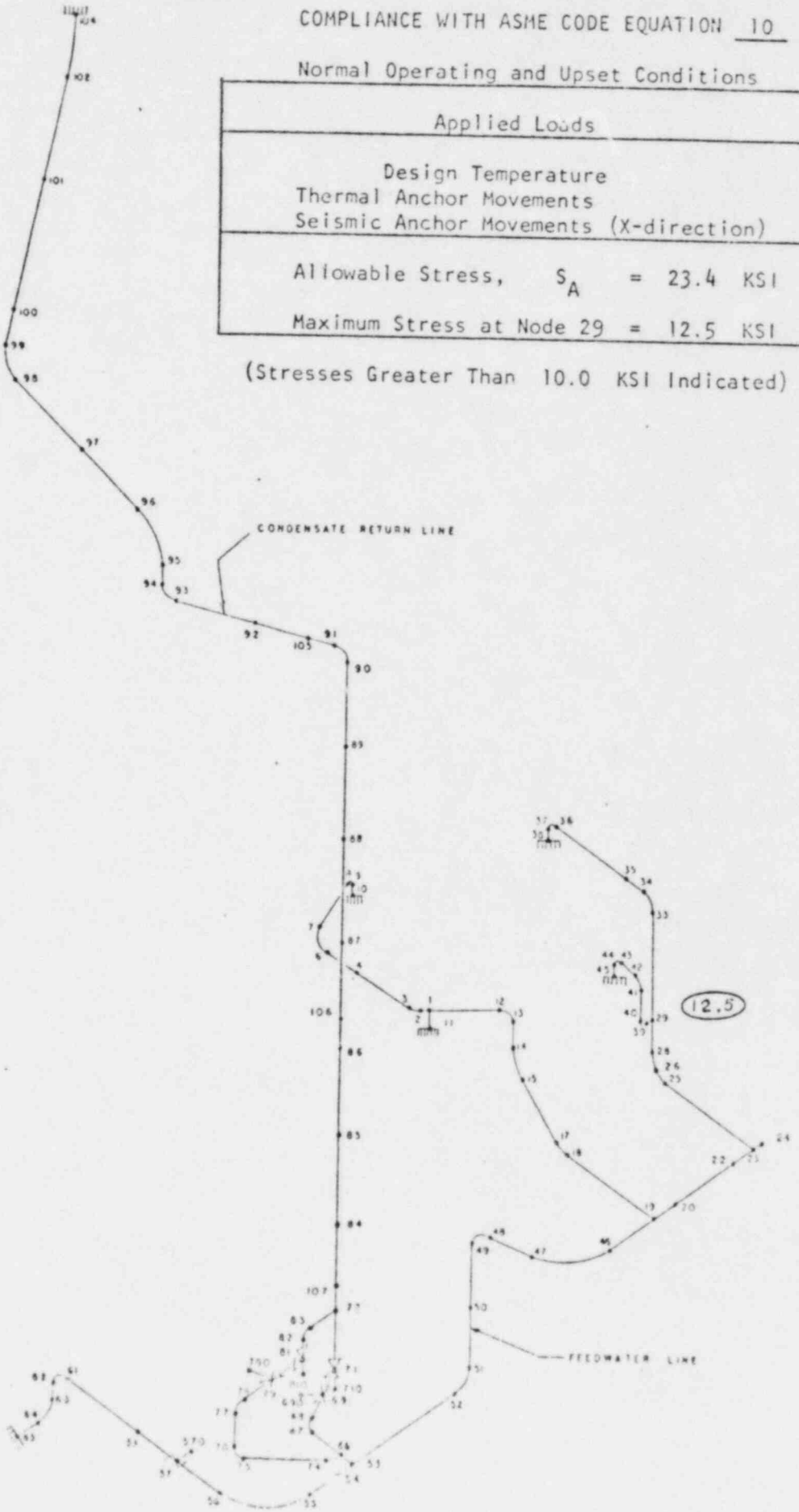


FIGURE 7.5

COMPLIANCE WITH ASME CODE EQUATION 10

Normal Operating and Upset Conditions

Applied Loads
Design Temperature Thermal Anchor Movements Seismic Anchor Movements (Z-direction)
Allowable Stress, S_A = 23.4 KSI
Maximum Stress at Node 29 = 17.0 KSI

(Stresses Greater Than 10.0 KSI Indicated)

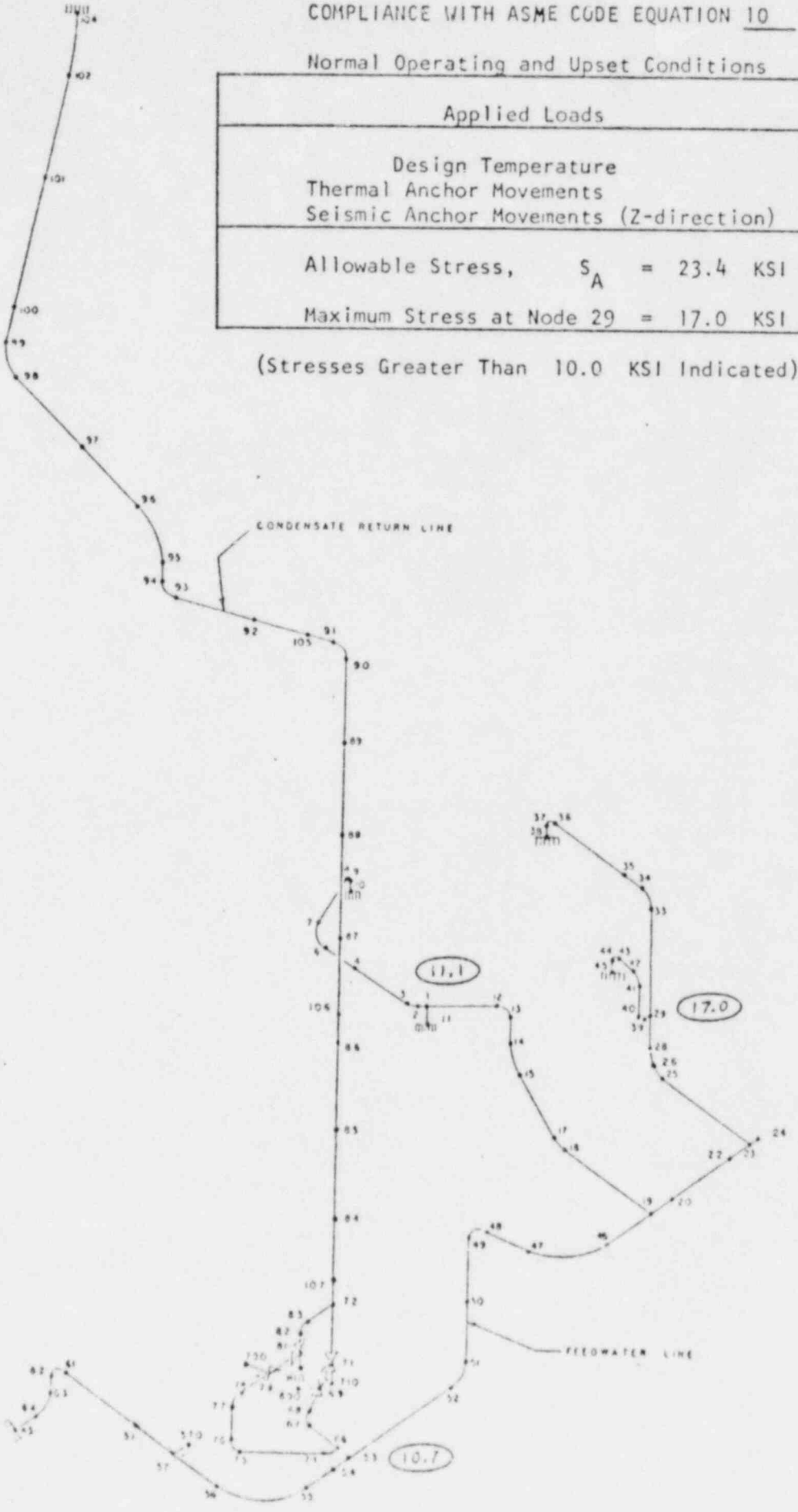


FIGURE 7.6

COMPLIANCE WITH ASME CODE EQUATION 11

Normal Operating and Upset Conditions

Applied Loads
Design Pressure and Temperature Dead Weight and Other Sustained Mechanical Loads Thermal Anchor Movements Seismic Anchor Movements (X-direction)
Allowable Stress, $S_h + S_A$ = 39.3 KSI Maximum Stress at Node 29 = 17.1 KSI

(Stresses Greater Than 10.0 KSI Indicated)

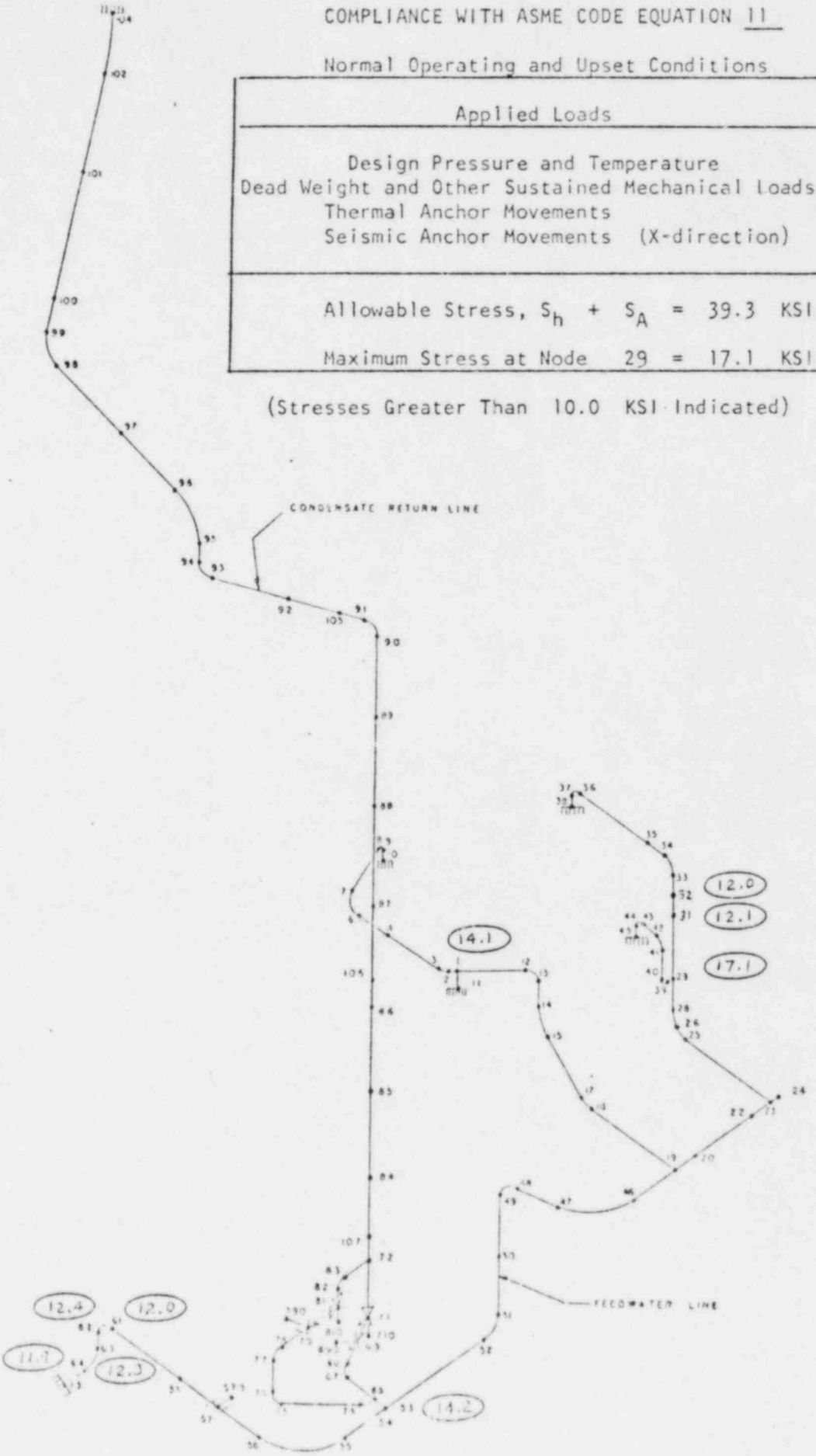


FIGURE 7.7

COMPLIANCE WITH ASME CODE EQUATION 11

Normal Operating and Upset Conditions

Applied Loads
Design Pressure and Temperature Dead Weight and Other Sustained Mechanical Loads Thermal Anchor Movements Seismic Anchor Movements (Z-direction)
Allowable Stress, $S_h + S_A$ = 39.3 KSI Maximum Stress at Node 29 = 21.6 KSI

(Stresses Greater Than 10.0 KSI Indicated)

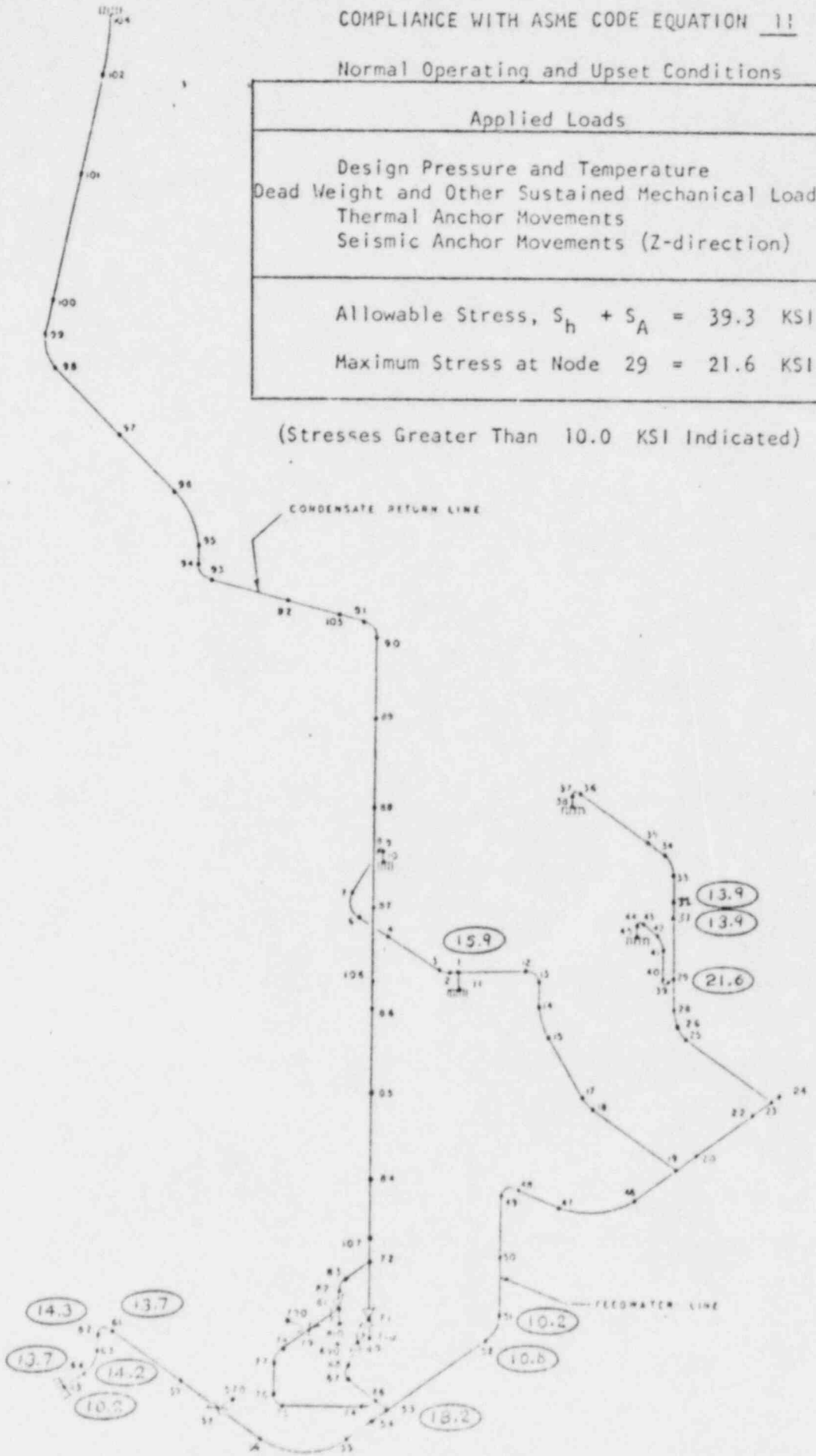


FIGURE 7.3

COMPLIANCE WITH ASME CODE EQUATION 9

FAULTED Conditions

Applied Loads
Peak Pressure Dead Weight and Other Sustained Mechanical Loads X + Y Earthquake (SSE) Seismic Anchor Movements (X-direction, SSE)
Allowable Stress, $1.8\ S_h$ = 28.6 KSI Maximum Stress at Node 53 = 17.6 KSI

(Stresses Greater Than 10.0 KSI Indicated)

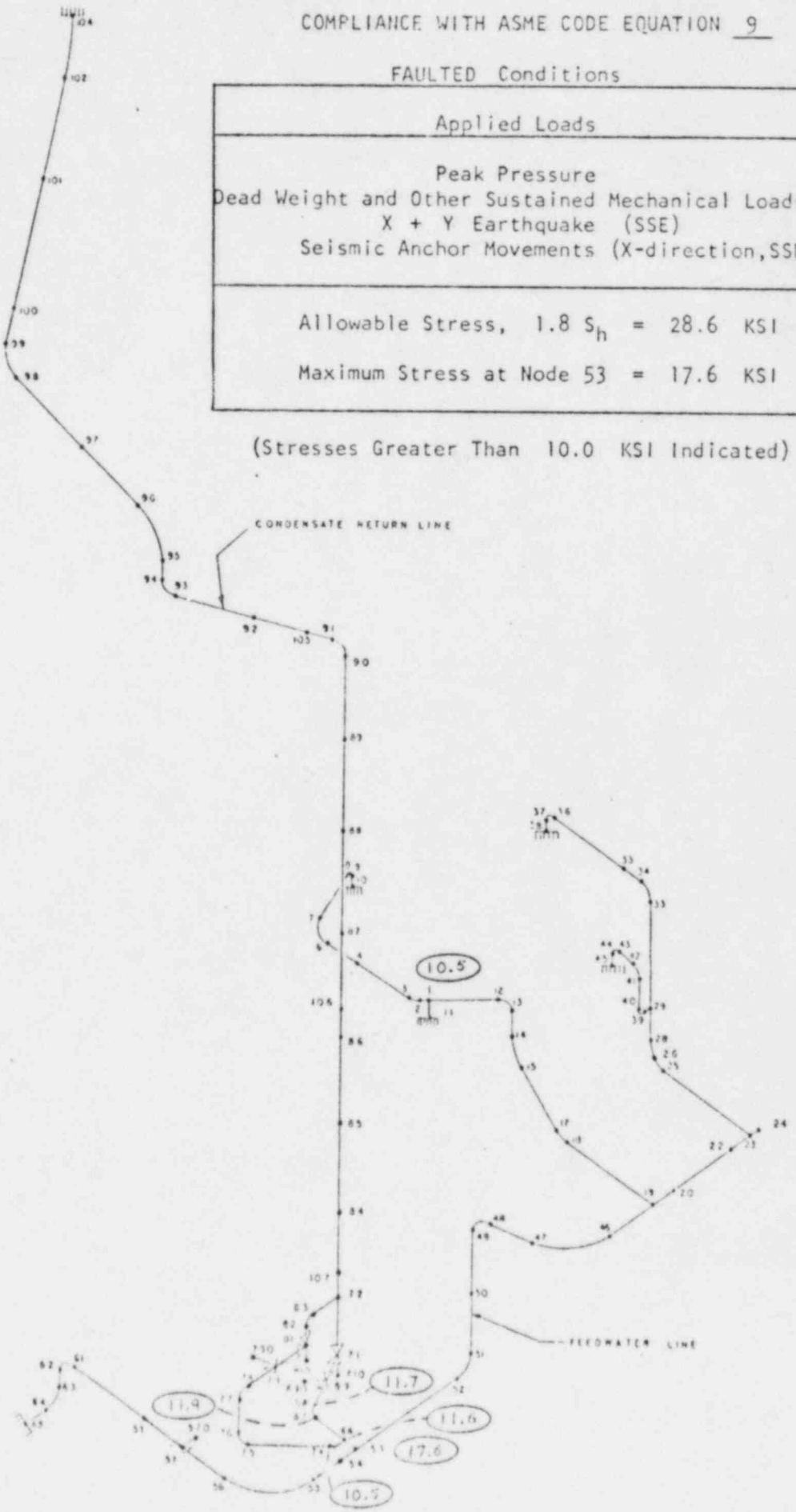


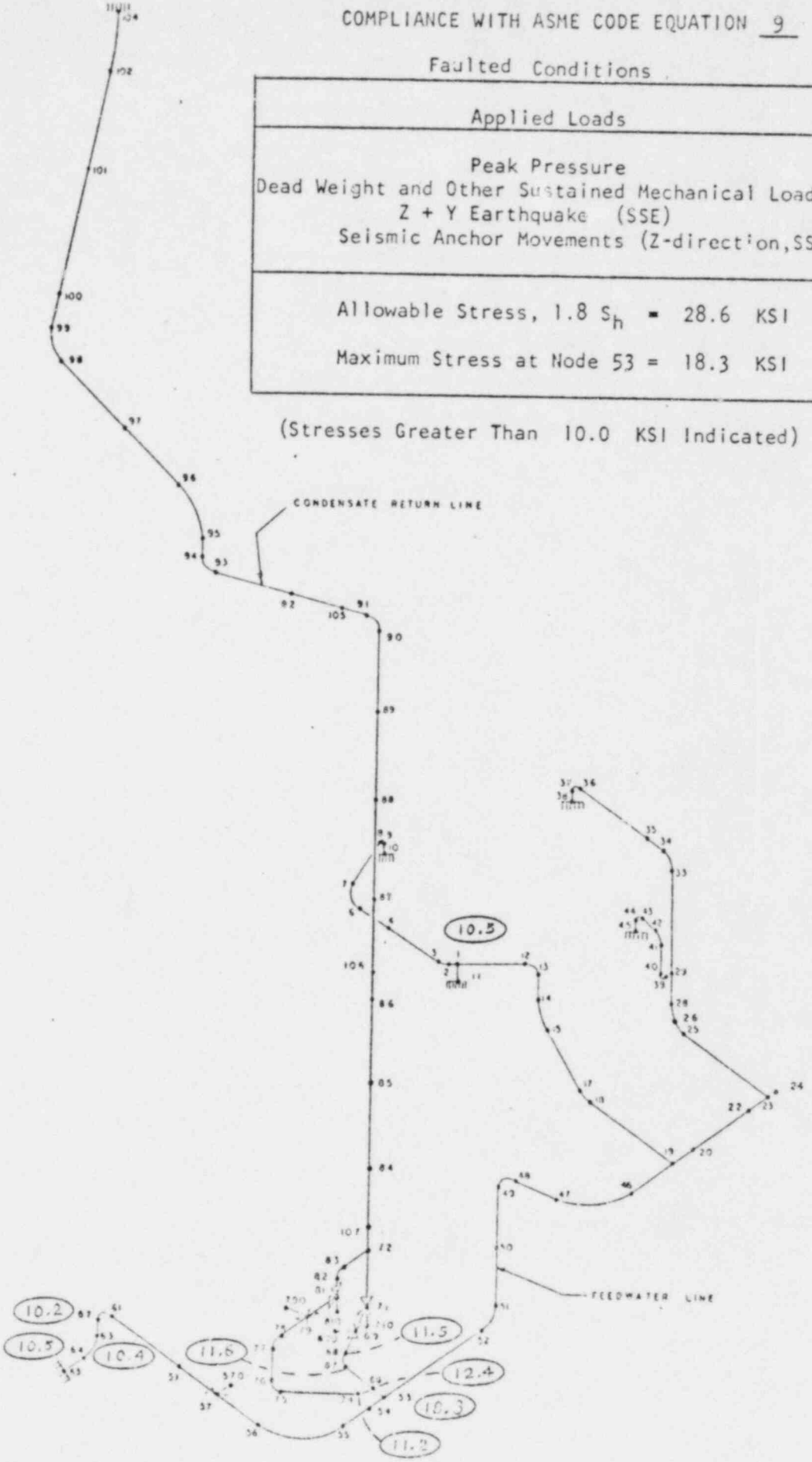
FIGURE 7.9

COMPLIANCE WITH ASME CODE EQUATION 9

Faulted Conditions

Applied Loads
Peak Pressure Dead Weight and Other Sustained Mechanical Loads Z + Y Earthquake (SSE) Seismic Anchor Movements (Z-direction, SSE)
Allowable Stress, 1.8 S_h = 28.6 KSI Maximum Stress at Node 53 = 18.3 KSI

(Stresses Greater Than 10.0 KSI Indicated)



8. CONCLUSION AND RECOMMENDATIONS

1. The existing support system of the LACBWR feedwater and condensate return piping system is not adequate to withstand the specified seismic events.

2. The results of the subject analysis, which includes effects of 11 additional seismic restraints, indicate that the deflections of the feedwater and condensate return piping system, due to dead weight, thermal expansion and seismic loading are nominal. In addition, the stresses resulting from these loadings, as calculated and combined in accordance with the rules given in Subarticle NC-3652 of Section III of the ASME Code (Ref.2), satisfy the design requirements for Class 2 piping systems.

3. It is therefore recommended that the feedwater and condensate return piping system be provided with eleven seismic restraints at the locations indicated in Figure 3.1. The seismic restraints and their attachments should be oriented as shown in Figure 3.1 and designed using the support reaction forces and node displacements given in Appendix B of this report.

9. REFERENCES

1. Gulf United Services Report No.SS-1162 "Seismic Evaluation of the LaCrosse Boiling Water Reactor", dated January 11, 1974.

2. ASME Boiler and Pressure Vessel Code, Section III, Division 1, 1974 Edition, Nuclear Power Plant Components.

3. Sargent and Lundy Engineers "Specification for Piping System-LaCrosse Boiling Water Reactor" LACBWR #256.

4. Sargent and Lundy Engineers "LACBWR" Project Drawing Nos.41-503374, 503375, 503376.

5. United Nuclear Corporation "Review of LACBWR Feedwater Nozzle and Recirculation Piping Stress Analyses" Report, dated October 1970.

6. Allis-Chalmers, "LaCrosse Boiling Water Reactor Safeguards Report Volume I and II; LACBWR #283, dated August, 1967.

7. U.S. Atomic Energy Commission - Regulatory Guide 1.48, May 1973.

8. Nuclear Energy Services Report No. 81A0086 "Seismic and Stress Analysis of LACBWR Recirculation Piping System", dated June 20,1975.

9. Sargent and Lundy Engineers, "Piping Flexibility Analysis for LACBWR Project", dated October 1965.

APPENDIX A

LACBWR FEEDWATER PIPING ANALYSIS

ANALYTICAL INPUT DATA

TABLE A-1 - Pipe Data

Run No.	From Point	To Point	O.D. (in.)	Wall Thick.(in.)	Matl. ASTM	Fluid	Wt.of Pipe and Fluid (lb./in.)	Wt.of Insul. (lb./in.)	Design Temp. (°F)	Design Press. (psia)	Elastic Modulus (psi) $\times 10^{-6}$
1	1	11	4.500	.337	A376 TYPE 304	WATER	1.66	0.45	547	1300	25.8
1	3	10	4.500	.337			1.66	0.45	547	1300	25.8
1	3	19	6.625	.562			3.89	0.71	547	1300	25.8
2	23	30	6.625	.562			3.89	0.71	547	1300	25.8
2	30	38	4.500	.337			1.66	0.45	547	1300	25.8
2	29	45	4.500	.337			1.66	0.45	547	1300	25.8
3	24	57	8.625	.593			5.81	0.85	547	1300	25.8
4	57	65	8.625	.500			5.27	0.85	295	1380	27.1
5	53	94	4.500	.337			1.66	0.45	547	1300	25.8
5	94	104	6.625	.562			3.89	0.71	547	1300	25.8

TABLE A-II - Valve Weights

Valve	Node Location	Total Weight, Lbs.	Eccentric Weight, Lbs.	Eccentricity, In.
8" Gate	57-570	810	405	18
8" Check	60	474	0	0
4" Check	69	156	0	0
4" Check	79	156	0	0
4" Gate	69-690	165	83	10
4" Gate	79-790	165	83	10
4" Control	71-710	630	315	40
4" Control	81-810	630	315	40

TABLE A-III
STATIC LOAD CASES

A) STATIC LOAD CASE # 1
LOAD CASE TITLE : DEAD LOAD PLUS SUSTAINED MECHANICAL LOADS

SINGLE JOINT FORCE AND MOMENT LOADING

JOINT ID	LOAD TYPE	LOAD DIRECTION	LOAD MAGNITUDE
17	FORCE	Y	780.0000
26	FORCE	Y	600.0000
54	FORCE	Y	1640.0000
77	FORCE	Y	660.0001
86	FORCE	Y	2300.0001
90	FORCE	Y	1050.0001
94	FORCE	Y	600.0001
100	FORCE	Y	1150.0001

B) STATIC LOAD CASE # 2
LOAD CASE TITLE : NORMAL OPERATING PRESSURE

THERMAL AND PRESSURE LOADINGS FOR ALL PIPE RUNS

RUN ID	DESIGN PRESSURE (PSI)	TEMPERATURE CHANGE (DEG)	LINEAR TEMPERATURE GRADIENT (DEG)	NONLINEAR TEMPERATURE GRADIENT (DEG)	LONG. PRESSURE STRESS
1	1285.00	0.00	0.000	0.000	NO
2	1285.00	0.00	0.000	0.000	NO
3	1285.00	0.00	0.000	0.000	NO
4	1363.00	0.00	0.000	0.000	NO
5	1285.00	0.00	0.000	0.000	NO

C) STATIC LOAD CASE # 3
LOAD CASE TITLE : MAXIMUM PRESSURE

THERMAL AND PRESSURE LOADINGS FOR ALL PIPE RUNS

RUN ID	DESIGN PRESSURE (PSI)	TEMPERATURE CHANGE (DEG)	LINEAR TEMPERATURE GRADIENT (DEG)	NONLINEAR TEMPERATURE GRADIENT (DEG)	LONG. PRESSURE STRESS
1	1400.00	0.00	0.000	0.000	NO
2	1400.00	0.00	0.000	0.000	NO
3	1400.00	0.00	0.000	0.000	NO
4	1400.00	0.00	0.000	0.000	NO
5	1400.00	0.00	0.000	0.000	NO

TABLE A-III

STATIC LOAD CASES (CONT'D)

D) STATIC LOAD CASE # 4
LOAD CASE TITLE : NORMAL OPERATING TEMPERATURE

INCL. THERMAL ANCHOR MOVEMENTS

SUPPORT DISPLACEMENTS

JOINT ID	LOAD TYPE	DISPLACEMENT DIRECTION	DISPLACEMENT MAGNITUDE
10	TRANS.	X	-.310
10	TRANS.	Y	.228
10	TRANS.	Z	.208
11	TRANS.	X	.160
11	TRANS.	Y	.229
11	TRANS.	Z	.353
4	TRANS.	Y	.228
35	TRANS.	Y	.228
38	TRANS.	X	-.054
38	TRANS.	Y	.227
38	TRANS.	Z	-.359
45	TRANS.	X	.360
45	TRANS.	Y	.228
45	TRANS.	Z	-.143
104	TRANS.	X	-.065
104	TRANS.	Z	-.113

THERMAL AND PRESSURE LOADINGS FOR ALL PIPE RUNS

RUN ID	DESIGN PRESSURE (PSI)	TEMPERATURE CHANGE (DEG)	LINEAR TEMPERATURE GRADIENT (DEG)	NONLINEAR TEMPERATURE GRADIENT (DEG)	LONG. PRESSURE STRESS
1	0.00	477.00	-0.000	-0.000	NO
2	0.00	477.00	-0.000	-0.000	NO
3	0.00	477.00	-0.000	-0.000	NO
4	0.00	225.00	-0.000	-0.000	NO
5	0.00	477.00	-0.000	-0.000	NO

TABLE A-III
STATIC LOAD CASES (CONT'D)

E) STATIC LOAD CASE : 6
LOAD CASE TITLE : SEISMIC ANCHOR MOVEMENTS X-DIRECTION (1/2 SSE)

SUPPORT DISPLACEMENTS

JOINT ID	LOAD TYPE	DISPLACEMENT DIRECTION	DISPLACEMENT MAGNITUDE
10	TRANS.	X	.560
11	TRANS.	X	.560
38	TRANS.	X	.560
45	TRANS.	X	.560
104	TRANS.	X	1.230

F) STATIC LOAD CASE : 7
LOAD CASE TITLE : SEISMIC ANCHOLR MOVEMENTS Z-DIRECTION (1/2 SSE)

SUPPORT DISPLACEMENTS

JOINT ID	LOAD TYPE	DISPLACEMENT DIRECTION	DISPLACEMENT MAGNITUDE
10	TRANS.	Z	.560
11	TRANS.	Z	.560
38	TRANS.	Z	.560
45	TRANS.	Z	.560
104	TRANS.	Z	1.230

TABLE A-III
STATIC LOAD CASES (CONT'D)

G) STATIC LOAD CASE # 12
LOAD CASE TITLE : SEISMIC ANCHOR MOVEMENTS X - DIRECTION (SSE)

SUPPORT DISPLACEMENTS

JOINT ID	LOAD TYPE	DISPLACEMENT DIRECTION	DISPLACEMENT MAGNITUDE
10	TRANS.	X	.740
11	TRANS.	X	.740
38	TRANS.	X	.740
45	TRANS.	X	.740
104	TRANS.	X	2.380

H) STATIC LOAD CASE # 13
LOAD CASE TITLE : SEISMIC ANCHOR MOVEMENTS Z - DIRECTION (SSE)

SUPPORT DISPLACEMENTS

JOINT ID	LOAD TYPE	DISPLACEMENT DIRECTION	DISPLACEMENT MAGNITUDE
10	TRANS.	Z	.740
11	TRANS.	Z	.740
38	TRANS.	Z	.740
45	TRANS.	Z	.740
104	TRANS.	Z	2.380

TABLE A-IV - DYNAMIC LOAD CASES

Load Case No.	Load Description	Spectrum IDS			Spectrum Multipliers		
		X	Y	Z	X	Y	Z
8	x + y Earthquake (½ SSE)	1	3	0	386.4	128.8	0
9	z + y Earthquake (½ SSE)	0	3	1	0	128.8	386.4
10	x + y Earthquake (SSE)	2	3	0	386.4	257.6	0
11	z + y Earthquake (SSE)	0	3	2	0	257.6	386.4

TABLE A-V

SEISMIC RESPONSE SPECTRA

SPECTRUM ID	FREQUENCY CPS	PERIOD SEC.	ACCELERATION G.'S
1	40.000	.025	.16000
	15.000	.067	.16000
	10.000	.100	.18000
	7.000	.143	.27000
	6.000	.167	.29000
	5.000	.200	.24000
	4.000	.250	.57000
	3.500	.286	.45000
	3.000	.333	.24000
	2.400	.417	.35000
	2.000	.500	.70000
	1.800	.556	1.70000
	1.600	.625	1.70000
	1.400	.714	.63000
	1.200	.833	.55000
	1.000	1.000	.30000
	.900	1.111	.18000
	.700	1.429	.11000
	.500	2.000	.09000
2	40.000	.025	.25000
	20.000	.050	.25000
	13.000	.077	.25000
	10.000	.100	.34000
	9.000	.111	.50000
	8.000	.125	.50000
	6.000	.167	.70000
	5.000	.200	.60000
	3.500	.286	.43000
	3.000	.333	.25000
	2.000	.500	.60000
	1.700	.588	1.75000
	1.400	.714	.70000
	1.000	1.000	.40000
	.900	1.111	.33000
	.700	1.429	.21000
	.500	2.000	.15000
3	40.000	.025	.12000
	33.000	.030	.12000
	20.000	.050	.23000
	15.000	.067	.32000
	10.000	.100	.52000
	9.000	.111	.60000
	5.000	.200	.65000
	3.000	.333	.70000
	2.500	.400	.72000
	2.200	.455	.63000
	2.000	.500	.50000
	1.500	.667	.44000
	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	.24300
	[illegible]	[illegible]	[illegible]
	.400	2.500	.13000
	.200	5.000	.09400
	.100	10.000	.01400

APPENDIX B

LACBWR FEEDWATER PIPING ANALYSIS

TABULATED RESULTS

TABLE B-1 (a)

JOINT DISPLACEMENTS (LOAD CASE 1)

DEAD LOAD PLUS SUSTAINED MECHANICAL LOADS

JOINT (GID)	/------DISPLACEMENTS (IN.)------/ X	Y	Z		X	Y	Z
1	.0001994	-.0000487	-.0008842	57	.0010724	-.0121963	-.0053340
2	.0003553	.0005264	-.0007451	59	.0010737	-.0059836	-.0031955
3	.0004409	.0009336	-.0005447	60	.0010745	-.0043649	-.0021174
4	.0004851	-.0000000	.0003149	61	.0010761	-.0019351	-.0005813
6	.0004946	-.0046555	.0005570	62	.0004585	-.0011077	-.0005048
7	.0003632	-.0069102	.0007461	63	-.0000279	-.0010947	-.0004146
8	.0000277	-.0008193	.0008764	64	-.0000741	-.0005435	.0000002
9	.0000022	-.0000100	.0002489	65	-.0000000	-.0000000	.0000000
10	.0000000	-.0000000	.0000000	66	-.0083259	.0181932	-.0110569
11	.0000000	-.0000000	-.0000000	67	-.0083263	.0213101	-.0108354
12	-.0013386	-.0041279	-.0013043	68	-.0080153	.0263623	-.0113702
13	-.0009417	-.0041154	-.0022897	69	-.0028974	.0555326	-.0165206
14	.0031929	-.0041056	-.0023073	71	.0046446	.0979442	-.0240995
15	.0079143	-.0020610	-.0040241	72	.0630726	.0963146	.0224804
16	.0111155	.0011500	-.0064554	73	-.0077026	.0174248	-.0110504
17	.0145246	.0046061	-.0103916	74	-.0062545	.0139412	-.0103343
18	.0148320	.0049646	-.0122334	75	.0161021	.0677293	.0120813
19	.0145940	-.0103238	-.0251031	76	.0274035	.0757048	.0122867
20	.0114458	-.0058834	-.0250906	77	.0374081	.0757169	.0036057
21	.0069299	-.0024231	-.0250939	78	.0427271	.0716228	.0049223
22	.0023273	-.0014403	-.0250982	79	.0388459	.0597031	.0049521
23	-.0009445	-.0014935	-.0250977	81	.0330477	.0610774	.0049711
24	-.0022577	-.0015075	-.0250977	82	.0503450	.0611460	.0145705
25	-.0009452	-.0018027	-.0103623	83	.0593076	.0701836	.0224542
26	-.0003652	-.0016473	-.0091015	84	.1665910	.0997511	.1018079
27	-.0008472	-.0016603	-.0081205	85	.2397089	.1013785	.1105760
28	-.0008659	-.0016651	-.0077741	86	.2789423	.1033258	.0690782
29	-.0006879	-.0016936	-.0050874	87	.2775550	.1034866	.0166833
30	-.0002944	-.0017223	-.0037205	88	.2395820	.1037979	-.0112250
31	.0001140	-.0017330	-.0030201	89	.1744098	.1040068	.0074755
32	.0006942	-.0016978	-.0028651	90	.0900290	.1046836	.0829565
33	.0001155	-.0024617	-.0029761	91	.0612707	.0868354	.1065411
34	.0000921	-.0012166	-.0028446	92	-.0284861	-.0227429	.1500827
35	.0000350	-.0000000	-.0024592	93	-.0951687	-.0774241	.1619142
36	.0000966	-.0001483	-.0001505	94	-.1053068	-.0804230	.1630543
37	.0000067	-.0000055	-.0000131	95	-.1077599	-.0815026	.1658132
38	-.0000000	-.0000000	-.0000000	96	-.1033352	-.0814033	.1586140
39	.0000668	-.0023052	-.0052073	97	-.1041476	-.0803859	.1111637
40	.0005875	-.0029770	-.0046285	98	-.0916148	-.0116889	.0678071
41	.0004716	-.0023806	-.0014923	99	-.0793634	.0104030	.0543454
42	.0007497	-.0024486	-.0006348	100	-.0631732	.0205240	.0446224
43	.0006917	-.0026312	-.0000529	101	-.0224160	-.0051738	.0116649
44	.0002122	-.0000048	.0000621	102	-.0048641	-.0037535	-.0003117
45	.0000000	-.0000000	-.0000000	103	-.0000065	-.0000026	-.0000038
46	.0212262	-.0227624	-.0251017	104	.0000000	-.0000000	.0000000
47	.0277011	-.0221601	-.0203383	105	.0305370	.0482037	.1223176
48	.0297476	-.0093255	-.0157591	106	.0821691	.1033533	.0561136
49	.0238674	-.0041066	-.0150904	107	.0716547	.0884151	.0310116
50	.0205479	-.0041017	-.0147711	570	-.0031026	-.0038024	-.0003340
51	-.0107350	-.0042047	-.0140473	600	-.0062247	.0687000	-.0118479
52	-.0218591	-.0021055	-.0124145	710	-.0614045	.0479302	-.0714627
53	-.0038259	.0125211	-.0124182	780	.0368459	.0727746	.0073061
54	-.0076136	.0119411	-.0124183	810	-.0208290	.0610075	-.0160247
55	-.0073473	.0120516	-.0124187				
56	-.0030711	-.0145071	-.0033430				

TABLE B-1 (b)

JOINT DISPLACEMENTS (LOAD CASE 4)

NORMAL OPERATING TEMPERATURE INCL. THERMAL ANCHOR MOVEMENTS

JOINT (GID)	/------DISPLACEMENTS (IN.)------/ X	Y	Z		X	Y	Z
1	.157347	.303149	.354668	56	.531343	-.154890	.612237
2	.142602	.298542	.379734	57	.354302	-.071154	.441417
3	.116496	.291662	.399822	59	.198409	-.003896	.274463
4	-.006579	.228000	.475214	60	.151702	.029633	.169135
6	-.203119	.209733	.507714	61	.061352	.077527	-.015331
7	-.288463	.229773	.447135	62	.028501	.060836	-.057914
8	-.307426	.297033	.240502	63	.021571	.028981	-.060966
9	-.311134	.274351	.208662	64	.003920	.001044	-.038260
10	-.310000	.220000	.200000	65	-.000000	.000000	.000000
11	.150000	.220000	.353000	66	.851783	-.407203	.373947
12	.268396	.345437	.173329	67	.832627	-.403169	.365072
13	.306874	.319452	.125818	68	.815406	-.404062	.353799
14	.364162	.290033	.092784	69	.773014	-.430775	.272897
15	.455174	.130530	.039116	71	.725289	-.457970	.160967
16	.543017	.085600	-.016035	72	.811565	-.230943	.061232
17	.661704	.034139	-.038238	73	.845699	-.395979	.393661
18	.693716	.026617	-.120631	74	.831237	-.382563	.410786
19	1.063270	.014622	-.340233	75	.640446	-.254015	.504896
20	1.026226	.007105	-.424010	76	.623066	-.207673	.500060
21	.973541	.000073	-.542408	77	.637100	-.173594	.478126
22	.917739	-.003656	-.661365	78	.658178	-.153634	.432170
23	.875227	-.004028	-.745137	79	.689317	-.221418	.342776
24	.857485	-.013743	-.772657	81	.729655	-.237304	.225450
25	.506926	-.060336	-.498132	82	.700647	-.230585	.186440
26	.463114	-.034433	-.458036	83	.765339	-.229072	.140069
27	.457793	.000604	-.431267	84	1.143238	.111636	-.185973
28	.456207	.015975	-.421074	85	1.636397	.519208	-.400629
29	.483889	.158957	-.336074	86	2.243139	.966051	-.554861
30	.513195	.242690	-.290672	87	2.770420	1.334333	-.591736
31	.548737	.326403	-.259713	88	3.155521	1.603714	-.494318
32	.537398	.356103	-.278541	89	3.290046	2.180662	-.267528
33	.415495	.263946	-.459782	90	3.120618	2.522880	.071183
34	.350633	.235365	-.467014	91	3.116261	2.539674	.200708
35	.274877	.228000	-.473406	92	2.769362	2.280632	.651945
36	-.024627	.217343	-.369452	93	2.314403	2.030581	1.046333
37	-.054545	.223106	-.360441	94	2.124426	2.050983	1.119325
38	-.054600	.227100	-.359000	95	1.947268	2.129443	1.146918
39	.502516	.141682	-.311245	96	1.519364	2.005335	1.156656
40	.500010	.151065	-.267036	97	1.169284	1.476580	1.035387
41	.493290	.290702	-.175985	98	.755159	.870341	1.007812
42	.458449	.313798	-.154927	99	.630272	.670404	.922883
43	.386043	.304283	-.141144	100	.534297	.517611	.794503
44	.350996	.274379	-.141864	101	.236227	.054279	.330908
45	.360000	.228000	-.143000	102	.010655	-.114035	-.001697
46	1.176152	.031409	-.160689	103	-.064658	-.006747	-.112375
47	1.045911	.032644	.048485	104	-.065000	.000000	-.113000
48	.906613	.059211	.102804	105	3.010096	2.462347	.345490
49	.855156	-.000639	.104944	106	2.382818	1.077740	-.576165
50	.809465	-.256431	.003771	107	.828732	-.253026	.042916
51	.962665	-.507815	-.078358	570	.430284	-.034593	.441417
52	.907755	-.567257	-.090820	690	.782694	-.339742	.262038
53	.904852	-.415279	.330937	710	.655730	-.457970	.310934
54	.837346	-.406117	.414505	730	.659317	-.199929	.226039
55	.836638	-.327865	.566933	810	.634073	-.237874	.347523

TABLE B-1 (c)

JOINT DISPLACEMENTS (LOAD CASE 6)

SEISMIC ANCHOR MOVEMENTS X-DIRECTION (1/2 SSE)

JOINT (GID)	/------DISPLACEMENTS (IN.)------/ X	Y	Z		X	Y	Z
1	.559351	.000036	.002043	59	.004176	-.000065	.009611
2	.559592	-.000933	.002258	60	.004163	-.000442	.004163
3	.559725	-.001417	.002529	61	.004137	-.001034	-.002440
4	.559695	-.000000	.001933	62	.003364	-.000652	-.002496
6	.559640	-.000005	.000704	63	.001939	-.000656	-.000896
7	.559978	.000133	.000042	64	.000363	-.000086	-.000009
8	.560025	.000020	.000018	65	.000000	.000000	-.000000
9	.560012	.000001	.000022	66	.105022	.004764	.066730
10	.560000	.000000	.000000	67	.105022	.007005	.060320
11	.560000	.000000	.000000	68	.107746	.009543	.053737
12	.558306	.004934	.001152	69	.128161	.013552	.033322
13	.555085	.003700	.001121	71	.151130	.029824	.010304
14	.540621	.003720	.001637	72	.184247	.029819	.011418
15	.527855	-.001332	.008921	73	.098421	.004465	.066730
16	.521346	-.007859	.020487	74	.091809	.005200	.063930
17	.514913	-.014229	.040116	75	.044018	.023145	.016136
18	.514503	-.014958	.047195	76	.041746	.025964	.009830
19	.514392	-.005658	.146887	77	.047294	.025965	.010178
20	.576893	-.002773	.146834	78	.081475	.026297	.010432
21	.567053	-.000147	.146879	79	.091959	.027465	.010492
22	.566263	.001438	.146874	81	.131812	.028948	.010431
23	.616703	.002334	.146871	82	.143347	.029049	.011145
24	.624930	.002613	.146871	83	.158233	.029208	.011418
25	.616651	.000231	.054395	84	.285286	.029812	.012132
26	.614631	-.002247	.043416	85	.423457	.029905	.010121
27	.611251	-.003543	.038056	86	.599926	.029737	.007180
28	.609565	-.003848	.036363	87	.773231	.029739	.006132
29	.590424	-.003932	.025094	88	.940341	.029741	.009087
30	.577179	-.003823	.018949	89	1.073686	.029774	.017072
31	.563818	-.003914	.014020	90	1.171879	.029768	.030152
32	.561273	-.005900	.013235	91	1.187460	.031672	.032875
33	.560699	-.003022	.013804	92	1.206254	.037621	.036726
34	.560626	-.000865	.013691	93	1.212965	.038162	.039310
35	.560606	-.000000	.012190	94	1.213616	.038153	.039592
36	.560531	-.000165	.001118	95	1.214260	.038153	.039801
37	.560285	.000002	.000156	96	1.214742	.038080	.036469
38	.560000	.000000	.000000	97	1.214769	.035556	.028659
39	.559068	-.000837	.026020	98	1.214344	.029822	.019235
40	.578339	.002412	.024175	99	1.215530	.026432	.015834
41	.561176	.002434	.011016	100	1.218152	.022390	.013399
42	.559854	.001060	.006215	101	1.226253	.008001	.005076
43	.560082	.000017	.000777	102	1.229702	.000323	.001031
44	.560100	-.000007	-.000144	103	1.230001	.000000	.000001
45	.560000	-.000000	.000000	104	1.230000	.000000	.000000
46	.462445	-.012504	.146803	105	1.194784	.034546	.033033
47	.408436	-.013657	.105503	106	.645362	.029735	.006639
48	.356625	-.005617	.062032	107	.190133	.029819	.011596
49	.342256	.000336	.047017	570	.012947	.000312	.022837
50	.339241	.000325	.044672	690	.117274	.023033	.022435
51	.239477	.000314	.042083	710	.120110	.029824	.009342
52	.206791	.002046	.034520	790	.011959	.035903	-.005769
53	.105022	-.001040	.034558	810	.009967	.023048	.003322
54	.036730	-.001540	.034560				
55	.048767	-.000369	.034574				
56	.054217	-.002632	.046036				
57	.004107	-.000351	.022837				

TABLE B-1 (d)

JOINT DISPLACEMENTS (LOAD CASE 7)

SEISMIC ANCHOLR MOVEMENTS Z-DIRECTION (1/2 SSE)

JOINT (GID)	/------DISPLACEMENTS (IN.)------/ X	Y	Z		X	Y	Z
1	.000570	-.000024	.559858	59	.005936	-.000990	.116432
2	.001014	-.000152	.560253	60	.005946	.001259	.082512
3	.001266	-.000242	.560776	61	.005967	.002537	.022744
4	.001267	-.000000	.560996	62	.006035	.002454	.006516
6	.001219	.000027	.559353	63	.005643	.002458	.002503
7	.001298	.000008	.559615	64	.001271	.000631	.000016
8	.000228	-.000038	.560024	65	-.000000	.000000	.000000
9	.000048	.000000	.560041	66	.071709	-.024743	.267535
10	.000000	.000000	.560000	67	.071709	-.024661	.265478
11	.000000	-.000000	.560000	68	.072620	-.024144	.263278
12	-.005092	.005328	.554567	69	.078546	-.020019	.256343
13	-.004585	.008939	.548859	71	.087374	-.014733	.248518
14	.005536	.008924	.535698	72	.086175	-.014725	.263245
15	.014297	.012404	.515627	73	.069556	-.025434	.267596
16	.018527	.016602	.495681	74	.067459	-.026377	.265751
17	.022075	.020104	.465662	75	.053648	-.036357	.253115
18	.022160	.020097	.457742	76	.051569	-.037917	.253032
19	.022245	.001726	.383267	77	.051119	-.037918	.255212
20	.009899	.001249	.383273	78	.053524	-.036252	.256927
21	-.007696	.000409	.383283	79	.063034	-.031141	.256929
22	-.026154	-.000046	.383233	81	.075626	-.023938	.256930
23	-.040104	.000204	.383300	82	.076008	-.023940	.261087
24	-.045868	.000448	.383300	83	.077714	-.021699	.263242
25	-.040065	.006652	.461459	84	.076574	-.014721	.320120
26	-.030464	.008662	.474034	85	.059071	-.014716	.414697
27	-.035865	.009658	.482200	86	.035103	-.014711	.546508
28	-.034594	.009830	.485259	87	.011992	-.014707	.685333
29	-.030265	.009876	.510279	88	-.007326	-.014702	.825617
30	-.013226	.009864	.524072	89	-.020030	-.014698	.943386
31	-.000284	.009852	.534950	90	-.023897	-.014694	1.035732
32	.000905	.011935	.536103	91	-.022742	-.023050	1.054096
33	-.000135	.006844	.539210	92	-.012718	-.066732	1.091974
34	-.000481	.002326	.540303	93	.002575	-.097641	1.102371
35	-.000461	.000000	.543168	94	.007612	-.101499	1.132486
36	-.000385	.000012	.558753	95	.011244	-.101499	1.141557
37	-.000250	-.000003	.559862	96	.017411	-.095106	1.162570
38	-.000000	-.000000	.560000	97	.018824	-.081351	1.179503
39	-.015114	.004384	.509392	98	.020471	-.065458	1.193573
40	-.027813	-.001521	.514435	99	.018808	-.056337	1.204819
41	.000147	-.001634	.544155	100	.015176	-.045434	1.209407
42	.000640	-.000795	.552292	101	.004458	-.014126	1.222607
43	.000067	-.000070	.559582	102	.000154	-.001552	1.228465
44	-.000029	.000004	.560346	103	-.000001	-.000000	1.229933
45	.000000	.000000	.560000	104	.000000	-.000000	1.230000
46	.046295	.030935	.283236	105	-.020104	-.033951	1.067305
47	.001123	.000877	.382463	106	.028839	-.014710	.582383
48	.002372	.002040	.387044	107	.035794	-.014725	.265967
49	.003728	-.000127	.388470	570	.033542	-.004853	.170464
50	.029562	-.000174	.384266	690	.075839	-.021846	.252642
51	.049435	-.000012	.282054	710	.087299	-.014733	.234470
52	.101167	-.007025	.273644	790	.063034	-.031650	.251977
53	.071709	-.024974	.273642				
54	.086628	-.025232	.273637	810	.077579	-.023939	.244433
55	.046644	-.025464	.273611				
56	.009304	-.017310	.270321				
57	.005920	-.007639	.170464				

TABLE B-1 (e)

JOINT DISPLACEMENTS (LOAD CASE 8)

X + Y EARTHQUAKE (1/2 SSE)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SQSS SUMMATION

JOINT GID	DISPLACEMENTS (IN.) X	Y	Z		X	Y	Z
1	.0005391	.0000291	.0024828	56	.0112546	.0412445	.0034417
2	.0009672	.0014249	.0034098	57	.0112303	.0163523	.0709334
3	.0016218	.0022292	.0047316	59	.0111961	.0020348	.0496629
4	.0016138	.0000000	.0046764	60	.0111744	.0028236	.0360639
6	.0014669	.0006718	.0011416	61	.0111232	.0035001	.0129470
7	.0020757	.0008158	.0004903	62	.0036574	.0023156	.0064156
8	.0004421	.0001200	.0001342	63	.0050182	.0023087	.0023923
9	.0001069	.0000013	.0001164	64	.0008925	.0006432	.0000140
10	.0000000	.0000000	.0000000	65	.0000000	.0000000	.0000000
11	.0000000	.0000000	.0000000	66	.0821919	.0445651	.1110109
12	.0118545	.0120354	.0087546	67	.0821949	.0411613	.1089710
13	.0172091	.0139459	.0142696	68	.0850133	.0353200	.1075389
14	.0240070	.0139579	.0243145	69	.1103212	.0000000	.1095670
15	.0376068	.0117135	.0336786	71	.1430184	.0531270	.1234891
16	.0426225	.0096690	.0384111	72	.0202176	.0532057	.0158227
17	.0478929	.0089199	.0424246	73	.0764703	.0482504	.1110093
18	.0482987	.0089175	.0414909	74	.0706527	.0518178	.1099437
19	.0493566	.0028569	.0000064	75	.0477460	.1310043	.1067295
20	.0355017	.0000000	.0000083	76	.0555783	.1467375	.0965062
21	.0174774	.0015002	.0000114	77	.0693173	.1467469	.0906134
22	.0000000	.0015469	.0000147	78	.0715242	.1344763	.0676715
23	.0116280	.0020384	.0000170	79	.0421702	.0949531	.0676701
24	.0161667	.0023467	.0000170	81	.0514179	.0460239	.0676573
25	.0116197	.0054131	.0394631	82	.0219270	.0460273	.0323413
26	.0113568	.0054717	.0406441	83	.0209242	.0398018	.0158451
27	.0109047	.0054333	.0388472	84	.2186492	.0533339	.1543172
28	.0106470	.0054220	.0377743	85	.2775763	.0534534	.1830678
29	.0074788	.0054209	.0250579	86	.0781779	.0535860	.0482450
30	.0052495	.0054199	.0183805	87	.2310245	.0536962	.1369160
31	.0030601	.0054190	.0137146	88	.4116498	.0538076	.2331449
32	.0025359	.0055107	.0130481	89	.3211327	.0538950	.1592108
33	.0007160	.0035107	.0124735	90	.0979157	.0539753	.0000000
34	.0002033	.0019734	.0112690	91	.0432606	.0601486	.0394695
35	.0002017	.0000000	.0033253	92	.0597042	.1463160	.1245513
36	.0001955	.0001675	.0005108	93	.0839264	.2016095	.1578054
37	.0000660	.0000015	.0000508	94	.0849299	.2015252	.1513952
38	.0000000	.0000000	.0000000	95	.0877896	.2015339	.1437274
39	.0050644	.0043362	.0247829	96	.0993466	.2077915	.0878670
40	.0040676	.0047205	.0214132	97	.1056726	.2353943	.0000000
41	.0008100	.0047009	.0042372	98	.1136332	.2717845	.0610258
42	.0010371	.0036222	.0015265	99	.1176147	.2680525	.0706076
43	.0009486	.0033033	.0006166	100	.1166146	.2432169	.0717375
44	.0002852	.0030074	.0002022	101	.0667189	.1112432	.0422425
45	.0000000	.0000000	.0000000	102	.0176625	.0162540	.0115012
46	.0764141	.0130351	.0000000	103	.0000283	.0000009	.0000356
47	.1021947	.0169175	.0191955	104	.0000000	.0000000	.0000000
48	.1093397	.0095954	.0356931	105	.0000000	.0339956	.0681093
49	.1096516	.0094471	.0422766	106	.0000000	.0536153	.0000000
50	.1276116	.0084610	.0703330	107	.0000000	.0952147	.0000000
51	.1631203	.0084745	.1096658	570	.0208333	.0154043	.0709334
52	.1645131	.0092724	.1178705	690	.0969878	.0231696	.1145463
53	.0821906	.0540012	.1178837	710	.2621385	.0531270	.2403692
54	.0766322	.0553743	.1178842	790	.0421702	.1212870	.0812124
55	.0437436	.0649338	.1178675	810	.2046346	.0460239	.1777896

TABLE B-1 (f)

J O I N T   D I S P L A C E M E N T S   (LOAD CASE 9)

Z + Y EARTHQUAKE (1/2 SSE)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SOSS SUMMATION

JOINT GID	X	Y	Z
	/------DISPLACEMENTS (IN.)------/		
1	.0004923	.0000253	.0020338
2	.0004687	.0012031	.0025095
3	.0007761	.0019305	.0031879
4	.0007735	.0000000	.0028833
6	.0007040	.0005205	.0007756
7	.0010319	.0006803	.0002486
8	.0002280	.0000741	.0000634
9	.0000566	.0000010	.0000598
10	.0000000	.0000000	.0000000
11	.0000000	.0000000	.0000000
12	.0065947	.0104820	.0044268
13	.0093726	.0121652	.0078819
14	.0153720	.0121759	.0152498
15	.0207955	.0103554	.0217631
16	.0236333	.0081595	.0248462
17	.0267034	.0060530	.0277379
18	.0269648	.0055946	.0271142
19	.0270079	.0028829	.0000079
20	.0193641	.0000000	.0000105
21	.0093224	.0015101	.0000143
22	.0000000	.0015277	.0000193
23	.0061759	.0016171	.0000211
24	.0085282	.0017069	.0000211
25	.0061739	.0052232	.0223581
26	.0060352	.0052869	.0233763
27	.0057869	.0052745	.0226840
28	.0056617	.0052698	.0222199
29	.0042358	.0052667	.0167707
30	.0031678	.0052659	.0150931
31	.0019643	.0052651	.0155959
32	.0017364	.0052553	.0162233
33	.0005990	.0028651	.0155391
34	.0001471	.0014495	.0141630
35	.0001461	.0000030	.0118135
36	.0001423	.0001260	.0007437
37	.0000469	.0000012	.0000685
38	.0000000	.0000000	.0000000
39	.0034527	.0042036	.0166124
40	.0025327	.0033599	.0147302
41	.0007632	.0033477	.0042069
42	.0006492	.0026492	.0021594
43	.0006244	.0006013	.0004610
44	.0001790	.0000045	.0001066
45	.0000000	.0000000	.0000000
46	.0456466	.0135320	.0000000
47	.0664218	.0176220	.0165433
48	.0704994	.0056339	.0325620
49	.0744620	.0004460	.0473799
50	.1177000	.0004546	.1050166
51	.1677331	.0004634	.1642731
52	.1676598	.0114579	.1760105
53	.0914667	.0730761	.1760317
54	.0861779	.0756210	.1760324
55	.0524766	.0370510	.1760305
56	.0115822	.0551593	.1384515
57	.0115683	.0227790	.1023934
59	.0115455	.0027053	.0691935
60	.0115311	.0032798	.0485475
61	.0115011	.0038538	.0133662
62	.0091103	.0021361	.0057054
63	.0058724	.0021267	.0021173
64	.0010639	.0006603	.0000140
65	.0000000	.0000000	.0000000
66	.0914724	.0627236	.1659351
67	.0914736	.0587391	.1624244
68	.0932448	.0506911	.1592117
69	.1074384	.0000000	.1522015
71	.1253582	.0767245	.1492374
72	.0167152	.0768170	.0195036
73	.0871586	.0686804	.1659326
74	.0828516	.0744779	.1642104
75	.0666448	.1426016	.1380872
76	.0631832	.1544056	.1193764
77	.0708245	.1544166	.0990190
78	.0687905	.1385260	.0825230
79	.0555664	.0852256	.0825121
81	.0554923	.0340230	.0324865
82	.0284361	.0340313	.0395709
83	.0192510	.0365606	.0195352
84	.1676737	.0769506	.1857557
85	.2049680	.0770717	.2105898
86	.0575843	.0772057	.0509733
87	.1703835	.0773126	.1300393
88	.3116806	.0774298	.2144770
89	.2611583	.0775012	.1469270
90	.0981119	.0775751	.0000000
91	.0469649	.0841442	.0338546
92	.0635578	.2077333	.1102280
93	.1033948	.2754554	.1443971
94	.1052099	.2736004	.1342004
95	.1003528	.2736178	.1205036
96	.0949034	.2710239	.0640638
97	.0930230	.2736813	.0000000
98	.0938826	.2767004	.0238673
99	.0936680	.2648745	.0269866
100	.0896482	.2794396	.0274373
101	.0497766	.1079606	.0173721
102	.0121354	.0161107	.0085210
103	.0000306	.0000006	.0000371
104	.0000000	.0000000	.0000000
105	.0000000	.1185325	.0578414
106	.0000000	.0772341	.0000000
107	.0000000	.0769264	.0000000
570	.0296598	.0216634	.1023934
690	.0997263	.0142179	.1499401
710	.2377350	.0767245	.2042932
790	.0555664	.0302305	.0830890
810	.1712076	.0340230	.2160737

TABLE B-1 (g)

JOINT DISPLACEMENTS (LOAD CASE 10)

X+ Y DPE EARTHQUAKE (SSE)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SQSS SUMMATION

JOINT GID	/------DISPLACEMENTS (IN.)------/ X	Y	Z		X	Y	Z
1	.0008671	.0000479	.0041606				
2	.0020744	.0023638	.0060900	57	.0157684	.0255515	.1057158
3	.0034443	.0036634	.0088408	59	.0167177	.0030867	.0748002
4	.0034347	.0000000	.0091043	60	.0166855	.0041401	.0546743
6	.0031344	.0012411	.0021418	61	.0166079	.0051264	.0197657
7	.0043413	.0014625	.0010135	62	.0129102	.0034558	.0035821
8	.0009177	.0002488	.0002833	63	.0074532	.0034454	.0035568
9	.0002203	.0000022	.0002419	64	.0017252	.0009680	.0000217
10	.0000000	.0000000	.0000000	65	.0000000	.0000000	.0000000
11	.0000000	.0000000	.0000000	66	.1010566	.0661065	.1598803
12	.0240549	.0198654	.0184673	67	.1010590	.0604400	.1564711
13	.0342485	.0226377	.0290736	68	.1036125	.0513176	.1533790
14	.0557984	.0228568	.0471426	69	.1277831	.0000000	.1494136
15	.0743283	.0181814	.0643919	71	.1629748	.0751150	.1583767
16	.0839732	.0157601	.0733641	72	.0225544	.0752135	.0205568
17	.0939503	.0175061	.0804734	73	.0956148	.0713475	.1538776
18	.0946039	.0170556	.0786954	74	.0905568	.0757375	.1590675
19	.0947938	.0042714	.0000115	75	.0970588	.1648551	.1413813
20	.0607133	.0000000	.0000151	76	.1073564	.1830429	.1258940
21	.0344026	.0021439	.0000207	77	.1210146	.1830558	.1048914
22	.0000000	.0019071	.0000265	78	.1215799	.1670437	.0878654
23	.0223825	.0028829	.0000307	79	.0325295	.1161208	.0878519
24	.0319700	.0036359	.0000307	81	.0673515	.0571561	.0378426
25	.0229641	.0089249	.0795047	82	.0425648	.0571601	.0418611
26	.0225557	.0091980	.0820171	83	.0350914	.0520537	.0205873
27	.0216393	.0091861	.0784810	84	.2556384	.0753581	.2126776
28	.0211375	.0091795	.0763510	85	.3299727	.0754656	.2663144
29	.0147895	.0091776	.0509918	86	.0882216	.0756270	.0717328
30	.0102669	.0091764	.0376049	87	.2544775	.0757358	.2040471
31	.0056347	.0091752	.0279805	88	.4632792	.0758462	.3416577
32	.0045272	.0093899	.0265085	89	.3722303	.0759241	.2242533
33	.0014227	.0064337	.0253136	90	.1245982	.0759258	.0000000
34	.0003904	.0035242	.0227828	91	.0598803	.0822692	.0473024
35	.0003872	.0000000	.0187839	92	.0912802	.2063905	.1516939
36	.0003748	.0003133	.0009964	93	.1475974	.2793377	.1338652
37	.0001273	.0000027	.0000932	94	.1472911	.2780165	.1910204
38	.0000000	.0000000	.0000000	95	.1451467	.2780375	.1809416
39	.0116326	.0077950	.0504240	96	.1474478	.2795455	.1123058
40	.0077185	.0097722	.0436445	97	.1517379	.2993951	.0000000
41	.0017013	.0097291	.0088327	98	.1560733	.3303502	.0903300
42	.0022080	.0079684	.0030432	99	.1643511	.3234047	.1066506
43	.0020002	.0018959	.0012121	100	.1655725	.2930037	.1094296
44	.0006062	.0000159	.0004093	101	.0963554	.1337729	.0656522
45	.0000000	.0000000	.0000000	102	.0158799	.0139946	.0157881
46	.1495666	.0208150	.0000000	103	.0000792	.0000012	.0000438
47	.2011438	.0275502	.0364708	104	.0000000	.0000000	.0000000
48	.2100591	.0093062	.0727753	105	.0000000	.1160641	.0814937
49	.2058452	.0004790	.0799648	106	.0000000	.0756599	.0000000
50	.1813737	.0008903	.1018747	107	.0000000	.0752278	.0000000
51	.1966745	.0000021	.1571315	570	.0296567	.0231117	.1057198
52	.1967783	.0126432	.1633238	600	.1137256	.0256437	.1515805
53	.1010437	.0817102	.1603502	710	.3060707	.0751100	.3053795
54	.0947439	.0946393	.1603510	720	.0825295	.1406840	.1014723
55	.0560904	.0947367	.1533562	610	.2392242	.0971561	.2320176
56	.0160029	.0026855	.1372367				

TABLE B-1 (h)

JOINT DISPLACEMENTS (LOAD CASE 11)

Z+ Y OBE EARTHQUAKE (SSE)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SQSS SUMMATION

JOINT GID	/------DISPLACEMENTS (IN.)------/ X	Y	Z		X	Y	Z
1	.0007000	.0000356	.0028060				
2	.0008530	.0016970	.0033609	57	.0157725	.0288514	.1335863
3	.0013010	.0027563	.0042364	59	.0157279	.0033774	.0933145
4	.0013113	.0000000	.0038873	60	.0156997	.0046991	.0675627
6	.0012225	.0009197	.0010334	61	.0156408	.0061674	.0233114
7	.0016042	.0011713	.0003724	62	.0121839	.0038377	.0110831
8	.0003446	.0001301	.0001283	63	.0074334	.0038295	.0040842
9	.0000938	.0000014	.0000908	64	.0013319	.0010219	.0000249
10	.0000000	.0000000	.0000000	65	.0000000	.0000000	.0000000
11	.0000000	.0000000	.0000000	66	.1155801	.0774512	.2062669
12	.0093945	.0151114	.0071369	67	.1155823	.0724872	.2016258
13	.0132042	.0176741	.0112632	68	.1173034	.0625173	.1972725
14	.0211963	.0176870	.0206337	69	.1324027	.0000000	.1374037
15	.0283451	.0156688	.0202934	71	.1538619	.0342902	.1334931
16	.0320774	.0132701	.0333809	72	.0204671	.0944144	.0240369
17	.0360739	.0109343	.0370183	73	.1111884	.0848702	.1362634
18	.0364041	.0101337	.0361406	74	.1074594	.0921739	.2038662
19	.0364570	.0039256	.0000133	75	.1215837	.1928769	.1719232
20	.0262252	.0000000	.0000175	76	.1318869	.1987104	.1498897
21	.0126688	.0020492	.0000238	77	.1376074	.1987341	.1243050
22	.0000000	.0020071	.0000304	78	.1318549	.1787398	.1035581
23	.0084904	.0021025	.0000350	79	.1025058	.1148510	.1035485
24	.0118244	.0022442	.0000350	81	.0815092	.0435735	.1035104
25	.0034872	.0082588	.0332418	82	.0508924	.0435773	.0490231
26	.0083400	.0086095	.0350355	83	.0351646	.0457848	.0240756
27	.0080534	.0086807	.0342069	84	.2086464	.0945809	.2403473
28	.0079059	.0086932	.0335992	85	.2560834	.0947313	.2818259
29	.0062304	.0086882	.0264616	86	.0715386	.0948978	.0665529
30	.0049286	.0086877	.0249549	87	.2104814	.0950300	.1705884
31	.0033830	.0086872	.0269232	88	.3859992	.0951637	.2875924
32	.0030579	.0086584	.0282264	89	.3234375	.0952624	.1947510
33	.0009982	.0046900	.0271412	90	.1224081	.0953531	.0000000
34	.0032498	.0023831	.0248057	91	.0594339	.1035127	.0425826
35	.0002479	.0000000	.0207406	92	.0829149	.2568975	.1372132
36	.0002407	.0002098	.0013277	93	.1363482	.3405700	.1906218
37	.0000808	.0000019	.0001228	94	.1375001	.3386188	.1585576
38	.0000000	.0000000	.0000000	95	.1307926	.3386401	.1522936
39	.0050576	.0073172	.0262153	96	.1239009	.3340412	.0830003
40	.0037787	.0063595	.0234463	97	.1275715	.3361544	.0000000
41	.0005979	.0063320	.0072159	98	.1245847	.3421344	.0420730
42	.0012547	.0050312	.0038444	99	.1255403	.3285228	.0491791
43	.0011903	.0011483	.0007784	100	.1217166	.2960487	.0504832
44	.0003415	.0000047	.0001594	101	.0677436	.1343761	.0314099
45	.0000000	.0000000	.0000000	102	.0160484	.0200508	.0114300
46	.0613472	.0182374	.0000000	103	.0000387	.0000010	.0000460
47	.0895081	.0236402	.0227337	104	.0000000	.0000000	.0000000
48	.0952311	.0278542	.0454519	105	.0000000	.1462327	.0722352
49	.1027938	.0337581	.0639400	106	.0000000	.0344329	.0000000
50	.1402584	.0307663	.1322443	107	.0000000	.0344262	.0000000
51	.2044553	.0307749	.2045912	570	.1355490	.0262353	.1336663
52	.2109736	.0141023	.2188732	690	.1240843	.0178547	.1342375
53	.1196653	.0084567	.2188979	710	.2904473	.0342902	.3497208
54	.1000198	.0336704	.2188930	790	.1125056	.1177786	.1086591
55	.0667836	.1080334	.2189855	810	.2241222	.0435735	.2750068
56	.0156116	.0607019	.1757079				

TABLE B-1 (j)

JOINT DISPLACEMENTS (LOAD CASE 12)

SEISMIC ANCHOR MOVEMENTS X - DIRECTION (SSE)

JOINT (GID)	/------DISPLACEMENTS (IN.)------/ X	Y	Z
1	.739144	.000048	.002690
2	.739453	-.001229	.002965
3	.739622	-.001968	.003311
4	.739582	-.000090	.002520
6	.739511	-.000001	.000923
7	.739953	.000141	.000060
8	.740029	.000027	.000022
9	.740014	.000001	.000028
10	.740000	.000000	.000000
11	.740000	.000000	.000000
12	.737856	.006503	.001593
13	.733651	.004878	.001539
14	.714647	.004906	.002307
15	.697874	-.001011	.011959
16	.689322	-.010307	.027247
17	.650868	-.018689	.053160
18	.630328	-.019638	.062497
19	.630103	-.007548	.193738
20	.739784	-.003633	.193793
21	.740448	-.000197	.193777
22	.7 7679	.001912	.193771
23	.814779	.003036	.193766
24	.825606	.003469	.193766
25	.834711	.000333	.071300
26	.812044	-.002933	.057430
27	.807585	-.004643	.050438
28	.805362	-.005045	.048167
29	.788119	-.006024	.033229
30	.762652	-.005013	.025085
31	.745032	-.005001	.019341
32	.741676	-.007626	.017583
33	.740820	-.003999	.018254
34	.740825	-.001144	.018099
35	.740800	-.000000	.016112
36	.740700	-.000217	.001478
37	.740300	.000002	.000205
38	.740000	.000000	.000000
39	.772061	-.001061	.034450
40	.761551	.003238	.032000
41	.741540	.003267	.014556
42	.739532	.001444	.008204
43	.740097	.000033	.001023
44	.740140	-.000010	-.000191
45	.740000	-.000000	.000000
46	.611 93	-.016775	.133809
47	.541025	-.013361	.139439
48	.525700	-.007543	.082423
49	.510294	.000430	.063139
50	.448530	.000413	.048296
51	.341513	.000400	.107562
52	.340379	.002405	.110533
53	.139352	-.003094	.110648
54	.127413	-.003736	.110651
55	.064376	-.003154	.110670
56	.006519	-.004940	.050939
57	.006492	-.000018	.029617
59	.005464	-.000124	.012336
60	.005447	-.000514	.005337
61	.005413	-.001375	-.003133
62	.004408	-.000810	-.003203
63	.002536	-.000015	-.001145
64	.000477	-.000096	-.000011
65	.000000	.000000	-.000000
66	.138253	.005534	.087133
67	.138253	.008942	.078660
68	.141852	.012852	.069970
69	.168875	.027052	.042945
71	.199420	.045571	.012404
72	.258099	.045551	.012977
73	.129534	.005168	.087133
74	.120794	.006416	.083505
75	.057210	.036279	.019925
76	.055634	.041108	.011239
77	.064983	.041109	.011616
78	.035689	.041462	.011946
79	.126698	.042933	.011944
81	.199317	.044774	.011943
82	.200731	.044775	.012689
83	.223179	.045039	.012978
84	.448035	.045547	.011254
85	.715866	.045532	.004576
86	1.070009	.045516	-.003625
87	1.420001	.045500	-.007461
88	1.760037	.045485	-.002987
89	2.033233	.045471	.011848
90	2.235620	.045459	.037030
91	2.270210	.049640	.043226
92	2.322095	.063731	.055643
93	2.345912	.060657	.064057
94	2.349038	.066890	.064920
95	2.351218	.066889	.065238
96	2.353555	.067973	.060513
97	2.353301	.065418	.049326
98	2.353174	.056581	.034166
99	2.355099	.050559	.023474
100	2.359414	.042931	.024144
101	2.373319	.010454	.009417
102	2.379825	.001886	.001919
103	2.380001	.000000	.000002
104	2.380000	.000000	.000000
105	2.2 9053	.056135	.047013
106	1.102651	.045512	-.009207
107	.268786	.045510	.013087
570	.016925	.000056	.029617
690	.154450	.034728	.023522
710	.145706	.045571	.012348
790	.129639	.057505	-.009400
810	.117050	.044774	.009371

TABLE B-1 (k)

JOINT DISPLACEMENTS (LOAD CASE 13)

SEISMIC ANCHOR MOVEMENTS Z - DIRECTION (SSE)

JOINT (GID)	DISPLACEMENTS (IN.) X	Y	Z		X	Y	Z
1	.000752	-.000031	.739808	59	.007846	-.001337	.154435
2	.001334	-.000212	.740327	60	.007660	.001722	.109540
3	.001665	-.000315	.741013	61	.007686	.003420	.030316
4	.001667	-.000000	.741302	62	.007987	.003313	.009744
6	.001603	.000037	.739935	63	.007741	.003305	.003359
7	.001707	.000012	.739493	64	.001685	.000851	.000022
8	.000300	-.000050	.740031	65	-.000000	.000000	.000000
9	.000063	.000010	.740053	66	.034683	-.033032	.354783
10	.000000	.000000	.740000	67	.034683	-.032866	.352032
11	.000000	-.000000	.740000	68	.035881	-.031837	.349149
12	-.006687	.007010	.732857	69	.105052	-.023572	.339973
13	-.006004	.011769	.725343	71	.115465	-.012801	.329553
14	.007369	.011750	.708012	72	.114199	-.012765	.359033
15	.018945	.016349	.681567	73	.091909	-.034445	.354734
16	.024535	.021837	.655278	74	.089305	-.036171	.353729
17	.020227	.026528	.615705	75	.073036	-.055814	.337469
18	.023340	.026507	.605258	76	.070030	-.058892	.338776
19	.025453	.002267	.506944	77	.069100	-.058884	.343078
20	.013135	.001644	.506953	78	.072128	-.055603	.346459
21	-.010114	.000539	.506966	79	.094157	-.045539	.346465
22	-.034550	-.000060	.506970	81	.100485	-.031243	.346472
23	-.052920	.000268	.506938	82	.099561	-.031237	.354740
24	-.060531	.000588	.506988	83	.103070	-.026810	.359048
25	-.052868	.003770	.610137	84	.099539	-.012777	.475121
26	-.050756	.011421	.526722	85	.071860	-.012769	.669475
27	-.047328	.012735	.637485	86	.033833	-.012760	.943646
28	-.045637	.013041	.641516	87	-.002454	-.012751	1.231299
29	-.026744	.013022	.674433	88	-.032847	-.012743	1.523629
30	-.013499	.013007	.692656	89	-.049894	-.012735	1.770182
31	-.000379	.012991	.706986	90	-.052660	-.012728	1.964659
32	.001190	.015816	.711140	91	-.048923	-.030245	2.003884
33	-.000179	.003020	.712599	92	-.023002	-.122664	2.086251
34	-.000635	.003723	.714117	93	.011186	-.199101	2.152025
35	-.000609	.000000	.717814	94	.021367	-.197365	2.173454
36	-.000508	.000015	.738356	95	.028209	-.197364	2.192486
37	-.000330	-.000004	.739818	96	.030675	-.185320	2.237084
38	-.000000	-.000000	.740000	97	.042070	-.159101	2.273568
39	-.019949	.005715	.673313	98	.044563	-.129302	2.314239
40	-.010319	-.002123	.679956	99	.041214	-.111602	2.327727
41	.000191	-.002145	.719113	100	.033060	-.089760	2.337183
42	.000854	-.001040	.729827	101	.009759	-.027769	2.364776
43	.000086	-.000091	.739448	102	.001449	-.003043	2.376836
44	-.000040	.000006	.740456	103	-.000002	-.000000	2.379936
45	.000000	.000000	.740000	104	.000000	-.000000	2.380000
46	.000047	.001234	.506903	105	-.041491	-.063859	2.332770
47	.000936	.001264	.518167	106	.023040	-.012797	1.018492
48	.002612	.002755	.525315	107	.113654	-.012794	.364545
49	.014334	-.000134	.514050	570	.044417	-.006523	.226083
50	.135603	-.000103	.442935	660	.100126	-.027053	.339040
51	.131106	-.000072	.373764	710	.114385	-.012801	.301600
52	.173223	-.003229	.362636	720	.094107	-.046342	.340037
53	.034683	-.033465	.362541	810	.103446	-.031233	.321765
54	.006307	-.033046	.362535				
55	.001662	-.035140	.362500				
56	.007403	-.023634	.309066				
57	.007824	-.010493	.226088				

TABLE B-11 ELASTIC SUPPORT REACTIONS

A) (LOAD CASE 1)

DEAD LOAD PLUS SUSTAINED MECHANICAL LOADS

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.00	201.04	0.00	0.00	0.00	0.00
10	-3.52	124.19	-2.28	-1245.79	-113.01	14.81
11	-6.76	349.79	7.00	1748.90	-414.19	414.67
20	0.00	1154.75	0.00	0.00	0.00	0.00
22	0.00	294.01	0.00	0.00	0.00	0.00
35	0.00	190.42	0.00	0.00	0.00	0.00
38	20.43	85.51	4.98	70.54	-198.58	12.25
45	-22.97	111.14	5.36	-304.28	-336.73	1084.91
49	0.00	1149.86	0.00	0.00	0.00	0.00
59	0.00	1768.11	0.00	0.00	0.00	0.00
65	12.96	525.39	-4.45	10451.94	-1326.13	1244.28
104	-.12	474.29	-11.28	-4918.95	3736.56	7825.63

B) (LOAD CASE 4)

NORMAL OPERATING TEMPERATURE INCL. THERMAL ANCHOR MOVEMENTS

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.00	-675.46	0.00	0.00	0.00	.00
10	560.38	203.75	284.97	-4012.44	9228.07	-6255.07
11	-1671.29	1097.22	157.11	-2634.61	-10517.07	1352.26
20	0.00	-1460.50	0.00	0.00	0.00	0.00
22	0.00	701.63	0.00	0.00	0.00	0.00
35	0.00	-857.45	0.00	0.00	0.00	0.00
38	977.90	376.02	254.22	7470.41	-9009.52	-3639.22
45	-360.08	-111.01	329.44	-5334.57	-10092.46	304.09
49	0.00	105.73	0.00	0.00	0.00	0.00
59	0.00	1149.37	0.00	0.00	0.00	0.00
65	559.55	-409.96	-1015.73	-18958.21	68617.50	-6022.39
104	33.94	-209.33	-10.00	29085.74	7026.35	-51897.47

C) (LOAD CASE 6)

SEISMIC ANCHOR MOVEMENTS X-DIRECTION (1/2 SSE)

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.000	25.850	0.000	0.000	0.000	0.000
10	-12.370	-8.824	-12.937	-12 .576	-61.195	70.762
11	337.391	-288.937	-78.741	-428 .223	-862.161	-2813.046
20	0.000	562.991	0.000	0.000	0.000	0.000
22	0.000	-281.847	0.000	0.000	0.000	0.000
35	0.000	73.804	0.000	.000	0.000	0.000
38	-133.484	-17.491	-28.437	-80 .606	948.309	1580.694
45	-47.869	84.902	-45.066	67 .739	2309.582	504.916
49	0.000	-93.998	0.000	.000	0.000	0.000
59	0.000	19.030	0.000	.000	0.000	0.000
65	-209.442	-58.277	163.364	142 .700	6678.487	3856.9 8
104	4.774	-9.703	-.782	140 .647	1109.730	-849.011

TABLE B-11 ELASTIC SUPPORT REACTIONS

D) (LOAD CASE 7)

SEISMIC ANCHOLR MOVEMENTS Z-DIRECTION (1/2 SSE)

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.00	6.80	0.00	0.00	0.00	0.00
10	-20.58	-2.35	-18.50	-222.84	-222.82	261.79
11	-276.84	169.35	191.25	983.15	-1203.64	2189.23
20	0.00	-253.53	0.00	0.00	0.00	0.00
22	0.00	9.32	0.00	0.00	0.00	0.00
35	0.00	-110.53	0.00	0.00	0.00	0.00
38	135.68	35.45	31.60	722.41	-1230.43	-1393.21
45	-.38	-50.47	114.94	-1619.36	-3633.07	-146.87
49	0.00	35.50	0.00	0.00	0.00	0.00
59	0.00	289.15	0.00	0.00	0.00	0.00
65	163.38	-134.63	-313.38	-11320.89	22271.01	-6334.05
104	-1.27	5.85	4.09	-2508.78	-1358.05	1316.13

E) (LOAD CASE 12)

SEISMIC ANCHOR MOVEMENTS X - DIRECTION (SSE)

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.000	34.158	0.000	0.000	0.000	0.000
10	-15.923	-11.599	-16.653	-156.392	-77.147	88.625
11	522.274	-340.810	-104.779	-5646.491	-347.644	-3703.627
20	0.000	748.713	0.000	0.000	0.000	0.000
22	0.000	-358.100	0.000	0.000	0.000	0.000
35	0.000	97.555	0.000	0.000	0.000	0.000
38	-176.100	-23.106	-34.922	-1062.057	1253.515	2085.245
45	-62.816	111.128	-53.861	893.549	3171.608	767.649
49	0.000	-120.491	0.000	0.000	0.000	0.000
59	0.000	36.539	0.000	0.000	0.000	0.000
65	-277.446	-134.567	217.790	1541.311	8762.270	5108.541
104	10.009	-19.339	-1.524	2854.191	2014.627	-1530.613

F) (LOAD CASE 13)

SEISMIC ANCHOR MOVEMENTS Z - DIRECTION (SSE)

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.00	8.93	0.00	0.00	0.00	0.00
10	-27.00	-3.07	-24.27	-292.28	-292.71	343.80
11	-365.78	223.60	238.74	1303.79	-1579.23	2890.30
20	0.00	-333.67	0.00	0.00	0.00	0.00
22	0.00	12.22	0.00	0.00	0.00	0.00
35	0.00	-145.71	0.00	0.00	0.00	0.00
38	178.04	46.72	41.66	951.10	-1700.34	-1837.64
45	-.77	-66.80	151.40	-2120.23	-4706.79	-197.62
49	0.00	37.43	0.00	0.00	0.00	0.00
59	0.00	379.17	0.00	0.00	0.00	0.00
65	216.37	-184.25	-415.98	-15270.65	29385.23	-8413.14
104	-2.17	10.63	8.45	-5010.92	-2044.39	2458.70

TABLE B-11 E L A S T I C S U P P O R T R E A C T I O N S

G) X + Y EARTHQUAKE (1/2 SSE) (LOAD CASE 8)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SQSS SUMMATION

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.0	50.0	0.0	0.	0.	0.
10	53.1	14.8	52.0	635.	446.	589.
11	320.9	207.5	105.9	4536.	3318.	2141.
20	0.0	538.2	0.0	0.	0.	0.
22	153.9	322.1	0.0	0.	0.	0.
35	0.0	36.9	0.0	0.	0.	0.
38	13.3	16.7	17.4	264.	731.	342.
45	38.1	84.9	86.6	930.	1170.	1458.
46	0.0	0.0	196.6	0.	0.	0.
49	0.0	125.5	0.0	0.	0.	0.
59	0.0	600.3	0.0	0.	0.	0.
65	505.3	338.9	268.2	11669.	16206.	10804.
69	0.0	545.9	0.0	0.	0.	0.
90	0.0	0.0	269.1	0.	0.	0.
97	0.0	0.0	702.2	0.	0.	0.
104	411.4	166.9	378.6	30760.	16299.	21012.
105	200.3	0.0	0.0	0.	0.	0.
106	172.9	0.0	129.9	0.	0.	0.

INCLINED AXIS SUPPORT REACTIONS

SUPPORT JOINT	REACTION TYPE	REACTION MAGNITUDE	DIRECTION COSINES (INCLINED AXIS) X	Y	Z
107	FORCE	371.5	-.9061	0.0000	-.4230
107	FORCE	208.0	.4230	0.0000	-.9061

H) Z + Y EARTHQUAKE (1/2 SSE) (LOAD CASE 9)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SQSS SUMMATION

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.0	46.0	0.0	0.	0.	0.
10	29.5	11.7	29.2	323.	234.	313.
11	200.7	130.2	66.6	3870.	1812.	1679.
20	0.0	469.6	0.0	0.	0.	0.
22	95.0	310.1	0.0	0.	0.	0.
35	0.0	31.3	0.0	0.	0.	0.
38	9.6	13.1	21.1	364.	896.	242.
45	12.6	51.4	73.6	491.	1120.	902.
46	0.0	0.0	266.2	0.	0.	0.
49	0.0	124.9	0.0	0.	0.	0.
59	0.0	798.1	0.0	0.	0.	0.
65	343.3	431.5	268.2	12091.	19031.	7885.
69	0.0	735.4	0.0	0.	0.	0.
90	0.0	0.0	337.8	0.	0.	0.
97	0.0	0.0	838.6	0.	0.	0.
104	421.2	120.6	458.9	29628.	9493.	23102.
105	303.1	0.0	0.0	0.	0.	0.
106	101.3	0.0	127.7	0.	0.	0.

INCLINED AXIS SUPPORT REACTIONS

SUPPORT JOINT	REACTION TYPE	REACTION MAGNITUDE	DIRECTION COSINES (INCLINED AXIS) X	Y	Z
107	FORCE	376.7	-.9061	0.0000	-.4230
107	FORCE	293.4	.4230	0.0000	-.9061

TABLE B-11 E L A S T I C S U P P O R T R E A C T I O N S

J) X+ Y DBE EARTHQUAKE (SSE) (LOAD CASE 10)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SQSS SUMMATION

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.0	79.9	0.0	0.	0.	0.
10	107.1	25.6	104.8	1317.	914.	1213.
11	612.4	341.0	231.1	7411.	6768.	3755.
20	0.0	651.3	0.0	0.	0.	0.
22	292.0	387.1	0.0	0.	0.	0.
35	0.0	69.2	0.0	0.	0.	0.
38	25.4	31.2	33.7	514.	1466.	661.
45	81.8	181.2	178.7	1879.	2411.	3105.
46	0.0	0.0	295.8	0.	0.	0.
49	0.0	246.1	0.0	0.	0.	0.
59	0.0	910.6	0.0	0.	0.	0.
65	772.2	529.3	417.5	17590.	24075.	16461.
69	0.0	813.1	0.0	0.	0.	0.
90	0.0	0.0	381.7	0.	0.	0.
97	0.0	0.0	938.6	0.	0.	0.
104	609.8	227.2	505.7	37303.	25025.	27908.
105	336.9	0.0	0.0	0.	0.	0.
106	267.0	0.0	213.8	0.	0.	0.

INCLINED AXIS SUPPORT REACTIONS

SUPPORT JOINT	REACTION TYPE	REACTION MAGNITUDE	DIRECTION COSINES (INCLINED AXIS) X	Y	Z
107	FORCE	616.0	-.9061	0.0000	-.4230
107	FORCE	343.3	.4230	0.0000	-.9061

K) Z+ Y DBE EARTHQUAKE (SSE) (LOAD CASE 11)

TOTAL RESPONSE EQUALS MODE 1 THROUGH 40 BY SQSS SUMMATION

SUPPORT JOINT	FORCE (LB.) X	Y	Z	MOMENT (IN-LB.) X	Y	Z
4	0.	67.	0.	0.	0.	0.
10	42.	16.	41.	494.	341.	461.
11	265.	254.	108.	5372.	2611.	2235.
20	0.	659.	0.	0.	0.	0.
22	146.	407.	0.	0.	0.	0.
35	0.	54.	0.	0.	0.	0.
38	18.	22.	38.	651.	1579.	419.
45	23.	99.	124.	738.	1917.	1723.
46	0.	0.	384.	0.	0.	0.
49	0.	212.	0.	0.	0.	0.
59	0.	906.	0.	0.	0.	0.
65	652.	535.	479.	18489.	23916.	14767.
69	0.	966.	0.	0.	0.	0.
90	0.	0.	422.	0.	0.	0.
97	0.	0.	1041.	0.	0.	0.
104	545.	180.	971.	37209.	14711.	28910.
105	380.	0.	0.	0.	0.	0.
106	155.	0.	243.	0.	0.	0.

INCLINED AXIS SUPPORT REACTIONS

SUPPORT JOINT	REACTION TYPE	REACTION MAGNITUDE	DIRECTION COSINES (INCLINED AXIS) X	Y	Z
107	FORCE	482.7	-.9061	0.0000	-.4230
107	FORCE	451.3	.4230	0.0000	-.9061

TABLE B - 111

Pages B - 16 through B - 42

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

0.1 CLASS 2 STRESSES FOR ANALYSIS SET NUMBER 1

ASSIGNED LOAD COMBINATION IDENTIFIERS
MA = 1 MB = 7 MC = 3 P = 1 PMAX = 2

0.1.1 SATISFACTION OF EQUATION 8 (ANALYSIS SET 1)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
1S	1	3746.977	0.000	131.607	0.000	0.000	3914.584	25893.481	.24645	
	2	3746.977	0.000	33.191	0.000	0.000	3723.169	25323.714	.24026	
2S	1	4249.645	0.000	465.419	0.000	0.000	4765.178	25772.725	.23997	
	11	4249.638	0.000	323.475	0.000	0.000	4613.564	25767.115	.23916	
3S	1	3736.977	0.000	341.292	0.000	0.000	4128.269	25855.243	.25964	
	12	3746.977	0.000	199.475	0.000	0.000	3936.452	25345.723	.25079	
4S	3	4249.638	0.000	65.741	0.000	0.000	4275.433	25403.770	.27518	
	4	4249.688	0.000	363.255	0.000	0.000	4632.947	25743.749	.25764	
5S	4	4249.688	0.000	363.258	0.000	0.000	4632.947	25743.749	.25764	
	6	4249.645	0.000	76.951	0.000	0.000	4166.640	25154.519	.27463	
6S	7	4249.638	0.000	206.553	0.000	0.000	4496.243	25777.446	.25274	
	8	4249.604	0.000	129.552	0.000	0.000	4419.248	25733.411	.27794	
7S	9	4249.645	0.000	215.707	0.000	0.000	4525.385	25775.134	.24336	
	10	4249.638	0.000	219.664	0.000	0.000	4539.352	25774.263	.25351	
8S	13	3786.977	0.000	146.713	0.000	0.000	3993.640	25555.334	.25856	
	14	3776.977	0.000	113.743	0.000	0.000	3970.720	25551.727	.24973	
9S	15	3746.977	0.000	116.264	0.000	0.000	3903.247	25173.760	.24549	
	16	3746.977	0.000	176.763	0.000	0.000	3963.748	25393.935	.24020	
10S	16	3746.977	0.000	176.763	0.000	0.000	3963.748	25393.935	.24020	
	17	3746.977	0.000	546.678	0.000	0.000	4333.655	25811.726	.27252	
11S	18	3746.977	0.000	451.396	0.000	0.000	4238.373	25521.546	.25656	
	19	3746.977	0.000	53.669	0.000	0.000	3860.646	25907.863	.24407	

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
1C	2	3786.977	0.000	44.479	0.000	0.000	3831.456	25919.315	.24097	
	3	3786.977	0.000	32.771	0.000	0.000	3819.748	25925.414	.24024	
2C	6	4249.645	0.000	76.951	0.000	0.000	4326.595	25174.519	.27463	
	7	4249.688	0.000	246.551	0.000	0.000	4496.243	25777.446	.25278	
3C	8	4249.638	0.000	143.791	0.000	0.000	4483.480	25774.781	.28198	
	9	4249.645	0.000	322.667	0.000	0.000	4612.355	25752.175	.29039	

4C	12	3746.977	0.000	267.994	0.000	0.000	4854.962	25570.571	.29503
	13	3736.977	0.000	263.612	0.000	0.000	4859.590	25475.750	.25475
5C	1	3786.977	0.000	183.741	0.000	0.000	3970.720	25555.732	.24973
	15	3736.977	0.000	116.264	0.000	0.000	3933.247	25933.550	.24549
6C	17	3746.977	0.000	731.793	0.000	0.000	4518.770	25772.761	.25420
	18	3786.977	0.000	604.918	0.000	0.000	4391.887	25799.224	.27622

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
12S	23	3746.977	0.000	267.661	0.000	0.000	4054.659	25870.335	.25021	
	25	3746.977	0.000	52.251	0.000	0.000	3833.236	25915.542	.24146	
13S	26	3746.977	0.000	76.764	0.000	0.000	3868.748	25911.379	.24313	
	27	3736.977	0.000	51.501	0.000	0.000	3833.482	25916.422	.24141	
14S	28	3746.977	0.000	82.331	0.000	0.000	3879.317	25914.545	.24147	
	29	3746.977	0.000	116.741	0.000	0.000	3907.718	25909.368	.24552	
15S	29	4249.688	0.000	324.281	0.000	0.000	4613.976	25753.330	.25749	
	30	4249.638	0.000	112.877	0.000	0.000	4402.587	25770.394	.27699	
16S	29	4249.688	0.000	223.594	0.000	0.000	4513.282	25771.407	.25735	
	39	4249.638	0.000	76.371	0.000	0.000	4366.041	25864.925	.27493	
17S	38	4249.688	0.000	118.677	0.000	0.000	4407.587	25770.354	.27699	
	31	4249.688	0.000	131.984	0.000	0.000	4425.678	25771.043	.27736	
18S	32	4249.638	0.000	73.716	0.000	0.000	4369.708	25864.357	.27499	
	33	4249.688	0.000	101.561	0.000	0.000	4398.604	25771.491	.27617	
19S	34	4249.638	0.000	93.944	0.000	0.000	4343.628	25863.448	.27319	
	35	4249.688	0.000	269.869	0.000	0.000	4569.598	25763.936	.25876	
20S	35	4249.638	0.000	269.869	0.000	0.000	4569.598	25763.936	.25876	
	36	4249.688	0.000	23.733	0.000	0.000	4319.472	25814.673	.27165	
21S	37	4249.638	0.000	51.622	0.000	0.000	4341.311	25813.371	.27334	
	38	4249.688	0.000	37.064	0.000	0.000	4326.754	25813.745	.27192	
22S	40	4249.688	0.000	25.984	0.000	0.000	4315.569	25814.105	.27161	
	41	4249.688	0.000	117.331	0.000	0.000	4407.021	25770.319	.27717	
23S	42	4249.688	0.000	117.794	0.000	0.000	4407.480	25770.317	.27720	
	43	4249.688	0.000	51.513	0.000	0.000	4351.201	25811.445	.27355	
24S	44	4249.688	0.000	173.691	0.000	0.000	4463.380	25774.812	.28072	
	45	4249.688	0.000	206.491	0.000	0.000	4496.185	25777.051	.28278	

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
7C	25	3746.977	0.000	76.672	0.000	0.000	3857.803	25913.436	.24854	
	26	3746.977	0.000	105.591	0.000	0.000	3898.519	25909.510	.24641	
8C	27	3736.977	0.000	64.824	0.000	0.000	3856.958	25913.193	.24397	
	24	3746.977	0.000	79.111	0.000	0.000	3857.167	25913.453	.24853	
9C	31	4249.638	0.000	261.423	0.000	0.000	4491.179	25777.714	.24859	
	32	4249.688	0.000	139.231	0.000	0.000	4408.973	25795.604	.27729	

10C	33	4229.445	0.000	101.36	0.000	0.000	4331.094	25733.471	.27417	
	34	4229.459	0.000	53.99	0.000	0.000	4283.678	25733.468	.27319	
11C	36	4289.459	0.000	44.67	0.000	0.000	4334.165	25811.470	.27759	
	37	4289.683	0.000	77.22	0.000	0.000	4366.939	25810.337	.27446	
12C	39	4289.468	0.000	112.74	0.000	0.000	4402.435	25730.333	.27688	
	40	4289.668	0.000	43.23	0.000	0.000	4332.918	25811.756	.27251	
13C	41	4289.684	0.000	175.51	0.000	0.000	4465.201	25811.446	.28083	
	42	4289.684	0.000	176.15	0.000	0.000	4465.843	25811.758	.28087	
14C	43	4289.684	0.000	136.09	0.000	0.000	4426.578	25731.152	.27840	
	44	4289.684	0.000	259.81	0.000	0.000	4549.507	25769.730	.28613	

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
25S	19	4672.481	0.000	309.04	0.000	0.000	4981.530	25673.305	.31330	
	20	4672.481	0.000	561.71	0.000	0.000	5234.194	25823.734	.32319	
26S	19	4672.481	0.000	358.94	0.000	0.000	5031.426	25663.322	.31644	
	46	4672.481	0.000	173.00	0.000	0.000	4845.481	25737.335	.30475	
27S	20	4672.481	0.000	561.71	0.000	0.000	5234.194	25823.734	.32919	
	21	4672.481	0.000	321.24	0.000	0.000	4993.731	25671.332	.31407	
28S	21	4672.481	0.000	321.24	0.000	0.000	4993.731	25671.332	.31407	
	22	4672.481	0.000	203.25	0.000	0.000	4875.736	25638.436	.30685	
29S	22	4672.481	0.000	203.25	0.000	0.000	4875.736	25638.436	.30685	
	23	4672.481	0.000	151.79	0.000	0.000	4824.278	25707.141	.30341	
30S	23	4672.481	0.000	5.16	0.000	0.000	4677.645	25733.530	.29419	
	24	4672.481	0.000	.00	0.000	0.000	4672.481	25733.530	.29187	
31S	47	4672.481	0.000	262.41	0.000	0.000	4934.893	25663.335	.31037	
	48	4672.481	0.000	128.48	0.000	0.000	4800.962	25712.775	.30199	
32S	49	4672.481	0.000	131.40	0.000	0.000	4803.882	25711.675	.30213	
	50	4672.481	0.000	139.59	0.000	0.000	4812.078	25703.333	.30265	
33S	50	4672.481	0.000	139.59	0.000	0.000	4812.078	25703.333	.30265	
	51	4672.481	0.000	152.95	0.000	0.000	4825.434	25737.335	.30349	
34S	52	4672.481	0.000	133.05	0.000	0.000	4805.532	25711.324	.30223	
	53	4672.481	0.000	2811.46	0.000	0.000	7484.048	25141.145	.47074	
35S	53	4672.481	0.000	2798.09	0.000	0.000	7471.578	25144.730	.46991	
	54	4672.481	0.000	1022.26	0.000	0.000	5694.741	25522.168	.35816	
36S	54	4672.481	0.000	1022.26	0.000	0.000	5694.741	25522.168	.35816	
	55	4672.481	0.000	412.40	0.000	0.000	5084.890	25651.351	.31950	
37S	56	4672.481	0.000	330.70	0.000	0.000	5003.181	25669.324	.31467	
	57	4672.481	0.000	445.40	0.000	0.000	5118.289	25644.454	.32190	
38S	57	5541.562	0.000	427.36	0.000	0.000	5968.927	25761.623	.35957	
	59	5541.562	0.000	925.14	0.000	0.000	6466.706	25740.825	.36546	

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
15C	46	4672.481	0.000	173.000	0.000	0.000	4845.481	25732.535	.30475	
	47	4672.481	0.000	262.412	0.000	0.000	4934.893	25663.335	.31037	
16C	43	4672.481	0.000	199.519	0.000	0.000	4872.000	25637.700	.30642	
	49	4672.481	0.000	204.052	0.000	0.000	4876.533	25809.237	.30670	
17C	51	4672.481	0.000	237.52	0.000	0.000	4910.001	25639.125	.30881	
	52	4672.481	0.000	206.61	0.000	0.000	4879.096	25645.492	.30686	
18C	55	4672.481	0.000	412.40	0.000	0.000	5084.890	25651.351	.31950	
	56	4672.481	0.000	330.70	0.000	0.000	5003.181	25669.324	.31467	

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
39S	59	5886.562	0.000	525.14	0.000	0.000	6411.706	25667.013	.34625	
	60	5886.562	0.000	87.35	0.000	0.000	5973.914	25761.043	.35087	
40S	60	5886.562	0.000	87.35	0.000	0.000	5973.914	25761.043	.35087	
	61	5886.562	0.000	72.52	0.000	0.000	5959.036	25761.634	.35098	
41S	62	5886.562	0.000	88.06	0.000	0.000	5974.628	25760.332	.35092	
	63	5886.562	0.000	66.55	0.000	0.000	5953.113	25760.714	.35083	
42S	64	5886.562	0.000	79.84	0.000	0.000	5966.406	25760.191	.35076	
	65	5886.562	0.000	324.58	0.000	0.000	6211.145	25710.132	.37417	

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T8)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T8/(1.0*SH)	MODIFIED STRESS RATIO
19C	61	5886.562	0.000	129.138	0.000	0.000	6014.700	25731.476	.35733	
	62	5886.562	0.000	160.598	0.000	0.000	6047.141	25740.341	.35945	
20C	63	5886.562	0.000	152.933	0.000	0.000	6039.473	25740.610	.35892	
	64	5886.562	0.000	139.305	0.000	0.000	6025.867	25749.533	.35800	

LAGUNA FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T B)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO (B/(1.0*SM))	MODIFIED STRESS RATIO
43S	53	4289.688	0.000	3060.689	0.000	0.000	7350.377	25173.545	.44229	
	66	4289.688	0.000	1757.462	0.000	0.000	6047.170	25447.481	.38032	
44S	66	4289.688	0.000	1757.676	0.000	0.000	6047.314	25438.946	.38045	
	67	4289.655	0.000	1627.755	0.000	0.000	5917.643	25475.128	.37214	
45S	64	4289.655	0.000	1377.766	0.000	0.000	5667.454	25524.156	.35644	
	73	4289.688	0.000	1259.264	0.000	0.000	5574.953	25567.873	.35063	
46S	68	4289.688	0.000	1538.362	0.000	0.000	5829.052	25446.519	.36654	
	69	4289.688	0.000	1202.931	0.000	0.000	5491.720	25565.588	.34539	
47S	69	4289.688	0.000	1196.471	0.000	0.000	5486.187	25567.114	.34492	
	71	4289.688	0.000	469.293	0.000	0.000	4757.906	25721.428	.29024	
48S	71	4289.688	0.000	469.293	0.000	0.000	4757.906	25721.428	.29024	
	72	4289.688	0.000	1023.751	0.000	0.000	5329.438	25593.334	.31718	
49S	72	4289.688	0.000	691.445	0.000	0.000	4951.133	25613.334	.31139	
	107	4289.688	0.000	618.281	0.000	0.000	4887.971	25633.576	.30665	
50S	74	4289.688	0.000	1209.421	0.000	0.000	5477.514	25563.453	.34484	
	75	4289.688	0.000	229.871	0.000	0.000	4519.564	25772.393	.28435	
51S	76	4289.688	0.000	384.771	0.000	0.000	4658.464	25742.576	.29293	
	77	4289.688	0.000	468.29	0.000	0.000	4757.988	25721.432	.29324	
52S	78	4289.688	0.000	357.281	0.000	0.000	4646.975	25745.318	.29226	
	79	4289.688	0.000	1469.321	0.000	0.000	5759.016	25518.709	.35590	
53S	70	4289.638	0.000	1467.694	0.000	0.000	5757.305	25523.976	.35610	
	81	4289.688	0.000	1756.811	0.000	0.000	5996.499	25459.344	.37714	
54S	81	4289.688	0.000	1706.811	0.000	0.000	5996.499	25459.344	.37714	
	82	4289.688	0.000	1313.361	0.000	0.000	5603.050	25543.677	.35277	
55S	83	4289.688	0.000	505.721	0.000	0.000	4795.417	25713.474	.33160	
	72	4289.688	0.000	1633.833	0.000	0.000	5923.526	25473.751	.37255	
56S	84	4289.655	0.000	474.081	0.000	0.000	4763.768	25729.139	.29961	
	85	4289.688	0.000	329.151	0.000	0.000	4614.838	25761.547	.29024	
57S	85	4289.688	0.000	329.151	0.000	0.000	4614.838	25761.547	.29024	
	86	4289.688	0.000	219.869	0.000	0.000	4502.556	25778.132	.28305	
58S	86	4289.688	0.000	210.869	0.000	0.000	4502.556	25778.132	.28305	
	106	4289.658	0.000	201.138	0.000	0.000	4430.824	25778.935	.28244	
59S	87	4289.688	0.000	223.661	0.000	0.000	4519.353	25772.117	.28434	
	84	4289.688	0.000	353.811	0.000	0.000	4642.700	25745.376	.29199	
60S	88	4289.688	0.000	353.811	0.000	0.000	4642.700	25745.376	.29199	
	89	4289.688	0.000	493.621	0.000	0.000	4783.318	25715.945	.30084	
61S	89	4289.658	0.000	493.621	0.000	0.000	4783.318	25715.945	.30084	
	90	4289.658	0.000	629.957	0.000	0.000	4919.262	25687.157	.30939	
62S	91	4289.688	0.000	342.211	0.000	0.000	4631.807	25747.220	.29131	
	105	4289.658	0.000	201.501	0.000	0.000	4431.197	25773.121	.28247	
63S	92	4289.688	0.000	790.174	0.000	0.000	5079.662	25653.029	.31949	
	93	4289.688	0.000	693.791	0.000	0.000	4983.481	25692.676	.30777	
64S	94	3786.377	0.000	123.551	0.000	0.000	3910.533	25901.912	.24595	
	95	3786.977	0.000	117.291	0.000	0.000	3904.271	25902.842	.24555	

65S	96	3786.977	0.000	464.221	0.000	0.000	4251.199	25823.120	.26737
	97	3786.977	0.000	681.991	0.000	0.000	4468.968	25782.144	.28107
66S	97	3786.977	0.000	681.991	0.000	0.000	4468.968	25782.144	.28107
	98	3786.977	0.000	121.041	0.000	0.000	4443.948	25793.944	.27957
67S	99	3786.977	0.000	517.121	0.000	0.000	3089.019	25303.146	.24579
	100	3786.977	0.000	1240.371	0.000	0.000	4326.102	25517.576	.27734
68S	100	3786.977	0.000	1243.371	0.000	0.000	5027.348	25564.149	.31619
	101	3785.977	0.000	446.611	0.000	0.000	5027.348	25564.149	.31619
69S	101	3785.977	0.000	446.611	0.000	0.000	4233.588	25919.503	.26626
	102	3786.377	0.000	244.467	0.000	0.000	4231.568	25932.443	.26626
70S	103	3786.977	0.000	499.681	0.000	0.000	4035.444	25376.168	.25380
	104	3786.977	0.000	499.271	0.000	0.000	4236.662	25921.534	.26650
71S	105	4289.655	0.000	201.50	0.000	0.000	4236.248	25921.672	.26958
	92	4289.658	0.000	790.174	0.000	0.000	4431.197	25773.121	.28247
72S	106	4289.688	0.000	201.134	0.000	0.000	5079.662	25653.029	.31949
	87	4289.688	0.000	229.661	0.000	0.000	4439.824	25771.230	.28044
73S	107	4289.655	0.000	618.281	0.000	0.000	4519.353	25772.117	.28434
	84	4289.688	0.000	474.081	0.000	0.000	4887.971	25653.556	.30665
							4763.768	25729.199	.29961

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T B)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO (B/(1.0*SM))	MODIFIED STRESS RATIO
21C	67	4289.688	0.000	2434.792	0.000	0.000	6723.590	25333.684	.42229	
	65	4289.658	0.000	2301.172	0.000	0.000	6593.661	25338.942	.41452	
22C	73	4289.688	0.000	1922.573	0.000	0.000	6212.261	25412.334	.38071	
	74	4289.655	0.000	1809.723	0.000	0.000	6104.415	25434.374	.38141	
23C	75	4289.655	0.000	319.067	0.000	0.000	4631.590	25747.471	.29142	
	76	4289.688	0.000	551.634	0.000	0.000	4861.224	25701.719	.30440	
24C	77	4289.655	0.000	700.441	0.000	0.000	4810.163	25672.319	.31719	
	78	4289.688	0.000	534.447	0.000	0.000	4824.138	25707.771	.30348	
25C	82	4289.688	0.000	1973.571	0.000	0.000	6263.265	25430.596	.39332	
	83	4289.688	0.000	776.491	0.000	0.000	5064.187	25667.119	.31737	
26C	90	4289.688	0.000	678.573	0.000	0.000	4939.282	25647.147	.30939	
	91	4289.688	0.000	342.211	0.000	0.000	4631.807	25747.220	.29131	
27C	97	4289.688	0.000	693.791	0.000	0.000	4983.481	25692.676	.30777	
	94	4289.688	0.000	433.201	0.000	0.000	4722.917	25771.199	.29204	
28C	95	3786.977	0.000	117.045	0.000	0.000	3904.271	25902.842	.24555	
	96	3786.977	0.000	464.221	0.000	0.000	4251.199	25823.120	.26737	
29C	96	3786.977	0.000	121.041	0.000	0.000	3734.619	25927.546	.24579	
	99	3786.977	0.000	517.121	0.000	0.000	4304.102	25817.576	.27734	
30C	102	3786.977	0.000	248.461	0.000	0.000	4035.444	25924.968	.25380	
	103	3786.977	0.000	499.681	0.000	0.000	4286.662	25821.934	.26960	

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

D.1.2 SATISFACTION OF EQUATION 9 (ANALYSIS SET 1)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
15	1	0.000	4125.890	131.607	543.590	0.000	4497.016	25833.301	.25196	.16796
	2	0.000	4125.890	33.131	191.307	0.000	4350.238	25373.714	.22801	.15201
25	1	0.000	4673.591	465.459	2013.377	0.000	7157.457	25722.925	.37513	.25039
	C1	0.000	4673.591	323.875	1955.983	0.000	6053.449	25757.118	.31727	.21151
35	1	0.000	4125.890	341.292	1333.065	0.000	5800.246	25855.243	.30400	.20266
	12	0.000	4125.890	199.971	402.253	0.000	4728.118	25845.273	.24780	.16520
45	3	0.000	4673.591	85.741	581.475	0.000	5341.160	25807.720	.27004	.18662
	4	0.000	4673.591	363.257	197.077	0.000	5233.926	25743.749	.27431	.18288
55	4	0.000	4673.591	363.257	197.077	0.000	5233.926	25743.749	.27431	.18288
	6	0.000	4673.591	76.951	173.797	0.000	4924.339	25804.589	.25809	.17206
65	7	0.000	4673.591	206.551	198.643	0.000	5078.788	25777.148	.26618	.17746
	8	0.000	4673.591	129.551	67.699	0.000	4870.842	25793.411	.25529	.17019
75	9	0.000	4673.591	215.761	84.055	0.000	4973.356	25775.194	.26066	.17377
	10	0.000	4673.591	219.661	171.165	0.000	5064.359	25774.263	.26543	.17695
85	13	0.000	4125.890	196.712	399.235	0.000	4721.838	25845.366	.24748	.16498
	14	0.000	4125.890	183.742	285.537	0.000	4595.170	25854.722	.24084	.16056
95	15	0.000	4125.890	116.267	391.274	0.000	4633.433	25903.950	.24284	.16189
	16	0.000	4125.890	176.762	444.144	0.000	4746.797	25893.235	.24878	.16586
105	16	0.000	4125.890	176.762	444.144	0.000	4746.797	25893.235	.24878	.16586
	17	0.000	4125.890	546.671	527.347	0.000	5201.314	25811.726	.27261	.18174
115	18	0.000	4125.890	451.391	525.878	0.000	5103.163	25831.446	.26746	.17831
	19	0.000	4125.890	93.661	504.447	0.000	4724.005	25907.863	.24759	.16506

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
1C	2	0.000	4125.890	44.479	256.388	0.000	4426.737	25913.315	.23201	.15467
	3	0.000	4125.890	32.771	222.367	0.000	4381.027	25920.834	.22961	.15335
2C	6	0.000	4673.591	76.951	173.797	0.000	4924.339	25804.589	.25809	.17206
	7	0.000	4673.591	206.551	198.643	0.000	5078.788	25777.048	.26618	.17746
3C	8	0.000	4673.591	193.791	101.268	0.000	4968.650	25773.741	.26041	.17361
	9	0.000	4673.591	322.663	125.733	0.000	5121.986	25752.375	.26845	.17897
4C	12	0.000	4125.890	267.984	533.355	0.000	4932.929	25870.331	.25854	.17236
	13	0.000	4125.890	263.612	535.012	0.000	4924.514	25871.750	.25810	.17207
5C	14	0.000	4125.890	183.741	285.537	0.000	4595.170	25884.722	.24084	.16056
	15	0.000	4125.890	116.265	391.274	0.000	4633.433	25901.060	.24284	.16189
6C	17	0.000	4125.890	731.793	709.371	0.000	5567.054	25772.261	.29177	.19452
	18	0.000	4125.890	604.911	704.723	0.000	5435.523	25799.224	.28488	.18992

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
125	23	0.000	4125.890	267.681	393.911	0.000	4787.483	25873.335	.25092	.16728
	25	0.000	4125.890	52.259	219.452	0.000	4397.601	25916.642	.23045	.15365
135	26	0.000	4125.890	78.769	210.343	0.000	4415.001	25911.929	.23139	.15426
	27	0.000	4125.890	51.505	183.199	0.000	4360.593	25916.923	.22854	.15236
145	28	0.000	4125.890	82.331	171.679	0.000	4349.964	25915.445	.22798	.15199
	29	0.000	4125.890	116.741	241.020	0.000	4490.656	25902.950	.23526	.15691
155	29	0.000	4673.591	324.251	693.375	0.000	5696.753	25797.930	.29857	.19905
	30	0.000	4673.591	112.871	225.143	0.000	5014.612	25795.954	.26282	.17521
165	29	0.000	4673.591	223.594	375.904	0.000	5273.089	25773.427	.27637	.18424
	39	0.000	4673.591	75.372	293.812	0.000	5039.775	25804.925	.26414	.17609
175	30	0.000	4673.591	112.871	225.143	0.000	5014.612	25795.954	.26282	.17521
	31	0.000	4673.591	135.981	225.801	0.000	5035.371	25792.343	.26391	.17594
185	32	0.000	4673.591	79.710	221.373	0.000	4974.673	25804.323	.26073	.17382
	33	0.000	4673.591	101.361	141.691	0.000	4916.646	25773.431	.25769	.17179
195	34	0.000	4673.591	53.991	175.860	0.000	4903.441	25803.468	.25699	.17133
	35	0.000	4673.591	269.861	195.447	0.000	5138.897	25763.526	.26932	.17956
205	35	0.000	4673.591	269.861	195.447	0.000	5133.397	25761.536	.26923	.17956
	36	0.000	4673.591	23.731	119.401	0.000	4822.725	25814.523	.25276	.16851
215	37	0.000	4673.591	51.622	133.591	0.000	4864.604	25803.471	.25497	.16998
	38	0.000	4673.591	37.061	143.127	0.000	4859.794	25813.365	.25471	.16980
225	40	0.000	4673.591	28.901	300.244	0.000	5002.765	25814.833	.26220	.17481
	41	0.000	4673.591	117.331	414.915	0.000	5205.838	25795.009	.27284	.18190
235	42	0.000	4673.591	117.761	429.914	0.000	5221.266	25795.317	.27365	.18243
	43	0.000	4673.591	91.511	414.271	0.000	5183.374	25821.435	.27167	.18111
245	44	0.000	4673.591	173.691	421.322	0.000	5268.604	25734.312	.27613	.18409
	45	0.000	4673.591	206.491	366.641	0.000	5246.728	25777.041	.27499	.18332

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
7C	25	0.000	4125.890	73.832	234.045	0.000	4433.076	25918.336	.23233	.15448
	26	0.000	4125.890	165.587	221.474	0.000	4511.325	25905.536	.23655	.15770
8C	27	0.000	4125.890	63.921	245.083	0.000	4440.413	25917.100	.23273	.15516
	28	0.000	4125.890	70.137	230.068	0.000	4425.099	25913.868	.23199	.15466
9C	31	0.000	4673.591	203.421	337.767	0.000	5214.778	25777.714	.27331	.18221
	32	0.000	4673.591	133.231	371.139	0.000	5123.963	25790.696	.26855	.17903
10C	33	0.000	4673.591	101.361	141.691	0.0[illegible]	4915.646	25773.431	.25763	.17179
	34	0.000	4673.591	53.931	175.860	0.0[illegible]	4903.441	25803.468	.25693	.17133
11C	36	0.000	4673.591	44.473	174.527	0.[illegible]	[illegible]	[illegible]	.25604	[illegible]
	37	0.000	4673.591	77.221	204.838	0.0[illegible]	4959.617	25824.032	.26004	.17329
12C	39	0.000	4673.591	112.741	420.313	0.0[illegible]	5271.350	25776.343	.27646	.18364
	40	0.000	4673.591	43.231	449.153	0.0[illegible]	5165.973	25811.755	.27075	.18053

13C	41	0.000	4673.591	175.413	601.653	0.000	5441.757	25741.445	.21647	.19112
	42	0.000	4673.591	176.191	641.000	0.000	5492.836	25741.438	.21784	.19192
14C	43	0.000	4673.591	136.891	625.679	0.000	5436.165	25741.492	.21641	.19094
	44	0.000	4673.591	259.611	630.235	0.000	5563.646	25765.730	.21960	.19440

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
25S	19	0.000	5030.641	503.049	415.825	0.000	5515.514	25671.336	.30458	.20278
	20	0.000	5030.641	561.713	435.003	0.000	6087.358	25621.234	.31934	.21278
26S	19	0.000	5030.641	358.945	503.724	0.000	5965.318	25663.732	.31252	.20831
	46	0.000	5030.641	173.000	413.769	0.000	5677.410	25702.535	.29756	.19837
27S	20	0.000	5030.641	561.713	435.003	0.000	6067.358	25623.334	.31904	.21270
	21	0.000	5030.641	321.241	243.501	0.000	5601.381	25671.332	.29672	.19781
28S	21	0.000	5030.641	321.241	249.501	0.000	5641.381	25671.332	.29672	.19781
	22	0.000	5030.641	203.251	215.327	0.000	5512.223	25619.436	.28899	.19267
29S	22	0.000	5030.641	203.251	215.327	0.000	5512.223	25619.436	.28898	.19268
	23	0.000	5030.641	151.797	224.451	0.000	5464.851	25707.341	.28652	.19102
30S	23	0.000	5030.641	5.164	.000	0.000	5035.805	25738.500	.26708	.17805
	24	0.000	5030.641	.000	.000	0.000	5030.641	25733.534	.26681	.17787
31S	47	0.000	5030.641	262.411	538.059	0.000	5831.112	25611.435	.30676	.20584
	48	0.000	5030.641	128.481	606.903	0.000	5826.173	25712.736	.30635	.20357
32S	49	0.000	5030.641	131.401	594.351	0.000	5816.303	25711.475	.30644	.20323
	50	0.000	5030.641	139.591	430.039	0.000	5660.276	25703.933	.29666	.19777
33S	50	0.000	5030.641	139.591	430.039	0.000	5660.276	25703.933	.29666	.19777
	51	0.000	5030.641	142.952	474.982	0.000	5714.576	25707.036	.29972	.19981
34S	52	0.000	5030.641	173.053	452.239	0.000	5715.670	25711.374	.29956	.19972
	53	0.000	5030.641	2302.463	1449.346	0.000	9340.055	25141.744	.43389	.32466
35S	53	0.000	5030.641	2793.093	1972.145	0.000	9561.615	25144.730	.41447	.34458
	54	0.000	5030.641	1022.261	630.413	0.000	6743.313	25523.166	.35342	.23562
36S	54	0.000	5030.641	1022.261	630.413	0.000	6743.313	25522.168	.35342	.23562
	55	0.000	5030.641	412.401	563.725	0.000	6006.774	25691.341	.31901	.21265
37S	56	0.000	5030.641	333.701	645.959	0.000	6063.440	25663.324	.31810	.21207
	57	0.000	5030.641	445.887	694.425	0.000	6190.853	25644.164	.32447	.21631
38S	57	0.000	6037.500	427.361	743.783	0.000	7214.818	25761.503	.36215	.24145
	59	0.000	6037.500	525.143	862.679	0.000	7425.522	25740.825	.37277	.24851

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
15C	46	0.000	5030.641	173.000	413.769	0.000	5677.410	25702.535	.29756	.19837
	47	0.000	5030.641	262.411	538.059	0.000	5891.112	25611.435	.30676	.20584
16C	48	0.000	5030.641	199.513	942.580	0.000	6232.739	25697.200	.32666	.21778
	49	0.000	5030.641	204.051	922.966	0.000	6217.661	25695.237	.32587	.21725
17C	51	0.000	5030.641	237.521	737.600	0.000	6065.761	25693.125	.31791	.21194
	52	0.000	5030.641	206.611	764.397	0.000	6061.653	25695.692	.31770	.21180

18C	55	0.000	5030.641	412.401	583.725	0.000	6056.774	25691.341	.31901	.21268
	56	0.000	5030.641	330.701	648.098	0.000	6063.440	25663.324	.31810	.21207

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
39S	59	0.000	6900.000	525.143	862.679	0.000	8284.822	25667.517	.41627	.27734
	60	0.000	6900.000	87.351	639.023	0.000	7426.374	25763.543	.38295	.25523
40S	60	0.000	6900.000	87.351	639.023	0.000	7426.374	25763.543	.33265	.25523
	61	0.000	6900.000	72.521	405.067	0.000	7393.590	25763.494	.37051	.24701
41S	62	0.000	6900.000	85.065	373.612	0.000	7366.677	25763.332	.36881	.24654
	63	0.000	6900.000	86.554	423.233	0.000	7409.789	25761.714	.37198	.24795
42S	64	0.000	6900.0	78.844	543.242	0.000	7526.086	25761.351	.37792	.25194
	65	0.000	6900.0	324.582	894.689	0.000	7919.251	25713.132	.39755	.26504

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
19C	61	0.000	6900.000	126.135	720.992	0.000	7749.135	25751.376	.38971	.25814
	62	0.000	6900.000	155.598	664.150	0.000	7724.548	25746.041	.38779	.25693
20C	63	0.000	6900.000	192.921	747.793	0.000	7853.720	25746.410	.39160	.25937
	64	0.000	6900.000	139.325	970.425	0.000	8003.733	25749.533	.40210	.26606

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
435	53	0.000	4673.591	3080.449	6976.172	0.000	14460.451	25178.545	.76837	.51224
	66	0.000	4673.591	1757.142	4073.774	0.000	10534.836	25447.441	.56057	.36705
445	66	0.000	4673.591	1737.426	2447.152	0.000	8510.108	25439.346	.44766	.31154
	67	0.000	4673.591	1627.355	2304.374	0.000	8405.909	25475.129	.45104	.30973
455	66	0.000	4673.591	1377.761	2013.051	0.000	8141.399	25521.156	.42670	.29446
	73	0.000	4673.591	1245.264	1692.395	0.000	7851.250	25547.373	.41149	.27433
465	68	0.000	4673.591	1535.362	2251.609	0.000	8465.563	25544.379	.44389	.29579
	69	0.000	4673.591	1702.834	2255.845	0.000	8131.475	25569.538	.42618	.28412
475	69	0.000	4673.591	1194.471	2251.524	0.000	8113.595	25567.114	.42556	.28378
	71	0.000	4673.591	468.293	2013.731	0.000	7161.821	25721.478	.37535	.25018
485	71	0.000	4673.591	468.293	1364.362	0.000	6505.950	25721.478	.34098	.22732
	72	0.000	4673.591	1039.758	1567.701	0.000	7251.042	25593.336	.38181	.25448
495	72	0.000	4673.591	661.445	1647.731	0.000	6932.766	25655.994	.36597	.24398
	107	0.000	4673.591	818.782	1853.467	0.000	7145.340	25691.536	.37449	.24966
505	74	0.000	4671.591	1209.821	1755.309	0.000	7641.811	25561.693	.40051	.26701
	75	0.000	4671.591	729.471	717.284	0.000	5029.738	25773.533	.23459	.15639
515	76	0.000	4673.591	385.771	769.816	0.000	5750.342	25747.576	.30138	.20092
	77	0.000	4673.591	463.281	727.907	0.000	5569.777	25721.432	.30764	.20509
525	78	0.000	4673.591	357.281	759.907	0.000	5781.064	25745.318	.30789	.20193
	79	0.000	4673.591	1409.121	959.111	0.000	7102.037	25584.759	.37222	.24815
535	81	0.000	4673.591	1647.691	967.369	0.000	7039.146	25533.356	.37155	.24779
	61	0.000	4671.591	1706.811	1157.615	0.000	7535.216	25455.744	.39908	.26599
545	82	0.000	4673.591	1706.811	632.234	0.000	7012.635	25458.744	.36754	.24503
	53	0.000	4673.591	1319.361	622.859	0.000	6675.811	25540.577	.34589	.23726
555	72	0.000	4673.591	505.721	747.144	0.000	5926.467	25713.474	.31041	.20707
	84	0.000	4673.591	1623.831	824.316	0.000	7132.244	25473.751	.37391	.24930
565	84	0.000	4673.591	474.081	1715.151	0.000	6862.821	25725.139	.35369	.23579
	85	0.000	4671.591	325.151	1333.549	0.000	6935.588	25758.447	.34766	.23244
575	85	0.000	4673.591	325.151	1333.549	0.000	6935.588	25751.347	.34765	.23244
	86	0.000	4673.591	219.861	1333.221	0.000	6223.641	25775.132	.32319	.21746
585	86	0.000	4671.591	219.867	1333.223	0.000	6223.681	25776.172	.32319	.21746
	106	0.000	4673.591	201.138	1533.285	0.000	6412.592	25773.330	.33611	.22437
595	87	0.000	4671.591	229.661	1214.310	0.000	6121.266	25775.137	.32282	.21735
	88	0.000	4673.591	393.011	2273.591	0.000	7159.193	25745.376	.33287	.25525
605	88	0.000	4671.591	393.011	2275.591	0.000	7335.103	25745.926	.38287	.25525
	89	0.000	4673.591	433.627	1546.393	0.000	6713.613	25715.045	.35187	.23458
615	89	0.000	4671.591	493.629	1546.351	0.000	6713.613	25715.945	.35187	.23458
	90	0.000	4671.591	629.573	1306.361	0.000	6209.632	25647.157	.33069	.22046
625	91	0.000	4673.591	342.214	1238.186	0.000	6321.996	25745.295	.33040	.22027
	105	0.000	4671.591	201.581	1339.115	0.000	6214.215	25775.121	.32569	.21713
635	92	0.000	4671.591	709.174	1373.398	0.000	6842.154	25651.929	.35160	.23357
	93	0.000	4673.591	603.791	1995.664	0.000	7273.047	25693.635	.38119	.25412
645	94	0.000	4125.890	123.551	514.006	0.000	4763.451	25931.512	.24956	.16644
	95	0.000	4125.890	117.291	452.963	0.000	4696.146	25902.642	.24613	.16409

655	96	0.000	4125.890	464.221	534.239	0.000	5124.341	25929.120	.26957	.17965
	97	0.000	4125.890	591.991	1341.384	0.000	6151.265	25733.344	.32233	.21433
665	97	0.000	4125.890	601.991	1343.384	0.000	6151.265	25732.144	.32234	.21433
	95	0.000	4125.890	121.941	902.690	0.000	5233.621	25932.946	.27441	.18258
675	99	0.000	4125.890	517.121	1150.510	0.000	5803.565	25817.978	.30417	.20273
	100	0.000	4125.890	1240.371	945.359	0.000	6311.658	25664.139	.33048	.22032
685	100	0.000	4125.890	1240.371	545.355	0.000	6311.658	25664.139	.33050	.22033
	101	0.000	4125.890	446.611	329.596	0.000	4795.007	25933.563	.25671	.17114
695	101	0.000	4125.890	446.611	329.596	0.000	4036.047	25933.563	.25671	.17114
	102	0.000	4125.893	248.462	1573.336	0.000	5447.742	25874.308	.28552	.19035
705	103	0.000	4125.890	499.081	2001.636	0.000	6627.211	25921.534	.34734	.23156
	104	0.000	4125.890	499.371	2036.232	0.000	6661.392	25921.672	.34913	.23275
715	105	0.000	4673.591	201.581	1339.116	0.000	6214.215	25773.121	.32568	.21713
	92	0.000	4673.591	709.174	1376.398	0.000	6842.154	25651.929	.35160	.23857
725	106	0.000	4673.591	201.131	1525.266	0.000	6412.592	25773.330	.33611	.27457
	87	0.000	4673.591	229.661	1213.313	0.000	6121.266	25773.137	.32282	.21788
735	107	0.000	4673.591	618.281	1853.467	0.000	7145.340	25691.536	.37449	.24966
	84	0.000	4673.591	474.081	1715.151	0.000	6862.821	25728.139	.35969	.23979

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
210	67	0.000	4673.591	2434.292	3447.925	0.000	10555.810	25310.594	.56324	.36883
	68	0.000	4673.591	2301.173	3371.077	0.000	10345.642	25331.742	.54223	.35349
220	73	0.000	4673.591	1902.972	2830.754	0.000	9426.918	25412.334	.49687	.32556
	74	0.000	4673.591	1803.721	2670.359	0.000	9113.626	25413.334	.47765	.31244
230	75	0.000	4673.591	343.669	1072.925	0.000	6030.377	25747.471	.31579	.21065
	76	0.000	4673.591	551.683	1053.851	0.000	6294.157	25719.719	.32377	.21058
240	77	0.000	4673.591	700.961	1065.645	0.000	6452.916	25677.339	.33173	.22062
	78	0.000	4673.591	534.441	1122.204	0.000	6330.242	25737.171	.33177	.22118
250	82	0.000	4673.591	1571.571	1021.481	0.000	7653.628	25401.506	.40192	.26795
	83	0.000	4673.591	706.401	1117.629	0.000	6547.716	25563.135	.34717	.23174
260	90	0.000	4673.591	629.573	1306.364	0.000	6321.532	25647.157	.33069	.22045
	91	0.000	4673.591	342.214	1238.186	0.000	6321.996	25745.295	.33040	.22027
270	93	0.000	4673.591	603.791	1995.664	0.000	7273.047	25693.635	.38119	.25412
	94	0.000	4673.591	433.224	1852.288	0.000	6703.104	25775.410	.36211	.24141
280	95	0.000	4125.890	117.291	452.963	0.000	4696.146	25932.642	.24613	.16409
	96	0.000	4125.890	464.221	534.239	0.000	5124.341	25929.120	.26957	.17965
290	96	0.000	4125.890	121.941	902.690	0.000	5233.621	25932.946	.27441	.18288
	99	0.000	4125.890	517.121	1150.510	0.000	5803.565	25817.978	.30417	.20273
300	102	0.000	4125.893	248.462	1573.336	0.000	5447.742	25874.308	.28552	.19035
	103	0.000	4125.890	499.081	2001.636	0.000	6627.211	25921.534	.34734	.23156

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

D.1.3 SATISFACTION OF EQUATION 10 (ANALYSIS SET 1)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER END I	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO T10/(1.0*SAM)
1S	1	0.000	0.000	0.000	0.000	3813.945	3813.945	25893.901	.15731	.14726
	2	0.000	0.000	0.000	0.000	1209.127	1233.127	25933.714	.05177	.04665
2S	1	0.000	0.000	0.000	0.000	9343.066	9343.066	25722.975	.40007	.36323
	11	0.000	0.000	0.000	0.000	3036.922	3036.922	25792.118	.13261	.12026
3S	1	0.000	0.000	0.000	0.000	1311.283	1311.293	25155.243	.05615	.05272
	12	0.000	0.000	0.000	0.000	1662.068	1662.068	25915.973	.07117	.06421
4S	3	0.000	0.000	0.000	0.000	3192.196	3192.196	25187.720	.13669	.12272
	4	0.000	0.000	0.000	0.000	2629.123	2629.123	25743.749	.11258	.10213
5S	4	0.000	0.000	0.000	0.000	2629.123	2629.123	25743.749	.11258	.10213
	6	0.000	0.000	0.000	0.000	3213.572	3213.572	25804.599	.13760	.12453
6S	7	0.000	0.000	0.000	0.000	2564.715	2564.715	25777.048	.10982	.09950
	8	0.000	0.000	0.000	0.000	2388.025	2388.025	25793.411	.10225	.09258
7S	9	0.000	0.000	0.000	0.000	2683.775	2683.775	25775.134	.11492	.10412
	10	0.000	0.000	0.000	0.000	2763.971	2763.971	25774.253	.11835	.10724
8S	13	0.000	0.000	0.000	0.000	1530.494	1530.494	25855.366	.06556	.05914
	14	0.000	0.000	0.000	0.000	907.999	907.999	25855.722	.03888	.03507
9S	15	0.000	0.000	0.000	0.000	1192.949	1192.949	25903.060	.05108	.04605
	16	0.000	0.000	0.000	0.000	1426.096	1426.096	25593.205	.06106	.05558
10S	16	0.000	0.000	0.000	0.000	1426.096	1426.096	25933.215	.06106	.05503
	17	0.000	0.000	0.000	0.000	1986.032	1986.032	25911.726	.08504	.07694
11S	18	0.000	0.000	0.000	0.000	2001.305	2001.305	25831.446	.08570	.07747
	19	0.000	0.000	0.000	0.000	2505.683	2505.683	25907.863	.10729	.09672

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER END I	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO T10/(1.0*SAM)
1C	2	0.000	0.000	0.000	0.000	1620.336	1620.336	25913.315	.06938	.06252
	3	0.000	0.000	0.000	0.000	1220.022	1220.022	25923.334	.05224	.04707
2C	6	0.000	0.000	0.000	0.000	3213.572	3213.572	25804.549	.13760	.12453
	7	0.000	0.000	0.000	0.000	2564.715	2564.715	25777.048	.10982	.09950
3C	8	0.000	0.000	0.000	0.000	3572.146	3572.146	25773.761	.15296	.13856
	9	0.000	0.000	0.000	0.000	4014.546	4014.546	25759.175	.17190	.15584
4C	12	0.000	0.000	0.000	0.000	2227.345	2227.345	25873.821	.09537	.08609
	13	0.000	0.000	0.000	0.000	2051.666	2051.666	25871.790	.08785	.07930
5C	14	0.000	0.000	0.000	0.000	907.999	907.999	25855.722	.03888	.03507
	15	0.000	0.000	0.000	0.000	1192.949	1192.949	25903.760	.05108	.04605
6C	17	0.000	0.000	0.000	0.000	2661.458	2661.458	25772.261	.11396	.10327
	18	0.000	0.000	0.000	0.000	2681.930	2681.930	25793.224	.11484	.10395

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO T10/(1.0*SAM)
12S	23	0.000	0.000	0.000	0.000	3107.260	3107.260	25873.595	.13305	.12011
	25	0.000	0.000	0.000	0.000	1864.248	1864.248	25916.662	.07983	.07193
13S	26	0.000	0.000	0.000	0.000	1892.454	1892.454	25911.329	.08103	.07304
	27	0.000	0.000	0.000	0.000	1729.372	1729.372	25916.927	.07405	.06673
14S	28	0.000	0.000	0.000	0.000	1642.595	1642.595	25916.646	.07034	.06338
	29	0.000	0.000	0.000	0.000	2471.393	2471.393	25912.950	.10582	.09541
15S	29	0.000	0.000	0.000	0.000	12503.747	12503.747	25752.575	.53541	.48554
	30	0.000	0.000	0.000	0.000	3201.135	3201.135	25736.354	.13707	.12439
16S	29	0.000	0.000	0.000	0.000	4820.839	4820.839	25773.437	.20643	.18705
	39	0.000	0.000	0.000	0.000	2953.734	2953.734	25834.925	.12691	.11435
17S	30	0.000	0.000	0.000	0.000	3201.135	3201.135	25746.354	.13707	.12439
	31	0.000	0.000	0.000	0.000	4237.418	4237.418	25732.843	.18421	.16667
18S	32	0.000	0.000	0.000	0.000	4356.450	4356.450	25334.333	.18654	.16983
	33	0.000	0.000	0.000	0.000	2542.462	2542.462	25793.431	.10887	.09855
19S	34	0.000	0.000	0.000	0.000	3460.070	3460.070	25833.448	.14816	.13406
	35	0.000	0.000	0.000	0.000	4130.493	4130.493	25763.536	.17687	.16032
20S	35	0.000	0.000	0.000	0.000	4130.493	4130.493	25763.536	.17687	.16032
	36	0.000	0.000	0.000	0.000	2415.477	2415.477	25814.523	.10344	.09633
21S	37	0.000	0.000	0.000	0.000	2438.133	2438.133	25827.371	.10454	.09440
	38	0.000	0.000	0.000	0.000	2495.625	2495.625	25813.065	.10686	.09668
22S	40	0.000	0.000	0.000	0.000	2309.597	2309.597	25814.300	.09899	.08947
	41	0.000	0.000	0.000	0.000	1870.293	1870.293	25795.338	.08008	.07253
23S	42	0.000	0.000	0.000	0.000	2479.488	2479.488	25765.917	.10617	.09512
	43	0.000	0.000	0.000	0.000	2850.597	2850.597	25801.495	.12206	.11045
24S	44	0.000	0.000	0.000	0.000	2621.265	2621.265	25734.932	.11224	.10166
	45	0.000	0.000	0.000	0.000	2116.449	2116.449	25777.361	.09063	.08211

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO T10/(1.0*SAM)
7C	25	0.000	0.000	0.000	0.000	2496.258	2496.258	25917.385	.10692	[illegible]
	26	0.000	0.000	0.000	0.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8C	27	0.000	0.000	0.000	0.000	2317.510	2317.510	[illegible]	.10159	.08793
	28	0.000	0.000	0.000	0.000	2317.510	2317.510	[illegible]	.09924	[illegible]
9C	31	0.000	0.000	0.000	0.000	2231.721	2231.721	25912.463	.09574	.08655
	32	0.000	0.000	0.000	0.000	6425.326	6425.326	25777.714	.27526	[illegible]
10C	33	0.000	0.000	0.000	0.000	6516.432	6516.432	25755.554	.27904	.25293
	34	0.000	0.000	0.000	0.000	2542.462	2542.462	25793.431	.10887	[illegible]
11C	9	0.000	0.000	0.000	0.000	3460.070	3460.070	[illegible]	.14816	.13405
	37	0.000	0.000	0.000	0.000	3719.514	3719.514	25911.498	.15903	.14356
12C	39	0.000	0.000	0.000	0.000	3721.849	3721.849	25754.532	.15937	.14453
	40	0.000	0.000	0.000	0.000	4413.400	4413.400	25796.333	.18924	.17116
	46	0.000	0.000	0.000	0.000	3454.829	3454.829	25411.755	.14793	.13785

13C	41	0.000	0.000	0.000	0.000	2797.632	2797.632	25751.645	.11379	.10450
	42	0.000	0.000	0.000	0.000	3788.941	3788.941	25751.938	.15882	.14785
14C	43	0.000	0.000	0.000	0.000	4264.008	4264.008	25731.152	.16259	.14833
	44	0.000	0.000	0.000	0.000	3921.039	3921.039	25765.730	.16798	.15218

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO T1O/(1.0*SAM)
25S	19	0.000	0.000	0.000	0.000	871.929	871.929	25673.925	.03519	.03231
	20	0.000	0.000	0.000	0.000	877.508	877.508	25929.734	.03757	.03429
26S	19	0.000	0.000	0.000	0.000	1615.049	1615.049	25663.122	.06316	.05833
	46	0.000	0.000	0.000	0.000	1956.767	1956.767	25732.615	.08179	.07613
27S	20	0.000	0.000	0.000	0.000	877.508	877.508	25829.734	.03767	.03425
	21	0.000	0.000	0.000	0.000	1057.761	1057.761	25671.132	.04529	.04129
28S	21	0.000	0.000	0.000	0.000	1057.761	1057.761	25671.132	.04529	.04129
	22	0.000	0.000	0.000	0.000	1257.706	1257.706	25634.406	.05514	.05011
29S	22	0.000	0.000	0.000	0.000	1257.706	1257.706	25634.406	.05514	.05011
	23	0.000	0.000	0.000	0.000	1770.536	1770.536	25707.341	.07581	.06887
30S	23	0.000	0.000	0.000	0.000	.000	.000	25739.500	.00000	.00000
	24	0.000	0.000	0.000	0.000	.000	.000	25739.498	.00000	.00000
31S	47	0.000	0.000	0.000	0.000	1891.559	1891.559	25643.635	.08100	.07365
	48	0.000	0.000	0.000	0.000	1644.501	1644.501	25732.795	.07043	.06396
32S	49	0.000	0.000	0.000	0.000	1324.456	1324.456	25711.475	.05671	.05151
	50	0.000	0.000	0.000	0.000	708.419	708.419	25703.937	.03033	.02755
33S	48	0.000	0.000	0.000	0.000	708.419	708.419	25703.937	.03033	.02755
	51	0.000	0.000	0.000	0.000	2435.593	2435.593	25707.595	.10429	.09474
34S	52	0.000	0.000	0.000	0.000	2679.708	2679.708	25711.374	.11474	.10422
	53	0.000	0.000	0.000	0.000	6687.793	6687.793	25141.045	.26617	.24606
35S	53	0.000	0.000	0.000	0.000	6243.979	6243.979	25144.730	.24851	.23031
	54	0.000	0.000	0.000	0.000	2091.050	2091.050	25522.164	.08194	.07220
36S	54	0.000	0.000	0.000	0.000	2091.050	2091.050	25522.168	.08194	.07220
	55	0.000	0.000	0.000	0.000	2767.513	2767.513	25851.961	.10134	.09079
37S	56	0.000	0.000	0.000	0.000	1821.400	1821.400	25643.324	.07799	.07096
	57	0.000	0.000	0.000	0.000	1484.993	1484.993	25644.954	.06273	.05713
38S	57	0.000	0.000	0.000	0.000	1681.282	1681.282	25761.433	.07154	.06526
	59	0.000	0.000	0.000	0.000	2519.104	2518.104	25749.925	.10714	.09783

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO T1O/(1.0*SAM)
15C	46	0.000	0.000	0.000	0.000	1956.767	1956.767	25732.615	.08379	.07613
	47	0.000	0.000	0.000	0.000	1891.559	1891.559	25643.635	.08100	.07365
16C	48	0.000	0.000	0.000	0.000	2553.746	2553.746	25937.230	.10935	.09938
	49	0.000	0.000	0.000	0.000	2056.748	2056.748	25636.237	.08687	.08004
17C	51	0.000	0.000	0.000	0.000	3762.233	3762.233	25619.125	.16195	.14723
	52	0.000	0.000	0.000	0.000	4161.319	4161.319	25635.692	.17819	.16195

18C	55	0.000	0.000	0.000	0.000	2367.613	2367.613	25651.961	.10138	.09209
	56	0.000	0.000	0.000	0.000	1821.400	1821.400	25643.324	.07799	.07096

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO T1O/(1.0*SAM)
39S	59	0.000	0.000	0.000	0.000	2519.104	2519.104	25667.913	.10714	.09810
	60	0.000	0.000	0.000	0.000	2572.285	2572.285	25761.543	.10946	.09985
40S	60	0.000	0.000	0.000	0.000	2572.285	2572.285	25761.543	.10946	.09985
	61	0.000	0.000	0.000	0.000	3402.484	3402.484	25763.494	.14477	.13207
41S	62	0.000	0.000	0.000	0.000	3613.698	3613.698	25763.332	.15373	.14024
	63	0.000	0.000	0.000	0.000	3515.873	3515.873	25760.714	.14957	.13644
42S	64	0.000	0.000	0.000	0.000	3349.016	3349.016	25762.951	.14254	.13003
	65	0.000	0.000	0.000	0.000	3155.027	3155.027	25710.132	.13424	.12272

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO T1O/(1.0*SAM)
19C	61	0.000	0.000	0.000	0.000	6011.676	6011.676	25751.576	.25579	.23345
	62	0.000	0.000	0.000	0.000	6379.546	6379.546	25746.341	.27144	.24779
20C	63	0.000	0.000	0.000	0.000	6212.014	6212.014	25746.618	.26431	.24128
	64	0.000	0.000	0.000	0.000	5917.207	5917.207	25749.931	.25177	.22980

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1B)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1B/(1.0*SA)	MODIFIED STRESS RATIO T1B/(1.0*SAM)
435	53	0.000	0.000	0.000	0.000	2670.815	2670.815	25170.945	.11433	.10803
	66	0.000	0.000	0.000	0.000	1775.647	1775.647	25447.471	.07803	.06978
445	66	0.000	0.000	0.000	0.000	1292.319	1292.919	25494.746	.05534	.04852
	67	0.000	0.000	0.000	0.000	1240.955	1240.955	25495.129	.05314	.04671
455	66	0.000	0.000	0.000	0.000	847.691	847.691	25529.166	.03630	.03321
	73	0.000	0.000	0.000	0.000	804.130	804.130	25547.523	.03443	.03145
465	68	0.000	0.000	0.000	0.000	1292.767	1292.767	25434.919	.05150	.04718
	69	0.000	0.000	0.000	0.000	1205.789	1205.789	25555.508	.05163	.04716
475	69	0.000	0.000	0.000	0.000	1205.793	1205.789	25547.114	.05163	.04716
	71	0.000	0.000	0.000	0.000	2010.772	2010.772	25721.428	.08810	.07817
485	71	0.000	0.000	0.000	0.000	2010.772	2010.772	25721.428	.08810	.07817
	72	0.000	0.000	0.000	0.000	1826.351	1826.351	25553.934	.07820	.07134
495	72	0.000	0.000	0.000	0.000	2298.344	2298.344	25868.334	.09841	.08969
	107	0.000	0.000	0.000	0.000	2133.966	2133.966	25693.536	.09134	.08307
505	74	0.000	0.000	0.000	0.000	790.614	790.614	25563.863	.03385	.03093
	75	0.000	0.000	0.000	0.000	601.443	601.443	25772.637	.02575	.02334
515	76	0.000	0.000	0.000	0.000	548.704	548.704	25742.576	.02350	.02129
	77	0.000	0.000	0.000	0.000	522.236	522.236	25721.432	.02236	.02028
525	78	0.000	0.000	0.000	0.000	534.977	534.977	25745.914	.02161	.01961
	79	0.000	0.000	0.000	0.000	512.149	512.149	25694.759	.02193	.02000
535	79	0.000	0.000	0.000	0.000	512.143	512.149	25981.376	.02193	.02008
	81	0.000	0.000	0.000	0.000	546.813	546.813	25691.244	.02341	.02147
545	81	0.000	0.000	0.000	0.000	546.813	546.813	25691.744	.02341	.02148
	82	0.000	0.000	0.000	0.000	488.811	488.811	25543.977	.02093	.01914
555	83	0.000	0.000	0.000	0.000	476.143	476.143	25713.476	.02039	.01862
	72	0.000	0.000	0.000	0.000	524.592	524.592	25473.791	.02246	.02053
565	84	0.000	0.000	0.000	0.000	1455.451	1455.451	25723.139	.06232	.05659
	55	0.000	0.000	0.000	0.000	825.239	825.239	25751.447	.03535	.03215
575	85	0.000	0.000	0.000	0.000	826.233	826.239	25751.947	.03538	.03218
	86	0.000	0.000	0.000	0.000	818.325	818.325	25776.132	.03504	.03175
585	86	0.000	0.000	0.000	0.000	818.325	818.325	25776.132	.03504	.03175
	106	0.000	0.000	0.000	0.000	958.473	953.373	25774.200	.04110	.03724
595	87	0.000	0.000	0.000	0.000	1462.660	1462.660	25773.137	.06263	.05675
	88	0.000	0.000	0.000	0.000	2245.709	2245.709	25745.326	.09616	.08723
605	88	0.000	0.000	0.000	0.000	2245.703	2245.709	25745.326	.09616	.08723
	89	0.000	0.000	0.000	0.000	2930.407	2930.407	25715.045	.12762	.11590
615	59	0.000	0.000	0.000	0.000	2930.407	2930.407	25715.045	.12762	.11590
	90	0.000	0.000	0.000	0.000	3657.146	3657.146	25657.157	.15668	.14237
625	91	0.000	0.000	0.000	0.000	3432.635	3432.635	25741.220	.14713	.13376
	105	0.000	0.000	0.000	0.000	3027.713	3027.713	25774.121	.12965	.11745
635	92	0.000	0.000	0.000	0.000	2746.277	2746.277	25651.929	.11759	.10705
	93	0.000	0.000	0.000	0.000	4033.741	4033.741	25613.635	.17272	.15700
645	94	0.000	0.000	0.000	0.000	1242.699	1242.699	25901.512	.05321	.04798
	95	0.000	0.000	0.000	0.000	1248.902	1248.902	25902.442	.05348	.04821

655	96	0.000	0.000	0.000	0.000	1115.263	1115.263	25923.120	.04776	.04318
	97	0.000	0.000	0.000	0.000	1160.009	1160.009	25742.944	.04967	.04499
665	97	0.000	0.000	0.000	0.000	1160.009	1160.009	25742.944	.04967	.04499
	98	0.000	0.000	0.000	0.000	1736.059	1736.059	25932.946	.07434	.06732
675	99	0.000	0.000	0.000	0.000	1919.306	1919.306	25917.473	.08219	.07474
	100	0.000	0.000	0.000	0.000	2028.248	2028.248	25684.189	.08686	.07903
685	100	0.000	0.000	0.000	0.000	2028.248	2028.248	25684.189	.08685	.07903
	101	0.000	0.000	0.000	0.000	2916.145	2916.145	25922.563	.12487	.11359
695	101	0.000	0.000	0.000	0.000	2916.145	2916.145	25922.343	.12487	.11359
	102	0.000	0.000	0.000	0.000	3829.684	3829.684	25874.368	.16399	.14871
705	103	0.000	0.000	0.000	0.000	4108.187	4108.187	25821.944	.17591	.15910
	104	0.000	0.000	0.000	0.000	4105.470	4105.470	25821.072	.17579	.15899
715	105	0.000	0.000	0.000	0.000	3027.713	3027.713	25774.121	.12965	.11745
	92	0.000	0.000	0.000	0.000	2746.277	2746.277	25651.929	.11759	.10705
725	156	0.000	0.000	0.000	0.000	959.373	959.373	25774.200	.04110	.03724
	87	0.000	0.000	0.000	0.000	1462.660	1462.660	25773.137	.06263	.05675
735	107	0.000	0.000	0.000	0.000	2133.966	2133.966	25693.536	.09134	.08307
	84	0.000	0.000	0.000	0.000	1455.451	1455.451	25720.199	.06232	.05659

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1B)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1B/(1.0*SA)	MODIFIED STRESS RATIO T1B/(1.0*SAM)
21C	67	0.000	0.000	0.000	0.000	1856.293	1856.293	25751.494	.07340	.06736
	68	0.000	0.000	0.000	0.000	1799.188	1799.188	25331.947	.07104	.06502
22C	73	0.000	0.000	0.000	0.000	1292.884	1292.884	25412.334	.05131	.04733
	74	0.000	0.000	0.000	0.000	1142.647	1142.647	25436.334	.04544	.04189
23C	75	0.000	0.000	0.000	0.000	851.674	851.674	25774.371	.03352	.03094
	76	0.000	0.000	0.000	0.000	823.775	823.775	25733.710	.03257	.03005
24C	77	0.000	0.000	0.000	0.000	781.191	781.191	25673.859	.03095	.02841
	78	0.000	0.000	0.000	0.000	754.775	754.775	25707.371	.02990	.02756
25C	82	0.000	0.000	0.000	0.000	731.192	731.192	25661.956	.02891	.02679
	83	0.000	0.000	0.000	0.000	712.242	712.242	25649.136	.02820	.02614
26C	90	0.000	0.000	0.000	0.000	3657.146	3657.146	25657.157	.14487	.13417
	91	0.000	0.000	0.000	0.000	3432.635	3432.635	25741.220	.13603	.12596
27C	93	0.000	0.000	0.000	0.000	4033.741	4033.741	25613.635	.17272	.15700
	94	0.000	0.000	0.000	0.000	4357.338	4357.338	25731.540	.18668	.16974
28C	95	0.000	0.000	0.000	0.000	1248.902	1248.902	25902.442	.05348	.04821
	96	0.000	0.000	0.000	0.000	1115.263	1115.263	25923.120	.04776	.04318
29C	97	0.000	0.000	0.000	0.000	1776.859	1776.859	25737.206	.07604	.06903
	98	0.000	0.000	0.000	0.000	1919.306	1919.306	25917.473	.08219	.07474
30C	102	0.000	0.000	0.000	0.000	3829.684	3829.684	25874.368	.16399	.14871
	103	0.000	0.000	0.000	0.000	4108.187	4108.187	25821.944	.17591	.15910

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

D.1.4 SATISFACTION OF EQUATION 11 (ANALYSIS SET 1)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
15	1	3786.977	0.000	131.687	0.000	3913.945	7732.529	25893.551	.19693	.18499
	2	3786.977	0.000	33.151	0.000	1209.127	5029.255	25920.714	.12912	.12026
25	1	4289.688	0.000	465.465	0.000	9343.066	14098.244	25727.925	.35916	.33572
	11	4289.688	0.000	323.875	0.000	3096.922	7710.485	25752.118	.19643	.18412
35	1	3786.977	0.000	341.292	0.000	1311.283	5439.552	25855.243	.13857	.13027
	12	3786.977	0.000	199.971	0.000	1662.088	5649.041	25835.273	.14391	.13519
45	3	4289.688	0.000	85.745	0.000	3192.196	7567.629	25802.720	.19279	.18147
	4	4289.688	0.000	363.258	0.000	2629.123	7282.070	25743.749	.18551	.17437
55	4	4289.688	0.000	363.258	0.000	2629.123	7282.070	25743.749	.18551	.17437
	6	4289.688	0.000	76.951	0.000	3213.572	7580.212	25804.539	.19311	.18176
65	7	4289.688	0.000	206.555	0.000	2564.715	7060.958	25777.048	.17988	.16942
	8	4289.688	0.000	129.552	0.000	2378.025	6797.266	25793.411	.17342	.16327
75	9	4289.688	0.000	215.707	0.000	2683.775	7189.170	25775.104	.18315	.17251
	10	4289.688	0.000	219.664	0.000	2763.971	7273.323	25774.263	.18529	.17453
85	13	3786.977	0.000	196.713	0.000	1530.994	5514.684	25883.956	.14049	.13197
	14	3786.977	0.000	183.743	0.000	907.999	4878.720	25888.722	.12429	.11675
95	15	3786.977	0.000	116.269	0.000	1192.949	5096.195	25903.060	.12983	.12191
	16	3786.977	0.000	176.763	0.000	1426.036	5389.836	25890.235	.13731	.12897
105	16	3786.977	0.000	176.763	0.000	1426.036	5389.836	25893.205	.13731	.12897
	17	3786.977	0.000	546.078	0.000	1986.032	6319.087	25815.726	.16098	.15149
115	18	3786.977	0.000	451.396	0.000	2001.308	6239.682	25831.346	.15895	.14952
	19	3786.977	0.000	93.665	0.000	2505.683	6386.329	25907.443	.16269	.15275

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
1C	2	3786.977	0.000	44.479	0.000	1620.336	5451.793	25915.315	.13889	.13[illegible]
	3	3786.977	0.000	32.771	0.000	1220.022	5039.770	25923.554	.12839	.12051
2C	6	4289.688	0.000	76.951	0.000	3213.572	7580.212	25804.539	.19311	.18176
	7	4289.688	0.000	206.555	0.000	2564.715	7060.958	25777.048	.17988	.16942
3C	8	4289.688	0.000	193.791	0.000	3572.146	8055.626	25779.761	.20522	.19327
	9	4289.688	0.000	322.667	0.000	4014.546	8626.901	25759.175	.21977	.20712
4C	12	3786.977	0.000	267.984	0.000	2227.345	6282.307	25873.921	.16004	.15040
	13	3786.977	0.000	263.612	0.000	2051.666	6102.256	25871.752	.15546	.14609
5C	14	3786.977	0.000	183.743	0.000	907.999	4878.720	25883.722	.12429	.11675
	15	3786.977	0.000	116.269	0.000	1192.949	5096.195	25903.060	.12983	.12191
6C	17	3786.977	0.000	731.793	0.000	2661.454	7180.225	25772.761	.18292	.17230
	18	3786.977	0.000	604.910	0.000	2681.930	7073.818	25793.224	.18021	.16964

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
125	23	3786.977	0.000	267.681	0.000	3107.260	7161.919	25879.955	.18245	.17146
	25	3786.977	0.000	52.259	0.000	1864.248	5703.485	25916.552	.14530	.13639
135	26	3786.977	0.000	75.769	0.000	1932.454	5795.200	25911.029	.14669	.13772
	27	3786.977	0.000	51.595	0.000	1729.272	5567.854	25915.922	.14184	.13315
145	28	3786.977	0.000	52.339	0.000	1642.595	5481.911	25915.849	.13965	.13119
	29	3786.977	0.000	116.741	0.000	2471.393	6375.111	25902.460	.16241	.15250
155	29	4289.688	0.000	324.281	0.000	12503.747	17117.723	25752.979	.43608	.41097
	30	4289.688	0.000	112.879	0.000	3201.135	7603.702	25785.934	.19371	.18236
165	29	4289.688	0.000	223.594	0.000	4820.839	9334.121	25773.427	.23779	.22399
	39	4289.688	0.000	75.373	0.000	2963.784	7328.845	25804.925	.18673	.17573
175	30	4289.688	0.000	112.879	0.000	3201.135	7603.702	25786.354	.19371	.18236
	31	4289.688	0.000	135.559	0.000	4297.413	8723.686	25797.943	.22222	.20923
185	32	4289.688	0.000	79.710	0.000	4356.450	8725.843	25804.133	.22229	.20923
	33	4289.688	0.000	101.365	0.000	2542.462	6933.516	25793.431	.17663	.16627
195	34	4289.688	0.000	53.990	0.000	3460.050	7803.728	25803.458	.19880	.18718
	35	4289.688	0.000	269.960	0.000	4130.483	8690.031	25763.996	.22138	.20858
205	35	4289.688	0.000	269.960	0.000	4130.483	8690.031	25763.596	.22138	.20858
	36	4289.688	0.000	29.733	0.000	2415.877	6805.299	25814.603	.17337	.16314
215	37	4289.688	0.000	51.623	0.000	2430.130	6823.442	25813.371	.17393	.16374
	38	4289.688	0.000	37.066	0.000	2415.625	6822.379	25813.365	.17363	.16355
225	40	4289.688	0.000	28.930	0.000	2309.537	6628.155	25814.900	.16885	.15899
	41	4289.688	0.000	117.333	0.000	1870.253	6277.274	25795.908	.15992	.15055
235	42	4289.688	0.000	117.762	0.000	2479.458	6886.938	25793.317	.17545	.16517
	43	4289.688	0.000	91.512	0.000	2850.597	7231.798	25801.435	.18423	.17342
245	44	4289.688	0.000	173.692	0.000	2621.265	7084.645	25784.232	.18048	.16996
	45	4289.688	0.000	206.491	0.000	2116.449	6612.634	25777.951	.16846	.15866

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
7C	25	3786.977	0.000	75.032	0.000	2474.258	6359.267	25912.456	.15190	.15139
	26	3786.977	0.000	105.567	0.000	2586.935	6478.590	25905.455	.16177	.15177
8C	27	3786.977	0.000	69.021	0.000	2317.510	6173.568	25911.170	.15727	.14765
	28	3786.977	0.000	70.137	0.000	2201.721	6058.837	25912.153	.15434	.14489
9C	31	[illegible]	0.000	203.421	0.000	[illegible]	[illegible]	25777.744	.22423	[illegible]
	32	[illegible]	0.000	[illegible]	0.000	[illegible]	[illegible]	25735.836	.22433	[illegible]
10C	33	[illegible]	0.000	[illegible]	0.000	3542.462	6933.516	25793.431	.17663	.16627
	34	[illegible]	0.000	[illegible]	0.000	[illegible]	7803.728	[illegible]	.19880	[illegible]
11C	36	[illegible]	0.000	[illegible]	0.000	[illegible]	[illegible]	[illegible]	.20014	[illegible]
	37	4289.688	0.000	77.221	0.000	3721.449	[illegible]	[illegible]	.20014	[illegible]
12C	39	[illegible]	0.000	112.741	0.000	4433.400	[illegible]	[illegible]	.20006	.19395
	40	4289.688	0.000	43.231	0.000	3454.823	7787.747	25811.755	.19829	[illegible]

13C	41	4249.648	0.000	175.512	0.000	2737.432	7262.273	25741.449	.18492	.17434
	42	4249.498	0.000	176.151	0.000	3708.761	8174.805	25743.598	.20826	.19612
14C	43	4249.456	0.000	136.696	0.000	4264.088	8690.667	25791.402	.22548	.20864
	44	4249.606	0.000	259.611	0.000	3921.339	8470.546	25765.730	.21979	.20339

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
25S	19	4672.481	0.000	309.049	0.000	821.329	5803.459	25673.195	.14784	.13959
	29	4672.481	0.000	561.713	0.000	877.500	6111.695	25620.934	.15870	.14727
26S	19	4672.481	0.000	358.945	0.000	1615.048	6646.474	25644.102	.16032	.15031
	46	4672.481	0.000	173.000	0.000	1956.767	6802.247	25702.435	.17329	.15765
27S	20	4672.481	0.000	561.713	0.000	877.500	6111.695	25620.934	.15870	.14729
	21	4672.481	0.000	321.249	0.000	1857.761	6851.492	25671.332	.15416	.14487
28S	21	4672.481	0.000	321.249	0.000	1857.751	6851.492	25671.332	.15416	.14487
	22	4672.481	0.000	203.255	0.000	1237.706	6163.442	25635.426	.15707	.14817
29S	22	4672.481	0.000	203.255	0.000	1237.706	6163.442	25635.426	.15707	.14817
	23	4672.481	0.000	151.797	0.000	1770.536	6594.516	25737.141	.16400	.15450
30S	23	4672.481	0.000	5.164	0.000	.000	4677.645	25738.930	.11936	.11234
	24	4672.481	0.000	.000	0.000	.000	4672.481	25733.538	.11803	.11101
31S	47	4672.481	0.000	262.412	0.000	1501.569	6826.482	25653.335	.17791	.16016
	48	4672.481	0.000	178.481	0.000	1644.581	6645.663	25717.735	.16420	.15449
32S	49	4672.481	0.000	131.401	0.000	1324.456	6121.338	25711.675	.15612	.14727
	50	4672.481	0.000	139.593	0.000	708.419	5520.497	25703.333	.14764	.13967
33S	50	4672.481	0.000	139.593	0.000	708.419	5520.497	25733.333	.14764	.13967
	51	4672.481	0.000	152.463	0.000	2419.503	7261.027	25707.035	.18495	.17451
34S	52	4672.481	0.000	133.853	0.000	2674.708	7486.241	25711.326	.19769	.17845
	53	4672.481	0.000	2512.463	0.000	6637.793	14172.742	25141.948	.36135	.34732
35S	53	4672.481	0.000	2798.857	0.000	6293.379	13765.556	25144.733	.35068	.33918
	54	4672.481	0.000	1822.264	0.000	2098.050	7792.791	25532.168	.19852	.18813
36S	54	4672.481	0.000	1822.264	0.000	2098.050	7792.791	25522.368	.19852	.18813
	55	4672.481	0.000	412.408	0.000	2367.513	7452.403	25691.341	.18995	.17995
37S	56	4672.481	0.000	330.700	0.000	1821.400	6824.581	25663.324	.17386	.16417
	57	4672.481	0.000	445.897	0.000	1484.933	6583.282	25644.564	.16771	.15966
38S	57	5541.562	0.000	427.365	0.000	1681.282	7650.209	25761.693	.19877	.18559
	59	5541.562	0.000	525.143	0.000	2518.104	8584.809	25740.975	.21407	.20275

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
15C	46	4672.481	0.000	173.000	0.000	1956.767	6802.247	25732.435	.17329	.15765
	47	4672.481	0.000	262.412	0.000	1351.533	6826.482	25643.335	.17791	.16016
16C	48	4672.481	0.000	199.519	0.000	2753.746	7425.745	25693.780	.18917	.17359
	49	4672.481	0.000	204.852	0.000	2056.748	6933.251	25630.237	.17663	.16468
17C	51	4672.481	0.000	237.521	0.000	3712.233	8692.234	25649.125	.22144	.21003
	52	4672.481	0.000	206.619	0.000	4161.315	9040.416	25695.692	.23031	.21734

18C	55	4672.481	0.000	412.408	0.000	2367.513	7452.403	25691.341	.18995	.17995
	56	4672.481	0.000	330.700	0.000	1821.400	6824.581	25663.324	.17386	.16417

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
39S	59	5846.562	0.000	525.143	0.000	2518.104	8929.809	25667.513	.22267	.21127
	60	5846.562	0.000	87.351	0.000	2572.235	8546.199	25745.543	.21311	.20175
40S	60	5846.562	0.000	87.351	0.000	2572.235	8546.199	25760.543	.21311	.20175
	61	5846.562	0.000	72.523	0.000	3402.634	9361.570	25781.634	.23344	.22095
41S	62	5846.562	0.000	85.065	0.000	3612.690	9525.318	25780.332	.23702	.22428
	63	5846.562	0.000	86.550	0.000	3915.873	9436.966	25760.714	.23662	.22409
42S	64	5846.562	0.000	78.844	0.000	3349.016	9314.423	25762.151	.23227	.21988
	65	5846.562	0.000	324.582	0.000	3155.027	9366.172	25710.132	.23356	.22137

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
19C	61	5846.562	0.000	128.138	0.000	6011.676	12026.377	25731.375	.29359	.27156
	62	5846.562	0.000	155.598	0.000	6379.546	12421.706	25746.041	.30275	.27934
20C	63	5846.562	0.000	152.921	0.000	6212.018	12251.502	25746.413	.30553	.27931
	64	5846.562	0.000	139.305	0.000	5917.207	11943.079	25743.502	.29761	.27201

LAGBHR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER END	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (SL)	OCCASIONAL LOAD STRESS (SO)	THERMAL EXPANSION STRESS (SC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
43S	53	4289.688	0.000	3009.699	0.000	2670.015	10030.302	25178.945	.25527	.24194
	66	4289.688	0.000	1757.462	0.000	1775.647	7622.797	25447.451	.19429	.18020
44S	66	4289.688	0.000	1757.628	0.000	1232.313	7380.233	25433.046	.18781	.17463
	67	4289.688	0.000	1627.355	0.000	1240.355	7157.979	25473.125	.18185	.17333
45S	69	4289.688	0.000	1377.764	0.000	847.691	6515.146	25539.166	.16598	.15726
	77	4289.688	0.000	1295.264	0.000	804.138	6378.083	25547.423	.16251	.15391
46S	64	4289.688	0.000	1539.363	0.000	1707.767	7038.819	25434.379	.17911	.16939
	69	4289.688	0.000	1202.035	0.000	1705.759	6607.517	25565.598	.17062	.16152
47S	69	4289.688	0.000	1174.479	0.000	1205.709	6663.907	25567.114	.17043	.16113
	71	4289.688	0.000	468.297	0.000	2010.772	6745.755	25721.428	.17244	.16263
48S	71	4289.688	0.000	468.297	0.000	2010.772	6745.755	25721.428	.17244	.16263
	72	4289.688	0.000	1019.756	0.000	1926.351	7195.789	25593.394	.18230	.17243
49S	72	4289.688	0.000	661.441	0.000	2298.348	7249.481	25613.344	.18368	.17415
	107	4289.688	0.000	618.282	0.000	2133.966	7041.937	25639.566	.17840	.16932
50S	74	4289.688	0.000	1273.525	0.000	790.614	6297.129	25563.427	.16024	.15170
	75	4289.688	0.000	229.571	0.000	601.443	5121.603	25772.793	.13346	.12789
51S	76	4289.688	0.000	368.775	0.000	550.734	5209.188	25742.578	.13273	.12909
	77	4289.688	0.000	468.281	0.000	522.236	5280.205	25721.432	.13451	.12968
52S	78	4289.688	0.000	357.284	0.000	504.477	5151.752	25745.314	.13124	.12670
	79	4289.688	0.000	1469.321	0.000	512.143	6271.105	25583.739	.15976	.15345
53S	78	4289.688	0.000	1467.634	0.000	512.143	6263.934	25583.336	.15972	.15340
	81	4289.688	0.000	1706.811	0.000	546.913	6541.311	25545.744	.16669	.15721
54S	81	4289.688	0.000	1706.811	0.000	546.913	6843.311	25545.744	.16669	.15621
	82	4289.688	0.000	1317.361	0.000	488.811	6047.861	25543.577	.15524	.14715
55S	83	4289.688	0.000	536.725	0.000	476.143	5271.560	25713.474	.13429	.12463
	72	4289.688	0.000	1633.837	0.000	524.592	6449.118	25543.751	.16427	.15595
56S	84	4289.688	0.000	474.051	0.000	1455.451	6219.219	25723.133	.15944	.14943
	85	4289.688	0.000	325.151	0.000	826.239	5441.077	25751.547	.13761	.13763
57S	85	4289.688	0.000	325.151	0.000	826.239	5441.077	25751.547	.13761	.13763
	96	4289.688	0.000	210.867	0.000	818.325	5318.881	25775.133	.13550	.12762
58S	86	4289.688	0.000	210.867	0.000	818.325	5318.881	25775.133	.13550	.12762
	106	4289.688	0.000	241.136	0.000	969.473	5453.697	25773.730	.13786	.13078
59S	87	4289.688	0.000	229.665	0.000	1482.668	5982.014	25772.137	.14733	.14756
	88	4289.688	0.000	353.011	0.000	2245.703	6455.408	25745.336	.17548	.16548
60S	88	4289.688	0.000	353.011	0.000	2247.709	6838.408	25745.336	.17548	.16540
	89	4289.688	0.000	493.625	0.000	2248.407	7763.725	25716.049	.19778	.18696
61S	89	4289.688	0.000	493.625	0.000	2248.407	7763.725	25716.049	.19778	.18696
	90	4289.688	0.000	629.577	0.000	3667.146	9576.467	25687.157	.21849	.20823
62S	91	4289.688	0.000	342.219	0.000	3482.635	8114.803	25743.230	.20672	.19484
	105	4289.688	0.000	201.581	0.000	3027.713	7518.910	25773.121	.19155	.18043
63S	92	4289.688	0.000	790.174	0.000	2746.277	7826.139	25663.929	.19937	.18834
	93	4289.688	0.000	603.793	0.000	4033.741	8927.222	25692.635	.22742	.21463
64S	94	3786.977	0.000	193.556	0.000	1242.699	5153.231	25901.512	.13128	.12328
	95	3786.977	0.000	117.293	0.000	1248.902	5153.173	25902.842	.13129	.12327

65S	96	3786.977	0.000	464.222	0.000	1115.363	5365.563	25323.135	.13671	.12869
	97	3786.977	0.000	621.931	0.000	1140.709	5625.977	25712.944	.14341	.13504
66S	97	3786.977	0.000	681.331	0.000	1140.709	5626.577	25712.944	.14340	.13504
	98	3786.977	0.000	121.042	0.000	1728.059	5644.078	25332.146	.14173	.13598
67S	99	3786.977	0.000	517.121	0.000	1919.356	6223.458	25317.578	.15874	.14915
	103	3786.977	0.000	1240.371	0.000	2028.288	7055.636	25664.140	.17374	.16375
68S	100	3786.977	0.000	1240.371	0.000	2028.288	7055.636	25664.140	.17374	.16379
	101	3786.977	0.000	446.611	0.000	2916.145	7143.733	25533.463	.18214	.17132
69S	101	3786.977	0.000	446.611	0.000	2916.145	7143.733	25533.463	.18214	.17132
	102	3786.977	0.000	245.453	0.000	3429.664	7665.128	25674.359	.20037	.18927
70S	103	3786.977	0.000	499.681	0.000	4108.197	8394.850	25921.594	.21886	.20121
	104	3786.977	0.000	493.271	0.000	4105.470	8391.715	25921.672	.21885	.20114
71S	105	4289.688	0.000	201.581	0.000	3027.713	7513.910	25773.121	.19155	.18043
	92	4289.688	0.000	790.174	0.000	2746.277	7826.139	25663.929	.19937	.18834
72S	106	4289.688	0.000	241.136	0.000	959.473	5453.697	25773.730	.13786	.13078
	87	4289.688	0.000	229.665	0.000	1482.668	5982.014	25772.137	.14733	.14756
73S	107	4289.688	0.000	618.282	0.000	2133.966	7041.937	25639.566	.17840	.16932
	84	4289.688	0.000	474.051	0.000	1455.451	6219.219	25723.139	.15944	.14943

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (SL)	OCCASIONAL LOAD STRESS (SO)	THERMAL EXPANSION STRESS (SC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO T11/(SH+SAM)
21C	67	4289.688	0.000	2414.292	0.000	1896.233	8530.273	25323.594	.21058	.20174
	68	4289.688	0.000	2361.173	0.000	1740.168	8340.020	25331.342	.21374	.20349
22C	73	4289.688	0.000	1922.573	0.000	1252.564	7415.126	25412.336	.18598	.17640
	74	4289.688	0.000	1809.723	0.000	1182.647	7292.062	25431.374	.18501	.17617
23C	75	4289.688	0.000	363.862	0.000	499.674	5535.224	25747.871	.14016	.13265
	76	4289.688	0.000	501.631	0.000	423.775	5685.009	25721.719	.14477	.13617
24C	77	4289.688	0.000	700.441	0.000	731.171	5771.260	25672.119	.14703	.13783
	78	4289.688	0.000	514.441	0.000	714.775	5578.913	25707.171	.14212	.13408
25C	42	4289.688	0.000	1973.571	0.000	731.192	6994.467	25481.536	.17819	.16836
	63	4289.688	0.000	706.499	0.000	712.242	5755.625	25695.145	.14670	.13776
26C	93	4289.688	0.000	603.793	0.000	3657.149	8579.407	25647.102	.21849	.20693
	91	4289.688	0.000	342.219	0.000	3482.635	8114.803	25743.230	.20672	.19484
27C	93	4289.688	0.000	603.793	0.000	4033.741	8927.222	25692.635	.22742	.21463
	94	4289.688	0.000	433.229	0.000	4017.338	9040.254	25725.410	.23112	.21712
28C	95	3786.977	0.000	117.293	0.000	1248.902	5153.173	25902.842	.13128	.12327
	96	3786.977	0.000	464.222	0.000	1115.363	5365.563	25323.135	.13671	.12869
29C	96	3786.977	0.000	121.042	0.000	1728.059	5644.078	25332.146	.14173	.13598
	99	3786.977	0.000	517.121	0.000	1919.356	6223.458	25317.578	.15874	.14915
30C	102	3786.977	0.000	245.453	0.000	3429.664	7665.128	25674.359	.20037	.18927
	103	3786.977	0.000	499.681	0.000	4108.197	8394.850	25921.594	.21886	.20121

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

D.2 C L A S S 2 S T R E S S E S F O R A N A L Y S I S S E T N U M B E R 2.

ASSIGNED LOAD COMBINATION IDENTIFIERS
MA = 1 MB = 6 MC = 4 P = 1 PMAX = 2

D.2.1 S A T I S F A C T I O N O F E Q U A T I O N 9 (ANALYSIS SET 2)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
15	1	0.000	4125.890	131.607	349.047	0.000	4605.543	0.000	.25138	.16892
	2	0.000	4125.890	33.191	120.795	0.000	4274.876	0.000	.22431	.14956
25	1	0.000	4673.591	465.409	1351.031	0.000	6490.110	0.000	.34015	.22677
	11	0.000	4673.591	323.875	896.083	0.000	5893.549	0.000	.30417	.20278
35	1	0.000	4125.890	341.292	856.185	0.000	5321.366	0.000	.27900	.18600
	12	0.000	4125.890	199.971	263.691	0.000	4589.562	0.000	.24054	.16036
45	3	0.000	4673.591	85.745	363.380	0.000	5123.315	0.000	.26852	.17901
	4	0.000	4673.591	363.258	145.121	0.000	5182.070	0.000	.27164	.18110
55	4	0.000	4673.591	363.258	146.121	0.000	5182.070	0.000	.27164	.18110
	6	0.000	4673.591	76.951	122.265	0.000	4872.806	0.000	.25539	.17026
65	7	0.000	4673.591	206.555	120.969	0.000	5001.114	0.000	.26211	.17474
	8	0.000	4673.591	129.552	39.909	0.000	4843.052	0.000	.25382	.16922
75	9	0.000	4673.591	215.707	44.524	0.000	4934.221	0.000	.25861	.17240
	10	0.000	4673.591	219.664	63.042	0.000	4982.296	0.000	.26113	.17408
85	13	0.000	4125.890	195.712	273.375	0.000	4592.978	0.000	.24072	.16048
	14	0.000	4125.890	183.742	185.865	0.000	4495.498	0.000	.23561	.15709
95	15	0.000	4125.890	116.265	237.074	0.000	4479.235	0.000	.23476	.15651
	16	0.000	4125.890	176.762	253.173	0.000	4555.825	0.000	.23877	.15918
105	16	0.000	4125.890	176.762	253.173	0.000	4555.825	0.000	.23877	.15918
	17	0.000	4125.890	546.071	281.403	0.000	4953.370	0.000	.25961	.17307
115	18	0.000	4125.890	451.398	271.025	0.000	4848.314	0.000	.25410	.16940
	19	0.000	4125.890	93.665	437.654	0.000	4657.212	0.000	.24409	.16273

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
1C	2	0.000	4125.890	44.479	161.876	0.000	4332.245	0.000	.22706	.15137
	3	0.000	4125.890	32.771	133.109	0.000	4297.769	0.000	.22525	.15017
2C	6	0.000	4673.591	76.951	122.265	0.000	4872.806	0.000	.25539	.17026
	7	0.000	4673.591	206.555	120.969	0.000	5001.114	0.000	.26211	.17474
3C	8	0.000	4673.591	193.791	59.699	0.000	4927.081	0.000	.25823	.17216
	9	0.000	4673.591	322.665	67.199	0.000	5063.456	0.000	.26538	.17692

4C	12	0.000	4125.890	267.984	353.378	0.000	4747.252	0.000	.24881	.16587
	13	0.000	4125.890	263.612	362.327	0.000	4751.829	0.000	.24905	.16603
5C	14	0.000	4125.890	183.742	185.865	0.000	4495.498	0.000	.23561	.15709
	15	0.000	4125.890	116.265	237.079	0.000	4479.235	0.000	.22476	.15651
6C	17	0.000	4125.890	731.793	377.104	0.000	5234.787	0.000	.27436	.18291
	18	0.000	4125.890	604.911	363.202	0.000	5094.002	0.000	.26698	.17799

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
125	23	0.000	4125.890	267.681	323.017	0.000	4716.588	0.000	.24720	.16480
	25	0.000	4125.890	52.259	126.310	0.000	4304.459	0.000	.22560	.15040
135	26	0.000	4125.890	78.769	123.040	0.000	4327.699	0.000	.22682	.15121
	27	0.000	4125.890	51.505	109.330	0.000	4286.725	0.000	.22467	.14978
145	28	0.000	4125.890	52.338	104.046	0.000	4282.275	0.000	.22444	.14963
	29	0.000	4125.890	116.741	193.042	0.000	4435.672	0.000	.23248	.15498
155	29	0.000	4673.591	324.298	759.411	0.000	5737.289	0.000	.29912	.19942
	30	0.000	4673.591	112.875	178.024	0.000	4964.493	0.000	.26019	.17346
165	29	0.000	4673.591	223.594	499.582	0.000	5396.766	0.000	.28285	.18857
	39	0.000	4673.591	75.172	319.127	0.000	5068.092	0.000	.26562	.17708
175	30	0.000	4673.591	112.875	178.024	0.000	4964.493	0.000	.26019	.17346
	31	0.000	4673.591	135.985	151.094	0.000	4960.674	0.000	.25999	.17333
185	32	0.000	4673.591	78.710	161.315	0.000	4914.615	0.000	.25758	.17172
	33	0.000	4673.591	101.365	123.458	0.000	4898.414	0.000	.25724	.17186
195	34	0.000	4673.591	58.990	169.231	0.000	4895.611	0.000	.25659	.17106
	35	0.000	4673.591	269.860	162.622	0.000	5106.072	0.000	.26761	.17841
205	35	0.000	4673.591	269.860	162.622	0.000	5106.072	0.000	.26761	.17841
	36	0.000	4673.591	29.733	137.213	0.000	4840.537	0.000	.25370	.16913
215	37	0.000	4673.591	51.623	103.212	0.000	4888.425	0.000	.25621	.17080
	38	0.000	4673.591	37.058	175.089	0.000	4885.737	0.000	.25607	.17071
225	40	0.000	4673.591	28.900	271.377	0.000	4973.867	0.000	.26069	.17379
	41	0.000	4673.591	117.332	265.597	0.000	5057.520	0.000	.26507	.17671
235	42	0.000	4673.591	117.763	281.469	0.000	5072.822	0.000	.26587	.17725
	43	0.000	4673.591	91.512	300.389	0.000	5065.492	0.000	.26549	.17699
245	44	0.000	4673.591	173.693	303.451	0.000	5150.736	0.000	.27022	.18014
	45	0.000	4673.591	206.497	266.747	0.000	5146.834	0.000	.26975	.17983

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
7C	25	0.000	4125.890	70.572	169.267	0.000	4365.238	0.000	.22878	[illegible]
	26	0.000	4125.890	109.553	174.594	0.000	4410.232	0.000	.22942	[illegible]
8C	27	0.000	4125.890	69.023	145.512	0.000	4341.403	0.000	.22754	[illegible]
	28	0.000	4125.890	78.135	131.473	0.000	4335.453	0.000	.22723	[illegible]
9C	31	0.000	4673.591	203.421	226.015	0.000	5103.026	0.000	.26745	[illegible]
	32	0.000	4673.591	119.238	241.304	0.000	5034.129	0.000	.26384	[illegible]

	10C	33	0.000	4671.591	101.364	123.459	0.000	4896.414	0.900	.28704	.17176
		34	0.000	4671.591	53.331	163.231	0.000	4888.211	0.000	.27659	.16556
	11C	36	0.000	4671.591	44.473	205.252	0.000	4923.319	0.000	.27904	.17703
		37	0.000	4671.591	77.023	244.142	0.000	4934.553	0.000	.28179	.17493
	12C	39	0.000	4671.591	112.741	477.371	0.000	5263.709	0.000	.27568	.18332
		40	0.000	4671.591	43.230	405.941	0.000	5122.762	0.000	.26849	.17893
	13C	41	0.000	4671.591	176.513	399.791	0.000	5247.895	0.000	.27505	.18335
		42	0.000	4671.591	176.154	421.054	0.000	5270.600	0.000	.27625	.18414
	14C	43	0.000	4671.591	136.891	449.339	0.000	5259.820	0.000	.27567	.18378
		44	0.000	4671.591	259.811	461.402	0.000	5394.811	0.000	.28275	.18850

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAH)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
25S	19	0.000	5030.641	309.049	461.445	0.000	5861.134	0.900	.30713	.20478
	20	0.000	5030.641	561.713	453.429	0.000	6199.720	0.000	.32001	.21334
26S	19	0.000	5030.641	358.045	553.467	0.000	6095.253	0.000	.31474	.20983
	46	0.000	5030.641	173.000	484.153	0.000	5747.799	0.000	.30125	.20083
27S	20	0.000	5040.641	561.712	483.425	0.000	6135.780	0.000	.32001	.21334
	21	0.000	5030.641	321.249	208.225	0.000	5664.115	0.000	.29656	.19771
28S	21	0.000	5030.641	321.249	252.225	0.000	5684.115	0.000	.29656	.19771
	22	0.000	5030.641	203.255	167.658	0.000	5451.354	0.000	.28623	.19082
29S	22	0.000	5030.641	203.255	167.658	0.000	5451.354	0.000	.28623	.19082
	23	0.000	5030.641	151.797	134.857	0.000	5426.495	0.000	.28441	.18961
30S	23	0.000	5040.641	5.164	.000	0.000	5035.785	0.000	.25708	.17139
	24	0.000	5035.641	.000	.000	0.000	5010.441	0.000	.26481	.17657
31S	47	0.000	5030.641	262.412	524.927	0.000	5777.980	0.000	.30457	.20305
	45	0.000	5030.641	128.481	613.757	0.000	5838.879	0.000	.30602	.20401
32S	49	0.000	5030.641	131.401	603.718	0.000	5830.760	0.000	.30560	.20373
	50	0.000	5039.641	131.593	426.667	0.000	5656.904	0.000	.29648	.19766
33S	50	0.000	5030.641	129.597	426.667	0.000	5656.904	0.000	.29648	.19766
	51	0.000	5040.641	152.951	496.271	0.000	5739.665	0.000	.30077	.20051
34S	52	0.000	5030.641	133.351	503.879	0.000	5753.342	0.000	.30154	.20103
	53	0.000	5090.641	2512.467	1473.816	0.000	9376.924	0.000	.43145	.32744
35S	53	0.000	5030.641	2733.093	2527.702	0.000	10417.439	0.000	.54400	.36480
	54	0.000	5030.641	1022.261	785.223	0.000	6893.121	0.000	.36159	.24106
36S	54	0.000	5030.641	1022.261	785.229	0.000	6893.121	0.000	.36159	.24106
	55	0.000	5030.641	412.401	511.011	0.000	6014.061	0.000	.31520	.21013
37S	56	0.000	5030.641	320.705	494.060	0.000	5935.401	0.000	.30991	.20694
	57	0.000	5095.641	445.807	608.953	0.000	6235.409	0.000	.32689	.21787
38S	57	0.000	6037.500	427.765	802.492	0.000	7267.356	0.000	.36483	.24322
	59	0.000	6037.500	525.143	1111.408	0.000	7674.051	0.000	.38524	.25683

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAH)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
15C	46	0.000	5030.641	173.000	484.153	0.000	5747.799	0.900	.30125	.20083
	47	0.000	5040.641	262.412	524.927	0.000	5877.980	0.000	.30457	.20305
16C	48	0.000	5030.641	199.511	562.420	0.000	6252.569	0.000	.32770	.21847
	49	0.000	5030.641	204.052	945.279	0.000	6233.971	0.000	.32704	.21803
17C	51	0.000	5030.641	237.527	769.791	0.000	6035.959	0.000	.31955	.21303
	52	0.000	5030.641	206.611	822.499	0.000	6119.749	0.000	.32074	.21383
18C	55	0.000	5030.641	412.401	511.011	0.000	6014.061	0.000	.31520	.21013
	56	0.000	5090.641	330.705	484.060	0.000	5905.401	0.000	.30991	.20634

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAH)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
39S	59	0.000	6037.500	525.143	1111.408	0.000	8636.551	0.000	.42874	.28583
	60	0.000	6037.500	67.351	831.691	0.000	7821.242	0.000	.39263	.26176
40S	60	0.000	6037.500	67.351	831.691	0.000	7821.242	0.000	.39263	.26176
	61	0.000	6037.500	72.527	497.117	0.000	7460.641	0.000	.37498	.24999
41S	62	0.000	6103.000	88.265	472.758	0.000	7480.824	0.000	.37554	.25036
	63	0.000	6100.000	86.554	522.770	0.000	7509.321	0.000	.37697	.25132
42S	64	0.000	6100.000	78.644	604.354	0.000	7543.135	0.000	.38064	.25379
	65	0.000	6100.000	324.581	778.793	0.000	7955.379	0.000	.39937	.26624

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAH)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
19C	61	0.000	6100.000	128.134	578.339	0.000	7866.449	0.000	.39531	.26354
	62	0.000	6100.000	169.598	878.035	0.000	7974.779	0.000	.39790	.26527
20C	63	0.000	6100.000	152.924	927.697	0.000	7974.078	0.000	.40043	.26695
	64	0.000	6100.000	139.309	1067.802	0.000	8107.197	0.000	.40698	.27132

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER END	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
435	53	0.000	4673.591	3068.449	6333.631	0.000	14067.790	0.000	.73771	.49156
	66	0.000	4673.591	1757.462	3737.262	0.000	10224.304	0.000	.53607	.35738
445	66	0.000	4673.591	1797.624	2102.342	0.000	8573.558	0.000	.44935	.29957
	67	0.000	4673.591	1627.359	2023.401	0.000	8330.666	0.000	.43665	.29110
455	66	0.000	4673.591	1377.764	2215.817	0.000	8266.374	0.000	.43329	.28886
	73	0.000	4673.591	1285.264	1903.659	0.000	7915.510	0.000	.41502	.27668
465	68	0.000	4673.591	1538.160	2041.719	0.000	8293.667	0.000	.43468	.28979
	69	0.000	4673.591	1202.035	2503.401	0.000	8379.431	0.000	.43917	.29278
475	69	0.000	4673.591	1174.479	2550.262	0.000	8344.371	0.000	.43659	.29040
	71	0.000	4673.591	468.293	1661.004	0.000	6832.942	0.000	.35805	.23770
485	71	0.000	4673.591	468.293	1065.903	0.000	6207.790	0.000	.32536	.21690
	72	0.000	4673.591	1039.750	1343.637	0.000	7056.478	0.000	.36936	.24656
495	72	0.000	4673.591	661.445	1309.114	0.000	6635.150	0.000	.34775	.23184
	107	0.000	4673.591	615.287	1603.211	0.000	6892.893	0.000	.36122	.24081
505	74	0.000	4673.591	1203.421	1774.902	0.000	7651.368	0.000	.40119	.26759
	75	0.000	4673.591	229.871	693.108	0.000	5593.665	0.000	.29317	.19545
515	76	0.000	4673.591	383.771	785.317	0.000	5836.683	0.000	.30593	.20395
	77	0.000	4673.591	465.284	813.911	0.000	5956.781	0.000	.31215	.20810
525	78	0.000	4673.591	307.284	805.750	0.000	5837.676	0.000	.30596	.20397
	79	0.000	4673.591	1463.321	994.395	0.000	7524.873	0.000	.37364	.24912
535	79	0.000	4673.591	1487.694	925.140	0.000	7329.447	0.000	.37266	.24811
	81	0.000	4673.591	1706.811	1374.748	0.000	7715.163	0.000	.40476	.26907
545	81	0.000	4673.591	1706.811	749.676	0.000	7127.077	0.000	.37354	.24902
	82	0.000	4673.591	1319.361	709.323	0.000	6701.275	0.000	.35122	.23415
555	83	0.000	4673.591	536.721	781.301	0.000	5940.628	0.000	.31240	.20827
	72	0.000	4673.591	1633.333	902.507	0.000	7209.935	0.000	.37785	.25192
565	84	0.000	4673.591	474.866	1075.154	0.000	6771.525	0.000	.35502	.23668
	85	0.000	4673.591	325.151	1601.932	0.000	6610.672	0.000	.34655	.23103
575	85	0.000	4673.591	326.151	1601.932	0.000	6610.672	0.000	.34655	.23103
	86	0.000	4673.591	210.557	939.962	0.000	5823.448	0.000	.30521	.20347
585	86	0.000	4673.591	210.557	939.962	0.000	5823.448	0.000	.30521	.20347
	106	0.000	4673.591	201.136	1122.277	0.000	5937.003	0.000	.31431	.20954
595	87	0.000	4673.591	229.661	945.372	0.000	5844.627	0.000	.30643	.20429
	88	0.000	4673.591	353.011	1705.828	0.000	6732.421	0.000	.35246	.23497
605	88	0.000	4673.591	353.011	1705.828	0.000	6732.421	0.000	.35246	.23523
	89	0.000	4673.591	443.621	1250.135	0.000	6447.355	0.000	.33791	.22527
615	89	0.000	4673.591	443.621	1243.135	0.000	6447.355	0.000	.33791	.22527
	90	0.000	4673.591	429.572	731.224	0.000	6034.388	0.000	.31627	.21085
625	91	0.000	4673.591	342.211	956.358	0.000	5972.117	0.000	.31300	.20867
	105	0.000	4673.591	201.508	1358.735	0.000	6233.834	0.000	.32672	.21781
635	92	0.000	4673.591	790.174	1346.014	0.000	6849.783	0.000	.35900	.23934
	93	0.000	4673.591	603.793	2126.621	0.000	7404.084	0.000	.38805	.25870
645	94	0.000	4125.890	123.554	494.911	0.000	4744.356	0.000	.24866	.16577
	95	0.000	4125.890	117.293	367.947	0.000	4610.280	0.000	.24163	.16109

655	96	0.000	4125.890	484.222	572.634	0.000	5162.745	0.000	.27055	.18039
	97	0.000	4125.890	681.991	1504.443	0.000	6312.720	0.000	.33086	.22057
665	97	0.000	4125.890	681.991	1504.443	0.000	6312.720	0.000	.33086	.22057
	98	0.000	4125.890	121.041	647.725	0.000	4894.659	0.000	.25653	.17102
675	99	0.000	4125.890	517.121	793.013	0.000	5447.027	0.000	.28542	.19028
	100	0.000	4125.890	1240.371	636.250	0.000	6002.510	0.000	.31460	.20973
685	100	0.000	4125.890	1240.371	636.250	0.000	6002.510	0.000	.31460	.20973
	101	0.000	4125.890	446.611	775.242	0.000	4810.742	0.000	.25214	.16809
695	101	0.000	4125.890	446.611	238.242	0.000	4810.742	0.000	.25214	.16809
	102	0.000	4125.890	248.463	895.224	0.000	5269.550	0.000	.27618	.18412
705	103	0.000	4125.890	499.685	1305.092	0.000	6530.627	0.000	.34225	.22818
	104	0.000	4125.890	499.271	1944.181	0.000	6573.261	0.000	.34451	.22967
715	105	0.000	4673.591	201.508	1358.735	0.000	6233.834	0.000	.32672	.21781
	92	0.000	4673.591	790.174	1346.014	0.000	6849.783	0.000	.35900	.23934
725	106	0.000	4673.591	201.136	1122.277	0.000	5937.003	0.000	.31431	.20954
	87	0.000	4673.591	229.661	945.372	0.000	5845.627	0.000	.30663	.20443
735	107	0.000	4673.591	618.284	1502.211	0.000	6892.083	0.000	.36122	.24081
	84	0.000	4673.591	474.866	1626.154	0.000	6773.825	0.000	.35502	.23668

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER END	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
210	67	0.000	4673.591	2474.292	3016.473	0.000	10144.355	0.000	.53167	.35445
	68	0.000	4673.591	2301.173	3113.946	0.000	10043.710	0.000	.52878	.35251
220	73	0.000	4673.591	1922.973	2471.369	0.000	9087.709	0.000	.48035	.32023
	74	0.000	4673.591	1800.720	2035.674	0.000	8135.303	0.000	.42959	.28639
230	75	0.000	4673.591	343.662	1220.433	0.000	6049.831	0.000	.31705	.21137
	76	0.000	4673.591	551.631	1171.211	0.000	6434.437	0.000	.33734	.22489
240	77	0.000	4673.591	700.481	1217.405	0.000	6531.565	0.000	.34247	.22831
	78	0.000	4673.591	534.444	1705.781	0.000	6614.822	0.000	.34721	.23147
250	82	0.000	4673.591	1973.671	1053.551	0.000	7706.718	0.000	.40392	.26928
	83	0.000	4673.591	708.49	1165.715	0.000	6538.604	0.000	.34265	.22843
260	90	0.000	4673.591	423.572	776.224	0.000	6034.388	0.000	.31627	.21085
	91	0.000	4673.591	342.211	956.358	0.000	5972.117	0.000	.31300	.20867
270	93	0.000	4673.591	603.793	2126.621	0.000	7404.084	0.000	.38805	.25870
	94	0.000	4673.591	433.221	1715.131	0.000	6842.149	0.000	.35860	.23907
280	95	0.000	4125.890	117.293	367.947	0.000	4610.280	0.000	.24163	.16109
	96	0.000	4125.890	484.222	572.634	0.000	5162.745	0.000	.27055	.18039
290	98	0.000	4125.890	121.041	647.725	0.000	4894.659	0.000	.25653	.17102
	99	0.000	4125.890	517.121	793.013	0.000	5447.027	0.000	.28542	.19028
300	102	0.000	4125.890	248.463	895.224	0.000	5269.550	0.000	.27618	.18412
	103	0.000	4125.890	499.685	1305.092	0.000	6530.627	0.000	.34225	.22818

D.2.2 S A T I S F A C T I O N O F E Q U A T I O N 10 (ANALYSIS SET 2)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO
1S	1	0.000	0.000	0.000	0.000	3432.578	3432.578	0.000	.16411	
	2	0.000	0.000	0.000	0.000	1216.449	1216.449	0.000	.05209	
2S	1	0.000	0.000	0.000	0.000	11130.867	11130.867	0.000	.47662	
	11	0.000	0.000	0.000	0.000	2892.552	2892.552	0.000	.12386	
3S	1	0.000	0.000	0.000	0.000	2106.190	2106.190	0.000	.09019	
	12	0.000	0.000	0.000	0.000	3408.670	3408.670	0.000	.14598	
4S	3	0.000	0.000	0.000	0.000	3214.084	3214.084	0.000	.13763	
	4	0.000	0.000	0.000	0.000	2723.741	2723.741	0.000	.11663	
5S	4	0.000	0.000	0.000	0.000	2723.741	2723.741	0.000	.11663	
	6	0.000	0.000	0.000	0.000	3224.328	3224.328	0.000	.13806	
6S	7	0.000	0.000	0.000	0.000	2542.854	2542.854	0.000	.10883	
	8	0.000	0.000	0.000	0.000	2366.531	2366.531	0.000	.10133	
7S	9	0.000	0.000	0.000	0.000	2658.455	2658.455	0.000	.11383	
	10	0.000	0.000	0.000	0.000	2719.749	2719.749	0.000	.11646	
8S	13	0.000	0.000	0.000	0.000	3288.594	3288.594	0.000	.14126	
	14	0.000	0.000	0.000	0.000	2220.963	2220.963	0.000	.09549	
9S	15	0.000	0.000	0.000	0.000	2522.287	2522.287	0.000	.10800	
	16	0.000	0.000	0.000	0.000	2732.448	2732.448	0.000	.11700	
10S	16	0.000	0.000	0.000	0.000	2732.448	2732.448	0.000	.11700	
	17	0.000	0.000	0.000	0.000	3448.081	3448.081	0.000	.14760	
11S	18	0.000	0.000	0.000	0.000	3430.572	3430.572	0.000	.14684	
	19	0.000	0.000	0.000	0.000	3778.042	3778.042	0.000	.16177	

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO
1C	2	0.000	0.000	0.000	0.000	1610.202	1610.202	0.000	.06900	
	3	0.000	0.000	0.000	0.000	1223.317	1223.317	0.000	.05240	
2C	6	0.000	0.000	0.000	0.000	3224.328	3224.328	0.000	.13806	
	7	0.000	0.000	0.000	0.000	2542.854	2542.854	0.000	.10888	
3C	8	0.000	0.000	0.000	0.000	3539.903	3539.903	0.000	.15158	
	9	0.000	0.000	0.000	0.000	3976.670	3976.670	0.000	.17028	
4C	12	0.000	0.000	0.000	0.000	4594.720	4594.720	0.000	.19674	
	13	0.000	0.000	0.000	0.000	4420.043	4420.043	0.000	.17930	
5C	14	0.000	0.000	0.000	0.000	2229.963	2229.963	0.000	.09549	
	15	0.000	0.000	0.000	0.000	2522.287	2522.287	0.000	.10800	
6C	17	0.000	0.000	0.000	0.000	4675.543	4675.543	0.000	.20021	
	18	0.000	0.000	0.000	0.000	4597.269	4597.269	0.000	.19685	

PIPESD

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO
12S	23	0.000	0.000	0.000	0.000	4327.222	4327.222	0.000	.18529	
	25	0.000	0.000	0.000	0.000	3119.345	3119.345	0.000	.13357	
13S	26	0.000	0.000	0.000	0.000	3171.922	3171.922	0.000	.13582	
	27	0.000	0.000	0.000	0.000	2897.581	2897.581	0.000	.12407	
14S	28	0.000	0.000	0.000	0.000	2750.416	2750.416	0.000	.11777	
	29	0.000	0.000	0.000	0.000	3823.637	3823.637	0.000	.16375	
15S	30	0.000	0.000	0.000	0.000	17036.104	17036.104	0.000	.72965	
	29	0.000	0.000	0.000	0.000	4684.707	4684.707	0.000	.20065	
16S	39	0.000	0.000	0.000	0.000	5830.028	5830.028	0.000	.24964	
	36	0.000	0.000	0.000	0.000	3539.528	3539.528	0.000	.15159	
17S	31	0.000	0.000	0.000	0.000	4654.797	4654.797	0.000	.23063	
	32	0.000	0.000	0.000	0.000	6303.047	6303.047	0.000	.26999	
18S	33	0.000	0.000	0.000	0.000	6359.033	6359.033	0.000	.27239	
	34	0.000	0.000	0.000	0.000	2957.295	2957.295	0.000	.12663	
19S	35	0.000	0.000	0.000	0.000	4056.433	4056.433	0.000	.17370	
	35	0.000	0.000	0.000	0.000	4345.530	4345.530	0.000	.23764	
20S	36	0.000	0.000	0.000	0.000	4345.530	4345.530	0.000	.20748	
	37	0.000	0.000	0.000	0.000	2960.253	2960.253	0.000	.17741	
21S	38	0.000	0.000	0.000	0.000	2963.825	2963.825	0.000	.12691	
	40	0.000	0.000	0.000	0.000	3293.836	3231.836	0.000	.14104	
22S	41	0.000	0.000	0.000	0.000	2783.437	2783.437	0.000	.11919	
	42	0.000	0.000	0.000	0.000	2761.116	2761.116	0.000	.11823	
23S	43	0.000	0.000	0.000	0.000	3522.726	3522.726	0.000	.14089	
	44	0.000	0.000	0.000	0.000	4312.727	4312.727	0.000	.18467	
24S	45	0.000	0.000	0.000	0.000	4249.468	4249.468	0.000	.18196	
	49	0.000	0.000	0.000	0.000	3681.463	3681.463	0.000	.15421	

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO
7C	25	0.000	0.000	0.000	0.000	4140.194	4140.194	0.000	.17333	
	26	0.000	0.000	0.000	0.000	4200.676	4200.676	0.000	.18203	
8C	27	0.000	0.000	0.000	0.000	3442.396	3442.396	0.000	.16836	
	28	0.000	0.000	0.000	0.000	3645.218	3645.218	0.000	.15747	
9C	31	0.000	0.000	0.000	0.000	9628.402	9628.402	0.000	.41772	
	32	0.000	0.000	0.000	0.000	8512.209	8512.209	0.000	.36931	
10C	33	0.000	0.000	0.000	0.000	2057.715	2057.715	0.000	.08927	
	34	0.000	0.000	0.000	0.000	4026.433	4026.433	0.000	.17393	
11C	35	0.000	0.000	0.000	0.000	4653.634	4653.634	0.000	.19869	
	37	0.000	0.000	0.000	0.000	4433.643	4433.643	0.000	.19004	
12C	39	0.000	0.000	0.000	0.000	5235.279	5235.279	0.000	.22674	
	40	0.000	0.000	0.000	0.000	4161.626	4161.626	0.000	.17838	

130	41	0.000	0.000	0.000	0.000	4130.236	4130.236	0.000	.17444
	42	0.000	0.000	0.000	0.000	5279.541	5279.541	0.000	.22436
140	43	0.000	0.000	0.000	0.000	6451.226	6451.226	0.000	.27424
	44	0.000	0.000	0.000	0.000	6356.599	6356.599	0.000	.27219

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO
255	19	0.000	0.000	0.000	0.000	1192.722	1192.722	0.000	.05107	
	20	0.000	0.000	0.000	0.000	1125.944	1125.944	0.000	.04821	
265	19	0.000	0.000	0.000	0.000	1551.055	1551.055	0.000	.06642	
	46	0.000	0.000	0.000	0.000	2467.815	2467.815	0.000	.10567	
275	20	0.000	0.000	0.000	0.000	1125.944	1125.944	0.000	.04821	
	21	0.000	0.000	0.000	0.000	1292.302	1292.302	0.000	.05534	
285	21	0.000	0.000	0.000	0.000	1292.302	1292.302	0.000	.05534	
	22	0.000	0.000	0.000	0.000	1666.144	1666.144	0.000	.07134	
295	22	0.000	0.000	0.000	0.000	1666.144	1666.144	0.000	.07134	
	23	0.000	0.000	0.000	0.000	2465.678	2465.678	0.000	.10558	
305	23	0.000	0.000	0.000	0.000	.000	.000	0.000	.00000	
	24	0.000	0.000	0.000	0.000	.000	.000	0.000	.00000	
315	47	0.000	0.000	0.000	0.000	2961.694	2961.694	0.000	.12682	
	48	0.000	0.000	0.000	0.000	3032.493	3032.493	0.000	.12985	
325	49	0.000	0.000	0.000	0.000	2633.270	2633.270	0.000	.11276	
	50	0.000	0.000	0.000	0.000	741.963	741.963	0.000	.03177	
335	50	0.000	0.000	0.000	0.000	741.963	741.963	0.000	.03177	
	51	0.000	0.000	0.000	0.000	3431.107	3431.107	0.000	.14692	
345	52	0.000	0.000	0.000	0.000	3836.347	3836.347	0.000	.16427	
	53	0.000	0.000	0.000	0.000	10704.048	10704.048	0.000	.45834	
355	53	0.000	0.000	0.000	0.000	10526.387	10526.387	0.000	.45073	
	54	0.000	0.000	0.000	0.000	3554.956	3554.956	0.000	.15222	
365	54	0.000	0.000	0.000	0.000	3554.936	3554.936	0.000	.15222	
	55	0.000	0.000	0.000	0.000	4192.134	4192.134	0.000	.17951	
375	56	0.000	0.000	0.000	0.000	3335.202	3335.202	0.000	.14281	
	57	0.000	0.000	0.000	0.000	2061.614	2061.614	0.000	.08829	
385	57	0.000	0.000	0.000	0.000	2365.987	2365.987	0.000	.10367	
	59	0.000	0.000	0.000	0.000	2843.552	2843.552	0.000	.12099	

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO
150	46	0.000	0.000	0.000	0.000	2467.815	2467.815	0.000	.10567	
	47	0.000	0.000	0.000	0.000	2961.694	2961.694	0.000	.12682	
160	48	0.000	0.000	0.000	0.000	4709.159	4709.159	0.000	.20164	
	49	0.000	0.000	0.000	0.000	4089.236	4089.236	0.000	.17510	
170	51	0.000	0.000	0.000	0.000	5328.166	5328.166	0.000	.22815	
	52	0.000	0.000	0.000	0.000	5957.464	5957.464	0.000	.25510	

180	55	0.000	0.000	0.000	0.000	4192.134	4192.134	0.000	.17951
	56	0.000	0.000	0.000	0.000	3335.202	3335.202	0.000	.14281

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO
395	59	0.000	0.000	0.000	0.000	2843.552	2843.552	0.000	.12099	
	60	0.000	0.000	0.000	0.000	2919.016	2919.016	0.000	.12420	
405	60	0.000	0.000	0.000	0.000	2919.016	2919.016	0.000	.12420	
	61	0.000	0.000	0.000	0.000	4331.291	4331.291	0.000	.18429	
415	62	0.000	0.000	0.000	0.000	4457.946	4457.946	0.000	.19347	
	63	0.000	0.000	0.000	0.000	4595.579	4595.579	0.000	.19554	
425	64	0.000	0.000	0.000	0.000	4349.332	4349.332	0.000	.18506	
	65	0.000	0.000	0.000	0.000	3940.370	3940.370	0.000	.16766	

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T1O)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T1O/(1.0*SA)	MODIFIED STRESS RATIO
190	61	0.000	0.000	0.000	0.000	7652.738	7652.738	0.000	.32561	
	62	0.000	0.000	0.000	0.000	8282.894	8282.894	0.000	.35243	
200	63	0.000	0.000	0.000	0.000	8119.693	8119.693	0.000	.34548	
	64	0.000	0.000	0.000	0.000	7664.815	7664.815	0.000	.32617	

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SA)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO
435	53	0.000	0.000	0.000	0.000	1789.337	1789.337	0.000	.07669	
	66	0.000	0.000	0.000	0.000	1109.617	1109.617	0.000	.04751	
445	66	0.000	0.000	0.000	0.000	968.577	968.577	0.000	.04149	
	67	0.000	0.000	0.000	0.000	916.697	916.697	0.000	.03925	
455	68	0.000	0.000	0.000	0.000	463.228	463.228	0.000	.01984	
	73	0.000	0.000	0.000	0.000	444.922	444.922	0.000	.01905	
465	69	0.000	0.000	0.000	0.000	873.677	873.677	0.000	.03741	
	69	0.000	0.000	0.000	0.000	902.777	902.777	0.000	.03866	
475	69	0.000	0.000	0.000	0.000	902.777	902.777	0.000	.03866	
	71	0.000	0.000	0.000	0.000	1641.405	1641.405	0.000	.07029	
485	71	0.000	0.000	0.000	0.000	1641.405	1641.405	0.000	.07029	
	72	0.000	0.000	0.000	0.000	1436.128	1436.128	0.000	.06364	
495	72	0.000	0.000	0.000	0.000	1932.089	1932.089	0.000	.08545	
	107	0.000	0.000	0.000	0.000	1768.499	1768.499	0.000	.07873	
505	74	0.000	0.000	0.000	0.000	444.784	444.784	0.000	.01921	
	75	0.000	0.000	0.000	0.000	481.037	481.037	0.000	.02080	
515	76	0.000	0.000	0.000	0.000	464.799	464.799	0.000	.01988	
	77	0.000	0.000	0.000	0.000	438.634	438.634	0.000	.01878	
525	78	0.000	0.000	0.000	0.000	417.612	417.612	0.000	.01788	
	79	0.000	0.000	0.000	0.000	416.126	416.126	0.000	.01782	
535	79	0.000	0.000	0.000	0.000	416.126	416.126	0.000	.01782	
	81	0.000	0.000	0.000	0.000	424.636	424.636	0.000	.01819	
545	81	0.000	0.000	0.000	0.000	424.636	424.636	0.000	.01818	
	82	0.000	0.000	0.000	0.000	402.018	402.018	0.000	.01721	
555	83	0.000	0.000	0.000	0.000	401.331	401.331	0.000	.01718	
	72	0.000	0.000	0.000	0.000	442.337	442.337	0.000	.01894	
565	84	0.000	0.000	0.000	0.000	1253.489	1253.489	0.000	.05367	
	85	0.000	0.000	0.000	0.000	542.402	542.402	0.000	.02322	
575	85	0.000	0.000	0.000	0.000	842.492	842.492	0.000	.03608	
	86	0.000	0.000	0.000	0.000	911.443	911.443	0.000	.03903	
585	86	0.000	0.000	0.000	0.000	911.443	911.443	0.000	.03903	
	106	0.000	0.000	0.000	0.000	1017.345	1017.345	0.000	.04356	
595	87	0.000	0.000	0.000	0.000	1338.428	1338.428	0.000	.05731	
	88	0.000	0.000	0.000	0.000	2014.774	2014.774	0.000	.08627	
605	88	0.000	0.000	0.000	0.000	2014.774	2014.774	0.000	.08627	
	89	0.000	0.000	0.000	0.000	2605.681	2605.681	0.000	.11157	
615	89	0.000	0.000	0.000	0.000	2605.681	2605.681	0.000	.11157	
	90	0.000	0.000	0.000	0.000	3155.145	3155.145	0.000	.13510	
625	91	0.000	0.000	0.000	0.000	2945.476	2945.476	0.000	.12784	
	105	0.000	0.000	0.000	0.000	2597.084	2597.084	0.000	.11078	
635	92	0.000	0.000	0.000	0.000	2472.073	2472.073	0.000	.10585	
	93	0.000	0.000	0.000	0.000	3897.866	3897.866	0.000	.16691	
645	94	0.000	0.000	0.000	0.000	1203.938	1203.938	0.000	.05156	
	95	0.000	0.000	0.000	0.000	1209.256	1209.256	0.000	.05178	

655	96	0.000	0.000	0.000	0.000	1115.014	1115.014	0.000	.04774
	97	0.000	0.000	0.000	0.000	1206.095	1206.095	0.000	.05164
665	97	0.000	0.000	0.000	0.000	1206.095	1206.095	0.000	.05164
	98	0.000	0.000	0.000	0.000	1749.504	1749.504	0.000	.07474
675	99	0.000	0.000	0.000	0.000	1909.559	1909.559	0.000	.08177
	100	0.000	0.000	0.000	0.000	1937.606	1937.606	0.000	.08554
685	100	0.000	0.000	0.000	0.000	1997.606	1997.606	0.000	.08554
	101	0.000	0.000	0.000	0.000	2767.211	2767.211	0.000	.11849
695	101	0.000	0.000	0.000	0.000	2767.211	2767.211	0.000	.11849
	102	0.000	0.000	0.000	0.000	3556.021	3556.021	0.000	.15755
705	103	0.000	0.000	0.000	0.000	3876.747	3876.747	0.000	.16429
	104	0.000	0.000	0.000	0.000	3834.207	3834.207	0.000	.16418
715	105	0.000	0.000	0.000	0.000	2597.084	2597.084	0.000	.11078
	92	0.000	0.000	0.000	0.000	2472.073	2472.073	0.000	.10585
725	106	0.000	0.000	0.000	0.000	1017.345	1017.345	0.000	.04356
	87	0.000	0.000	0.000	0.000	1338.428	1338.428	0.000	.05988
735	107	0.000	0.000	0.000	0.000	1768.499	1768.499	0.000	.07573
	84	0.000	0.000	0.000	0.000	1253.489	1253.489	0.000	.05367

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (PI)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T10)	MODIFIED ALLOWABLE STRESS (SA)	DESIGN STRESS RATIO T10/(1.0*SA)	MODIFIED STRESS RATIO
210	67	0.000	0.000	0.000	0.000	1371.248	1371.248	0.000	.05870	
	68	0.000	0.000	0.000	0.000	1306.836	1306.836	0.000	.05594	
220	73	0.000	0.000	0.000	0.000	669.539	669.539	0.000	.02868	
	74	0.000	0.000	0.000	0.000	671.197	671.197	0.000	.02874	
230	75	0.000	0.000	0.000	0.000	719.653	719.653	0.000	.03082	
	76	0.000	0.000	0.000	0.000	694.525	694.525	0.000	.02974	
240	77	0.000	0.000	0.000	0.000	656.114	656.114	0.000	.02810	
	78	0.000	0.000	0.000	0.000	624.643	624.643	0.000	.02675	
250	52	0.000	0.000	0.000	0.000	601.362	601.362	0.000	.02575	
	83	0.000	0.000	0.000	0.000	600.331	600.331	0.000	.02571	
260	97	0.000	0.000	0.000	0.000	3155.145	3155.145	0.000	.13510	
	91	0.000	0.000	0.000	0.000	2945.476	2945.476	0.000	.12784	
270	93	0.000	0.000	0.000	0.000	3897.866	3897.866	0.000	.16691	
	94	0.000	0.000	0.000	0.000	4071.428	4071.428	0.000	.17436	
280	95	0.000	0.000	0.000	0.000	1203.256	1203.256	0.000	.05153	
	96	0.000	0.000	0.000	0.000	1115.014	1115.014	0.000	.04774	
290	96	0.000	0.000	0.000	0.000	1749.504	1749.504	0.000	.07490	
	99	0.000	0.000	0.000	0.000	1909.559	1909.559	0.000	.08177	
300	10.	0.000	0.000	0.000	0.000	3556.021	3556.021	0.000	.15305	
	103	0.000	0.000	0.000	0.000	3836.747	3836.747	0.000	.16429	

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

D.2.3 SATISFACTION OF EQUATION 11 (ANALYSIS SET 2)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO
15	1	3786.977	0.000	131.607	0.000	3832.578	7751.162	0.000	.19746	
	2	3786.977	0.000	33.191	0.000	1216.489	5036.657	0.000	.12831	
25	1	4289.688	0.000	465.439	0.000	11130.767	15886.044	0.000	.40470	
	11	4289.698	0.000	323.475	0.000	2892.552	7505.116	0.000	.19122	
35	1	3786.977	0.000	341.292	0.000	2106.180	6234.449	0.000	.15882	
	12	3786.977	0.000	199.975	0.000	3428.670	7415.622	0.000	.18891	
45	3	4289.668	0.000	85.745	0.000	3214.264	7589.517	0.000	.19335	
	4	4289.688	0.000	363.256	0.000	2723.741	7376.687	0.000	.18792	
55	4	4289.698	0.000	363.258	0.000	2723.741	7376.687	0.000	.18792	
	6	4289.688	0.000	76.591	0.000	3224.328	7590.968	0.000	.19338	
65	7	4289.688	0.000	206.555	0.000	2542.854	7039.097	0.000	.17932	
	8	4289.688	0.000	129.552	0.000	2366.531	6785.771	0.000	.17287	
75	9	4289.688	0.000	215.793	0.000	2558.499	7163.650	0.000	.18250	
	10	4289.688	0.000	219.664	0.000	2715.749	7229.101	0.000	.18416	
85	13	3786.977	0.000	196.712	0.000	3298.934	7282.624	0.000	.18553	
	14	3786.977	0.000	133.742	0.000	2279.963	6200.683	0.000	.15796	
95	15	3786.977	0.000	116.265	0.000	2522.287	6425.534	0.000	.16369	
	16	3786.977	0.000	176.762	0.000	2732.448	6696.188	0.000	.17059	
105	16	3786.977	0.000	176.762	0.000	2732.448	6696.188	0.000	.17059	
	17	3786.977	0.000	544.078	0.000	3428.981	7822.036	0.000	.19927	
115	18	3786.977	0.000	451.394	0.000	3430.572	7669.945	0.000	.19537	
	19	3786.977	0.000	93.664	0.000	3778.042	7658.688	0.000	.19511	

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO
10	2	3786.977	0.000	44.479	0.000	1630.202	5461.659	0.000	.13914	
	3	3786.977	0.000	32.771	0.000	1278.387	5098.135	0.000	.12860	
20	6	4289.688	0.000	76.951	0.000	3224.328	7590.968	0.000	.19338	
	7	4289.688	0.000	206.555	0.000	2542.854	7039.097	0.000	.17932	
30	8	4289.688	0.000	197.791	0.000	3539.993	8023.473	0.000	.20440	
	9	4289.688	0.000	322.661	0.000	3976.670	8589.025	0.000	.21881	
40	12	3786.977	0.000	287.984	0.000	4594.720	8649.692	0.000	.22035	
	13	3786.977	0.000	263.612	0.000	4420.943	8471.533	0.000	.21581	
50	14	3786.977	0.000	133.742	0.000	2229.963	6200.623	0.000	.15796	
	15	3786.977	0.000	116.265	0.000	2522.287	6425.534	0.000	.16369	
60	17	3786.977	0.000	731.732	0.000	4675.543	9194.313	0.000	.23423	
	18	3786.977	0.000	604.911	0.000	4597.269	8989.156	0.000	.22900	

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO
125	23	3786.977	0.000	267.681	0.000	4327.222	8381.881	0.000	.21353	
	25	3786.977	0.000	52.854	0.000	3119.349	6959.581	0.000	.17727	
135	26	3786.977	0.000	79.765	0.000	3171.922	7037.669	0.000	.17929	
	27	3786.977	0.000	51.505	0.000	2897.501	6735.983	0.000	.17160	
145	28	3786.977	0.000	52.339	0.000	2750.416	6591.733	0.000	.16788	
	29	3786.977	0.000	116.741	0.000	3828.837	7732.555	0.000	.19699	
155	29	4289.688	0.000	324.788	0.000	17806.104	21420.080	0.000	.55078	
	30	4289.688	0.000	112.879	0.000	4654.797	9057.364	0.000	.23150	
165	29	4289.688	0.000	223.594	0.000	5820.028	10343.310	0.000	.26350	
	39	4289.688	0.000	75.373	0.000	3539.928	7904.989	0.000	.20138	
175	30	4289.688	0.000	112.879	0.000	4654.797	9057.364	0.000	.23150	
	31	4289.688	0.000	135.349	0.000	6303.047	10728.725	0.000	.27332	
185	32	4289.688	0.000	79.710	0.000	6259.323	10728.421	0.000	.27331	
	33	4289.688	0.000	101.365	0.000	2957.295	7348.349	0.000	.18720	
195	34	4289.688	0.000	53.990	0.000	4056.433	8400.111	0.000	.21400	
	35	4289.688	0.000	269.860	0.000	4845.530	9405.078	0.000	.23960	
205	35	4289.688	0.000	269.860	0.000	4845.530	9405.078	0.000	.23960	
	36	4289.688	0.000	79.733	0.000	2940.253	7293.675	0.000	.18596	
215	37	4289.688	0.000	51.623	0.000	2963.839	7305.150	0.000	.18610	
	38	4289.688	0.000	37.361	0.000	3298.878	7625.590	0.000	.19426	
225	40	4289.688	0.000	28.901	0.000	2783.437	7102.025	0.000	.18093	
	41	4289.688	0.000	117.331	0.000	2761.116	7168.137	0.000	.18261	
235	42	4289.688	0.000	117.761	0.000	3502.776	7910.177	0.000	.20151	
	43	4289.688	0.000	91.511	0.000	4312.727	8693.928	0.000	.22149	
245	44	4289.688	0.000	173.693	0.000	4249.468	8712.848	0.000	.22196	
	45	4289.688	0.000	266.491	0.000	3601.453	8097.638	0.000	.20629	

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SH+SA)	MODIFIED STRESS RATIO
70	25	3786.977	0.000	70.032	0.000	4150.135	8617.287	0.000	.22475	
	26	3786.977	0.000	125.553	0.000	4250.066	8143.101	0.000	.20745	
80	27	3786.977	0.000	63.021	0.000	3862.066	7725.904	0.000	.19735	
	28	3786.977	0.000	70.137	0.000	3675.796	7542.915	0.000	.19214	
90	31	4289.688	0.000	213.471	0.000	[illegible]	[illegible]	0.000	.30466	
	32	4289.688	0.000	115.235	0.000	[illegible]	[illegible]	0.000	.35464	
100	33	4289.688	0.000	101.367	0.000	[illegible]	7745.350	0.000	.19726	
	34	4289.688	0.000	[illegible]	0.000	[illegible]	[illegible]	0.000	.21409	
110	36	4289.688	0.000	44.471	0.000	4458.934	8792.200	0.000	.22398	
	37	4289.688	0.000	77.221	0.000	4433.463	8800.389	0.000	.22419	
120	39	4289.688	0.000	112.741	0.000	5205.22	9607.[illegible]	0.000	.24705	
	40	4289.688	0.000	43.231	0.000	4163.62	8496.544	0.000	.21645	

130	41	4249.488	0.000	175.512	0.000	4170.776	8595.439	0.000	.21497
	42	4249.488	0.000	176.151	0.000	5231.574	9705.474	0.000	.24725
140	43	4259.088	0.000	136.891	0.000	6671.726	10877.804	0.000	.27712
	44	4269.588	0.000	259.811	0.000	6356.599	10926.106	0.000	.27784

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SM+SA)	MODIFIED STRESS RATIO
255	19	4672.481	0.000	309.049	0.000	1192.722	6174.252	0.000	.19730	
	20	4672.481	0.000	561.713	0.000	1129.944	6360.139	0.000	.19783	
265	19	4672.481	0.000	305.945	0.000	1501.055	6532.440	0.000	.20862	
	46	4672.481	0.000	173.000	0.000	2467.815	7313.296	0.000	.18671	
275	20	4672.481	0.000	561.713	0.000	1129.944	6360.139	0.000	.16203	
	21	4672.481	0.000	371.244	0.000	1202.302	6286.032	0.000	.16014	
285	21	4672.481	0.000	371.244	0.000	1202.302	6286.032	0.000	.16014	
	22	4672.481	0.000	203.254	0.000	1646.144	6541.819	0.000	.16686	
295	22	4672.481	0.000	203.254	0.000	1646.144	6541.880	0.000	.16686	
	23	4672.481	0.000	151.793	0.000	2465.674	7289.956	0.000	.18571	
305	23	4672.481	0.000	5.184	0.000	.000	4677.665	0.000	.11918	
	24	4672.481	0.000	.884	0.000	.000	4672.481	0.000	.11903	
315	47	4672.481	0.000	262.412	0.000	2961.684	7836.577	0.000	.20117	
	48	4672.481	0.000	178.481	0.000	3832.403	8683.456	0.000	.19456	
325	48	4672.481	0.000	131.483	0.000	2633.290	7437.171	0.000	.13946	
	50	4672.481	0.000	131.593	0.000	741.563	5584.041	0.000	.14149	
335	50	4672.481	0.000	131.593	0.000	741.563	5584.041	0.000	.14149	
	51	4672.481	0.000	152.951	0.000	3431.107	8256.541	0.000	.21034	
345	52	4672.481	0.000	133.051	0.000	3836.347	8641.870	0.000	.22015	
	53	4672.481	0.000	2812.462	0.000	10704.040	18186.989	0.000	.46337	
355	53	4672.481	0.000	2799.031	0.000	10526.307	17997.885	0.000	.46359	
	54	4672.481	0.000	1022.260	0.000	3584.496	9249.737	0.000	.23564	
365	54	4672.481	0.000	1022.261	0.000	3584.936	9249.737	0.000	.23564	
	55	4672.481	0.000	412.408	0.000	4192.134	9277.023	0.000	.23633	
375	56	4672.481	0.000	330.780	0.000	3335.202	8335.283	0.000	.21242	
	57	4672.481	0.000	445.807	0.000	2061.614	7179.902	0.000	.18291	
385	57	5541.562	0.000	427.361	0.000	2365.587	8334.514	0.000	.20784	
	59	5541.562	0.000	525.142	0.000	2843.552	8910.258	0.000	.22219	

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SM+SA)	MODIFIED STRESS RATIO
150	46	4672.481	0.000	173.000	0.000	2467.815	7313.296	0.000	.18671	
	47	4672.481	0.000	262.412	0.000	2961.684	7836.577	0.000	.20117	
160	48	4672.481	0.000	199.519	0.000	4769.159	9591.259	0.000	.24404	
	49	4672.481	0.000	204.052	0.000	4085.236	8965.768	0.000	.22841	
170	51	4672.481	0.000	237.520	0.000	5328.166	10235.167	0.000	.26067	
	52	4672.481	0.000	286.611	0.000	5957.464	10836.561	0.000	.27606	

130	55	4672.481	0.000	412.408	0.000	4192.134	9277.023	0.000	.23633
	56	4672.481	0.000	330.780	0.000	3335.202	8335.283	0.000	.21242

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SM+SA)	MODIFIED STRESS RATIO
395	59	5846.562	0.000	525.142	0.000	2843.552	9265.258	0.000	.23078	
	60	5846.562	0.000	87.391	0.000	2919.016	8692.979	0.000	.22175	
405	60	5846.562	0.000	87.391	0.000	2919.016	8692.979	0.000	.22175	
	61	5846.562	0.000	72.521	0.000	4331.791	10240.377	0.000	.25668	
415	62	5846.562	0.000	66.061	0.000	4687.914	10667.574	0.000	.26563	
	63	5846.562	0.000	66.551	0.000	4509.578	10568.690	0.000	.26354	
425	64	5846.562	0.000	78.464	0.000	4349.332	10314.739	0.000	.25721	
	65	5846.562	0.000	324.587	0.000	3940.370	10151.515	0.000	.25314	

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T11)	MODIFIED ALLOWABLE STRESS (SAM)	DESIGN STRESS RATIO T11/(SM+SA)	MODIFIED STRESS RATIO
190	61	5846.562	0.000	128.138	0.000	7652.738	13667.439	0.000	.34081	
	62	5846.562	0.000	195.598	0.000	8242.494	14325.055	0.000	.35721	
200	63	5846.562	0.000	152.921	0.000	8119.693	14159.177	0.000	.35307	
	64	5846.562	0.000	139.305	0.000	7684.615	13710.482	0.000	.34189	

LAGUNA FEED WATER & CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (SP)	PEAK PRESSURE STRESS (SPEAK)	SUSTAINED LOAD STRESS (SA)	OCCASIONAL LOAD STRESS (SO)	THERMAL EXPANSION STRESS (SC)	TOTAL STRESS (ST)	MODIFIED ALLOWABLE STRESS (SSH)	OPSIG STRESS RATIO ST/(SSH+SA)	MODIFIED STRESS RATIO
435	63	4289.688	0.000	3060.669	0.000	1789.337	9139.714	0.000	.23284	
	64	4289.688	0.000	1707.402	0.000	1189.617	7186.707	0.000	.17232	
445	66	4289.688	0.000	1737.626	0.000	968.877	7096.191	0.000	.17476	
	67	4289.688	0.000	1627.355	0.000	916.697	6933.740	0.000	.17069	
455	68	4289.688	0.000	1377.764	0.000	863.728	6130.682	0.000	.15618	
	73	4289.688	0.000	1295.264	0.000	844.322	6019.874	0.000	.15336	
465	68	4289.688	0.000	1538.363	0.000	873.677	6701.729	0.000	.17071	
	69	4289.688	0.000	1702.039	0.000	902.777	6394.505	0.000	.16290	
475	69	4289.688	0.000	1194.479	0.000	902.777	6365.944	0.000	.16271	
	71	4289.688	0.000	463.297	0.000	1641.485	6233.331	0.000	.16303	
485	71	4289.688	0.000	468.297	0.000	1641.485	6233.331	0.000	.16303	
	72	4289.688	0.000	1039.759	0.000	1466.123	6815.569	0.000	.17363	
495	72	4289.688	0.000	661.445	0.000	1902.289	6853.222	0.000	.17459	
	107	4289.688	0.000	618.284	0.000	1768.499	6676.469	0.000	.17008	
505	74	4289.688	0.000	1269.825	0.000	448.704	5944.213	0.000	.15153	
	75	4289.688	0.000	223.674	0.000	481.037	5030.692	0.000	.12729	
515	76	4289.688	0.000	368.775	0.000	484.739	5122.762	0.000	.13050	
	77	4289.688	0.000	461.284	0.000	438.634	5134.602	0.000	.13238	
525	78	4289.688	0.000	357.284	0.000	417.612	5054.587	0.000	.12989	
	79	4289.688	0.000	1469.328	0.000	436.126	6175.142	0.000	.15731	
535	79	4289.688	0.000	1467.694	0.000	436.126	6173.511	0.000	.15727	
	81	4289.688	0.000	1706.611	0.000	424.636	6421.135	0.000	.16358	
545	81	4289.688	0.000	1706.911	0.000	424.636	6421.175	0.000	.16359	
	82	4289.688	0.000	1311.363	0.000	402.018	6003.068	0.000	.15313	
555	82	4289.688	0.000	505.727	0.000	401.331	5196.748	0.000	.13249	
	72	4289.688	0.000	1533.831	0.000	442.337	6369.663	0.000	.16237	
565	84	4289.688	0.000	474.088	0.000	1203.489	6017.257	0.000	.15329	
	85	4289.688	0.000	325.151	0.000	842.432	5457.320	0.000	.13903	
575	85	4289.688	0.000	325.151	0.000	842.432	5457.320	0.000	.13903	
	86	4289.688	0.000	210.863	0.000	911.448	5412.004	0.000	.13787	
585	86	4289.688	0.000	210.867	0.000	911.448	5412.004	0.000	.13787	
	106	4289.688	0.000	201.138	0.000	1017.345	5504.163	0.000	.14032	
595	87	4289.688	0.000	223.661	0.000	1398.428	5917.751	0.000	.15076	
	88	4289.688	0.000	353.011	0.000	2014.774	6657.473	0.000	.16960	
605	88	4289.688	0.000	353.011	0.000	2014.774	6657.473	0.000	.16960	
	89	4289.688	0.000	493.825	0.000	2605.681	7388.999	0.000	.18824	
615	89	4289.688	0.000	493.825	0.000	2605.681	7388.999	0.000	.18824	
	90	4289.688	0.000	629.573	0.000	3139.145	8074.407	0.000	.20570	
625	91	4289.688	0.000	342.211	0.000	2955.476	7617.344	0.000	.19405	
	105	4289.688	0.000	201.138	0.000	2597.054	7074.268	0.000	.18032	
635	92	4289.688	0.000	770.174	0.000	2472.073	7551.936	0.000	.19239	
	93	4289.688	0.000	603.793	0.000	3897.866	8791.347	0.000	.22396	
645	94	3786.977	0.000	123.551	0.000	1203.938	5114.470	0.000	.13029	
	95	3786.977	0.000	117.293	0.000	1209.256	5113.527	0.000	.13027	

655	96	3786.977	0.000	464.223	0.000	1115.014	5366.213	0.000	.13671
	97	3786.977	0.000	681.991	0.000	1206.005	5675.063	0.000	.14457
665	97	3786.977	0.000	681.991	0.000	1206.005	5675.063	0.000	.14457
	98	3786.977	0.000	121.042	0.000	1745.504	5663.523	0.000	.14423
675	98	3786.977	0.000	517.121	0.000	1909.559	6213.661	0.000	.15829
	100	3786.977	0.000	1240.371	0.000	1997.606	7024.953	0.000	.17896
685	100	3786.977	0.000	1240.371	0.000	1997.606	7024.953	0.000	.17896
	101	3786.977	0.000	446.611	0.000	2787.211	7703.799	0.000	.17835
695	101	3786.977	0.000	446.611	0.000	2787.211	7703.799	0.000	.17835
	102	3786.977	0.000	248.463	0.000	3536.021	8421.465	0.000	.19414
705	103	3786.977	0.000	493.681	0.000	3336.747	8523.409	0.000	.20695
	104	3786.977	0.000	493.273	0.000	3834.207	8820.455	0.000	.20687
715	105	4289.688	0.000	201.508	0.000	2597.054	7075.280	0.000	.18032
	92	4289.688	0.000	763.174	0.000	2472.073	7551.936	0.000	.19239
725	106	4289.688	0.000	201.138	0.000	1017.345	5508.169	0.000	.14032
	87	4289.688	0.000	223.661	0.000	1398.428	5917.751	0.000	.15076
735	107	4289.688	0.000	618.284	0.000	1768.499	6676.469	0.000	.17008
	84	4289.688	0.000	474.088	0.000	1253.489	6017.257	0.000	.15329

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (SP)	PEAK PRESSURE STRESS (SPEAK)	SUSTAINED LOAD STRESS (SA)	OCCASIONAL LOAD STRESS (SO)	THERMAL EXPANSION STRESS (SC)	TOTAL STRESS (ST)	MODIFIED ALLOWABLE STRESS (SSH)	OPSIG STRESS RATIO ST/(SSH+SA)	MODIFIED STRESS RATIO
210	67	4289.688	0.000	2434.292	0.000	1371.048	8095.278	0.000	.20691	
	65	4289.688	0.000	2351.172	0.000	1366.496	7937.759	0.000	.20128	
220	73	4289.688	0.000	1302.472	0.000	665.533	6277.801	0.000	.17571	
	74	4289.688	0.000	1309.221	0.000	671.197	6298.613	0.000	.17644	
230	75	4289.688	0.000	543.868	0.000	719.453	5253.203	0.000	.13637	
	76	4289.688	0.000	571.631	0.000	674.505	5535.849	0.000	.14402	
240	77	4289.688	0.000	702.481	0.000	696.174	5644.323	0.000	.14684	
	78	4289.688	0.000	534.445	0.000	624.443	5443.826	0.000	.13981	
250	82	4289.688	0.000	1373.571	0.000	601.162	6484.627	0.000	.17649	
	83	4289.688	0.000	796.498	0.000	600.733	5886.920	0.000	.16149	
260	90	4289.688	0.000	629.573	0.000	3139.145	8074.407	0.000	.20570	
	91	4289.688	0.000	342.211	0.000	2955.476	7617.344	0.000	.19405	
270	93	4289.688	0.000	603.793	0.000	3897.866	8791.347	0.000	.22396	
	94	4289.688	0.000	423.224	0.000	4271.471	8944.345	0.000	.22796	
280	95	3786.977	0.000	117.293	0.000	1209.256	5113.527	0.000	.13027	
	96	3786.977	0.000	464.223	0.000	1115.014	5366.213	0.000	.13671	
290	78	3786.977	0.000	121.042	0.000	1745.504	5663.523	0.000	.14423	
	99	3786.977	0.000	517.121	0.000	1909.559	6213.661	0.000	.15829	
300	102	3786.977	0.000	248.463	0.000	3536.021	8421.465	0.000	.19414	
	103	3786.977	0.000	493.681	0.000	3836.747	8523.409	0.000	.20695	

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

D.5 CLASS 2 STRESSES FOR ANALYSIS SET NUMBER 5

ASSIGNED LOAD COMBINATION IDENTIFIERS
MA = 1 MB = 9 MC = 0 P = 0 PMAX = 2

D.5.1 SATISFACTION OF EQUATION 9 (ANALYSIS SET 5)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
15	1	0.000	4125.890	131.607	976.399	0.000	5233.836	0.000	.27431	.13788
	2	0.000	4125.890	33.191	442.010	0.000	4601.091	0.000	.24115	.16076
25	1	0.000	4673.591	465.489	5313.465	0.000	10449.745	0.000	.54768	.36512
	11	0.000	4673.591	323.875	2955.559	0.000	7953.024	0.000	.41683	.27789
35	1	0.000	4125.890	341.292	1932.563	0.000	6399.745	0.000	.33542	.22361
	12	0.000	4125.890	199.955	1610.363	0.000	5936.617	0.000	.31115	.20744
45	3	0.000	4673.591	85.745	1347.843	0.000	6107.173	0.000	.32009	.21339
	4	0.000	4673.591	363.252	469.625	0.000	5506.474	0.000	.28865	.19315
55	4	0.000	4673.591	363.251	469.625	0.000	5506.474	0.000	.28965	.19313
	6	0.000	4673.591	76.951	427.351	0.000	5177.893	0.000	.27133	.18092
65	7	0.000	4673.591	206.551	474.985	0.000	5355.131	0.000	.28067	.18711
	8	0.000	4673.591	123.951	155.706	0.000	4955.647	0.000	.25930	.17327
75	9	0.000	4673.591	215.701	184.276	0.000	5077.573	0.000	.26612	.17741
	10	0.000	4673.591	213.661	385.619	0.000	5279.873	0.000	.27677	.18445
85	13	0.000	4125.890	196.711	1663.464	0.000	5983.567	0.000	.31360	.20327
	14	0.000	4125.890	183.741	1245.424	0.000	5555.057	0.000	.29115	.19417
95	15	0.000	4125.890	116.261	1525.509	0.000	5767.668	0.000	.30229	.20153
	16	0.000	4125.890	176.761	1650.647	0.000	5953.300	0.000	.31202	.20801
105	16	0.000	4125.890	176.761	1650.647	0.000	5953.300	0.000	.31202	.20801
	17	0.000	4125.890	546.071	1835.706	0.000	6560.674	0.000	.34385	.22923
115	18	0.000	4125.890	451.391	1865.493	0.000	6465.779	0.000	.33888	.22592
	19	0.000	4125.890	93.661	1392.277	0.000	5611.836	0.000	.29412	.19609

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
1C	2	0.000	4125.890	44.479	592.517	0.000	4762.885	0.000	.24963	.16642
	3	0.000	4125.890	32.771	515.132	0.000	4673.793	0.000	.24496	.16331
2C	6	0.000	4673.591	76.951	427.351	0.000	5177.893	0.000	.27138	.18092
	7	0.000	4673.591	205.551	474.986	0.000	5355.131	0.000	.28067	.18711
3C	8	0.000	4673.591	193.791	232.911	0.000	5100.293	0.000	.26731	.17821
	9	0.000	4673.591	322.661	281.911	0.000	5278.168	0.000	.27663	.18442
4C	12	0.000	4125.890	267.981	2155.327	0.000	6552.703	0.000	.34343	.22896
	13	0.000	4125.890	293.611	2210.563	0.000	6630.065	0.000	.34592	.23061
5C	14	0.000	4125.890	183.741	1245.424	0.000	5555.057	0.000	.29115	.19410
	15	0.000	4125.890	116.261	1525.509	0.000	5767.668	0.000	.30229	.20153
6C	17	0.000	4125.890	731.791	2531.033	0.000	7388.716	0.000	.38725	.25817
	18	0.000	4125.890	604.911	2530.745	0.000	7261.547	0.000	.38058	.25372

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
125	23	0.000	4125.890	207.681	1092.652	0.000	5446.223	0.000	.28754	.19169
	25	0.000	4125.890	52.255	1062.844	0.000	5240.992	0.000	.27469	.18312
135	26	0.000	4125.890	78.765	1035.443	0.000	5240.101	0.000	.27464	.18309
	27	0.000	4125.890	51.505	933.813	0.000	5111.207	0.000	.26788	.17859
145	28	0.000	4125.890	52.335	943.053	0.000	5121.262	0.000	.26841	.17894
	29	0.000	4125.890	116.741	333.199	0.000	4690.742	0.000	.24209	.16139
155	29	0.000	4673.591	324.253	1557.556	0.000	6555.434	0.000	.34353	.22902
	30	0.000	4673.591	112.679	1202.201	0.000	5981.672	0.000	.31337	.20925
165	29	0.000	4673.591	223.594	1272.480	0.000	6169.665	0.000	.32336	.21557
	30	0.000	4673.591	79.373	895.358	0.000	5645.322	0.000	.29955	.19725
175	30	0.000	4673.591	112.875	1195.565	0.000	5982.555	0.000	.31355	.20903
	31	0.000	4673.591	135.985	1404.207	0.000	6213.702	0.000	.32567	.21711
185	32	0.000	4673.591	79.718	1402.387	0.000	6155.694	0.000	.32263	.21509
	33	0.000	4673.591	101.365	588.512	0.000	5363.468	0.000	.28110	.18740
195	34	0.000	4673.591	51.931	637.336	0.000	5365.517	0.000	.28121	.18747
	35	0.000	4673.591	269.861	629.081	0.000	5572.531	0.000	.29206	.19471
205	35	0.000	4673.591	269.861	629.081	0.000	5572.531	0.000	.29206	.19471
	36	0.000	4673.591	23.731	461.996	0.000	5165.318	0.000	.27072	.18048
215	37	0.000	4673.591	51.621	535.043	0.000	5281.236	0.000	.27675	.18450
	38	0.000	4673.591	37.261	732.990	0.000	5443.036	0.000	.28531	.19020
225	40	0.000	4673.591	25.901	311.811	0.000	5614.101	0.000	.29424	.19616
	41	0.000	4673.591	117.331	1499.043	0.000	6290.322	0.000	.32446	.21964
235	42	0.000	4673.591	117.761	1486.552	0.000	6275.265	0.000	.32525	.21016
	43	0.000	4673.591	51.511	1349.680	0.000	6154.793	0.000	.32256	.21505
245	44	0.000	4673.591	173.691	1396.643	0.000	6243.925	0.000	.32725	.21817
	45	0.000	4673.591	206.491	1288.534	0.000	6168.671	0.000	.32330	.21554

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
7C	25	0.000	4125.890	73.037	1576.106	0.000	5690.226	0.000	.29456	.19637
	26	0.000	[illegible]	[illegible]	[illegible]	0.000	[illegible]	0.000	[illegible]	[illegible]
8C	27	0.000	4125.890	[illegible]	[illegible]	0.000	5444.302	0.000	.28545	[illegible]
	28	0.000	4125.890	70.137	1231.249	0.000	5435.403	0.000	[illegible]	.18999
9C	31	0.000	4673.591	203.423	[illegible]	0.000	[illegible]	0.000	.36487	[illegible]
	32	0.000	4673.591	119.237	2097.789	0.000	6893.605	0.000	.36114	.24076

100	33	0.000	4673.591	101.364	583.617	0.000	5341.478	0.000	.28118	.19745
	34	0.000	4673.591	93.350	637.096	0.000	5405.817	0.000	.24121	.19767
110	36	0.000	4673.591	44.471	691.079	0.000	5409.145	0.000	.24358	.19950
	37	0.000	4673.591	77.023	801.193	0.000	5552.715	0.000	.20102	.19462
120	39	0.000	4673.591	112.744	1340.975	0.000	6127.162	0.000	.32113	.21459
	40	0.000	4673.591	44.238	1364.863	0.000	6076.703	0.000	.31381	.21248
130	41	0.000	4673.591	175.911	2201.650	0.000	7054.753	0.000	.36996	.24584
	42	0.000	4673.591	176.151	2224.119	0.000	7073.365	0.000	.37078	.24717
140	43	0.000	4673.591	136.498	2078.779	0.000	6853.259	0.000	.36107	.24371
	44	0.000	4673.591	259.811	2073.593	0.000	7007.008	0.000	.36724	.24483

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.6*SH)
255	19	0.000	5030.641	389.349	1051.106	0.000	6400.805	0.000	.33543	.23365
	20	0.000	5030.641	561.712	1107.736	0.000	6763.698	0.000	.35410	.23623
265	19	0.000	5090.641	389.349	1368.961	0.000	6835.247	0.000	.35735	.23833
	46	0.000	5090.641	173.808	919.776	0.000	6174.417	0.000	.32361	.21574
275	20	0.000	5090.641	561.712	1107.736	0.000	6763.698	0.000	.35410	.23623
	21	0.000	5040.641	321.249	719.051	0.000	6130.941	0.000	.32133	.21422
285	21	0.000	5090.641	321.249	719.051	0.000	6130.941	0.000	.32133	.21422
	22	0.000	5030.641	283.259	501.303	0.000	5745.199	0.000	.30173	.20743
295	22	0.000	5090.641	283.259	501.303	0.000	5735.509	0.000	.30173	.20743
	23	0.000	5030.641	151.791	583.941	0.000	5596.366	0.000	.30432	.20724
305	23	0.000	5030.641	5.161	.000	0.000	5035.485	0.000	.26768	.17655
	24	0.000	5030.641	.000	.000	0.000	5030.641	0.000	.26581	.17727
315	47	0.000	5030.641	262.413	1233.879	0.000	6585.932	0.000	.34923	.23315
	48	0.000	5090.641	173.648	1575.773	0.000	6744.655	0.000	.35613	.23742
325	49	0.000	5030.641	131.403	1534.182	0.000	6816.204	0.000	.35724	.23816
	50	0.000	5030.641	139.581	935.231	0.000	6161.470	0.000	.32330	.21553
335	50	0.000	5090.641	139.581	935.231	0.000	6168.470	0.000	.32330	.21553
	51	0.000	5030.641	152.581	1103.620	0.000	6357.213	0.000	.33298	.22199
345	52	0.000	5090.641	123.051	1147.753	0.000	6371.446	0.000	.33393	.22262
	53	0.000	5090.641	2612.461	1843.199	0.000	9546.299	0.000	.50033	.33355
355	53	0.000	5030.641	2703.081	2463.582	0.000	10343.319	0.000	.54210	.36140
	54	0.000	5090.641	1322.261	1522.619	0.000	7635.516	0.000	.40018	.26679
365	54	0.000	5030.641	1322.261	1522.619	0.000	7635.516	0.000	.40018	.26679
	55	0.000	5030.641	412.401	1561.442	0.000	7064.491	0.000	.37026	.24684
375	56	0.000	5090.641	335.701	1762.021	0.000	7187.362	0.000	.37649	.25099
	57	0.000	5030.641	465.803	1562.540	0.000	7119.988	0.000	.37311	.24874
385	57	0.000	6037.500	427.361	1812.150	0.000	8277.015	0.000	.41551	.27701
	59	0.000	6037.500	525.143	1668.367	0.000	8231.010	0.000	.41320	.27547

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.6*SH)
150	46	0.000	5030.641	173.808	919.776	0.000	6174.417	0.000	.32351	.21574
	47	0.000	5030.641	262.413	1233.879	0.000	6586.932	0.000	.34523	.23015
160	48	0.000	5040.641	193.515	2447.017	0.000	7737.177	0.000	.40551	.27034
	49	0.000	5090.641	204.052	2445.512	0.000	7740.505	0.000	.40569	.27046
170	51	0.000	5090.641	237.521	1703.129	0.000	7031.289	0.000	.36956	.24638
	52	0.000	5090.641	236.615	1782.344	0.000	7079.607	0.000	.37105	.24737
180	55	0.000	5090.641	412.401	1561.442	0.000	7064.491	0.000	.37026	.24684
	56	0.000	5090.641	330.701	1762.021	0.000	7183.362	0.000	.37649	.25099

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.6*SH)
395	59	0.000	6900.000	525.143	1664.367	0.000	9091.510	0.000	.45650	.30433
	60	0.000	6900.000	67.351	1135.894	0.000	8183.245	0.000	.41041	.27357
405	60	0.000	6900.000	67.351	1135.894	0.000	8183.245	0.000	.41041	.27357
	61	0.000	6900.000	72.023	701.189	0.000	7743.712	0.000	.38974	.25983
415	62	0.000	6900.000	85.067	612.804	0.000	7603.889	0.000	.38157	.25438
	63	0.000	6900.000	60.551	707.054	0.000	7633.604	0.000	.38323	.25549
425	64	0.000	6900.000	78.841	1043.770	0.000	8028.608	0.000	.40304	.26869
	65	0.000	6900.000	324.581	1336.795	0.000	8561.382	0.000	.42979	.28653

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.6*SH)
190	61	0.000	6900.000	178.138	1337.912	0.000	8426.050	0.000	.42303	.28202
	62	0.000	6900.000	150.594	1302.739	0.000	8353.331	0.000	.41939	.27959
200	63	0.000	6900.000	172.921	1243.259	0.000	8302.173	0.000	.41674	.27782
	64	0.000	6900.000	139.391	1554.761	0.000	8694.016	0.000	.44849	.29900

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (TB)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO TB/(1.2*SH)	EMERGENCY STRESS RATIO TB/(1.8*SH)
435	53	0.000	4673.591	3263.689	9964.959	0.000	17839.238	0.000	.92449	.61633
	66	0.000	4673.591	1757.462	5178.712	0.000	11627.764	0.000	.60242	.40161
445	66	0.000	4673.591	1707.624	2010.023	0.000	9451.239	0.000	.48935	.32623
	67	0.000	4673.591	1627.354	3171.256	0.000	9440.201	0.000	.48867	.32578
455	66	0.000	4673.591	1377.764	3247.701	0.000	9213.057	0.000	.47737	.31824
	73	0.000	4673.591	1265.264	2817.674	0.000	8876.479	0.000	.46522	.31015
465	68	0.000	4673.591	1535.362	3173.393	0.000	9300.747	0.000	.47216	.31478
	69	0.000	4673.591	1202.034	3077.574	0.000	9153.200	0.000	.47973	.31982
475	69	0.000	4673.591	1104.475	3171.983	0.000	9140.052	0.000	.47904	.31936
	71	0.000	4673.591	468.297	2364.545	0.000	8000.472	0.000	.41531	.27684
485	71	0.000	4673.591	468.297	2203.231	0.000	7435.099	0.000	.38968	.25979
	72	0.000	4673.591	1033.756	2993.155	0.000	8711.499	0.000	.45654	.30439
495	72	0.000	4673.591	661.444	3214.237	0.000	8053.272	0.000	.44438	.29625
	107	0.000	4673.591	619.251	3451.147	0.000	8743.040	0.000	.45828	.30552
505	74	0.000	4673.591	1209.021	2764.596	0.000	8553.012	0.000	.45021	.30014
	75	0.000	4673.591	229.874	1123.237	0.000	6074.504	0.000	.31837	.21225
515	76	0.000	4673.591	368.771	1172.480	0.000	6214.846	0.000	.32573	.21715
	77	0.000	4673.591	448.286	1213.171	0.000	6336.041	0.000	.33207	.22138
525	78	0.000	4673.591	367.254	1223.702	0.000	6260.579	0.000	.32812	.21875
	79	0.000	4673.591	1469.326	1455.549	0.000	7593.467	0.000	.39794	.26529
535	79	0.000	4673.591	1407.694	1450.412	0.000	7534.699	0.000	.39501	.26334
	81	0.000	4673.591	1706.811	1752.712	0.000	8133.113	0.000	.42626	.28417
545	81	0.000	4673.591	1706.811	1245.543	0.000	7625.044	0.000	.39959	.26639
	82	0.000	4673.591	1319.361	1727.780	0.000	7320.712	0.000	.38369	.25579
555	83	0.000	4673.591	595.721	1411.632	0.000	6591.991	0.000	.34544	.23029
	72	0.000	4673.591	1633.831	1580.091	0.000	7847.519	0.000	.41339	.27559
565	84	0.000	4673.591	474.056	2497.946	0.000	7845.665	0.000	.40972	.26714
	85	0.000	4673.591	325.151	2325.543	0.000	7937.239	0.000	.41600	.27733
575	85	0.000	4673.591	325.151	2336.549	0.000	7937.249	0.000	.41600	.27733
	86	0.000	4673.591	210.867	1701.046	0.000	6735.504	0.000	.35463	.23642
585	86	0.000	4673.591	210.867	1701.046	0.000	6735.504	0.000	.35463	.23642
	106	0.000	4673.591	201.136	2362.906	0.000	7237.633	0.000	.37933	.25289
595	87	0.000	4673.591	220.865	1659.939	0.000	6593.194	0.000	.34456	.22937
	88	0.000	4673.591	353.011	3079.955	0.000	8176.566	0.000	.42467	.28311
605	88	0.000	4673.591	353.011	3074.055	0.000	8170.566	0.000	.42487	.28325
	89	0.000	4673.591	493.621	2303.314	0.000	7471.134	0.000	.39157	.26105
615	89	0.000	4673.591	493.621	2303.414	0.000	7471.134	0.000	.39157	.26105
	90	0.000	4673.591	629.572	1566.113	0.000	7163.773	0.000	.37595	.25063
625	91	0.000	4673.591	342.211	2159.589	0.000	7175.393	0.000	.37607	.25071
	105	0.000	4673.591	221.508	2233.452	0.000	7173.441	0.000	.37598	.25065
635	92	0.000	4673.591	790.174	2265.664	0.000	7729.629	0.000	.40512	.27008
	93	0.000	4673.591	603.792	3155.541	0.000	8442.925	0.000	.44250	.29500
645	94	0.000	4125.390	123.554	862.563	0.000	5111.998	0.000	.26792	.17862
	95	0.000	4125.390	117.293	789.623	0.000	5032.812	0.000	.26377	.17585

655	96	0.000	4125.390	484.221	851.597	0.000	5471.804	0.000	.28678	.19119
	97	0.000	4125.390	671.931	1775.265	0.000	6593.166	0.000	.34553	.23002
665	97	0.000	4125.390	661.991	1775.265	0.000	6583.166	0.000	.34503	.23002
	98	0.000	4125.390	121.043	1369.479	0.000	5615.411	0.000	.29431	.19621
675	99	0.000	4125.390	517.121	1645.319	0.000	6284.333	0.000	.32955	.21972
	100	0.000	4125.390	1240.371	1344.643	0.000	6710.903	0.000	.35172	.23448
685	100	0.000	4125.390	1240.371	1344.592	0.000	6710.852	0.000	.35172	.23448
	101	0.000	4125.390	446.611	583.494	0.000	5161.394	0.000	.27054	.18036
695	101	0.000	4125.390	445.611	583.344	0.000	5161.744	0.000	.27056	.18038
	102	0.000	4125.390	243.463	1565.003	0.000	5940.760	0.000	.31134	.20756
705	103	0.000	4125.390	499.685	2792.944	0.000	7416.519	0.000	.38881	.25921
	104	0.000	4125.390	499.273	2817.470	0.000	7452.630	0.000	.39112	.26075
715	105	0.000	4673.591	201.508	2233.452	0.000	7173.441	0.000	.37598	.25065
	92	0.000	4673.591	790.174	2265.664	0.000	7729.629	0.000	.40512	.27008
725	106	0.000	4673.591	201.136	2362.906	0.000	7237.633	0.000	.37933	.25289
	87	0.000	4673.591	229.865	1659.939	0.000	6593.194	0.000	.34556	.23037
735	107	0.000	4673.591	618.251	3451.147	0.000	8743.040	0.000	.45822	.30548
	84	0.000	4673.591	474.056	2497.946	0.000	7645.665	0.000	.40072	.26714

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (TB)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO TB/(1.2*SH)	EMERGENCY STRESS RATIO TB/(1.8*SH)
210	67	0.000	4673.591	2434.298	4765.715	0.000	11863.597	0.000	.62178	.41452
	65	0.000	4673.591	2301.173	4794.474	0.000	11721.148	0.000	.61474	.40982
220	73	0.000	4673.591	1422.571	4384.153	0.000	10360.514	0.000	.57445	.38297
	74	0.000	4673.591	1809.723	4745.691	0.000	10923.809	0.000	.59147	.39431
230	75	0.000	4673.591	343.842	1504.353	0.000	6697.685	0.000	.35134	.23423
	76	0.000	4673.591	401.639	1711.656	0.000	7306.127	0.000	.38315	.25543
240	77	0.000	4673.591	708.681	1814.731	0.000	7155.302	0.000	.37577	.25051
	78	0.000	4673.591	534.441	1539.451	0.000	7047.449	0.000	.36987	.24658
250	82	0.000	4673.591	1173.573	1366.141	0.000	6633.308	0.000	.45264	.33160
	83	0.000	4673.591	704.691	2111.601	0.000	7545.683	0.000	.39627	.26418
260	98	0.000	4673.591	689.673	1775.977	0.000	7373.059	0.000	.38723	.25815
	91	0.000	4673.591	342.211	2159.589	0.000	7175.841	0.000	.37689	.25126
270	93	0.000	4673.591	603.792	3160.671	0.000	8447.034	0.000	.44351	.29567
	94	0.000	4673.591	433.221	2370.615	0.000	8017.435	0.000	.42101	.28067
280	95	0.000	4125.390	117.293	789.363	0.000	5032.843	0.000	.26176	.17544
	96	0.000	4125.390	484.221	851.594	0.000	5471.806	0.000	.28478	.19113
290	98	0.000	4125.390	121.043	1367.271	0.000	5614.014	0.000	.29474	.19814
	99	0.000	4125.390	517.121	1643.474	0.000	6281.003	0.000	.32976	.21984
300	102	0.000	4125.390	248.463	1562.203	0.000	5943.102	0.000	.31211	.20809
	103	0.000	4125.390	499.685	2791.455	0.000	7417.073	0.000	.38874	.25916

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

D.6 CLASS 2 STRESSES FOR ANALYSIS SET NUMBER 6

ASSIGNED LOAD COMBINATION IDENTIFIERS
MA = 1 MB =10 MC = 0 P = 0 PMAX = 2

D.6.1 SATISFACTION OF EQUATION 9 (ANALYSIS SET 6)

STRAIGHT MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
1S	1	0.000	4125.890	131.607	370.597	0.000	4628.093	0.000	.24256	.16171
	2	0.000	4125.890	33.191	243.435	0.000	4409.519	0.000	.23165	.15444
2S	1	0.000	4673.591	465.469	2804.573	0.000	7943.633	0.000	.41660	.27773
	11	0.000	4673.591	323.875	1741.112	0.000	6733.578	0.000	.35317	.23545
3S	1	0.000	4125.890	341.292	787.466	0.000	5254.648	0.000	.27546	.18360
	12	0.000	4125.890	193.975	1156.322	0.000	5492.186	0.000	.23733	.19195
4S	3	0.000	4673.591	85.745	753.278	0.000	5512.613	0.000	.28892	.19261
	4	0.000	4673.591	363.258	243.175	0.000	5255.024	0.000	.27659	.18455
5S	4	0.000	4673.591	363.258	243.175	0.000	5255.024	0.000	.27699	.18456
	6	0.000	4673.591	76.951	224.821	0.000	4975.262	0.000	.26076	.17384
6S	7	0.000	4673.591	206.555	250.918	0.000	5131.064	0.000	.26892	.17923
	8	0.000	4673.591	129.551	94.216	0.000	4897.359	0.000	.25667	.17112
7S	9	0.000	4673.591	215.703	121.512	0.000	5010.809	0.000	.26262	.17505
	10	0.000	4673.591	219.664	226.806	0.000	5120.060	0.000	.26835	.17890
8S	13	0.000	4125.890	196.712	1185.900	0.000	5503.502	0.000	.28371	.19247
	14	0.000	4125.890	183.743	866.131	0.000	5175.764	0.000	.27127	.18084
9S	15	0.000	4125.890	116.267	931.810	0.000	5173.969	0.000	.27117	.18078
	16	0.000	4125.890	176.763	929.389	0.000	5232.041	0.000	.27422	.18281
10S	16	0.000	4125.890	176.763	929.389	0.000	5232.041	0.000	.27422	.18281
	17	0.000	4125.890	546.078	1113.365	0.000	5785.333	0.000	.30321	.20214
11S	18	0.000	4125.890	451.396	1066.547	0.000	5643.832	0.000	.29580	.19720
	19	0.000	4125.890	93.661	1519.830	0.000	5739.388	0.000	.30081	.20054

CURVED MEMBERS FOR RUN 1

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
1C	2	0.000	4125.890	44.479	334.267	0.000	4504.637	0.000	.23609	.15739
	3	0.000	4125.890	32.771	287.894	0.000	4446.555	0.000	.23305	.15537
2C	6	0.000	4673.591	76.951	224.821	0.000	4975.362	0.000	.26076	.17384
	7	0.000	4673.591	206.551	250.919	0.000	5131.064	0.000	.26892	.17928
3C	8	0.000	4673.591	193.791	140.934	0.000	5008.316	0.000	.26249	.17499
	9	0.000	4673.591	322.667	181.996	0.000	5178.253	0.000	.27140	.18093

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
4C	12	0.000	4125.890	267.984	1549.632	0.000	5943.505	0.000	.31150	.20767
	13	0.000	4125.890	263.612	1585.940	0.000	5975.442	0.000	.31334	.20889
5C	14	0.000	4125.890	183.743	866.131	0.000	5175.764	0.000	.27127	.18084
	15	0.000	4125.890	116.267	931.810	0.000	5173.969	0.000	.27117	.18078
6C	17	0.000	4125.890	721.797	1492.003	0.000	6343.690	0.000	.33279	.22186
	18	0.000	4125.890	604.910	1429.267	0.000	6160.067	0.000	.32285	.21524

STRAIGHT MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
12S	23	0.000	4125.890	267.681	1359.469	0.000	5753.040	0.000	.30152	.20101
	25	0.000	4125.890	52.259	802.649	0.000	4980.798	0.000	.26105	.17403
13S	26	0.000	4125.890	78.769	793.333	0.000	5002.992	0.000	.26221	.17481
	27	0.000	4125.890	91.505	714.532	0.000	4931.926	0.000	.25639	.17093
14S	28	0.000	4125.890	52.339	633.834	0.000	4667.063	0.000	.25509	.17006
	29	0.000	4125.890	110.741	922.464	0.000	5159.595	0.000	.27071	.18047
15S	29	0.000	4673.591	324.231	3303.703	0.000	8301.568	0.000	.41923	.29216
	30	0.000	4673.591	112.675	1088.754	0.000	5875.224	0.000	.30793	.20529
16S	29	0.000	4673.591	223.594	1643.771	0.000	6540.955	0.000	.34282	.22854
	39	0.000	4673.591	75.372	993.322	0.000	5742.285	0.000	.30096	.20064
17S	30	0.000	4673.591	112.875	1084.627	0.000	5871.097	0.000	.30771	.20514
	31	0.000	4673.591	139.486	1314.233	0.000	6127.310	0.000	.32116	.21411
18S	32	0.000	4673.591	73.718	1373.641	0.000	6093.942	0.000	.31936	.21290
	33	0.000	4673.591	101.361	535.321	0.000	5211.276	0.000	.27474	.18458
19S	34	0.000	4673.591	53.336	651.376	0.000	5378.907	0.000	.28192	.18794
	35	0.000	4673.591	269.864	731.763	0.000	5675.219	0.000	.29744	.19830
20S	35	0.000	4673.591	267.860	731.763	0.000	5675.219	0.000	.29744	.19830
	36	0.000	4673.591	21.732	521.695	0.000	5225.019	0.000	.27385	.18257
21S	37	0.000	4673.591	51.623	597.993	0.000	5323.212	0.000	.27899	.18600
	38	0.000	4673.591	37.361	753.749	0.000	5464.402	0.000	.28637	.19091
22S	40	0.000	4673.591	73.901	751.859	0.000	5494.349	0.000	.28587	.19058
	41	0.000	4673.591	117.332	1134.573	0.000	5925.476	0.000	.31076	.20604
23S	42	0.000	4673.591	117.761	1343.322	0.000	6131.072	0.000	.32137	.21424
	43	0.000	4673.591	91.511	1526.171	0.000	6291.276	0.000	.32973	.21982
24S	44	0.000	4673.591	173.693	1531.310	0.000	6379.112	0.000	.33434	.22289
	45	0.000	4673.591	206.493	1323.230	0.000	6203.818	0.000	.32515	.21677

CURVED MEMBERS FOR RUN 2

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
7C	25	0.000	4125.890	72.032	1075.623	0.000	5271.547	0.000	[illegible]	[illegible]
	26	0.000	4125.890	105.063	1063.337	0.000	5271.514	0.000	[illegible]	[illegible]
8C	27	0.000	4125.890	[illegible]	957.592	0.000	[illegible]	0.000	[illegible]	[illegible]
	28	0.000	4125.890	70.137	918.295	0.000	5114.324	0.000	.26805	[illegible]
9C	31	0.000	4673.591	203.421	1965.070	0.000	6842.937	0.000	.35865	[illegible]
	32	0.000	4673.591	119.027	1910.400	0.000	6703.278	0.000	[illegible]	[illegible]

10C	33	0.000	4673.591	101.361	505.329	0.000	5280.276	0.000	.27674	.18451
	34	0.000	4673.591	53.991	651.376	0.000	5378.957	0.000	.28192	.18794
11C	36	0.000	4673.591	44.473	780.382	0.000	5498.449	0.000	.28818	.19212
	37	0.000	4673.591	77.221	894.521	0.000	5645.332	0.000	.29588	.19725
12C	39	0.000	4673.591	112.741	1485.873	0.000	6272.205	0.000	.32873	.21915
	40	0.000	4673.591	43.231	1103.007	0.000	5819.830	0.000	.30502	.20335
13C	41	0.000	4673.591	175.512	1699.900	0.000	6549.003	0.000	.34324	.22883
	42	0.000	4673.591	176.151	2004.928	0.000	6854.674	0.000	.35926	.23951
14C	43	0.000	4673.591	136.891	2282.937	0.000	7093.418	0.000	.37177	.24785
	44	0.000	4673.591	259.811	2287.494	0.000	7220.907	0.000	.37845	.25230

STRAIGHT MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (TS)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO TS/(1.2*SH)	EMERGENCY STRESS RATIO TS/(1.8*SH)
25S	19	0.000	5090.641	309.049	318.909	0.000	5718.598	0.000	.29972	.19981
	20	0.000	5090.641	561.713	696.654	0.000	6349.008	0.000	.33276	.22184
26S	19	0.000	5090.641	355.947	1066.237	0.000	6513.323	0.000	.34137	.22758
	46	0.000	5090.641	173.000	1235.282	0.000	6498.923	0.000	.34061	.22708
27S	20	0.000	5090.641	561.713	696.654	0.000	6349.008	0.000	.33276	.22184
	21	0.000	5090.641	321.249	543.004	0.000	5954.894	0.000	.31210	.20807
28S	21	0.000	5090.641	321.249	543.004	0.000	5954.894	0.000	.31210	.20807
	22	0.000	5090.641	203.251	594.684	0.000	5888.576	0.000	.30863	.20575
29S	22	0.000	5090.641	203.251	594.684	0.000	5888.576	0.000	.30863	.20575
	23	0.000	5090.641	151.791	359.429	0.000	5601.867	0.000	.29360	.19573
30S	23	0.000	5090.641	5.164	.000	0.000	5095.805	0.000	.26708	.17805
	24	0.000	5090.641	.000	.000	0.000	5090.641	0.000	.26681	.17787
31S	47	0.000	5090.641	262.412	1481.262	0.000	6834.315	0.000	.35819	.23879
	48	0.000	5090.641	128.481	1631.577	0.000	6850.699	0.000	.35905	.23937
32S	49	0.000	5090.641	131.401	1482.479	0.000	6704.521	0.000	.35141	.23427
	50	0.000	5090.641	139.591	674.939	0.000	5905.175	0.000	.30950	.20633
33S	50	0.000	5090.641	139.591	674.939	0.000	5905.175	0.000	.30950	.20633
	51	0.000	5090.641	152.951	1197.573	0.000	6441.166	0.000	.33759	.22506
34S	52	0.000	5090.641	133.051	1349.620	0.000	6573.312	0.000	.34451	.22967
	53	0.000	5090.641	2412.463	3950.424	0.000	11453.533	0.000	.60029	.40019
35S	53	0.000	5090.641	2719.091	4907.825	0.000	12717.572	0.000	.66654	.44436
	54	0.000	5090.641	1022.261	1798.400	0.000	7911.300	0.000	.41464	.27642
36S	54	0.000	5090.641	1022.261	1798.400	0.000	7911.300	0.000	.41464	.27642
	55	0.000	5090.641	412.401	1450.656	0.000	6953.705	0.000	.36445	.24297
37S	56	0.000	5090.641	330.700	1441.581	0.000	6862.922	0.000	.35969	.23979
	57	0.000	5090.641	445.807	1342.357	0.000	6878.805	0.000	.36052	.24035
38S	57	0.000	6037.500	427.365	1542.342	0.000	8007.206	0.000	.40197	.26798
	59	0.000	6037.500	525.143	1907.123	0.000	8469.766	0.000	.42519	.28346

CURVED MEMBERS FOR RUN 3

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (TS)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO TS/(1.2*SH)	EMERGENCY STRESS RATIO TS/(1.8*SH)
15C	46	0.000	5090.641	173.000	1235.282	0.000	6498.923	0.000	.34061	.22708
	47	0.000	5090.641	262.412	1481.262	0.000	6834.315	0.000	.35819	.23879
16C	48	0.000	5090.641	133.519	2599.675	0.000	7823.835	0.000	.41005	.27337
	49	0.000	5090.641	204.052	2298.561	0.000	7593.253	0.000	.39797	.26531
17C	51	0.000	5090.641	237.521	1859.710	0.000	7187.871	0.000	.37672	.25115
	52	0.000	5090.641	206.611	2126.887	0.000	7424.139	0.000	.38911	.25940
18C	55	0.000	5090.641	412.401	1450.656	0.000	6953.705	0.000	.36445	.24297
	56	0.000	5090.641	330.701	1441.581	0.000	6862.922	0.000	.35969	.23979

STRAIGHT MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (TS)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO TS/(1.2*SH)	EMERGENCY STRESS RATIO TS/(1.8*SH)
39S	59	0.000	6800.000	525.143	1907.123	0.000	9232.266	0.000	.46847	.31032
	60	0.000	6900.000	87.351	1563.602	0.000	8550.953	0.000	.42926	.28618
40S	60	0.000	6900.000	87.351	1563.602	0.000	8550.953	0.000	.42926	.28618
	61	0.000	6900.000	72.521	1604.809	0.000	8577.332	0.000	.43059	.28706
41S	62	0.000	6900.000	88.061	1800.522	0.000	8788.587	0.000	.44119	.29413
	63	0.000	6900.000	86.551	1877.931	0.000	8864.483	0.000	.44473	.29666
42S	64	0.000	6900.000	71.844	1977.160	0.000	8949.003	0.000	.44940	.29973
	65	0.000	6900.000	324.581	2159.879	0.000	9284.460	0.000	.46609	.31072

CURVED MEMBERS FOR RUN 4

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (TS)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO TS/(1.2*SH)	EMERGENCY STRESS RATIO TS/(1.8*SH)
19C	61	0.000	6900.000	129.138	2834.454	0.000	9863.592	0.000	.49516	.33011
	62	0.000	6900.000	139.593	3181.250	0.000	10220.843	0.000	.51307	.34205
20C	63	0.000	6900.000	152.921	3317.317	0.000	10370.238	0.000	.52059	.34706
	64	0.000	6900.000	139.300	3493.343	0.000	10532.643	0.000	.52875	.35250

LACBWR FEED WATER + CONDENSATE RETURN PIPING CLASS 2 ANALYSIS

STRAIGHT MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
435	53	0.000	4673.591	3363.669	10541.522	0.000	18252.801	0.000	.55522	.43881
	66	0.000	4673.591	1757.467	5934.961	0.000	12416.013	0.000	.55073	.41782
445	66	0.000	4673.591	1797.621	3033.129	0.000	9513.344	0.000	.49845	.31930
	67	0.000	4673.591	1677.251	2973.211	0.000	9274.187	0.000	.43607	.30404
455	66	0.000	4673.591	1377.761	3974.527	0.000	10029.665	0.000	.52568	.35045
	73	0.000	4673.591	1295.761	3564.628	0.000	9463.473	0.000	.49597	.33066
465	69	0.000	4673.591	1513.761	3023.384	0.000	9215.274	0.000	.42298	.32199
	63	0.000	4673.591	1222.031	3403.423	0.000	9276.553	0.000	.44617	.30411
475	69	0.000	4673.591	1134.471	3135.373	0.000	9253.039	0.000	.44549	.32306
	71	0.000	4673.591	459.291	2203.394	0.000	7412.282	0.000	.38956	.25971
485	71	0.000	4673.591	461.291	1723.316	0.000	6865.124	0.000	.35981	.23987
	72	0.000	4673.591	1219.751	1809.271	0.000	7605.012	0.000	.39877	.26585
495	72	0.000	4673.591	601.443	2725.254	0.000	8000.289	0.000	.42245	.28163
	107	0.000	4673.591	615.281	3920.224	0.000	8312.137	0.000	.43565	.29043
505	74	0.000	4673.591	333.621	3143.409	0.000	9032.321	0.000	.47339	.31559
	75	0.000	4673.591	223.371	1077.313	0.000	5946.715	0.000	.31166	.20797
515	76	0.000	4673.591	308.771	1391.573	0.000	6373.899	0.000	.33406	.22271
	77	0.000	4673.591	468.281	1425.037	0.000	6567.187	0.000	.34419	.22946
525	78	0.000	4673.591	357.281	1415.802	0.000	6446.679	0.000	.33788	.22525
	79	0.000	4673.591	1459.321	1605.572	0.000	7743.790	0.000	.40612	.27075
535	79	0.000	4673.591	1467.698	1612.704	0.000	7753.991	0.000	.40633	.27093
	81	0.000	4673.591	1706.811	2121.154	0.000	8501.565	0.000	.44557	.29705
545	81	0.000	4673.591	1706.811	1450.301	0.000	7830.708	0.000	.41041	.27361
	82	0.000	4673.591	1319.361	1556.173	0.000	7549.131	0.000	.39566	.26377
555	83	0.000	4673.591	515.729	1723.941	0.000	6903.260	0.000	.36212	.24141
	72	0.000	4673.591	1633.831	2234.435	0.000	8341.863	0.000	.43720	.29147
565	84	0.000	4673.591	474.081	2476.147	0.000	7623.818	0.000	.39957	.26638
	85	0.000	4673.591	325.151	2540.630	0.000	7539.370	0.000	.39515	.26343
575	85	0.000	4673.591	325.151	2540.630	0.000	7539.370	0.000	.39515	.26343
	86	0.000	4673.591	210.961	1519.951	0.000	6404.409	0.000	.33566	.22377
585	86	0.000	4673.591	210.961	1519.951	0.000	6404.409	0.000	.33566	.22377
	105	0.000	4673.591	201.131	1367.652	0.000	6242.375	0.000	.35562	.23708
595	87	0.000	4673.591	229.661	1304.445	0.000	6207.702	0.000	.32535	.21690
	88	0.000	4673.591	353.011	2405.467	0.000	7432.068	0.000	.38952	.25968
605	88	0.000	4673.591	353.011	2405.467	0.000	7432.068	0.000	.38952	.25968
	89	0.000	4673.591	403.621	1376.274	0.000	7043.404	0.000	.36916	.24610
615	89	0.000	4673.591	493.621	1376.274	0.000	7043.404	0.000	.36916	.24610
	90	0.000	4673.591	623.572	1555.375	0.000	6855.539	0.000	.35931	.23954
625	91	0.000	4673.591	342.211	1733.795	0.000	6749.585	0.000	.35375	.23583
	105	0.000	4673.591	201.501	2010.023	0.000	6885.120	0.000	.36086	.24057
635	92	0.000	4673.591	790.174	2065.463	0.000	7529.228	0.000	.39461	.26307
	93	0.000	4673.591	603.791	2959.035	0.000	8252.415	0.000	.43306	.28869
645	94	0.000	4125.990	123.551	703.153	0.000	4977.604	0.000	.26088	.17392
	95	0.000	4123.590	117.291	959.205	0.000	4802.363	0.000	.25170	.15780

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
655	96	0.000	4125.990	464.221	823.594	0.000	5413.710	0.000	.28374	.18916
	97	0.000	4125.990	681.991	1343.135	0.000	6745.016	0.000	.35267	.23578
665	97	0.000	4125.990	681.991	1340.137	0.000	6743.017	0.000	.35167	.23573
	98	0.000	4125.990	121.041	1026.215	0.000	5273.149	0.000	.27637	.18425
675	99	0.000	4125.990	517.121	1260.047	0.000	5903.056	0.000	.30933	.20626
	100	0.000	4125.990	1240.371	1058.421	0.000	6424.881	0.000	.33672	.22465
685	100	0.000	4125.990	1240.371	1053.479	0.000	6424.739	0.000	.33673	.22447
	101	0.000	4125.990	446.611	618.231	0.000	5190.731	0.000	.27205	.18137
695	101	0.000	4125.990	446.611	617.221	0.000	5189.722	0.000	.27200	.18133
	102	0.000	4125.990	241.461	1451.861	0.000	5826.245	0.000	.30536	.20357
705	103	0.000	4125.990	499.681	2724.427	0.000	7353.022	0.000	.38522	.25681
	104	0.000	4125.990	499.271	2776.326	0.000	7401.987	0.000	.38794	.25363
715	105	0.000	4673.591	201.901	2339.103	0.000	6834.222	0.000	.36034	.24056
	92	0.000	4673.591	790.174	2065.412	0.000	7529.176	0.000	.39461	.26307
725	106	0.000	4673.591	201.131	1367.652	0.000	6242.375	0.000	.35462	.23708
	87	0.000	4673.591	229.661	1304.446	0.000	6207.702	0.000	.32535	.21690
735	107	0.000	4673.591	615.281	3023.234	0.000	6312.107	0.000	.43565	.29043
	84	0.000	4673.591	474.081	2476.147	0.000	7623.818	0.000	.39957	.26638

CURVED MEMBERS FOR RUN 5

MEMBER NO.	MEMBER ENDS	INTERNAL PRESSURE STRESS (P)	PEAK PRESSURE STRESS (PMAX)	SUSTAINED LOAD STRESS (MA)	OCCASIONAL LOAD STRESS (MB)	THERMAL EXPANSION STRESS (MC)	TOTAL STRESS (T9)	MODIFIED ALLOWABLE STRESS (SAM)	UPSET STRESS RATIO T9/(1.2*SH)	EMERGENCY STRESS RATIO T9/(1.8*SH)
210	67	0.000	4673.591	2434.291	4447.601	0.000	11555.393	0.000	.60563	.40375
	65	0.000	4673.591	2321.171	4413.516	0.000	11407.223	0.000	.59771	.39858
220	73	0.000	4673.591	1522.521	5542.414	0.000	11738.529	0.000	.67047	.41765
	74	0.000	4673.591	1353.721	4719.319	0.000	11193.632	0.000	.58667	.39111
230	75	0.000	4673.591	343.261	1611.519	0.000	6625.348	0.000	.34743	.23162
	76	0.000	4673.591	551.431	1975.549	0.000	7211.515	0.000	.37791	.25193
240	77	0.000	4673.591	701.481	2171.507	0.000	7556.622	0.000	.39140	.26095
	78	0.000	4673.591	534.441	2117.123	0.000	7325.471	0.000	.38396	.25597
250	82	0.000	4673.591	1573.571	2327.823	0.000	8074.985	0.000	.42320	.31309
	83	0.000	4673.591	786.451	2537.784	0.000	8317.825	0.000	.42027	.28018
260	90	0.000	4673.591	[illegible]	1544.417	0.000	[illegible]	0.000	.35539	.23728
	91	0.000	4673.591	342.211	1733.554	0.000	6741.263	0.000	.35374	.23583
270	93	0.000	4673.591	[illegible]	2955.074	0.000	6252.437	0.000	.43194	.28795
	94	0.000	4673.591	[illegible]	2340.184	0.000	7650.027	0.000	.40150	.26767
280	95	0.000	4125.990	[illegible]	595.606	0.000	4795.475	0.000	.25150	.16767
	96	0.000	4125.990	[illegible]	553.731	0.000	5413.031	0.000	.28374	.18916
290	97	0.000	4125.990	[illegible]	1306.725	0.000	5413.231	0.000	.28374	.18916
	99	0.000	4125.990	[illegible]	1204.831	0.000	5293.437	0.000	.27640	.18427
300	102	0.000	4125.990	342.461	1502.312	0.000	5826.669	0.000	.30536	.20357
	103	0.000	4125.990	493.681	2703.104	0.000	7304.679	0.000	.38547	.25698